

City of Uvalde Water Master Plan Proposal

DRAFT Scope of Services:

Task A: Project Management and Data Collection

A1. Project Administration

ENGINEER will perform general administration duties for the project, including progress meeting scheduling, general correspondence, office administration, and monthly invoicing.

A2. Kickoff Meeting

ENGINEER will meet with the City to review the scope, project team, and schedule. A data request memorandum will be presented and discussed. The data request memorandum shall include but is not limited to:

- Water distribution system GIS data
- Water system SCADA records
- Utility billing data
- Historical water production data
- As-built drawings for water facilities

A3. Data Review

ENGINEER will review the requested data and compile the information for use in the master plan analysis. If pertinent information is unavailable, ENGINEER will discuss options and path forward for specific tasks related to the requested data.

Task B: Water Model Development

B1. Construct Water Model Network

ENGINEER will build the water model using current water system GIS data. As-built drawings will be used to enter data for water facilities.

B2. Water Demand Allocation

ENGINEER will utilize data from the City's billing system database to allocate existing demands throughout the service area to the water model. The data shall consist of metered usage fields for active customer accounts. ENGINEER spatially locate meters using service address in GIS so that the associated water usage can be assigned to the appropriate model node.

B3. Conduct Temporary Pressure Testing

ENGINEER will identify locations for field testing based on model calibration needs and areas of concern from City. Up to twelve (12) temporary pressure recorders will be provided by ENGINEER. Procedures for field testing will be prepared showing proposed location of testing, duration of testing, required SCADA data during testing period, and assistance from water utility department.

B4. Conduct Model Calibration

ENGINEER will conduct a steady-state model calibration by adjusting C-factors, demand peaking factors, and demand distribution until modeling results match the field pressure measurements and pump/tank operation. ENGINEER will provide comparison graphs and mapping to document model calibration results.

B5. Progress Meeting #1: Model Creation and Calibration

ENGINEER will meet with the City to discuss the results of the water model development. Pressure recorder data will also be presented.

Task C: Water Demand Projections

C1. Workshop: Proposed Land Use Assumptions and Projections

ENGINEER will meet with the City to discuss the existing and future service areas, proposed developments, and anticipated growth rates.

C2. Water System Projections for 5-year, 10-year and 25-year Conditions

ENGINEER will develop population projections and non-residential growth for 5-year, 10-year and 25-year planning periods within the water service area.

C3. Review Historical Water Usage Data

ENGINEER will evaluate historical water usage data to develop per-capita usage trends and calculate peaking factors. This data will be used to select design criteria for projecting future water demands.

C4. Develop and Distribute Water Demand Projections

ENGINEER will develop water demand projections for 5-year, 10-year, and 25-year conditions using the population and non-residential growth projections developed as part of this study and selected design criteria. ENGINEER will distribute water demands throughout the service area based on the future population distribution.

C5. Water Supply Integration Alternatives

ENGINEER will work with City staff to identify and document all existing and future known sources of water supply. ENGINEER will compare existing water supply to future water demand projections to identify any deficiencies. ENGINEER will evaluate integration alternatives to identify water distribution

system improvements needed to integrate new water supplies.

C6. Water Loss Audit

ENGINEER will perform a water audit utilizing AWWA's M36 water audit method and the AWWA Free Water Audit Software (FWAS). ENGINEER will summarize the findings of the audit and incorporate into the water demand projections.

C7. Progress Meeting #2: Water Demand Projections

ENGINEER will conduct a meeting with the City to present assumptions, methodology, and water demand projections for 5-year, 10-year and 25-year planning periods within the water service area.

Task D: Existing and Future System Hydraulic Analyses

D1. Perform Modeling of Existing Water System

ENGINEER will conduct steady-state modeling of the existing water system for average day, maximum day, and peak hour demand conditions to determine capacity and deficiencies within the existing water system. ENGINEER will conduct a fire flow model run under existing maximum day demand conditions. **Mapping and model results showing minimum pressures and available fire flow will be prepared to document the analyses.**

D2. Evaluate Existing Pumping and Storage Requirements

ENGINEER will evaluate existing and future pumping capacity based on TCEQ requirements and general industry recommendations. Ground and elevated storage will also be evaluated.

D3. Progress Meeting #3: Existing System Capacity Analysis

ENGINEER will meet with the City to discuss the results of the existing water system analysis. Design criteria for future system analysis will also be discussed.

D4. Develop Future Water Model Scenarios

ENGINEER will develop model scenarios for 5-year, 10-year, and 25-year planning periods. Extended period simulations with average day and maximum day demand conditions will be modeled. Operational controls for pump stations will be developed and input in the model. A steady-state fire flow run with 25-year projected maximum day demand and improvements will be conducted for comparison with existing available fire flow results.

D5. Identify Future Water System Improvements

Utilizing model results from the future planning period scenarios, ENGINEER will develop improvements to adequately serve existing and future water demands. Improvements required to resolve existing system deficiencies and to provide service to undeveloped portions of the water service area will be included. ENGINEER will develop mapping showing improvements required for 5-year, 10-year and 25-year planning periods.

D6. Progress Meeting #4: Review Water System Improvements

ENGINEER will meet with the City to discuss the water system improvements. Documentation of the analysis may include pumping and storage calculations, charts showing modeling results, system mapping, and model output files. ENGINEER will solicit comments from City staff and address any required changes to the water system analysis.

Task E: Condition Assessment

E1. Compile Asset Inventory ENGINEER will compile a list of all water facilities and document available information on location, date of construction, capacity, and other pertinent data.

E2. Develop Condition and Criticality Parameters for Facilities and Linear Assets

In consultation with City staff, ENGINEER will develop condition and criticality prioritization scoring criteria. Potential condition scoring parameters are age, pipeline material, history of repairs, and functionality of facility components (i.e. mechanical, structural, electrical, etc.). Potential criticality scoring parameters are number of customers served, environmental impact, high impact customers, redundancy, and access.

E3. Conduct Facility Site Visits

ENGINEER will conduct two days of site visits with City staff to selected water system facilities. The purpose of the site visits is to collect data on existing facilities and evaluate the various components. Condition scores will be assigned based on visual observations and discussions with operations staff during the site visit. The site visits do not include field testing of equipment.

E4. Perform Risk Based Condition and Criticality Scoring

ENGINEER will utilize the results of the site visits to assign condition and criticality scores to water system facilities. Pipelines will also be assessed based on available GIS data and maintenance history. An overall risk matrix and mapping will be developed that characterizes high risk assets.

E5. Prioritize Rehabilitation Projects

ENGINEER will utilize the scoring system results to develop and prioritize rehabilitation projects. Planning level cost estimates will be calculated and summarized based on the recommended rehabilitation projects.

Task F: Capital Improvements Plans and Master Plan Report

F1. Develop Capital Improvements Plan

ENGINEER will prepare a capital improvements plan with prioritization list of growth-related system improvements. ENGINEER will develop costs for each proposed water system CIP project in Year 2024 dollars including engineering and contingencies. Large scale city-wide maps will be produced showing proposed projects and recommended in-service dates of proposed projects. Project write-ups for

recommended improvements will also be prepared.

F2. Funding Evaluation

ENGINEER will provide information on available funding programs based on the recommended Capital Improvements Plan. Information will include program requirements, application deadlines, and available funding.

F3. Draft Water Master Plan Report

ENGINEER will prepare a draft report to document the methodology and results of the Water Master Plan. ENGINEER will submit an electronic PDF file of the draft report to the City for review.

F4. Meeting with City to Review Draft Master Plan Report

ENGINEER will meet with the City to discuss the Draft Water Master Plan Report. Comments will be solicited and incorporated into the Final Water Master Plan Report.

F5. Final Water Master Plan Report

ENGINEER will address City comments and submit five (5) hard copies and a PDF file of the final Water Master Plan Report.

F6. Council Presentation

ENGINEER will prepare a PowerPoint presentation summarizing the results of the Water Master Plan. ENGINEER will conduct up to two (2) City Council presentations related to the Water Master Plan.

Compensation:

TASK	FEE
Task A: Project Management and Data Collection	\$29,784
Task B: Water Model Development	\$44,488
Task C: Water Demand Projections	\$57,457
Task D: Existing and Future System Hydraulic Analyses	\$61,179
Task E: Condition Assessment	\$32,354
Task F: Capital Improvements Plans and Master Plan Report	\$66,981
TOTAL FEE	\$292,243