June 13, 2017

ARDURRA

Mr. Gabriel Menendez, P.E.
City of League City
Director of Public Works
300 West Walker St.
League City, Texas 77573

Subject: Proposal for 2018-2028 Water, Wastewater, and Reuse Master Plan Update and Determination of Maximum CRF

Dear Mr. Menendez:

Engineering & Disaster Management

Ardurra Group, LLC (Ardurra) is excited to have the opportunity to submit this proposal to the City of League City to provide professional engineering services in conjunction with the subject project.

Please find the attached **Exhibit A-Scope of Services** (and attachments) which provides the detailed description of engineering and professional services for the water master plan update, water system corrosion study, wastewater master plan update, reuse master plan update, and determination of maximum eligible capital recover fund.

Based on the scope of services included in **Exhibit A**, we propose to complete the work under a maximum not to exceed basis in the amount of $538,818.00 as shown in the task breakdown on **Table A-1**. Also, please find the attached level of effort tabulation and details on **Table A-3**.

We look forward to beginning work on this important project and appreciate the opportunity to serve the City of League City. If you have any questions or require additional information, please contact me at 713-385-5601.

Very truly yours,

Jeffrey S. Peters, P.E., BCEE
Client Service Leader
Ardurra Group, LLC
TPBE Firm Registration No. 17004

Attachments

Ardurra Group, LLC
2032 Buffalo Terrace
Houston, TX 77019
346.666.5130
Ardurragroup.com

Exhibit A-1
Further Description of Engineering Services and Related Matters Detailed Scope of Services
For
City of League City
2017 Water, Wastewater, and Reuse Master Plan Update and Maximum Capital Recovery Fee Update 2018-2028

Project Understanding

The City of League City's current Water Master Plan was performed in 2011 by CDM Smith and the current Wastewater Master Plan was performed in 2012 by CDM Smith. Since the completion of these plans, significant improvements to both the water and wastewater infrastructure have occurred including the reconstruction of the SH 3 Booster Pump Station, Calder Road Booster Pump Station, South Shore Harbour Booster Pump Station and the completion of the Northside Booster Pump Station. The Southwest Water Reclamation Facility has been constructed and the Countryside Wastewater Treatment Plant has been decommissioned. Additionally, thousands of feet of waterline, gravity sewer line and sanitary force mains have been added and older systems have been replaced and/or rehabilitated. These significant improvements, coupled with the fact that it has been 5+ years since the last master plan was completed necessitates the commissioning and completion of an updated integrated water and wastewater master plan and subsequent determination of the maximum capital recovery fee. Additionally, the City desires to include an update to the Reuse Master Plan as part of this effort.

In general, the City's objective and expectations are that all of the utility (water, wastewater and reuse) master planning projects shall move forward concurrently to the end that the City meets all of the legal requirements and prerequisites for implementing or amending impact fees in accordance with Chapter 395 of the Texas Local Government Code and that the Determination of Maximum Capital Recovery Fee Update 2018-2028 and attendant Capital Improvement Plans and Land Use Plan are approved by Ordinance (two readings required) by the City Council of the City of League City no later than May 22, 2018. The development of the Land Use Assumptions and growth projections is not a part of this project as it is being completed under separate contract by Freese & Nichols, Inc (Engineer).

The proposed general work is broken down into the following major tasks:

1. General Project Management
2. Water Master Plan Update
3. Water Distribution System Corrosion Control Evaluation
4. Wastewater Master Plan Update
5. Reuse Master Plan Update
6. Determination of Maximum Capital Recovery Fee

1.0 Project Management

1.1 Conduct a project initiation meeting to identify critical success factors, brainstorm potential solutions, and establish a clear set of objectives for the project based on client input and consultation with senior technical experts;

1.2 Coordinate with staff and project personnel to complete project tasks and meet project objectives;

1.3 Conduct progress meetings with City staff monthly and provide appropriate and necessary documentation;

1.4 Develop and maintain a project schedule with detailed milestones;

1.5 Provide quality control reviews and technical reviews of all evaluations and recommendations, technical memoranda, and reports, and;

1.6 Work with City Project Manager (and other designated City personnel) to coordinate City reviews of final report. Work with internal project team to document and incorporate City comments.

2.0 Water Model and Master Plan Update

2.1 Review Historic Documents

Existing information, including data analyses, will be reviewed to understand City needs. A kickoff meeting will be held with City staff to discuss project startup and gain perspective on the information available. The relevant data and reports supplied by the City will be reviewed as follows:

2.1.1 Water Master Plan Update (2011 and 2013 update).

2.1.2 Customer complaint database and previous reports relating to flow, pressure, and/or water quality.

2.1.3 Main break records.

2.1.4 Most recent City fire flow testing data.

2.1.5 Operation data including distribution system water quantity and quality, pump station pumping records and plant production (past 2-3 years of records).

2.1.6 Pipe type/age in distribution system.

2.1.7 Existing City GIS system for model conversion.

2.1.8 Previous Water Distribution System WaterGems Model.

2.1.9 Deliverables

2.1.9.1 Workshop #1: Project kick-off, inputs for demand data development, established modeling scenarios, summary of workshop #1.

2.1.9.2 All project deliverables will be supplied in their original format as well as in PDF. Deliverables will include graphic and map figures. All deliverables will be reviewed for security concerns and City approval prior to possible or anticipated public presentation. This applies to all the following tasks.

2.1.10 City Staff Involvement

2.1.10.1 Provide copies or access to the reports and data sets listed above.

2.1.10.2 Participation in Workshop #1.

2.2 Demand Allocations and Projections

Demand development is one of the key aspects of hydraulic model development and represents one of the key areas where the existing distribution model can be improved. Existing demand will be allocated based on water billing data and existing water production and pumping data. Engineer understands that the City is conducting a Future Land Use Plan Update and Land Use Assumptions for Capital Recovery Studies (Land Use Update) concurrent to this Project. Furthermore, Engineer understands that the population and land use projections developed in the Land Use Update will be utilized for this Project.

2.2.1 Review and Update Projections – This activity includes a brief review of the data, assumptions, process and results of the water demand projections from the prior master plans (2011 and 2013). A meeting will be scheduled with the City to verify existing demands and discuss their plans for future water demands.

2.2.2 Development Review – Open, developable land in the service area will be evaluated for development use and a demand estimate will be prepared for these areas in accordance with the land use plan (by others). Use

most recent information from city planning documents if information is still applicable. Initially, this information will be combined with the allowable population density based on zoning and the projected uses to establish future and ultimate demands.

2.2.3 Redevelopment Review - Review the potential for redevelopment with City Staff and city planning documents. Develop an understanding of the potential redevelopment impacts to the City water demands.

2.2.4 Estimate Future Demands - Combine current updated demand data (acquired from billing data), with demand projections for undeveloped and redevelopment areas to determine a best estimate of projected demand for intermediate demand scenarios between existing and build-out conditions. Depending on the difference between existing demands and ultimate demand projections, develop up to four demand scenarios as follows:

2.2.4.1 Present (baseline)

2.2.4.2 5-year Projection

2.2.4.3 10-year Projection

2.2.4.4 20-year Projection

2.2.5 This analysis will also provide an estimate of the year of the ultimate build-out. These projected demands will be prepared as average annual demand throughout the City. Demands will be applied to vacant parcels and parcels identified as viable redevelopment candidates based on the land use.

2.2.6 A range for each prediction (low demand/high demand) will be provided for the intermediate scenarios and ultimate build-out projections. Demand scenarios will include a reasonable/conservative estimate for use in future planning for new developments. A table will be prepared using current demand as a baseline for comparison. Demand values will be distributed as a single demand split to one or more model junctions.

2.2.7 Deliverables

2.2.7.1 Demand projections Section in the Master Plan Report (intermediate and build-out demands for average day conditions)

2.2.7.2 Range of build-out conditions to be used in sensitivity analysis

2.2.7.3 Demand comparison table (present vs. future)

2.2.8 City Staff Involvement

2.2.8.1 Interactive meetings regarding model inputs and operation

2.2.8.2 Planning meeting to determine expected development and determine demand projections

2.2.8.3 Provide billing data history

2.2.8.4 Provide operation data for pressures, flows, and tank levels

2.2.8.5 Provide annual WTP production

2.3 Model Improvement

The model improvement task includes a comprehensive review of the existing model configuration and operation with modifications provided to reflect changes that have taken place in the system or in the system operations since the last master plan. Changes in the system will be presented for visual review. New data sources will also be incorporated into the revised system.

The updated model will be capable of evaluating changes in projected water demands, pressure criteria, and fire flows, and the impacts of improvements to the distribution system. Operational improvements will be made to the model based on new data on operation and on improved model demand distribution, diurnal pattern assignments, physical layout, C-factors, and major facility operations.

2.3.1 Update System/GIS – The first component of this project involves upgrading the hydraulic model to better represent current system conditions. The pipe configuration in the model will be verified through direct comparison to the GIS and the model will be updated to reflect the current state of the distribution system, as detailed in the GIS.

2.3.2 Distribute Demands - A key component of the demand development process involves improvements to the current demand allocation in the City's model. The budget developed for this task approach assumes that the demands from each parcel will be proportionally split, using model tools, to the existing model nodes on either end of the main linking these nodes. This proportional split will be made using geocoded customer billing points.

Current water demands will be used for establishing the baseline model. There are three components of a complete demand allocation that will be further developed using available data:

2.3.2.1 Average Demands - The annual average demand for every customer will be linked to each parcel. This volume will be developed by taking a year of data from the billing system and

assigning it directly to the meter location or parcel via geocoding or another viable method. The demand values will be assigned as described above using tools provided in the modeling software suite.

2.3.2.2 Peaking Factors –Use the available operation data and production data to identify the peak and minimum demand periods and associated factors. These factors will be applied universally to all demands to develop maximum and minimum day scenarios. These different demand conditions will be simulated using the scenario management capabilities of the model and by changing the base operating parameters for different alternatives that will then be associated with the appropriate scenarios. Scenarios will be created for average, minimum day, maximum day, and peak hour demand conditions. These scenarios will typically be operated in extended period mode. The peak hour demand condition will be simulated as the highest hour on maximum day, unless the peak hour demand is consistently shown to not occur on maximum day. In this case, the project team and the City will decide on the best course of action to simulate this condition. These scenarios will be created as children of the "Base" model that will simulate actual, best known current conditions.

2.3.2.3 Unaccounted-for-water (UFW) – Billing data for an extended period will be compared to operation data to estimate the unaccounted-for-water volume UFW will be distributed across the system based on discussions with City staff. Traditionally, UFW demand is simply divided by the number of model nodes and distributed evenly to each node.

2.3.3 Revise Diurnal Patterns - A representative diurnal demand pattern will be developed for each customer type (if possible) under different conditions.

2.3.4 Verify Facility Operations - Assess the capabilities and limitations of the existing hydraulic model, and identify required system improvements. Pump operations will be reviewed so they reflect current operations at each pumping location. Control valve operation and settings will be verified with operational staff so that these devices are modeled as they are operated. If operational settings change seasonally, these changes will be noted and appropriate scenarios created to model the range of conditions so that maximum day and minimum day demand scenarios are appropriately handled from a control standpoint. Units will be modified as needed for pumps, controls, etc.

2.3.5 Scenario Management - Recommendations for how the scenario management capabilities of the model will be used to support a wide

range of modeling activities will be developed. This will include recommendations for applying both the scenario management tools and facility sets to achieve the intended operations for different model runs. The recommended and agreed upon scenario tree within the delivered model will be created. The different modeled scenarios will include descriptions on the conditions that each scenario represents.

2.3.6 The total system demands that will be modeled to simulate long-term build-out of vacant parcels throughout the service area is expected to be represented in four base demand alternatives:

2.3.6.1 Base: Existing Condition

2.3.6.2 Intermediate 1 - 5-year

2.3.6.3 Intermediate 2 - 10-year

2.3.6.4 Ultimate - 20-year

2.3.7 The system demand alternatives will also include the following subsets that will be represented using either global factors or different diurnal patterns:

2.3.7.1 Average Day

2.3.7.2 Maximum Day

2.3.7.3 Peak Hour (may be simulated as part of maximum day if appropriate)

2.3.7.4 Minimum Day

2.3.8 The model will be operated in the following different analysis modes:

2.3.8.1 Extended Period Simulations – Review of tank and reservoir use and capability to maintain desired pressures and other “level-of-service” indicators during expected operations, such as water age. All “normal” runs – average day, maximum day, minimum day – for all scenarios will be made in extended period mode.

2.3.8.2 Steady State – Adequacy of pumping and conveyance for maintaining system pressure based on TCEQ standards, including 35 psi for average conditions, with a 20-psi minimum at point of delivery. High pressure will also be evaluated.

2.3.9 The distribution system components will vary from run to run consistent with the modeled time frame. This will be performed using facility sets instead of, for example, using open/closed status of pipes to change the

modeled features from one scenario to another. Facility sets will be based on database queries rolled up into a single query set for each time frame. Model time frames consistent with the different future demand scenarios will be created as follows:

2.3.9.1 Base conditions (existing features only)

2.3.9.2 CIP facilities (existing, less features to be removed, plus features to be added at specified times in the CIP, for up to three modeled future scenarios)

2.3.9.3 Ultimate (existing facilities plus all CIP projects, less existing facilities to be removed)

2.3.9.4 Operation Recommendation scenarios: Overall Modeling objectives include:

2.3.9.4.1 Identifying areas of constant concern, such as chronically low pressure, high pressure, residence time, high velocity or flow reversals.

2.3.9.4.2 Identifying pumping system and transmission system capacity and capability to deliver peak flows.

2.3.9.4.3 Identifying maximum residence times.

2.3.9.4.4 Identifying operations concerns and recommendations.

2.3.10 Deliverables

2.3.10.1 Section in the Master Plan Report detailing extent of differences between GIS and changes incorporated into the model

2.3.10.2 Section in the Master Plan Report reviewing system demands detailing total billed demand, production, and maximum and minimum factors

2.3.10.3 Section in the Master Plan Report detailing diurnal patterns derived for different customer types and for discrete large customers.

2.3.10.4 Section in the Master Plan Report to summarize distribution system operation scenario assumptions (e.g., pump station, elevated storage tanks, etc.)

2.3.10.5 Deliver up to 20 simulations including detailed output in PDF format. At a minimum, this will include the following runs:

2.3.10.5.1 Existing and 5-year average day simulations for routine operations (2 runs)

2.3.10.5.2 Existing and 5-year maximum day/peak hour simulations for identifying transmission system issues and verifying the capability to refill system tanks (2 runs)

2.3.10.5.3 Existing and 5-year minimum day simulations for calculating travel time on minimum day (2 runs)

2.3.10.5.4 The balance of 20 runs may include runs for buildout scenarios or longer-term scenarios, or additional custom scenarios, as desired by the City

2.3.11 City Staff Involvement

2.3.11.1 Provide necessary GIS and operation data

2.3.11.2 Assist in determining demand locations for large customers

2.3.11.3 Work with Engineer on verification of facility operations

2.4 Model Verification

After review of the model configuration has been completed and modifications to model inputs have been performed and confirmed by the City, the hydraulic model will be verified. The verification process depends on data collected from the distribution system that reflects actual operation that will be used to compare model predictions to field conditions and to adjust model parameters if necessary to better reflect field conditions.

2.4.1 Operational Review - An operational review with City staff will be used to verify that the model results agree with their experience. Operational parameters verified will be high pressures areas, low pressures areas, tank fill and empty rates and pump station operations specifically ability to pump against system head.

2.4.2 Adjust Model Parameters – Model C-factors and pump and facility operations will be adjusted to within accepted accuracy to represent the operation of the City water system.

2.4.3 Deliverables

2.4.3.1 Section in the Master Plan Report with model verification results and comparisons to existing operation.

2.4.4 City Staff Involvement

2.4.4.1 Assistance in adjusting model to accurately represent facility and system operation in the model.

2.5 Model Analysis

The model analysis task includes a complete review of current conditions using the verified distribution system model. These simulations will evaluate the behavior and adequacy of the system under both current and future flow conditions, and subsequently identify potential improvements. Using the verified model, create operation scenarios that utilize the existing system layout.

A “brainstorming” session will be held with City staff to develop alternatives after the severity of near-term and build out issues have been established.

2.5.1 Establish Criteria - Develop the criteria for system assessment and modeling. The criteria to be reviewed and established include; allowable pressure ranges, storage requirements, maximum velocities and other factors. The evaluation criteria include the requirements of the TCEQ. Criteria for evaluation of all the alternatives will be summarized.

2.5.2 Identify Immediate Issues – Consider existing system and current demands and determine where the established hydraulic levels of service are not being met with the existing system. Review the deficiencies listed in the previous Master Plan to determine if these items have been addressed. Use this information to document deficiencies and develop potential projects to address them. Prepare list for inclusion in the capital improvement plan.

2.5.3 Identify Long Term Issues – Consider ultimate build-out demand with pipe degradation and identify long-term issues. Develop potential long term improvements to address the deficiencies in the system, review with City staff, and evaluate these for inclusion in the long-term plan. Develop a table with recommended improvements, time frame, and conditions that would trigger initiation.

2.5.4 Analyze & Select Alternatives - Develop alternatives for each identified potential improvement. Prepare preliminary costs and pros/cons for the different solutions. Discuss these developed alternatives with City staff and facilitate a session with City staff to apply the evaluation criteria (previously established by the City) for the immediate and long term improvements identified.

2.5.5 Identify Capital Projects - Identify the resulting list of capital improvement projects for use by the City in its planning process. Include preliminary prioritization based on city established process, budget cost and timing for each of the elements of the final plan. Prepare draft CIP data sheets for each project.

2.5.6 Operation Recommendation -Identify facility operation recommendations to operate the City system more efficiently and optimize hydraulic performance.

2.5.7 Deliverables

2.5.7.1 A proposed list of both short term and long term potential improvements

2.5.7.2 Section in the Master Plan Report including the process for development of short term and long term improvement list

2.5.7.3 Section in the Master Plan Report detailing recommended Operation Recommendation Plan. This Section will include facility operation recommendations including pumps, tanks, and valve settings/modifications.

2.5.7.4 Workshop #2: Modeling results workshop to discuss needed improvements in the system

2.5.7.5 Workshop #3: Operation Recommendation Plan scenarios and responses.

2.5.8 City Staff Involvement

2.5.8.1 Provide input during all phases of project development and evaluations

2.5.8.2 Participation in Workshop #2

2.5.8.3 Participation in Workshop #3

2.5.8.4 Assistance with valve identification, model inputs and locational information as needed

2.5.8.5 Review of operation plan

2.5.8.6 Provide City established evaluation and prioritization criteria for CIP projects

2.6 Project Development

The previous tasks will generate a list of potential projects. All the available documents, reports, data, and model results will have been reviewed and recommendations will be developed under this task. This task will develop the recommended plan for system improvements, and how they will be incorporated into the City's CIP.

2.6.1 Calculate Project Costs - Project costs will be developed for all the identified projects. The number of projects is assumed to be no more than 20 and the cost numbers will be developed based on a unit cost basis. The unit costs for a variety of construction projects will be developed with input from the City staff. Recent construction projects in the City will be used to develop these unit costs. Costs should be loaded with City's implementation costs including design, management, bonding, etc.

2.6.2 Prioritize CIP - The Distribution System Master Plan recommendations developed in Workshop #2 will be prioritized. A timeline and budget level cost for the recommended improvements will be developed. Following the development of this draft CIP, facilitate Workshop #4 to review the final recommendations. Results will be provided to the City for input into the CIP. Provide projected priority, projected year of construction and cost. Prepare draft CIP project sheets and use model to prioritize.

2.6.3 Prepare Reports – A draft report will be prepared, and submitted to the City staff for review. Following receipt of comments, a final version of the report will be prepared and distributed to the City.

2.6.4 Finalize Master Plan Report and Present to Council

Address City comments and coordinate with City on preparation of the Final Master Plan Report. Make two (2) presentations to Water Master Plan Update to City Council during workshops at both the mid-point and end-point of the project.

2.6.5 Deliverables

2.6.5.1 Section in the Master Plan Report detailing project costs and the final CIP recommendations

2.6.5.2 Draft report for City review

2.6.5.3 Hydraulic model files

2.6.5.4 GIS project files bookmarked with key layout data displayed.

2.6.5.5 Electronic copies of all deliverables, such as TMs, minutes, presentations, drawings, final report and so forth, in both original and PDF formats. City should also receive 3 paper copies of final report

2.6.5.6 Workshop #4: Recommended CIP

2.6.6 City Staff Involvement

2.6.6.1 Provide unit cost information

2.6.6.2 Participation in the workshop

2.6.6.3 Provide recent League City construction costs

2.6.6.4 Provide rate analysis based on initial CIP prioritization.

2.6.6.5 Provide CIP adjustments to schedule based on rate impact.

2.7 Source Water Development

2.7.1 After determination of required additional treated water quantity, Engineer will examine infrastructure and costs to provide additional treated source water for two scenarios as follows:

2.7.1.1 New Surface Water Treatment Plant – Engineer will provide planning level cost analysis for a new surface water treatment plant with assumes source water through the American Canal. Engineer will consider necessary land size and land acquisition cost, likely treatment processes and associated costs, and impact and cost to other water infrastructure within the City.

2.7.1.2 Southeast Water Purification Plant – Engineer will provide planning level costs for constructing additional treated surface water capacity from the City of Houston's Southeast Water Purification Plant.

2.8 Development of Water Capital Recovery Fee

2.8.1 Develop Capital Recovery Fee Water CIP

2.8.1.1 Identify Existing Water Improvements Eligible for Capital Recovery Fees

Engineer will review recently completed (over the last 5 years) water improvements and determine which projects are eligible for future cost recovery from growth. CIP will include mapping of existing capital recovery fee eligible improvements.

2.8.1.2 Identify Proposed Water Improvements Eligible for Capital Recovery Fees

Engineer will utilize the results of the water system modeling from the Master Plan Update to determine Capital Recovery fee eligible projects. Maps will be prepared showing the proposed water capital improvements plan projects to be included in the Capital Recovery fee calculation.

2.8.1.3 Meet with City to Review Existing & Proposed Water Projects Eligible for Capital Recovery Fee Analysis

Engineer will meet with the City to review existing and proposed water system improvements identified to be included in the capital recovery fee analysis and the associated project costs.

2.8.1.4 Present Land Use Assumptions and Capital Improvements Plans to Capital Recovery Fee Advisory Committee

Following review by City Staff, Engineer will conduct one presentation of the Land Use Assumptions and Water Capital Recovery Fee Eligible Capital Improvements Plans to the Capital Recovery Fee Advisory Committee.

2.8.2 Water CIP Capital Recovery Fee Analysis

2.8.2.1 Conduct Water Capital Recovery Fee Capacity Analysis for Existing Recently Completed Capital Improvements Projects for 10-year Projected Growth

Engineer will utilize the water models from the Master Plan Update Project to analyze existing completed projects for remaining capacity for capital recovery fee cost recovery for 10-year projected growth.

2.8.2.2 Conduct Water Capital Recovery Fee Capacity Analysis for New Capital Improvements Projects

Engineer will utilize the water models from the Master Plan Update Project to analyze new water improvements for eligible capacity for capital recovery fee cost recovery for 10-year projected growth and associated financing costs.

2.8.2.3 Calculate Water Costs Eligible for Capital Cost Recovery

Engineer will utilize the capacity analysis and capital project costs to calculate percentage of project cost eligible for cost recovery.

2.8.2.4 Develop Service Unit Equivalent (SUEs) for Water Systems

Engineer will utilize equivalent capacity of water meters to establish the service unit equivamlents (SUEs) required in Chapter 395 of the Local Government Code for both existing and 10-year growth conditions.

2.8.2.5 Develop Draft CIP Update and Capital Recovery Fee Report

Engineer will prepare a Draft Water CIP Update and Capital Recovery Fee Report showing land use assumptions, water capital recovery fee eligible capital improvement costs, and maximum allowable water capital recovery fees. An electronic PDF copy and fifteen (15) hard copies will be delivered to the City.

2.8.2.6 Present Capital Recovery Fee Analysis Results to Capital Recovery Fee Advisory Committee

Following review by City Staff, Engineer will conduct one presentation of results of the water capital recovery fee analysis results and recommendations to the Capital Recovery Fee Advisory Committee.

2.8.2.7 Assist with Preparation of Presentation for and Attend Public Hearing(s) on Land Use Assumptions, CIPs and Capital Recovery Fee Calculations

Engineer will assist the City in preparing the presentation material for the public hearing. Engineer will attend up to two (2) Public Hearing(s) on Capital Recovery Fees and be available to answer questions at the public hearing.

2.8.2.8 Finalize Capital Recovery Fee Report

Engineer will prepare a final Water Capital Recovery Fee Report and deliver an electronic PDF copy.

3.0 Water Distribution System Corrosion Control Evaluation

3.1 Project Understanding

The City of League City (City) supplies potable water to its residential and commercial customers that are within the City limits. The City operates and maintains several booster stations and groundwater wells. The City receives treated surface water from the City of Houston's Southeast Water Purification Plant (SEWPP) and Gulf Coast Water Authority's (GCWA) Thomas Mackey Water Treatment Plant (TMWTP). The SEWPP is the predominant supply of surface water. Majority of the demands in the winter months are met using surface water. During the summer months, the City pumps groundwater to augment the surface water supplies and meet the peak demands. The Texas Commission on Environmental

Quality (TCEQ) requires all public water systems to maintain and update their Corrosion Control Study (CCS) reports.

3.2 Corrosion Control Study Kickoff Meeting

Engineer will coordinate a kickoff meeting for corrosion control study with all the City stakeholders. The goal of this meeting is to identify and establish a clear set of goals and objectives for the study, review key schedule milestones and develop preliminary data needs list. Engineer will summarize the discussions and actions items from the meeting as minutes.

3.3 Pertinent Water Quality Data Collection and Analysis

Preparation of the CCS will require collection, analysis and summarization of water quality data. TCEQ requires collecting two rounds of lead and copper data from the previously approved sampling sites. The first round of tap water sampling will be conducted between January and June of 2017. The second round of tap water sampling will be conducted between July and December of 2017. City will conduct the sampling and provide the results to Engineer for review and analysis.

In addition to tap water sampling, TCEQ requires submittal of the following water quality data:

3.3.1 Lead and copper entry point monitoring results.

3.3.2 Results from monitoring for entry point water quality parameters such as pH, temperature, alkalinity, calcium, conductivity etc. TCEQ requires the quarterly monitoring data for the past three years.

3.3.3 Minerals analysis results for entry points.

3.3.4 Results of distribution system water quality monitoring.

3.3.5 Untreated source water monitoring results.

This scope assumes that the City will provide the water quality data in electronic format (Microsoft Excel spreadsheet tables). Engineer will analyze and summarize the data per the CCS report requirements. Engineer will submit the water quality summary tables to City for review.

3.4 Desktop Water Stability Analysis

Based on the information gathered in Tasks 1 and 2, Engineer will conduct a desktop assessment of water stability. The desktop assessment will include analysis and estimation of water stability indices such as Langelier Saturation Index, Aggressiveness Index, Ryznar Index, Larsons Ratio, and Calcium Carbonate Precipitation Potential (CCPP) for each of the entry points, i.e., booster stations and groundwater plants. Engineer will present the key findings from the desktop assessment to City staff members.

Preparation of the CCS report requires addressing specific technical questions related to existing conditions, existing treatment, distribution system infrastructure and corrosion control strategies. Engineer will review the questions with City stakeholders in progress meetings. Engineer will coordinate up to two progress meetings under this task. Engineer will use the information generated from the meeting discussions to develop responses to the questions. The scope assumes that the City will provide the necessary background information to address the questions.

3.5 Compile Corrosion Control Study Report

Based on the information generated in the Tasks above, Engineer will prepare the draft CCS report using the TCEQ Form 20495. Engineer will discuss the optimal corrosion control treatment strategies that the City has been implementing. Based on the water quality data, Engineer will identify the need for fine- tuning of the corrosion control strategies and discuss them with the City stakeholders. Engineer will summarize the optimal corrosion control discussion as part of the CCS report. Engineer will submit the draft report to City for review and comment.

3.6 Finalize Report and Coordinate with TCEQ

Engineer will address the comments received from the City and finalize the CCS report. Engineer will submit signed and sealed copies of the CCS report to TCEQ for review. Engineer will address any questions that TCEQ may have from their review.

4.0 Wastewater Master Plan Update

4.1 Wastewater Model Plan Update

4.1.1 Wastewater Model Update and Review of Flow Monitoring Results

4.1.1.1 Update Wastewater Model Network and Facilities

Obtain and review City's most current GIS network data, facility information (including wet well dimensions and pump curves), as-built drawings, and wastewater projects currently under design or construction. Perform a detailed model review and network update. Populate the wastewater model with updated invert and manhole rim elevation information, network lines, and facility information.

4.1.1.2 Develop Wastewater System Schematics

Create wastewater system schematics detailing relative lift station locations, upstream and downstream lift stations and wastewater reclamation facilities, and firm pumping capacities. Schematic will include delineation of wastewater reclamation facility basins.

4.1.1.3 Updated Model Sub Catchment Generation

Generate sub catchments for updated model network and each sewer sub-basin showing which areas feed into each sewer

manhole using Thiessen polygons within their respective flow meter basins.

4.1.1.4 Flow Monitor and Rain Gauge Data Analysis

Engineer will analyze wastewater flow monitoring field data collected by the City and prepare flow and depth hydrographs for each flow monitoring location. The flow data will be summarized showing average dry weather flow and peak wet weather flows at each flow monitor site. Rainfall events will also be summarized for total depth and duration. The flow data will be prepared for use in model calibration and analyses. Flow hydrographs and depth-flow plots will be prepared for the flow monitoring period.

4.1.1.5 Technical Memorandum (TM-1): Model Update and Flow Monitor Results

Prepare and submit Technical Memorandum (TM-1) documenting wastewater model updates and flow monitor results, including dry and wet weather flow rates by flow meter basin.

4.1.1.6 Workshop #1: Review Wastewater Field Testing and Model Development

Meet with City to discuss the flow monitoring and field testing results. Water and wastewater model development will also be discussed. City comments will be solicited and addressed.

4.1.2 Wastewater Model Calibration

4.1.2.1 Import Existing Flow Data (Meter Billing Data) Into the Model

Geocoded water meter billing data from the City will be imported into the hydraulic model. A return percentage of water usage will be used to assign wastewater flows to the hydraulic model. Major customers will be located and allocated as a point loading. Diurnal curves representing the dry weather wastewater flow patterns will be created for each flow monitor basin and assigned to the hydraulic model.

4.1.2.2 Dry Weather Calibration

A dry weather period will be selected from the field collected flow monitoring data during which to perform an extended period simulation (EPS) dry weather calibration. The existing per capita wastewater flows from water meter billing data and dry weather infiltration rates will be adjusted as necessary to match the field collected flow data to within industry standard tolerances. Lift station operational controls and force main parameters will be adjusted to achieve dry weather flow calibration. Calibration plots

overlaying the modeled dry weather flows vs. the field collected flow data will be prepared for each flow monitoring location.

4.1.2.3 Wet Weather Calibration

Field collected flow monitor and rain gauge data will be reviewed and a wet weather calibration storm event will be selected. The recorded rainfall storm hyetograph will be applied to the hydraulic model to perform an EPS wet weather calibration. Individual RTK parameters will be developed for each flow monitor basin. Hydrologic parameters in the model will be adjusted so that the peak wet weather flows generated in the model closely match the observed flows. Lift station pumping and wet well levels will be compared against available SCADA data to verify wet weather lift station operations in the hydraulic model. Engineer will prepare calibration plots overlaying the modeled wet weather flows vs. the field collected flow data at each flow monitoring location.

4.1.2.4 Technical Memorandum (TM-2): Model Update and Flow Monitor Results

Prepare and submit Technical Memorandum (TM-2) summarizing the dry and wet weather calibration process and results. Engineer will include calibration graphs showing comparison of wastewater flow monitoring results vs model results.

4.1.2.5 Workshop #2: Wastewater Model Calibration Results

Meet with the City to discuss the wastewater model calibration results. Engineer will bring calibration graphs showing comparison of wastewater flow monitoring results vs model results and meet with the City for review. City comments will be solicited and addressed.

4.1.3 Wastewater Flow Projections

Engineer understands that the City is conducting a Future Land Use Plan Update and Land Use Assumptions for Capital Recovery Studies (Land Use Update) concurrent to this Project. Furthermore, Engineer understands that the population and land use projections developed in the Land Use Update will be utilized for this Project.

4.1.3.1 Population and Land Use Projections

Population and Land Use projections will be developed for the Wastewater Service Area utilizing the projections in the City's Land Use Update for 5-year, 10-year and 20-year planning periods. Population and non-residential acreage will be distributed by wastewater sub-basin for each planning year.

4.1.3.2 Develop Wastewater Flow Projections

Historical WRF flow data will be analyzed to select a per-capita residential wastewater flow and a non-residential wastewater flow for future flow projections. Infiltration/inflow allowances for future planning periods will be developed based on historical flow data and the field collected flow monitoring data. Wastewater flow projections will be developed by sewer sub-basin for the 5-year, 10-year and 20-year planning periods.

4.1.3.3 Distribute Wastewater Flow Projections in the Hydraulic Model

Allocate projected residential and non-residential loads for each planning period in the hydraulic model. Sewer basin and sub-basin delineation boundaries developed as part of the flow monitoring data analysis and model development tasks will be utilized for flow allocation.

4.1.3.4 Technical Memorandum (TM-3): Wastewater Flow Projections

Prepare and submit Technical Memorandum (TM-3) to include documentation of existing and future populations, historical flows, selected per-capita flows for future conditions, and wastewater flow projections for the 5-Year, 10-Year, and 20-Year planning periods.

4.1.3.5 Workshop #3: Review Population and Wastewater Flow Projections

Meet with City to discuss population and wastewater flow projections. City comments will be solicited and addressed.

4.1.4 Existing and Future Wastewater Collection System Analyses

4.1.4.1 Existing Wastewater System Analysis

Run the wastewater model with the City's 2-Year, 24-Hour design storm and identify existing surcharging and overflow locations and other capacity/restriction issues. Conduct an evaluation to determine the impacts of critical element (special structure) and lift station modifications on the existing system evaluation results. Mapping will be prepared showing the location and magnitude of all modeled surcharging and overflows. Each occurrence of modeled wastewater line surcharging will be categorized as due to a downstream restriction or a localized pipeline capacity deficiency.

4.1.4.2 Develop Future Wastewater Model Scenarios

Model scenarios will be developed for the 5-year, 10-year and 20-year planning periods. Projected residential and non-residential wastewater loads will be distributed to the wastewater basins in the hydraulic model. Each scenario will be evaluated under peak wet

weather conditions based on the design storm and future peaking factor criteria to determine the system response for surcharging and predicted overflow events.

4.1.4.3 Evaluate and Optimize Existing Wastewater Reclamation Facility Service Area

Develop operational plan to optimize available wastewater treatment capacity at the City's existing wastewater reclamation facilities. Meet with operational staff to review the capacity and operations of the existing WRFs as well as recommendations on future service area enhancements.

4.1.4.4 Develop Wastewater System Improvements Alternatives for Each Planning Period

Using results of future models, develop improvements to eliminate excessive surcharging and overflows in the collection system resulting from increased wastewater flow from projected future development. Develop improvements alternatives for gravity lines, lift stations, force mains, special structures, and treatment facilities. Improvements needed to correct existing deficiencies will also be included. Utilize model results to develop improvements to serve areas that are currently not developed. Prioritize rehabilitation areas based on flow monitoring results and operational data to help reduce infiltration/inflow. Develop mapping showing improvements required for the 5-year, 10-year and 25-year planning periods as well as improvements needed to correct existing deficiencies.

4.1.4.5 Technical Memorandum (TM-4): Wastewater Flow Projections

Prepare and submit Technical Memorandum (TM-4) to include documentation of existing and future system analyses. TM will include documentation of the design storm used in the system analyses.

4.1.4.6 Workshop #4: Review Wastewater System Analyses

Meet with the City to present and discuss results of the wastewater system analyses and identified improvements. Engineer will solicit comments and make revisions to the recommended improvements.

4.1.5 Wastewater System Capital Improvements Plan and Report

4.1.5.1 Prepare Phased Capital Improvement Plan for Growth

Prepare a capital improvements plan with prioritized list of and growth related system improvements by 5-Year, 10-Year, and 20-Year phases. Prepare cost estimates in 2018 dollars and mapping

showing color-coded phasing and project write-ups for recommended improvements.

4.1.5.2 Workshop #5: Wastewater System Capital Improvements Plan

Engineer will meet with City personnel to discuss Capital Improvements Plan. Engineer will revise CIP according to comments and recommendations from the City staff.

4.1.5.3 Prepare Draft Master Plan Report

Combine Technical Memorandums into a single Wastewater Master Plan Report document.

4.1.5.4 Meeting to Review Draft Master Plan Report

Meet with the City to review draft wastewater master plan report. Engineer will solicit comments and make revisions based on City comments.

4.1.5.5 Finalize Master Plan Report and Present to Council

Address City comments and coordinate with City on preparation of the Final Master Plan Report. Make two (2) presentations to Wastewater Master Plan Update to City Council during workshops at both the mid-point and end-point of the project.

4.2 Coordination with the City's Flow Monitoring and SSES Rehabilitation Results

Engineer understands that the City is conducting a Wastewater Sanitary Sewer Evaluation Study (SSES) concurrent to this Project. Furthermore, Engineer understands that this SSES study will determine I/I levels throughout the City and develop wastewater system rehabilitation projects. The City would like to include these wastewater system rehabilitation projects in the Wastewater Master Plan Update Report.

4.2.1 Coordinate Results of the City's SSES

4.2.1.1 Meeting with City's SSES Engineer

Engineer will meet with the Engineer conducting the City's SSES to discuss rehabilitation recommendations.

4.2.1.2 Incorporate Flow Monitoring and SSES Rehabilitation Recommendations into Wastewater Master Plan Update Report

Engineer will include a section in the Wastewater Master Plan Update Report to summarize the flow monitoring results and the rehabilitation recommendations from the City's SSES.

4.3 Development of Wastewater Capital Recovery Fee

4.3.1 Develop Capital Recovery Fee Wastewater CIP

4.3.1.1 Identify Existing Wastewater Improvements Eligible for Capital Recovery Fees

Engineer will review recently completed (over the last 5 years) wastewater improvements and determine which projects are eligible for future cost recovery from growth. CIP will include mapping of existing capital recovery fee eligible improvements.

4.3.1.2 Identify Proposed Wastewater Improvements Eligible for Capital Recovery Fees

Engineer will utilize the results of the wastewater system modeling from the Master Plan Update to determine Capital Recovery fee eligible projects. Maps will be prepared showing the proposed wastewater capital improvements plan projects to be included in the Capital Recovery fee calculation.

4.3.1.3 Meet with City to Review Existing & Proposed Wastewater Projects Eligible for Capital Recovery Fee Analysis

Engineer will meet with the City to review existing and proposed wastewater system improvements identified to be included in the capital recovery fee analysis and the associated project costs.

4.3.1.4 Present Land Use Assumptions and Capital Improvements Plans to Capital Recovery Fee Advisory Committee

Following review by City Staff, Engineer will conduct one presentation of the Land Use Assumptions and Wastewater Capital Recovery Fee Eligible Capital Improvements Plans to the Capital Recovery Fee Advisory Committee.

4.3.2 Wastewater CIP Capital Recovery Fee Analysis

4.3.2.1 Conduct Wastewater Capital Recovery Fee Capacity Analysis for Existing Recently Completed Capital Improvements Projects for 10-year Projected Growth

Engineer will utilize the wastewater models from the Master Plan Update Project to analyze existing completed projects for remaining

capacity for capital recovery fee cost recovery for 10-year projected growth.

4.3.2.2 Conduct Wastewater Capital Recovery Fee Capacity Analysis for New Capital Improvements Projects

Engineer will utilize the wastewater models from the Master Plan Update Project to analyze new wastewater improvements for eligible capacity for capital recovery fee cost recovery for 10-year projected growth and associated financing costs.

4.3.2.3 Calculate Wastewater Costs Eligible for Capital Cost Recovery

Engineer will utilize the capacity analysis and capital project costs to calculate percentage of project cost eligible for cost recovery.

4.3.2.4 Develop Service Unit Equivalent (SUEs) for Wastewater Systems

Engineer will utilize equivalent capacity of water meters to establish the service unit equivalents (SUEs) required in Chapter 395 of the Local Government Code for both existing and 10-year growth conditions.

4.3.2.5 Develop Draft CIP Update and Capital Recovery Fee Report

Engineer will prepare a Draft Wastewater CIP Update and Capital Recovery Fee Report showing land use assumptions, wastewater capital recovery fee eligible capital improvement costs, and maximum allowable wastewater capital recovery fees. An electronic PDF copy and five (5) hard copies will be delivered to the City.

4.3.2.6 Present Capital Recovery Fee Analysis Results to Capital Recovery Fee Advisory Committee

Following review by City Staff, Engineer will conduct one presentation of results of the wastewater capital recovery fee analysis results and recommendations to the Capital Recovery Fee Advisory Committee.

4.3.2.7 Assist with Preparation of Presentation for and Attend Public Hearing(s) on Land Use Assumptions, CIPs and Capital Recovery Fee Calculations

Engineer will assist the City in preparing the presentation material for the public hearing. Engineer will attend up to two (2) Public

Hearing(s) on Capital Recovery Fees and be available to answer questions at the public hearing.

4.3.2.8 Finalize Capital Recovery Fee Report

Engineer will prepare a final Wastewater Capital Recovery Fee Report and deliver an electronic PDF copy.

5.0 Reuse Master Plan Update

5.1 Project Understanding

The City of League City actively seeks economical and environmentally friendly means of reducing potable water consumption while at the same time reducing the long-term cost to the City of League City. As such, the City of League City has actively engaged Engineer to update the reuse feasibility study of the potential opportunities for conservation and water reuse which include the following:

5.1.1 Review of current conservation efforts and reuse customers

5.1.2 Efforts necessary to expand the current reuse system including the economics and costs of infrastructure

5.1.3 Seasonal water use

5.1.4 Identification of potential reclaimed water customers

This feasibility analysis will address the above bulleted items. Below is a detailed list of tasks that describe the steps and activities of the scope in detail. The findings and conclusions of each of the tasks will be written up into sections of the overall Water, Wastewater and Reuse Master Plan Update Report.

5.2 Summarize Texas Reuse Regulations and Procedures

The treatment and usage of reclaimed water is not regulated on a federal level. The State of Texas' Texas Commission on Environmental Quality (TCEQ) regulates the treatment and use of reclaimed water. TCEQ has created published reuse regulations. Under this task, Engineer will summarize the regulations and procedures related to the treatment, distribution, and usage of reclaimed water promulgated by the TCEQ including any updates since the last reuse feasibility report.

5.3 Identify Potential Reuse Projects

Engineer will identify potential new reclaimed water projects/users including potential capacity/demand of the potential reclaimed water customer utilizing existing irrigation meter data, required water quality, which type of customer they would be, and the applicable requirements pertaining to their customer classification. Engineer will summarize as many as the top 100 potential users and provide a graphical overlay of the locations.

5.4 Grading and Ranking of Potential Users

Using the list of potential projects, Engineer will identify advantages and disadvantages for servicing potential reuse users or groups of users. Some of the users may fall out of the analysis due to the abundance of disadvantages. For the remaining users, Engineer will use a set of criteria to grade each of the potential users. The criteria may include:

5.4.1 Economics

5.4.2 Water savings

5.4.3 Project reliability

5.4.4 Operations requirements

5.4.5 Location

5.4.6 Constructability

5.4.7 Permitting requirements and challenges

5.4.8 Current WWTP effluent quality

5.4.9 Additional treatment requirements to meet user quality

A matrix will be developed where each user will be ranked on the above individual criteria. The individual potential users will be grouped into potential projects to serve groups of users. The top five projects will move on to the Cost-Effective Analysis in the following task.

5.5 Cost Effectiveness Analysis

5.5.1 Although these efforts of determining broad brush feasibility of reuse projects do not warrant specific cost estimates, it is prudent to estimate comparatively which of the projects is least in estimated costs versus the highest in estimated costs. From the rankings done in the previous task and the continuum of cost estimates of the projects, it can be determined which of the projects is the “low hanging fruit.” The continuum of costs should be based on cost per mgd so that the comparison is adequate.

5.5.2 Engineer will provide a continuum of the lowest to highest cost projects of those identified as the “Top 5 Projects.” In addition, there will be discussion of the items/factors that make up the costs including the identification of the biggest costs and the most costs avoided by not having to provide treated surface water capacity.

5.5.3 Review of Existing Information

The ultimate potable water system demand for the upcoming 20-year period will be obtained from the Water Master Plan Update and modified for the two cases with and without implementation of the reclaimed water system.

5.6 Limitations

The Reuse Master Plan Update includes determining feasibility of off-setting capital costs of acquiring and constructing additional treated surface water. Contemplation of a separate reuse utility, reuse rates, and detailed preliminary engineering reports is reserved for future studies.

5.7 Deliverables

Engineer will provide the draft section in the consolidated report related to each task at the conclusion of each task for City of League City review. Engineer will then address review comments for each section and finalize the section to become part of the final report.

5.8 Meetings and Project Management

Engineer will attend meetings with City of League City to discuss progress of the project and to review tasks throughout the project. Five meetings/workshops are anticipated to be held with City of League City as follows:

5.8.1 Meetings

5.8.1.1 Kickoff meeting to refine scope and develop a project specific action plan.

5.8.1.2 Two workshops during the early stages of the project to develop and evaluate alternatives.

5.8.1.3 One workshop to review alternative rate strategies.

5.8.1.4 One meeting to review comments on the draft report and rate model.

5.8.1.5 Coordinate with staff and project personnel to complete project tasks and meet project objectives;

6.0 Determination of Maximum Capital Recovery Fee

6.1 Project Understanding

It is our understanding that the City desires to update its current Water and Wastewater CRFs commensurate with the Water and Wastewater Master Plans which are under development. NewGen is being engaged to perform the required CRF calculations in conjunction with Chapter 395 of the Texas Local Government

Code, and assist in the presentation and adoption of the CRFs under the requirements of this statute.

6.2 Initial Data Request

At the outset of the Project, Engineer will submit to the City an initial request for information related to items needed to perform the CRF update. After receiving the requested data, NewGen will review and analyze the data in preparation for discussion during the CRF Calculation Kick-off Meeting.

6.3 CRF Calculation Kick-off Meeting

After receiving the data requested above, the Project Team will conduct an in-person meeting with City personnel to outline the goals, objectives, and expectations of the CRF Calculation effort, as well as to discuss any questions or concerns the Project Team has regarding the data received.

6.4 Determination of CRF Projects and Service Units

In the determination of any required updates to the City's current CRFs, Engineer will seek to comply with Chapter 395 of the Texas Local Government Code, which provides the guidelines for governmental entities and political subdivisions in the development of such fees. NewGen will work with Project Team to identify the applicable CRF projects, the percentage capacity in each project which will be utilized to meet new demand over the upcoming ten (10) year period, as well as the anticipated growth in service units over a ten (10) year period.

6.5 Determination of Required CRF Adjustments

The CRF determination method employed is a cash flow based financial model, which follows the requirements of Chapter 395, including the recognition of cash and/or debt financing, interest earnings and fund balances. The model also allows us to calculate and account for the required revenue credits as dictated by Chapter 395. The spreadsheets from the model will provide forecasted cash flows that coincide with the timeframe from the City's capital plans. These forecasted cash flows will be based on projected construction lead times, growth in service units, anticipated interest rates, construction costs, and the calculated CRFs. Based on the forecasts from the cash flow model, any required updates to the City's current CRFs will be determined using the projected service units over the capital plan timeframe. The cash flow based financial model allows the flexibility for the CRF to be calculated for a uniform charge over the forecasted timeframe, or to be calculated for an escalating or declining charge over the forecasted timeframe.

6.6 Report Narrative Preparation and Project Team Review

Once the required updates to the City's CRFs have been determined, Engineer will provide the necessary narrative report information and spreadsheets for inclusion in the final project report. The report sections will summarize the findings and calculations made during the course of the study.

6.7 Final Letter Report Preparation and Presentation

Upon receipt of League City's recommendations and comments, Engineer will make appropriate changes and provide a final report section for inclusion in the overall project report. Project Team personnel will also participate in the in-person presentation of the CRF calculations to the Capital Improvements Advisory Committee, the City Council, as well as in one public meeting with the development community.

6.8 Deliverables

6.8.1 Upon completion of the CRF study update, we will provide the following:

6.8.1.1 Draft Report Narrative Presented with 60 days of receipt of the required CRF capital project determination.

6.8.1.2 Final Report Narrative Presented within two weeks after delivery of the draft report narrative, given the timely receipt of comments.

6.8.2 Meetings

6.8.2.1 In-person Task Kick-off meeting

6.8.2.2 Telecommerce to discuss CRF results and review Draft Report Narrative

6.8.2.3 In-person presentation to Capital Improvements Advisory Committee

6.8.2.4 In-person presentation to the City Council

6.8.2.5 In-person presentation at Public Meeting with Development Community Representatives

7.0 Schedule

7.1 Project Management – Project management activities will commence at project kick-off and continue through the final deliverable.

7.2 Water Master Plan Update

7.2.1 Draft Water Master Plan – 270 Days after NTP

7.2.2 Final Water Master Plan Report – 15 days after receiving City comments

7.3 Water Distribution System Corrosion Control Evaluation –

7.3.1 Water distribution system corrosion control evaluation will run concurrently and be completed with the water master plan update. Any recommendations

will be included in the list of projects for water system growth and improvements if eligible for CRF.

7.3.2 The final report coordinating with TCEQ will be completed 12 months from project initiation in order to collect and review enough representative samples.

7.4 Wastewater Master Plan Update

7.4.1 Reuse Master Plan Update – The reuse master plan update will run concurrently and be completed with the water master plan update.

7.5 Determination of Maximum Capital Recovery Fee

7.5.1 Draft Report Narrative - Presented within 60 days of completion of Items 7.2 and 7.4 above are completed.

7.5.2 Final Report Narrative - Presented within two weeks after receipt of comments to the draft report narrative.

8.0 Summary of Final Deliverables

The scope of services includes multiple tasks. Each task will be provide in a single bound report or Volume in which the below will be submitted and included together to form the

8.1 Volume I - Water Master Plan Update

8.2 Volume II – Water Distribution System Corrosion Control Evaluation

8.3 Volume III – Wastewater Master Plan Updated

8.4 Volume IV – Reuse Master Plan Update

8.5 Volume V – Determination of Maximum Capital Recover Fee

9.0 Level of Effort and Fees Presented in Tables A-1, A-2 and A-3.

Table A-1
Further Description of Engineering Services and
Related Matters Detailed Scope of Services
For
City of League City
2017 Water, Wastewater, And Reuse Master Plan Update and
Maximum Capital Recovery Fee Update 2018-2028

Summary of Services and Fees

Task No.	Task Description	Lump Sum Amount
1	Project Management	$ 16,716
2	Water Master Plan Update	$171,108
3	Water Distribution System Corrosion Control Evaluation (LS)	$ 30,000
4	Wastewater Master Plan Update	$256,510
5	Reuse Master Plan Update	$ 39,984
6	Determination of Maximum Capital Recovery Fee	$ 24,500
Total		**$538,818**

Table A-2
Further Description of Engineering Services and
Related Matters Detailed Scope of Services
For
City of League City
2017 Water, Wastewater, And Reuse Master Plan Update and
Maximum Capital Recovery Fee Update 2018-2028

Hourly Labor Rates

Labor Category	Hourly Rate
Principal/Sr. Proj. Manager	$240
Sr. Tech Specialist (QA/QC)	$240
Engineer 7	$200
Engineer 5/6	$180
Engineer 3/4	$160
Engineer 1/2	$140
Senior Designer/Drafter	$135
GIS Technician	$120
Administrative/Accounting	$100

Table A-3
City of League City
2017 Water, Wastewater, And Reuse Master Plan Update and Maximum Capital Recovery Fee Update 2018-2028

Task No.	Task Description	Principal/PM		Sr. Tech Specialist/Modeling Lead Practitioner		Engineer 3/4		Engineer 1/2		GIS Technician		Sr. Admin Support/ Accounting		SubTotal Labor $	OP $	ODC $	Totals $	total hours
		$240 /hr		$240 /hr		$160 /hr		$140 /hr		$120 /hr		$100 /hr						
		hrs	$	hrs	$	hrs	$	hrs	$	hrs	$	hrs	$					
1.0	**Project Management**	**36**	**$8,640**	**12**	**$2,880**	**0**	**$0**	**20**	**$2,800**	**0**	**$0**	**16**	**$1,600**	**$15,920**	**0**	**$796**	**$16,716**	**84**
1.1	Project Inititation & Monthly Meetings	24	$5,760	12	$2,880		$0	20	$2,800		$0		$0	$11,440		$572	$12,012	56
1.2	Maintain scope, schedule and invoicing	12	$2,880		$0		$0		$0		$0	16	$1,600	$4,480		$224	$4,704	28
2.0	**Water Master Plan Update**	**112**	**$26,880**	**20**	**$4,800**	**254**	**$40,640**	**288**	**$40,320**	**316**	**$37,920**	**124**	**$12,400**	**$162,960**	**0**	**$8,148**	**$171,108**	**1,114**
2.1	**Review Historic Documents**	0	$0	1	$240	6	$960	8	$1,120	16	$1,920	0	$0	$4,240		$212	$4,452	31
2.2	**Demand Allocations and Projections**																	
2.2.1	Review Update Projections	0	$0	1	$240	6	$960	12	$1,680	24	$2,880	2	$200	$5,960		$298	$6,258	45
2.2.2	Development Review (land use)	0	$0	1	$240	4	$640	8	$1,120	24	$2,880	2	$200	$5,080		$254	$5,334	39
2.2.3	Redevelopment Review	0	$0	1	$240	4	$640	8	$1,120	16	$1,920	2	$200	$4,120		$206	$4,326	31
2.2.4	Estimate Future Demands	0	$0	1	$240	6	$960	12	$1,680	16	$1,920	2	$200	$5,000		$250	$5,250	37
2.3	**Model Improvements and Update**																	
2.3.1	Update System/GIS	6	$1,440	1	$240	6	$960	8	$1,120	40	$4,800	4	$400	$8,960		$448	$9,408	65
2.3.2	Distribute Demands	4	$960	1	$240	8	$1,280	8	$1,120	40	$4,800	4	$400	$8,800		$440	$9,240	65
2.3.3	Revise Diurnal Patterns	4	$960	1	$240	4	$640	12	$1,680	0	$0	2	$200	$3,720		$186	$3,906	23
2.3.4	Verify Facility Operations	4	$960	1	$240	8	$1,280	12	$1,680	0	$0	2	$200	$4,360		$218	$4,578	27
2.3.5	Scenario Management	6	$1,440	1	$240	2	$320	12	$1,680	0	$0	0	$0	$3,680		$184	$3,864	21
2.4	**Model Verification**																	
2.4.1	Operational Review	4	$960	1	$240	2	$320	8	$1,120	0	$0	8	$800	$3,440		$172	$3,612	23
2.4.2	Adjust Model Parameters	4	$960	1	$240	2	$320	16	$2,240	16	$1,920	0	$0	$5,680		$284	$5,964	39
2.5	**Model Analysis**																	
2.5.1	Establish Criteria	4	$960	1	$240	12	$1,920	4	$560	0	$0	8	$800	$4,480		$224	$4,704	29
2.5.2	Identify Immediate Issues	4	$960	1	$240	4	$640	12	$1,680	4	$480	0	$0	$4,000		$200	$4,200	25
2.5.3	Identify Long Term Issues	4	$960	1	$240	8	$1,280	16	$2,240	4	$480	0	$0	$5,200		$260	$5,460	33
2.6.4	Analyze & Select Alternatives	4	$960	1	$240	8	$1,280	16	$2,240	4	$480	0	$0	$5,200		$260	$5,460	33
2.5.5	Identify Capital Projects	4	$960	1	$240	20	$3,200	16	$2,240	4	$480	0	$0	$7,120		$356	$7,476	45
2.5.6	Recommended Operation Plan	4	$960	1	$240	20	$3,200	20	$2,800	32	$3,840	32	$3,200	$14,240		$712	$14,952	109
2.6	**Project Development**																	
2.6.1	Calculate Project Costs	4	$960	0	$0	12	$1,920	24	$3,360	20	$2,400	0	$0	$8,640		$432	$9,072	60
2.6.2	Priorities and CIP	6	$1,440	0	$0	16	$2,560	16	$2,240	0	$0	4	$400	$6,640		$332	$6,972	42
2.6.3	Report Preparation	4	$960	0	$0	16	$2,560	20	$2,800	32	$3,840	12	$1,200	$11,360		$568	$11,928	84
2.6.4	Finalize Report and Present to Council	10	$2,400	0	$0	16	$2,560	0	$0	0	$0	32	$3,200	$8,160		$408	$8,568	58
2.7	**Source Water Development**	24	$5,760	0	$0	48	$7,680	0	$0	0	$0		$0	$13,440		$672	$14,112	72
2.8	**Development of Water Capital Recovery Fee**		$0		$0		$0		$0		$0		$0	$0		$0	$0	0
2.8.1	Development of Caital Recovery Water CIP	4	$960	1	$240	8	$1,280	20	$2,800	24	$2,880	8	$800	$8,960		$448	$9,408	65
2.8.2	Water CIP Capital Recovery Fee Analysis	4	$960	1	$240	8	$1,280		$0		$0		$0	$2,480		$124	$2,604	13
3.0	**Water Distribution System Corrosion Control Evaluation**														**$29,500**	**$500**	**$30,000**	
3.1-3.2	Project Understanding & Kickoff Meeting														$2,300		$2,300	
3.3	Pertinent Wate Quality Data Collection and Analysis														$7,100		$7,100	
3.4	Desktop Water Stabilty Analysis														$8,000		$8,000	
3.5	Complile Corrosion Control Study Report														$8,000		$8,000	
3.6	Finalize Report and Coordiante with TCEQ														$4,100		$4,100	
4.0	**Wastewater Model Update and Review of Flow Monitoring Results**														**$256,510**	**$0**	**$256,510**	**0**
4.1	Wastewater Master Plan Update																$0	0
4.1.1	Wastewater Model Update and Review of Flow														$34,285		$34,285	0
4.1.2	Wastewater Model Calibration														$37,745		$37,745	0
4.1.3	Wastewater Flow Projections														$19,295		$19,295	0
4.1.4	Exisitng and Future WW Collection System Analysis														$47,393		$47,393	0
4.1.5	Wastewater System Capital Improvement Plan for														$40,011		$40,011	0
4.2	Coordination with the City's Flow Monitoring														$9,570		$9,570	0
4.3	Development of Wastewater Capital Recovery Fee																$0	0
4.3.1	Develop Capital Recovery Fee for Wastewater														$19,047		$19,047	0
4.3.2	Wastewater Capital Recovery Analysis														$49,164		$49,164	0
5.0	**Reuse Master Plan Update**	**50**	**$12,000**	**0**	**$0**	**118**	**$18,880**	**0**	**$0**	**60**	**$7,200**	**0**	**$0**	**$38,080**	**0**	**1904**	**$39,984**	**228**
5.1-5.2	Project Understanding and Regulations & Procedures	2	$480		$0	6	$960		$0		$0		$0	$1,440		$72	$1,512	8
5.3	Identify Potential Reuse Projects	8	$1,920		$0	36	$5,760		$0	20	$2,400		$0	$10,080		$504	$10,584	64
5.4	Grading and Ranking of Potential Uers	20	$4,800		$0	36	$5,760		$0	20	$2,400		$0	$12,960		$648	$13,608	76
5.5	Cost Effective Analysis	20	$4,800		$0	40	$6,400		$0	20	$2,400		$0	$13,600		$680	$14,280	80
6.0	**Determinination of Maximum Capital Recovery Fee**														**$24,500**		**$24,500**	
6.1-6.2	Project Understanding & Initial Data Request																	
6.3	CRF Calculation Kick-off Meeting																	
6.4	Determination of CRF Projects and Service Units														$24,500			
6.5	Determination of Required CRF Adjustments																	
6.6	Report Narrative Preparation and Porject Team Review																	
6.7	Final Letter Report Preparation and Presentation																	
Total		**198**	**####**	**32**	**$7,680**	**372**	**$59,520**	**308**	**$43,120**	**376**	**$45,120**	**140**	**####**	**$216,960**	**$310,510**	**$11,348**	**$538,818**	**1,426**

Notes: 1. OP = Outside Professional; ODC = Other Direct Costs

May 25th, 2017

Jeff Peters, P.E.
Principal Engineer
Ardurra Group
2032 Buffalo Terrace
Houston, Texas 77019

Re: City of League City Corrosion Control Study

Dear Jeff,

The City of League City (City) supplies potable water to its residential and commercial customers that are within the City limits. The City operates and maintains several booster stations and groundwater wells. The City receives treated surface water from the City of Houston's Southeast Water Purification Plant (SEWPP) and Gulf Coast Water Authority's (GCWA) Thomas Mackey Water Treatment Plant (TMWTP). The SEWPP is the predominant supply of surface water. Majority of the demands in the winter months are met using surface water. During the summer months, the City pumps groundwater to augment the surface water supplies and meet the peak demands.

The Texas Commission on Environmental Quality (TCEQ) requires all public water systems to maintain and update their Corrosion Control Study (CCS) reports. The City has retained Ardurra Group (prime consultant) to assist with utility master planning. KIT Professionals, Inc. (KIT) (sub-consultant) will assist Ardurra Group with the analysis and preparation of the CCS report. KIT will prepare the CCS report using the TCEQ Form 20495 and the associated guidance.

The following is a description of the KIT's Scope of Services.

Task 1. Corrosion Control Study Kickoff Meeting
KIT will coordinate a kickoff meeting for corrosion control study with all the City stakeholders. The goal of this meeting is to identify and establish a clear set of goals and objectives for the study, review key schedule milestones and develop preliminary data needs list. KIT will summarize the discussions and actions items from the meeting as minutes.

Task 2. Pertinent Water Quality Data Collection and Analysis
Preparation of the CCS will require collection, analysis and summarization of water quality data. TCEQ requires collecting two rounds of lead and copper data from the previously approved sampling sites. The first round of tap water sampling will be conducted between January and June of 2017. The second round of tap water sampling will be conducted between July and December of 2017. City will conduct the sampling and provide the results to KIT for review and analysis.

In addition to tap water sampling, TCEQ requires submittal of the following water quality data:

- Lead and copper entry point monitoring results.

- Results from monitoring for entry point water quality parameters such as pH, temperature, alkalinity, calcium, conductivity etc. TCEQ requires the quarterly monitoring data for the past three years.
- Minerals analysis results for entry points.
- Results of distribution system water quality monitoring.
- Untreated source water monitoring results.

This scope assumes that the City will provide the water quality data in electronic format (Microsoft Excel spreadsheet tables). KIT will analyze and summarize the data per the CCS report requirements. KIT will submit the water quality summary tables to Ardurra/City for review.

Task 3. Desktop Water Stability Analysis

Based on the information gathered in Tasks 1 and 2, KIT will conduct a desktop assessment of water stability. The desktop assessment will include analysis and estimation of water stability indices such as Langelier Saturation Index, Aggressiveness Index, Ryznar Index, Larsons Ratio, and Calcium Carbonate Precipitation Potential (CCPP) for each of the entry points, i.e., booster stations and groundwater plants. KIT will present the key findings from the desktop assessment to Ardurra and City staff members.

Preparation of the CCS report requires addressing specific technical questions related to existing conditions, existing treatment, distribution system infrastructure and corrosion control strategies. KIT will review the questions with City stakeholders in progress meetings. KIT will coordinate up to two progress meetings under this task. KIT will use the information generated from the meeting discussions to develop responses to the questions. The KIT scope assumes that the City will provide the necessary background information to address the questions.

Task 4. Compile Corrosion Control Study Report

Based on the information generated in Tasks 2 and 3, KIT will prepare the draft CCS report using the TCEQ Form 20495. KIT will discuss the optimal corrosion control treatment strategies that the City has been implementing. Based on the water quality data, KIT will identify the need for fine-tuning of the corrosion control strategies and discuss them with the City stakeholders. KIT will summarize the optimal corrosion control discussion as part of the CCS report. KIT will submit the draft report to City for review and comment.

Task 5. Finalize Report and Coordinate with TCEQ

KIT will address the comments received from the City and finalize the CCS report. KIT will submit signed and sealed copies of the CCS report to TCEQ for review. KIT will address any questions that TCEQ may have from their review.

Fee Estimate

KIT will complete Tasks 1-5 for a not-to-exceed lump sum fee of $28,700. The task-by-task fee estimates are shown in the table below. Detailed level of effort and fee estimate is included in the attachment.

Task	KIT Fee Estimate
1. Corrosion Control Study Kickoff Meeting	$2,300
2. Pertinent Water Quality Data Collection and Analysis	$7,100
3. Desktop Water Stability Analysis	$8,000
4. Compile Corrosion Control Study Report	$8,000
5. Finalize Report and Coordinate with TCEQ	$4,100
Expenses	$500
Total	**$30,000**

Schedule

The services described in this letter will be conducted over a period of approximately 12 months from the notice-to-proceed date. The 12 months duration allows sufficient time for the City to collect the required source, entry point and tap water quality data.

We are excited to submit this proposal to assist the Ardurra Group with this critical study. Please feel free to call me at (713) 231-4403 if you have any questions.

Regards,

KIT Professionals, Inc.

Sunil Kommineni, PhD, P.E., BCEE
Task Leader

Enclosure

Detailed Level of Effort and Fee Estimate

FREESE AND NICHOLS

Innovative approaches
Practical results
Outstanding service

11200 Broadway Street, Suite 2320 • Pearland, Texas 77584 • 832-456-4700 • FAX 832-456-4701 www.freese.com

June 13, 2017

Jeff Peters, P.E., BCEE
Ardurra Group, LLC
2032 Buffalo Terrace
Houston, TX 77019

RE: Scope and Fee for League City Water and Wastewater Master Plan Update and Capital Recovery Fee Analysis

Dear Mr. Peters,

Freese and Nichols, Inc. (FNI) is pleased to submit the attached proposed scope and fee for engineering services for the League City Water and Wastewater Master Plan Update and Capital Recovery Fee Analysis (Project).

As per this proposal, FNI will assist Ardurra and conduct the following items as part of the Project:

- Scope Item 1 - Wastewater Model and Master Plan Update
- Scope Item 2 – Coordination with the City's Flow Monitoring and SSES Rehabilitation Results
- Scope Item 3- Development of Water and Wastewater Capital Recovery Fee CIP

We are ready to initiate work upon execution of a contract. If you have any questions, please do not hesitate to call or e-mail me. Thank you for considering Freese and Nichols; we look forward to working with you on this project.

Sincerely,

Richard Weatherly

Richard Weatherly, P.E.
Associate/Project Manager
713-600-6824
richard.weatherly@freese.com

Exhibit A-1
Detailed Scope of Services for Ardurra Group, LLC
Water, Wastewater, and Reuse Master Plan Update and Capital Recovery Fee (CRF) Analysis

Project Understanding

Ardurra Group, LLC (Ardurra) is performing a *Water, Wastewater, and Reuse Master Plan Update and Capital Recovery Fee (CRF) Analysis* (**Project**) for the City of League City. The City has contracted with ARKK and RJN to perform wastewater flow monitoring and SSES work that will be integrated into the Master Plan Update. The City has also contracted with Freese and Nichols, Inc. (FNI) in a separate contract to develop Land Use Assumptions that will be used as a basis for the Master Plan Update. As part of this Scope of Services, FNI will assist Ardurra and conduct the following items as part of the **Project**:

- Scope Item 1 - Wastewater Model and Master Plan Update
- Scope Item 2 – Coordination with the City's Flow Monitoring and SSES Rehabilitation Results
- Scope Item 3- Development of Water and Wastewater Capital Recovery Fee CIP

Scope Item 1: Wastewater Model and Master Plan Update

Task 1 – Wastewater Model Update and Review of Flow Monitoring Results

1A. Update Wastewater Model Network and Facilities

Obtain and review City's most current GIS network data, facility information (including wet well dimensions and pump curves), as-built drawings, and wastewater projects currently under design or construction. Perform a detailed model review and network update. Populate the wastewater model with updated invert and manhole rim elevation information, network lines, and facility information.

1B. Develop Wastewater System Schematics

Create wastewater system schematics detailing relative lift station locations, upstream and downstream lift stations and wastewater reclamation facilities, and firm pumping capacities. Schematic will include delineation of wastewater reclamation facility basins.

1C. Updated Model Subcatchment Generation

Generate subcatchments for updated model network and each sewer sub-basin showing which areas feed into each sewer manhole using Thiessen polygons within their respective flow meter basins.

1D. Flow Monitor and Rain Gauge Data Analysis

FNI will analyze wastewater flow monitoring field data collected by the City and prepare flow and depth hydrographs for each flow monitoring location. The flow data will be summarized showing average dry weather flow and peak wet weather flows at each flow monitor site. Rainfall events will also be summarized for total depth and duration. The flow data will be prepared for use in model calibration and analyses. Flow hydrographs and depth-flow plots will be prepared for the flow monitoring period.

1E. Additional Data Acquisition

FNI will assist Ardurra with additional data acquisition for water or wastewater master plans (as directed by Ardurra).

1F. Technical Memorandum (TM-1): Model Update and Flow Monitor Results

Prepare and submit Technical Memorandum (TM-1) documenting wastewater model updates and flow monitor results, including dry and wet weather flow rates by flow meter basin.

1G. Workshop #1: Review Wastewater Field Testing and Model Development

Meet with City to discuss the flow monitoring and field testing results. Water and wastewater model development will also be discussed. City comments will be solicited and addressed.

Task 2 – Wastewater Model Calibration

2A. Import Existing Flow Data (Meter Billing Data) Into the Model

Geocoded water meter billing data from the City will be imported into the hydraulic model. A return percentage of water usage will be used to assign wastewater flows to the hydraulic model. Major customers will be located and allocated as a point loading. Diurnal curves representing the dry weather wastewater flow patterns will be created for each flow monitor basin and assigned to the hydraulic model.

2B. Dry Weather Calibration

A dry weather period will be selected from the field collected flow monitoring data during which to perform an extended period simulation (EPS) dry weather calibration. The existing per capita wastewater flows from water meter billing data and dry weather infiltration rates will be adjusted as necessary to match the field collected flow data to within industry standard tolerances. Lift station operational controls and force main parameters will be adjusted to achieve dry weather flow calibration. Calibration plots overlaying the modeled dry weather flows vs. the field collected flow data will be prepared for each flow monitoring location.

2C. Wet Weather Calibration

Field collected flow monitor and rain gauge data will be reviewed and a wet weather calibration storm event will be selected. The recorded rainfall storm hyetograph will be applied to the hydraulic model to perform an EPS wet weather calibration. Individual RTK parameters will be developed for each flow monitor basin. Hydrologic parameters in the model will be adjusted so that the peak wet weather flows generated in the model closely match the observed flows. Lift station pumping and wet well levels will be compared against available SCADA data to verify wet weather lift station operations in the hydraulic model. FNI will prepare calibration plots overlaying the modeled wet weather flows vs. the field collected flow data at each flow monitoring location.

2D. Technical Memorandum (TM-2): Model Update and Flow Monitor Results

Prepare and submit Technical Memorandum (TM-2) summarizing the dry and wet weather calibration process and results. FNI will include calibration graphs showing comparison of wastewater flow monitoring results vs model results.

2E. Workshop #2: Wastewater Model Calibration Results

Meet with the City to discuss the wastewater model calibration results. FNI will bring calibration graphs showing comparison of wastewater flow monitoring results vs model results and meet with the City for review. City comments will be solicited and addressed.

Task 3 –Wastewater Flow Projections

FNI understands that the City is conducting a *Future Land Use Plan Update and Land Use Assumptions for Capital Recovery Studies* (Land Use Update) concurrent to this Project. Furthermore, FNI understands that the population and land use projections developed in the Land Use Update will be utilized for this Project.

3A. Population and Land Use Projections

Population and Land Use projections will be developed for the Wastewater Service Area utilizing the projections in the City's Land Use Update for 5-year, 10-year and 20-year planning periods. Population and non-residential acreage will be distributed by wastewater sub-basin for each planning year.

3B. Develop Wastewater Flow Projections

Historical WRF flow data will be analyzed to select a per-capita residential wastewater flow and a non-residential wastewater flow for future flow projections. Infiltration/inflow allowances for future planning periods will be developed based on historical flow data and the field collected flow monitoring data. Wastewater flow projections will be developed by sewer sub-basin for the 5-year, 10-year and 20-year planning periods.

3C. Distribute Wastewater Flow Projections in the Hydraulic Model

Allocate projected residential and non-residential loads for each planning period in the hydraulic model. Sewer basin and sub-basin delineation boundaries developed as part of the flow monitoring data analysis and model development tasks will be utilized for flow allocation.

3D. Technical Memorandum (TM-3): Wastewater Flow Projections

Prepare and submit Technical Memorandum (TM-3) to include documentation of existing and future populations, historical flows, selected per-capita flows for future conditions, and wastewater flow projections for the 5-Year, 10-Year, and 20-Year planning periods.

3E. Workshop #3: Review Population and Wastewater Flow Projections

Meet with City to discuss population and wastewater flow projections. City comments will be solicited and addressed.

Task 4 – Existing and Future Wastewater Collection System Analyses

4A. Existing Wastewater System Analysis

Run the wastewater model with the City's 2-Year, 24-Hour design storm and identify existing surcharging and overflow locations and other capacity/restriction issues. Conduct an evaluation to determine the impacts of critical element (special structure) and lift station modifications on the existing system evaluation results. Mapping will be prepared showing the location and magnitude of all modeled

surcharging and overflows. Each occurrence of modeled wastewater line surcharging will be categorized as due to a downstream restriction or a localized pipeline capacity deficiency.

4B. Develop Future Wastewater Model Scenarios

Model scenarios will be developed for the 5-year, 10-year and 20-year planning periods. Projected residential and non-residential wastewater loads will be distributed to the wastewater basins in the hydraulic model. Each scenario will be evaluated under peak wet weather conditions based on the design storm and future peaking factor criteria to determine the system response for surcharging and predicted overflow events.

4C. Evaluate and Optimize Existing Wastewater Reclamation Facility Service Area

Develop operational plan to optimize available wastewater treatment capacity at the City's existing wastewater reclamation facilities. Meet with operational staff to review the capacity and operations of the existing WRFs as well as recommendations on future service area enhancements.

4D. Develop Wastewater System Improvements Alternatives for Each Planning Period

Using results of future models, develop improvements to eliminate excessive surcharging and overflows in the collection system resulting from increased wastewater flow from projected future development. Develop improvements alternatives for gravity lines, lift stations, force mains, special structures, and treatment facilities. Improvements needed to correct existing deficiencies will also be included. Utilize model results to develop improvements to serve areas that are currently not developed. Prioritize rehabilitation areas based on flow monitoring results and operational data to help reduce infiltration/inflow. Develop mapping showing improvements required for the 5-year, 10-year and 25-year planning periods as well as improvements needed to correct existing deficiencies.

4E. Technical Memorandum (TM-4): Wastewater Flow Projections

Prepare and submit Technical Memorandum (TM-4) to include documentation of existing and future system analyses. TM will include documentation of the design storm used in the system analyses.

4F. Workshop #4: Review Wastewater System Analyses

Meet with the City to present and discuss results of the wastewater system analyses and identified improvements. FNI will solicit comments and make revisions to the recommended improvements.

Task 5 – Wastewater System Capital Improvements Plan and Report

5A. Prepare Phased Capital Improvement Plan for Growth

Prepare a capital improvements plan with prioritized list of and growth related system improvements by 5-Year, 10-Year, and 20-Year phases. Prepare cost estimates in 2018 dollars and mapping showing color-coded phasing and project write-ups for recommended improvements.

5B. Workshop #5: Wastewater System Capital Improvements Plan

FNI will meet with City personnel to discuss Capital Improvements Plan. FNI will revise CIP according to comments and recommendations from the City staff.

5C. Prepare Draft Master Plan Report

Combine Technical Memorandums into a single Wastewater Master Plan Report document. FNI will coordinate with Ardurra on draft report document format.

5D. Meeting to Review Draft Master Plan Report

Meet with the City to review draft wastewater master plan report. FNI will solicit comments and make revisions based on City comments.

5E. Finalize Master Plan Report and Present to Council

Address City comments and coordinate with Ardurra on preparation of the Final Master Plan Report. Assist Ardurra with preparation of PowerPoint presentation of system study report detailing flow metering and model development process, results of the hydraulic analyses, and capital improvements plan. Make two (2) presentations to Wastewater Master Plan Update to City Council during workshops at both the mid-point and end-point of the project.

Scope Item 2: Coordination with the City's Flow Monitoring and SSES Rehabilitation Results

FNI understands that the City is conducting a *Wastewater Sanitary Sewer Evaluation Study* (SSES) concurrent to this Project. Furthermore, FNI understands that this SSES study will determine I/I levels throughout the City and develop wastewater system rehabilitation projects. The City would like to include these wastewater system rehabilitation projects in the Wastewater Master Plan Update Report.

Task 1 – Coordinate Results of the City's SSES

1A. Meeting with City's SSES Engineer

FNI will meet with the Engineer conducting the City's SSES to discuss rehabilitation recommendations.

1B. Incorporate Flow Monitoring and SSES Rehabilitation Recommendations into Wastewater Master Plan Update Report

FNI will include a section in the Wastewater Master Plan Update Report to summarize the flow monitoring results and the rehabilitation recommendations from the City's SSES.

Scope Item 3: Development of Water and Wastewater Capital Recovery Fee

Task 1 – Develop Capital Recovery Fee Water and Wastewater CIP

1A. Identify Existing Water and Wastewater Improvements Eligible for Capital Recovery Fees

FNI will review recently completed (over the last 5 years) water and wastewater improvements and determine which projects are eligible for future cost recovery from growth. CIP will include mapping of existing capital recovery fee eligible improvements.

1B. Identify Proposed Wastewater Improvements Eligible for Capital Recovery Fees

FNI will utilize the results of the water and wastewater system modeling from the Master Plan Update to determine Capital Recovery fee eligible projects. Maps will be prepared showing the proposed water and wastewater capital improvements plan projects to be included in the Capital Recovery fee calculation.

1C. Meet with City to Review Existing & Proposed Water and Wastewater Projects Eligible for Capital Recovery Fee Analysis

FNI will meet with the City to review existing and proposed water and wastewater system improvements identified to be included in the capital recovery fee analysis and the associated project costs.

1D. Present Land Use Assumptions and Capital Improvements Plans to Capital Recovery Fee Advisory Committee

Following review by City Staff, FNI will conduct one presentation of the Land Use Assumptions and Water and Wastewater Capital Recovery Fee Eligible Capital Improvements Plans to the Capital Recovery Fee Advisory Committee.

Task 2 – Water and Wastewater CIP Capital Recovery Fee Analysis

2A. Conduct Water and Wastewater Capital Recovery Fee Capacity Analysis for Existing Recently Completed Capital Improvements Projects for 10-year Projected Growth

FNI will utilize the water and wastewater models from the Master Plan Update Project to analyze existing completed projects for remaining capacity for capital recovery fee cost recovery for 10-year projected growth.

2B. Conduct Water and Wastewater Capital Recovery Fee Capacity Analysis for New Capital Improvements Projects

FNI will utilize the water and wastewater models from the Master Plan Update Project to analyze new water and wastewater improvements for eligible capacity for capital recovery fee cost recovery for 10-year projected growth and associated financing costs.

2C. Calculate Water and Wastewater Costs Eligible for Capital Cost Recovery

FNI will utilize the capacity analysis and capital project costs to calculate percentage of project cost eligible for cost recovery.

2D. Develop Service Unit Equivalent (SUEs) for Water and Wastewater Systems

FNI will utilize equivalent capacity of water meters to establish the service unit equivalents (SUEs) required in Chapter 395 of the Local Government Code for both existing and 10-year growth conditions.

2E. Develop Draft CIP Update and Capital Recovery Fee Report

FNI will prepare a Draft Water and Wastewater CIP Update and Capital Recovery Fee Report showing land use assumptions, water and wastewater capital recovery fee eligible capital improvement costs, and maximum allowable water and wastewater capital recovery fees. An electronic PDF copy and fifteen (15) hard copies will be delivered to the City.

2F. Present Capital Recovery Fee Analysis Results to Capital Recovery Fee Advisory Committee

Following review by City Staff, FNI will conduct one presentation of results of the water and wastewater capital recovery fee analysis results and recommendations to the Capital Recovery Fee Advisory Committee.

2G. Assist with Preparation of Presentation for and Attend Public Hearing on Land Use Assumptions, CIPs and Capital Recovery Fee Calculations

FNI will assist the City in preparing the presentation material for the public hearing. FNI will attend up to two (2) Public Hearing(s) on Capital Recovery Fees and be available to answer questions at the public hearing.

2H. Finalize Capital Recovery Fee Report

FNI will prepare a final Water and Wastewater Capital Recovery Fee Report and deliver an electronic PDF copy.

Schedule for Master Plan Update and Capital Recovery Fee Report

- Draft Wastewater Master Plan Report – 270 days after NTP
- Draft Capital Recovery Fee Report – 330 days from NTP
- Final Wastewater Master Plan Report – 15 days after receiving City comments
- Final Capital Recovery Fee Report – 15 days after receiving City comments

Ardurra Group, LLC
City of League City Master Plan Update
6/12/2017
Detailed Cost Breakdown

Project Fee Summary	
Basic Services	256,510
Special Services	-
Total Project	256,510

Basic Services

Phase	Task	Employee	Scott Cole	Richard Weatherly	Kendall Ryan	Sherrie Hubble	Jared Barber							Total Hours	Total Labor Effort	Total Expense Effort	Total Sub Effort	Total Effort
		Project Role	PIC / QC	PM	APM/Project Engineer	GIS	Cost Estimating											
1		**Wastewater Model and Master Plan Update**													$ -	$ -	$ -	$ -
	Task 1	**Wastewater Model Update and Review of Flow Monitoring Results**													$ -	$ -	$ -	$ -
	1A	Update Wastewater Model Network and Facilities		8	80									88	$ 11,783	$ 748	$ -	$ 12,531
	1B	Develop Wastewater System Schematics		2	16									18	$ 2,436	$ 153	$ -	$ 2,589
	1C	Updated Model Subcatchment Generation		2	16									18	$ 2,436	$ 153	$ -	$ 2,589
	1D	Flow Monitor and Rain Gauge Data Analysis		4	24	8								36	$ 4,652	$ 306	$ -	$ 4,958
	1E	Additoinal Data Acquisition		2	12									14	$ 1,927	$ 119	$ -	$ 2,046
	1F	Technical Memorandum (TM-1): Model Update and Flow Monitor Results		4	24	12								40	$ 5,051	$ 340	$ -	$ 5,391
	1G	Workshop #1: Review Wastewater Field Testing and Model Development		8	12	8								28	$ 3,916	$ 265	$ -	$ 4,181
	Task 2	**Wastewater Model Calibration**													$ -	$ -	$ -	$ -
	2A	Import Existing Flow Data (Meter Billing Data) Into the Model		2	8	4								14	$ 1,816	$ 119	$ -	$ 1,935
	2B	Dry Weather Calibration		16	32									48	$ 7,254	$ 408	$ -	$ 7,662
	2C	Wet Weather Calibration		24	96									120	$ 16,997	$ 1,020	$ -	$ 18,017
	2D	Technical Memorandum (TM-2): Model Update and Flow Monitor Results	2	4	24	12								42	$ 5,593	$ 357	$ -	$ 5,950
	2E	Workshop #2: Wastewater Model Calibration Results		8	12	8								28	$ 3,916	$ 265	$ -	$ 4,181
	Task 3	**Wastewater Flow Projections**													$ -	$ -	$ -	$ -
	3A	Population and Land Use Projections		8	16									24	$ 3,627	$ 204	$ -	$ 3,831
	3B	Develop Wastewater Flow Projections		8	16									24	$ 3,627	$ 204	$ -	$ 3,831
	3C	Distribute Wastewater Flow Projections in the Hydraulic Model		2	8									10	$ 1,417	$ 85	$ -	$ 1,502
	3D	Technical Memorandum (TM-3): Wastewater Flow Projections	2	4	24	12								42	$ 5,593	$ 357	$ -	$ 5,950
	3E	Workshop #3: Review Population and Wastewater Flow Projections		8	12	8								28	$ 3,916	$ 265	$ -	$ 4,181
	Task 4	**Existing and Future Wastewater Collection System Analyses**													$ -	$ -	$ -	$ -
	4A	Existing Wastewater System Analysis		16	40	16								72	$ 9,871	$ 612	$ -	$ 10,483
	4B	Develop Future Wastewater Model Scenarios		2	16									18	$ 2,436	$ 153	$ -	$ 2,589
	4C	Evaluate and Optimize Existing Wastewater Reclamation Facility Service Area		16	24									40	$ 6,234	$ 340	$ -	$ 6,574
	4D	Develop Wastewater System Improvements Alternatives for Each Planning Period		20	80	24								124	$ 16,562	$ 1,054	$ -	$ 17,616
	4E	Technical Memorandum (TM-4): Wastewater Flow Projections	2	4	24	12								42	$ 5,593	$ 357	$ -	$ 5,950
	4F	Workshop #4: Review Wastewater System Analyses		8	12	8								28	$ 3,916	$ 265	$ -	$ 4,181
	Task 5	**Wastewter System Capital Improvements Plan and Report**													$ -	$ -	$ -	$ -
	5A	Prepare Phased Capital Improvement Plan for Growth		16	80	16	12							124	$ 16,874	$ 1,054	$ -	$ 17,928
	5B	Workshop #5: Wastewater System Capital Improvements Plan		8	12	8								28	$ 3,916	$ 265	$ -	$ 4,181
	5C	Prepare Draft Master Plan Report	2	12	24	12								50	$ 7,181	$ 425	$ -	$ 7,606
	5D	Meeting to Review Draft Master Plan Report		8	12									20	$ 3,117	$ 197	$ -	$ 3,314
	5E	Finalize Master Plan Report and Present to Council	4	16	12	8								40	$ 6,588	$ 394	$ -	$ 6,982
		TOTALS: Scope Item 1 - Wastewter Model and Master Plan Update												**1,208**	**$ 168,245**	**$ 10,484**	**$ -**	**$ 178,729**

Ardurra Group, LLC
City of League City Master Plan Update
6/12/2017
Detailed Cost Breakdown

Project Fee Summary	
Basic Services	256,510
Special Services	-
Total Project	256,510

Basic Services

Phase	Task	Employee	Scott Cole	Richard Weatherly	Kendall Ryan	Sherrie Hubble	Jared Barber							Total Hours	Total Labor Effort	Total Expense Effort	Total Sub Effort	Total Effort
		Project Role	PIC / QC	PM	APM/Project Engineer	GIS	Cost Estimating											
2		**Coordination with the City's SSES Rehabilitation Results**													$ -	$ -	$ -	$ -
	Task 1	**Coordinate Results of the City's SSES**													$ -	$ -	$ -	$ -
	1A	Meeting with City's SSES Engineer		8	12									20	$ 3,117	$ 197	$ -	$ 3,314
	1B	Incorporate SSES Rehabilitation Recommendations into Wastewater Master Plan Update Report		8	24		8							40	$ 5,916	$ 340	$ -	$ 6,256
		TOTALS: Scope Item 2 - Coordination with the City's SSES Rehabilitation Results												**60**	**$ 9,033**	**$ 537**	**$ -**	**$ 9,570**
3		**Development of Water and Wastewater Captial Recovery Fee CIP**													$ -	$ -	$ -	$ -
	Task 1	**Develop Capital Recovery Fee Water and Wastewater CIP**													$ -	$ -	$ -	$ -
	1A	Identify Existing Water and Wastewater Improvements Eligible for Impact Fees	1	8	32	12								53	$ 7,136	$ 451	$ -	$ 7,587
	1B	Identify Proposed Water and Wastewater Improvements Eligible for Capital Recovery Fees	1	8	32	12								53	$ 7,136	$ 451	$ -	$ 7,587
	1C	Meet with City to Review Existing & Proposed Water and Wastewater Projects Eligible for Capital Recovery Fee Analysis	2	8	12									22	$ 3,659	$ 214	$ -	$ 3,873
	Task 2	**Wastewater CIP Capital Recovery Fee Analysis**													$ -	$ -	$ -	$ -
	2A	Conduct Water and Wastewater Capital Recovery Fee Capacity Analysis for Existing Recently Completed Capital Improvements Projects for 10-year Projected Growth	1	8	24	12								45	$ 6,116	$ 383	$ -	$ 6,499
	2B	Conduct Water and Wastewater Capital Recovery Fee Capacity Analysis for New Capital Improvements Projects	1	12	24	12								49	$ 6,910	$ 417	$ -	$ 7,327
	2C	Calculate Water and Wastewater Costs Eligible for Impact Fee Cost Recovery		8	24									32	$ 4,647	$ 272	$ -	$ 4,919
	2D	Develop Service Unit Equivalent (SUEs) for Water and Wastewater Systems		8	24	8								40	$ 5,446	$ 340	$ -	$ 5,786
	2E	Develop Draft CIP Update and Capital Recovery Fee Report	1	12	40	8								61	$ 8,549	$ 519	$ -	$ 9,068
	2F	Present Capital Recovery Fee Analysis Results to Capital Recovery Fee Advisory Committee	1	16	20	6								43	$ 6,595	$ 393	$ -	$ 6,988
	2G	Assist with Preparation of Presentation for and Attend Public Hearing on Land Use Assumptions, CIPs and Capital Recovery Fee Calculations	1	8	8	6								23	$ 3,478	$ 223	$ -	$ 3,701
	2H	Finalize Capital Recovery Fee Report	1	8	16	6								31	$ 4,497	$ 379	$ -	$ 4,876
		TOTALS: Scope Item 3 - Development of Water and Wastewater Capital Recovery Fee												**452**	**$ 64,169**	**$ 4,042**	**$ -**	**$ 68,211**
		Total Basic Services Hours	**22**	**360**	**1,060**	**258**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**1,720**	**$ 241,447**	**$ 15,063**	**$ -**	**$ 256,510**

Ardurra Group, LLC
City of League City Master Plan Update
6/12/2017
Detailed Cost Breakdown

Project Fee Summary	
Basic Services	256,510
Special Services	-
Total Project	256,510

Phase	Task	Expenses	Tech Charge	Miles	Meals	Hotel	B&W (sheet)	Color (sheet)	Binding (each)	Lg Format - Bond - B&W (sq. ft.)	Lg Format - Glossy/Mylar - B&W (sq. ft.)	Other	Other	Total Exp Effort
1		Wastewater Model and Master Plan Update												$ -
	Task 1	Wastewater Model Update and Review of Flow Monitoring Results												$ -
	1A	Update Wastewater Model Network and Facilities	88											$ 748
	1B	Develop Wastewater System Schematics	18											$ 153
	1C	Updated Model Subcatchment Generation	18											$ 153
	1D	Flow Monitor and Rain Gauge Data Analysis	36											$ 306
	1E	Additoinal Data Acquisition	14											$ 119
	1F	Technical Memorandum (TM-1): Model Update and Flow Monitor Results	40											$ 340
	1G	Workshop #1: Review Wastewater Field Testing and Model Development	28	50										$ 265
	Task 2	Wastewater Model Calibration												$ -
	2A	Import Existing Flow Data (Meter Billing Data) Into the Model	14											$ 119
	2B	Dry Weather Calibration	48											$ 408
	2C	Wet Weather Calibration	120											$ 1,020
	2D	Technical Memorandum (TM-2): Model Update and Flow Monitor Results	42											$ 357
	2E	Workshop #2: Wastewater Model Calibration Results	28	50										$ 265
	Task 3	Wastewater Flow Projections												$ -
	3A	Population and Land Use Projections	24											$ 204
	3B	Develop Wastewater Flow Projections	24											$ 204
	3C	Distribute Wastewater Flow Projections in the Hydraulic Model	10											$ 85
	3D	Technical Memorandum (TM-3): Wastewater Flow Projections	42											$ 357
	3E	Workshop #3: Review Population and Wastewater Flow Projections	28	50										$ 265
	Task 4	Existing and Future Wastewater Collection System Analyses												$ -
	4A	Existing Wastewater System Analysis	72											$ 612
	4B	Develop Future Wastewater Model Scenarios	18											$ 153
	4C	Evaluate and Optimize Existing Wastewater Reclamation Facility Service Area	40											$ 340
	4D	Develop Wastewater System Improvements Alternatives for Each Planning Period	124											$ 1,054
	4E	Technical Memorandum (TM-4): Wastewater Flow Projections	42											$ 357
	4F	Workshop #4: Review Wastewater System Analyses	28	50										$ 265
	Task 5	Wastewter System Capital Improvements Plan and Report												$ -
	5A	Prepare Phased Capital Improvement Plan for Growth	124											$ 1,054
	5B	Workshop #5: Wastewater System Capital Improvements Plan	28	50										$ 265
	5C	Prepare Draft Master Plan Report	50											$ 425
	5D	Meeting to Review Draft Master Plan Report	20	50										$ 197
	5E	Finalize Master Plan Report and Present to Council	40	100										$ 394

Ardurra Group, LLC
City of League City Master Plan Update
6/12/2017
Detailed Cost Breakdown

Project Fee Summary	
Basic Services	256,510
Special Services	-
Total Project	256,510

2		Coordination with the City's SSES Rehabilitation Results												$ -
	Task 1	Coordinate Results of the City's SSES												$ -
	1A	Meeting with City's SSES Engineer	20	50										$ 197
	1B	Incorporate SSES Rehabilitation Recommendations into Wastewater Master Plan Update Report	40											$ 340
3		Development of Water and Wastewater Captial Recovery Fee CIP												$ -
	Task 1	Develop Capital Recovery Fee Water and Wastewater CIP												$ -
	1A	Identify Existing Water and Wastewater Improvements Eligible for Impact Fees	53											$ 451
	1B	Identify Proposed Water and Wastewater Improvements Eligible for Capital Recovery Fees	53											$ 451
	1C	Meet with City to Review Existing & Proposed Water and Wastewater Projects Eligible for Capital Recovery Fee Analysis	22	50										$ 214
	Task 2	Wastewater CIP Capital Recovery Fee Analysis												$ -
	2A	Conduct Water and Wastewater Capital Recovery Fee Capacity Analysis for Existing Recently Completed Capital Improvements Projects for 10-year Projected Growth	45											$ 383
	2B	Conduct Water and Wastewater Capital Recovery Fee Capacity Analysis for New Capital Improvements Projects	49											$ 417
	2C	Calculate Water and Wastewater Costs Eligible for Impact Fee Cost Recovery	32											$ 272
	2D	Develop Service Unit Equivalent (SUEs) for Water and Wastewater Systems	40											$ 340
	2E	Develop Draft CIP Update and Capital Recovery Fee Report	61											$ 519
	2F	Present Capital Recovery Fee Analysis Results to Capital Recovery Fee Advisory Committee	43	50										$ 393
	2G	Assist with Preparation of Presentation for and Attend Public Hearing on Land Use Assumptions, CIPs and Capital Recovery Fee Calculations	23	50										$ 223
	2H	Finalize Capital Recovery Fee Report	31									100		$ 379
														$ -
Total Basic Services Items			**1,720**	**600**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**100**	**-**	
Total Basic Services Expenses Effort			**$ 14,620**	**$ 321**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 115**	**$ -**	**$ 15,063**

NewGen Strategies & Solutions

1300 E. Lookout Drive
Suite 100
Richardson, TX 75082
Phone: (972) 680-2000

May 22, 2017

Mr. Jeff Peters, PE, BCEE
Client Accounts Manager
Ardurra Engineering & Disaster Management
2032 Buffalo Terrace
Houston, TX 77019

Subject: Capital Recovery Fee (CRF) Scope and Fee Specific to League City, Texas

Dear Mr. Peters:

NewGen Strategies and Solutions, LLC, ("NewGen") is pleased to have this opportunity to assist the Ardurra Project Team ("Ardurra") in calculating updated Water and Wastewater Capital Recovery Fees (CRFs) for the City of League City, Texas ("City"). Based on our discussions, the attached letter details our understanding of the services to be provided, the anticipated scope of services, and our proposed fee for said services.

Project Understanding

It is our understanding that the City desires to update its current Water and Wastewater CRFs commensurate with the Water and Wastewater Master Plans which are under development. NewGen is being engaged to perform the required CRF calculations in conjunction with Chapter 395 of the Texas Local Government Code, and assist in the presentation and adoption of the CRFs under the requirements of this statute.

Scope of Services

Task 1 – Initial Data Request

At the outset of the Project, NewGen will submit to the City and to Ardurra an initial request for information related to items needed to perform the CRF update. After receiving the requested data, NewGen will review and analyze the data in preparation for discussion during the CRF Calculation Kick-off Meeting.

Task 2 – CRF Calculation Kick-off Meeting

After receiving the data requested in Task 1, the Project Team will conduct an in-person meeting with City and Ardurra personnel to outline the goals, objectives, and expectations of the CRF Calculation effort, as well as to discuss any questions or concerns the Project Team has regarding the data receiving in Task 1.

If requested, NewGen is also available to meet and conduct a workshop with the City Council to explain the importance of CRFs and the process for determining appropriate fees. At this time, the Project Team's proposed pricing does not include the proposed workshop. If this workshop is requested, the Project Team will provide the services based on time and expenses incurred.

Task 3 – Determination of CRF Projects and Service Units

In the determination of any required updates to the City's current CRFs, NewGen will seek to comply with Chapter 395 of the Texas Local Government Code, which provides the guidelines for governmental entities and political subdivisions in the development of such fees. In Task 3, NewGen will work with members of Ardurra to identify the applicable CRF projects, the percentage capacity in each project which will be utilized to meet new demand over the upcoming ten (10) year period, as well as the anticipated growth in service units over a ten (10) year period.

Task 4 – Determination of Required CRF Adjustments

The CRF determination method employed by NewGen is a cash flow based financial model, which follows the requirements of Chapter 395, including the recognition of cash and/or debt financing, interest earnings and fund balances. The model also allows us to calculate and account for the required revenue credits as dictated by Chapter 395. The spreadsheets from the model will provide forecasted cash flows that coincide with the timeframe from the City's capital plans. These forecasted cash flows will be based on projected construction lead times, growth in service units, anticipated interest rates, construction costs, and the calculated CRFs. Based on the forecasts from the cash flow model, any required updates to the Citys's current CRFs will be determined using the projected service units over the capital plan timeframe. The cash flow based financial model allows the flexibility for the CRF to be calculated for a uniform charge over the forecasted timeframe, or to be calculated for an escalating or declining charge over the forecasted timeframe.

Task 5 – Report Narrative Preparation and Project Team Review

Once the required updates to the City's CRFs have been determined, NewGen will provide the necessary narrative report information and spreadsheets for inclusion in the final project report. The report sections prepared by NewGen will summarize the findings and calculations made during the course of the study. Once the report has been prepared, members of NewGen will meet via teleconference with appropriate Ardurra personnel to review the determination of required updates to the CRFs and address any outstanding issues and/or concerns.

Task 6 – Final Letter Report Preparation and Presentation

Upon receipt of Ardurra's recommendations and comments, NewGen will make appropriate changes and provide a final report section for inclusion in the overall project report. NewGen personnel will also participate in the in-person presentation of the CRF calculations to the Capital Improvements Advisory Committee, the City Council, as well as in one public meeting with the development community.

Deliverables

Upon completion of the CRF study update, we will provide the Ardurra with the following:

- Draft Report Narrative
  - Presented with 60 days of receipt of the required CRF capital project determination from Ardurra.
- Final Report Narrative
  - Presented within two weeks after delivery of the draft report narrative, given the timely receipt of comments by Ardurra Project Team members.

- Meetings
  - In-person Task Kick-off meeting
  - Telecommerce to discuss CRF results and review Draft Report Narrative
  - In-person presentation to Capital Improvements Advisory Committee
  - In-person presentation to the City Council
  - In-person presentation at Public Meeting with Development Community Representatives

Additional Services

Should additional services be required that are outside of the scope of services contained herein, they will be provided at time and expense, based on our standard billing rates in place at that time.

Project Fees

NewGen invoices its clients monthly for actual services performed plus out-of-pocket expenses incurred at cost. Payment is due within thirty days of the invoice date. We are prepared to accept this engagement under a **fixed fee of $24,500, inclusive of out of pocket expenses incurred at cost,** based upon the scope of services set forth here-in. Our standard hourly billing rates at this time are as follows:

NewGen Strategies and Solutions, LLC
Billing Rates

Staff Category	Hourly Billing Rates
President	$285
Directors	$225 - $285
Executive Consultant	$210 - $285
Senior Consultant	$160 - $210
Staff Consultant	$100 - $160
Administrative Assistant	$70 - $75

By engaging NewGen, you agree that the services rendered by NewGen will be performed in accordance with instructions or specifications received by representatives of Ardurra or the City, and will be provided with the degree of skill and judgment exercised by recognized professionals performing services of similar nature and consistent with the applicable industry best practices. You further agree that compensation for services rendered will be provided to NewGen regardless of the final outcome of the engagement.

NewGen again thanks you for the opportunity to assist in this important engagement. If you should have any questions regarding this letter and/or require additional information, please contact Chris Ekrut at (972) 232-2234 or via email at cekrut@newgenstrategies.net.

Very truly yours,

Chris D. Ekrut

Chris Ekrut
Director
NewGen Strategies & Solutions

City of League City, Texas
Corrosion Control Study
KIT's Fee Estimate

Level of Effort

		Budgeted Hours				
	Staff Category	**Principal**	**Project Manager**	**Project Engineer**	**Admin. Assist. / Biller**	**Subtotal Hours**
Task No.	**Task Description**					
1	Corrosion Control Study Kickoff Meeting	2	4	8	1	15
2	Pertinent Water Quality Data Collection and Analysis	0	12	40	0	52
3	Desktop Water Stability Analysis	0	12	48	0	60
4	Compile Corrosion Control Study Report	0	12	46	2	60
5	Finalize Report and Coordinate w/ TCEQ	2	8	16	1	27
	Total Hours	4	48	158	4	**214**

Fee Estimate

		Budgeted Amounts				
	Staff Category	**Principal**	**Project Manager**	**Project Engineer**	**Admin. Assist. / Biller**	**Subtotal Amounts**
	Billing Rate per Hour	$230	$225	$111	$78	
Task No.	**Task Description**					
1	Corrosion Control Study Kickoff Meeting	$460	$900	$888	$78	$2,300
2	Pertinent Water Quality Data Collection and Analysis	$0	$2,700	$4,440	$0	$7,100
3	Desktop Water Stability Analysis	$0	$2,700	$5,328	$0	$8,000
4	Compile Corrosion Control Study Report	$0	$2,700	$5,106	$156	$8,000
5	Finalize Report and Coordinate w/ TCEQ	$460	$1,800	$1,776	$78	$4,100
	Expenses					$500
	Total Fee Estimate (Lump Sum)					**$30,000**