

ATTACHMENT SC:

SCOPE OF SERVICES

Project Understanding: The City of Mansfield (CITY) is experiencing rapid growth in its southern portion of its service area, potentially triggering the need for water and wastewater improvements identified in its Master Plan update. Mansfield has also been contacted by existing and proposed wholesale customers requesting increases in water supply. The City is requesting Freese and Nichols, Inc. (FNI) to help develop a comprehensive strategy for providing water service to its retail and wholesale customers and wastewater service to retail growth.

Task A. Future Water Demands, Wastewater Flows, and Service Areas

- A1. **Project Kickoff Meeting:** FNI will meet with the CITY to review scope and schedule of the project and critical project milestones and future service area. FNI will present a memorandum outlining data needed for the project. FNI will review the data request memorandum with the CITY to determine what data and data format is available from the CITY.
- A2. **Document Control:** FNI has established Document Control procedures to enable proper recordkeeping and retrieval. The Document Control procedures use a standardized electronic and paper file index, set up at the outset of the project. Protocols are observed for electronic and paper records, confidentiality and security, and proper distribution and retention. Documents will be assigned unique names and the filename and path included in the footer of each document.
- A3. **Administration and Monthly Progress Reports:** FNI will perform general administration duties with the project, including progress meeting scheduling, general correspondence, office administration, and monthly invoicing. FNI will also prepare a Monthly Status Report to be submitted, summarizing progress against specific tasks and scheduled tasks to be accomplished in the upcoming month; outlining upcoming key decisions which will require input from, or discussion with, City staff; and listing any problems or unresolved issues.
- A4. **Data Collection:** FNI will compile information from the City including updated GIS files, as-builts since the Master Plan Update, and preliminary design drawings for developments currently under design. FNI will review the data request memorandum with the City to determine what data and data format is available from the City.
- A5. **Data Collection with Wholesale Customers Including Online Survey:** FNI will coordinate with the CITY to request wholesale customer data regarding future water needs. FNI will send online surveys to wholesale customers on projected water demands, timing of demand increases, and verifying any changes in information relative their water service areas.

A6. Wholesale Customer Stakeholder Meeting on Projections and Service Areas: FNI will coordinate with existing and prospective wholesale customers to solicit input and feedback on desired wholesale customer water demands and service areas. FNI will utilize the data collected and input to determine the future modeling scenarios to be evaluated. FNI will conduct up to three (3) meetings as follows:

- Grand Prairie, Midlothian
- Johnson County Special Utility District (SUD)
- Mountain Peak SUD, Sardis Water Supply Corp, Johnson County Fresh Water District (FWD), Ellis County FWD #1

A7. Develop Updated Water Demand Projections: FNI will use the information from the data collection to develop water demands for updated retail and wholesale needs. FNI will develop the water demands utilizing per-capitas, peaking factors, historical CITY data, all in accordance with TCEQ regulatory guidelines. FNI will prepare mapping showing the wholesale customer boundaries and their respective demands requested.

A8. Develop Updated Wastewater Flow Projections: FNI will use the information from the data collection to develop wastewater flows for updated developer requests in the southern portion of the collection system. FNI will utilize historical billing information from TRA and design criteria in the Master Plan Update to calculate the updated flows. FNI will prepare mapping showing the proposed development, its land uses, and projected wastewater flow produced.

A9. Update Future Water and Wastewater Service Areas: FNI will utilize information from the data collection tasks to review and update the future service area boundaries and discuss any changes necessary based on developer and wholesale customer changes. FNI will prepare mapping for the future service areas for water and wastewater and submit to the CITY for review and comment.

A10. Meet with the CITY to Review Updated Projections, Future Service Areas, and Timing of Growth Expansion: FNI will prepare for and conduct a meeting with CITY staff to review the updated water and wastewater projections. FNI will also review the future service areas and FNI will address comments from the CITY to submit updated service area maps.

Task B. Analysis of Water and Wastewater Service Area Alternatives

B1. Develop Design Criteria: FNI will collaborate with CITY staff to establish system boundary conditions and design criteria for the evaluation to help inform and drive modeling decisions and future recommendations.

B2. Update Water Model in InfoWater: FNI will update the existing water model in the InfoWater software and utilize GIS data to add new water infrastructure to the model and update attribute data. FNI will verify model results are in-line with older models but will not conduct a new model calibration.

B3. Perform Extended Period Modeling and Analysis of the Water System with Added Wholesale Supply Demand: FNI will utilize the updated water model to perform an extended period simulation of the water system under maximum day and peak hour water demands. FNI will conduct EPS modeling of the water system for maximum day operating conditions to evaluate the following:

- Tank Cycling
- System Pressures (retail and wholesale delivery point)
- Existing System Deficiencies
- Water Treatment Plant Capacity
- Trigger Points for 2nd Water Treatment Plant

B4. Develop Water System Improvement Alternatives for Future Conditions: FNI will utilize the hydraulic model to identify water infrastructure needs to serve the increase in wholesale customer demand. FNI will simulate a number of system improvement alternatives to meet future needs and maintain the current level of service to its existing customers. Water system facilities and lines will be sized to meet retail + wholesale maximum day demands, retail peak hour demands and to provide retail fire flows of at least 1,500 gpm under maximum day demand conditions for recommended infrastructure improvements.

B5. Update Wastewater Model in InfoSewer: FNI will update the existing wastewater model in the InfoSewer software and utilize GIS data to add new wastewater infrastructure to the model and update attribute data to include 10-inch and larger wastewater lines and other critical 6-inch and 8-inch wastewater lines and lift stations in the modeling software. FNI will verify model results are in-line with older models but will not conduct a new model calibration.

B6. Perform Steady-State Modeling of the Wastewater System: FNI will run the updated wastewater model with design storm(s) and identify existing surcharging and overflow locations and other capacity/restriction issues with added development flows. This task will establish projects that will be included in the short-term recommendations:

- Trigger for WWMP Project #6
- Low Branch Basin options downstream of the Best Maid Lift Station
- Additional Reece Branch wastewater needs triggered by new development

FNI will prepare mapping and model results showing all surcharging and overflow locations, if applicable.

- B7. **Develop Wastewater System Improvement Alternatives to Address Capacity Issues:** Using the results of the wastewater system modeling, FNI will develop improvements to eliminate excessive surcharging and overflows in the collection system resulting from increased wastewater flow from projected future growth and development. FNI will develop improvements alternatives for gravity lines, lift stations, force mains, and special structures. Improvements needed to correct existing deficiencies will also be included. FNI will utilize model results to develop improvements to serve areas that are currently not developed or served by the City. FNI will develop mapping showing improvements required to provide wastewater service.
- B8. **Meet with the CITY to Discuss Future Modeling and Recommended Improvements Results:** FNI will meet with the CITY to discuss the future water and wastewater system analysis results. FNI will also present recommended improvements based on the projected needs of retail and wholesale customers.

Task C. Develop Long Term Service Area Plan and Implementation Strategy

- C1. **Develop Regional Water and Wastewater Capital Improvement Plan (CIP) Costs, Phasing Plan & Mapping:** FNI will develop costs for each recommended improvement, draft CIP timing of projects based upon water and wastewater system modeling requirements and reliability needs, and mapping showing project locations. Costs will be in current year dollars and will include engineering and contingencies.
- C2. **Meet with the CITY to Discuss Future Water and Wastewater Improvements:** FNI will meet with the CITY to discuss future water and wastewater system improvements based on developer and wholesale customer needs.
- C3. **Revise Regional CIP and Prepare Draft Water and Wastewater System Regional Planning CIP Report:** FNI will revise the CIP based upon the CITY's comments and modifications and prepare a CIP report discussing service areas, projections, assumptions, and recommended capital improvement plans including schedule and costs of improvements. The report will include colored maps showing proposed system improvements as well as GIS digital copies.
- C4. **Finalize Strategic Regional Planning Report and Deliver to the CITY:** FNI will revise the Strategic Planning Report based on CITY comments and finalize. FNI will provide the CITY with five (5) copies of the final report. FNI will deliver to the City all electronic GIS Mapping files and a PDF copy of the final report.

C5. Coordination Meetings: FNI will prepare for and attend meetings with various stakeholders to review and discuss the results and recommendations of the Strategic Regional Planning Report. FNI will attend up to four (4) additional meetings, with a combination of potential stakeholders including:

- Trinity River Authority
- Grand Prairie, Midlothian
- Johnson County Special Utility District (SUD)
- Mountain Peak SUD, Sardis Water Supply Corp, Johnson County Fresh Water District (FWD), Ellis County FWD #1

Water Strategic Planning Deliverables

- Updated Retail Water Demands for Mansfield (2022, 2025, 2030, 2035, 2050)
- Updated Wholesale Water Supply Projections for Mansfield (2022, 2025, 2030, 2035, 2050)
- Total Projected Avg Day and Max Day Water Supply Needs for Mansfield (Series of Ranges Depending on the Number of Wholesale Customers Contracted) (2022, 2025, 2030, 2035, 2050)
- Updated Retail Service Area Map for Mansfield
- Updated Wholesale Service Area Map for Mansfield
- Updated Total Service Area Map for Mansfield
- Updated Water Treatment Capacity Needs (Series of Ranges Depending on the Number of Wholesale Customers Contracted)
- Strategic Regional Planning Report

Wastewater Strategic Planning Deliverables

- Updated Retail Wastewater Flows for Mansfield By Basin (2022, 2025, 2030, 2050)
- Updated Retail Service Area Map for Mansfield (Series of Alternatives Looking at Flows to TRA Central vs Flow to TRA Mountain Creek)
- Updated Wastewater Capacity Needs for Mansfield By Basin to Each TRA Wholesale System
- Strategic Regional Planning Report

COMPENSATION

Compensation to FNI for Basic Services in Attachment SC shall be computed on the basis of the following Schedule of Charges, but shall not exceed One Hundred Twenty Three Thousand Dollars (\$123,000).

If FNI sees the Scope of Services changing so that Additional Services are needed, including but not limited to those services described as Additional Services in Attachment SC, FNI will notify CITY for CITY'S approval before proceeding. Additional Services shall be computed based on the following Schedule of Charges.

Position	Hourly Rate	
	Min	Max
Professional 1	85	159
Professional 2	107	168
Professional 3	131	244
Professional 4	163	262
Professional 5	199	375
Professional 6	211	427
Construction Manager 1	95	189
Construction Manager 2	116	204
Construction Manager 3	179	240
Construction Manager 4	219	310
CAD Technician/Designer 1	77	158
CAD Technician/Designer 2	112	169
CAD Technician/Designer 3	143	223
Corporate Project Support 1	56	135
Corporate Project Support 2	78	188
Corporate Project Support 3	112	285
Intern / Coop	45	115
Senior Advisor	175	175

Rates for In-House Services and Equipment

Mileage	Bulk Printing and Reproduction			Equipment		
		B&W	Color			
Standard IRS Rates				Valve Crew Vehicle (hour)	\$75	
	Small Format (per copy)	\$0.10	\$0.25	Pressure Data Logger (each)	\$100	
	Large Format (per sq. ft.)			Water Quality Meter (per day)	\$100	
Tech Charges				Bond	\$0.25	\$0.75
8.50 per hour	Bond	\$0.25	\$0.75	Microscope (each)	\$150	
	Glossy / Mylar	\$0.75	\$1.25	Pressure Recorder (per day)	\$200	
	Vinyl / Adhesive	\$1.50	\$2.00	Ultrasonic Thickness Gauge (per day)	\$275	
	Mounting (per sq. ft.)	\$2.00		Coating Inspection Kit (per day)	\$275	
	Binding (per binding)	\$0.25		Flushing / Cfactor (each)	\$500	
				Backpack Electrofisher (each)	\$1,000	
					Survey Grade	Standard
				Drone (per day)	\$200	\$100
				GPS (per day)	\$150	\$50

OTHER DIRECT EXPENSES:

Other direct expenses are reimbursed at actual cost times a multiplier of 1.10. They include outside printing and reproduction expense, communication expense, travel, transportation and subsistence away from the FNI office. For other miscellaneous expenses directly related to the work, including costs of laboratory analysis, test, and other work required to be done by independent persons other than staff members, these services will be billed at a cost times a multiplier of 1.05. For Resident Representative services performed by non-FNI employees and CAD services performed In-house by non-FNI employees where FNI provides workspace and equipment to perform such services, these services will be billed at cost times a multiplier of 2.0. This markup approximates the cost to FNI if an FNI employee was performing the same or similar services.

These ranges and/or rates will be adjusted annually in February. Last updated February 2021.