



January 11, 2019
Revision No. 1: August 20, 2020
Proposal No.: MWKELRTX.001C

Mr. Chad Bartee, PE
City Engineer, City of Keller
1100 Bear Creek Parkway
Keller, Texas 76248

Subject: Proposal for “Wet” Tank Inspection and Preliminary Engineering Services for Water Storage Tanks

Dear Mr. Bartee:

As requested, Kleinfelder Inc. (Kleinfelder) is pleased to submit this proposal for the “wet” tank inspection and engineering services of one (1) ground storage tanks (GSTs) and three (3) elevated storage tanks (ESTs) owned and operated by the City of Keller, Texas. The following sections provide our understanding of the project and our proposed scope of services, related budget and schedule to assist the City of Keller.

PROJECT UNDERSTANDING

Facilities throughout the United States are currently facing the challenge of extensive rehabilitation and replacement of aging and deteriorated water infrastructure. The City of Keller (City) is no different in this regard. Of particular concern to the City, in terms of water storage infrastructure, is their water storage tanks. The tanks are constructed of steel and concrete.

The City is seeking an assessment of their tanks as a tool to prioritize tank repair, maintenance, improvements, and/or possible replacement – dependent on the tank’s remaining useful life. Further, it is to be used as a cursory planning tool during discussions related to annual capital improvement program budget.

PURPOSE AND SCOPE OF BASIC SERVICES

Each of the tanks will first be evaluated in terms of its physical condition and operating performance in a “wet” condition. Kleinfelder will develop planning estimates of the costs to repair tank deficiencies observed and will develop a prioritization of repairs. The scope of work to accomplish this purpose is described in detail below.

Task 1 – Project Planning & Management

Upon issuance of Notice to Proceed, Kleinfelder will develop a health and safety plan, review available information provided by the City, and prepare an inspection schedule.

1.1) Develop Health and Safety Plan.

Kleinfelder will prepare a Health and Safety Plan (HASP), including a list of project personnel responsible for health and safety, hazard analysis for the anticipated activities, required personal protective equipment, Covid 19 safety measures, contingency measures and forms. Field personnel will be briefed on the plan.

1.2) Review Available Information.

Kleinfelder will submit a list of information to the City which is required to complete the tank assessments and prioritization activities. The data request is expected to include, at a minimum:

- Record drawings for each tank and the tank site improvements
- Shop drawings from the tank construction
- Any available inspection records or photos including previous dive reports
- Current site photos of known deficiencies if available
- Any special access issues at the tank sites
- Any known sedimentation issues
- Any maintenance record for the tanks

Kleinfelder will submit a list of questions to the City which will assist Kleinfelder staff to become familiar with the water storage tanks and the City's water distribution system – specifically current projects, future projects, operations, maintenance, water quality, corrosion, safety, security and regulatory compliance issues. Kleinfelder will use pre-existing condition assessment rating criteria – as established by our project team – for each tank and major components.

City staff will develop a schedule of tanks in order of priority related to consumer demand and pressure zone limitations to be assessed by Kleinfelder.

Kleinfelder will attend the kick-off via teleconference for the project, prepare meeting notes, and provide any questions and clarification the team may have. The kick-off meeting will have the entire project team including City, Kleinfelder and its subs to review the scope, upcoming inspections, health and safety measures and to discuss the coordination that will be necessary prior to start of the condition assessment. In addition, these meetings will review project progress, discuss upcoming tasks, and compare schedule and budget against original submittal. Kleinfelder will maintain project schedule updates and will provide reports to the City at the progress meeting. When feasible, these meeting will be conducted in conjunction with other task meetings.

Task 2 – Condition Assessment of Tanks

Prior to conducting the condition assessment for each tank, divers and equipment will be disinfected prior to entering the tank. Kleinfelder will furnish all the necessary materials, equipment and labor required to accomplish the disinfection. Disinfection will be performed in accordance with the requirements of AWWA C652 "Disinfection of Water Storage Facilities" Section 5 and the regulations of the State of Texas.

Kleinfelder will perform condition assessments to the water storage tanks listed below, in accordance with the procedures stated in the following subtasks.

Water Storage Facilities:

- Pearson GST # 2 – 3.0 MG (Concrete)
- Whitley EST – 1.5 MG
- Knox EST – 1.5 MG
- Keller Smithfield EST – 1.0 MG

2.1) Tank Condition Assessment Procedure

- Kleinfelder will perform an appropriate safety briefing for the project team prior to each site visit and start of tank assessment.
- Kleinfelder will photograph each tank to capture the site layout, building elevations, tank appurtenances and potential issues which have been observed.
- Kleinfelder will perform visual assessment for each tank inspected where accessible, in accordance with the elements in Table 1 for each asset group. For visual inspections of tanks, Kleinfelder will use appropriate personal protective equipment (PPE) and fall protection and ensure that entry into tank is in accordance with the HASP.
- Kleinfelder will follow the most current Centers for Disease Control (CDC) recommendation for Covid 19 mitigation and implementation for a safe assessment. Diving operations will be performed in accordance with:
 - a. OSHA, 29 CFR, 1910 Subpart T – Commercial Diving Operations
 - b. ADCl, Consensus Standards for Commercial Diving Operations and Underwater Operations

When diving is performed, a minimum 3-man dive team according to OSHA regulation will perform the inspection. Divers will perform ultrasonic thickness testing at various levels of the shell in a circular pattern as well as provide photographic and videographic documentation of the inspection with narration.

- Kleinfelder will ensure that all divers and other equipment are disinfected prior to entering the tank.
- Kleinfelder will perform the following tests and measurements where accessible: ultrasonic thickness (UT), dry film thickness (coatings), coating adhesion, and heavy metals. The measurements will be compared with the original tank shop drawings if available.
- For structures, a visual observation may be made of each structure. The foundation (as observed on the ground) will be reviewed; the inside of each bowl will be reviewed; the roof structure will be reviewed; and other accessible structural components will be reviewed. Typically for reviewing components such as exterior columns and other inaccessible features, photographs will be utilized to review and catalogue those areas. Man lifts or scaffolding will not be used. Field observations will be compared to record drawings and assessed.
- Kleinfelder's inspection teams will complete condition assessment forms for each tank inspected, recording descriptive information and condition assessment for tank assets.
- In the event of missing name plate data, Kleinfelder will review record information collected during Task 1 as a post-condition assessment activity.
- Obtain City SCADA data on the tank to determine how it operates in terms of filling, draining and tank turnover.
- General evaluation of site security
- General recommendation on the possible placement of security cameras
- Inspection of any water ponding around the water tank and the existing grade; no survey will be completed.
- Interview with the field staff to discuss the day to day operation and ongoing issues.

Kleinfelder will perform the following observations in Table 1 for the water storage tanks to include at a minimum – coating system, structural, safety, security, operational and sanitary conditions as well as general details.

Table 1 – Observations of Tank System

Tank System	Method/Observation
Coating Systems	
Tank Exterior Coating System	<p>The condition of the tank exterior coating systems, where applicable, including piping and valves in vaults will be evaluated by the following methods:</p> <ul style="list-style-type: none"> • Observation of the coating, where access permits • Coating adhesion test in accordance with ASTM D 3359, Standard Test Method for Measuring Adhesion by Tape Test, Method A • Thickness measurements on tanks • Heavy metal tests on coatings to be coordinated with Owner or as required
Tank Interior Coating System	<p>The condition of the tank interior coating systems will be evaluated by the Video captured by the professional divers and/or Remotely Operated Vehicle (ROV) inspection if it is unsafe to access/enter the tank</p> <ul style="list-style-type: none"> • Observation of the coating, where access permits • Thickness measurements on tanks, if needed • Heavy metal test on coatings to be coordinated with Owner or as required • Depth and location of corrosion pitting or general corrosion
Structural	
Tank Exterior Structural and Appurtenances	<p>Perform an exterior observation to assess the condition of the following:</p> <ul style="list-style-type: none"> • Tank foundation • Structural steel, roof plates, and other roof accessories such as vents, roof hatches, painter hatches and railing connection to roof. • Exterior concrete cracks, spalling and efflorescence • Access ladders, platforms, walkways, and railing • Exterior pipe opening/connection to the tank, pipe supports and overflow structure
Tank Interior Structural and Appurtenances	<p>The condition of the tank interior structural systems will be evaluated by the Video captured by the professional divers and/or Remotely Operated Vehicle (ROV) inspection if it is unsafe to access/enter the tank:</p> <ul style="list-style-type: none"> • Underside of roof plates, roof framing, girders, columns and upper portions of the shell above the high water level where access permits • Interior concrete cracks, chairs, spalling and efflorescence Visible portions of the tank and appurtenances at floor level for floor plates and appurtenances • Ladder, platforms, walkways, and Crow's Nest as applicable • Level sensor/transmitter and sample taps
Safety & Security	
Safety and Security Features	<p>Perform an observation of safety and security features at each tank site to assess the condition of the following:</p> <ul style="list-style-type: none"> • Fall protections systems • Ladders, platforms, walkway and railings constructed to OSHA requirements • Painters rings and brackets • Locking ladder guards if applicable • Alarm and intrusion alarm • Site safety
Operational	

Tank System	Method/Observation
Pipe and Valve Vaults	Perform an observation of pipe and valve vaults at each tank site to assess the condition of the following: <ul style="list-style-type: none"> • Vault structure including access hatch, manhole covers, ladders, safety railing and platforms • Pipe and valve coating including leak and corrosion • Inlet/Outlet pipe, drainpipe, overflow pipe, yard piping, pump station piping and all valves where accessible
Tank Site Evaluation	Performed an observation of the tank site to assess the condition of the following: <ul style="list-style-type: none"> • Paved areas including access drive and parking • Overflow splash pads or catchment structures • Site grading and drainage
Sanitary	
Pathways for Contamination Evaluation	Perform an observation of the tank system to assess potential pathways for contamination: <ul style="list-style-type: none"> • Roof and walls • Roof hatches • Roof drainage • Venting • Screening • Overflows
Electrical	
Electrical, Instrumentation and Control Systems	Perform an observation of electrical, instrumentation and control systems at each tank site to assess the condition of the following: <ul style="list-style-type: none"> • Pressure, level and valve controls • Power panels, switches and grounding • Supervisory Control and Data Acquisition (SCADA) and Remote Terminal Units • Interior, exterior lighting and obstruction lights

City's responsibilities include:

- Fill all tanks to highest operational level as per the agreed schedule and be ready to isolate the tank from the distribution system during the assessment of the tank if needed.
- Provide access to each tank for Kleinfelder staff. Kleinfelder's tank inspection team will require support from one City maintenance staff, approximately one day per tank to address access or operational issues.
- Opening electrical panels, guards, or hatches for Kleinfelder to visually evaluate electrical components.
- Operating tank electrical system (i.e. turning the power off/on to the pumps). This will include drawing down the level of water, if needed.
- Disinfection Residual Date in the system, if needed.
- Providing the record drawings as well as any existing information on the tank.
- Notify the local resident for the tank assessment.

2.2) Condition and Performance Rankings

After completion of on-site assessment of each tank asset, Kleinfelder will assign a score ranging from 1 to 5 for each asset using the Condition and Performance (C&P) Ranking criteria in Table 2.

Table 2 – Condition and Performance Rankings

Ranking Type	Scale
Physical Condition Ranking	1 – No Visible Degradation 2 - Slightly Visible Degradation 3 - Visible Degradation 4 - Integrity of Component Moderately Compromised 5 - Integrity of Component Severely Compromised NR: Not Rated. Asset could not be accessed or found
Performance Ranking	1 - Functioning as Intended 2 - In-Service, but Higher than Expected O&M 3 - In-Service, but Function is Impaired 4 - In-Service, but Function is Highly Impaired 5 - Not Functioning as Intended NR: Not Rated. Asset could not be accessed or found
Code Compliance Ranking	1 – No Code Issue 2 – Code Issue - Repairable 3 – Code Issue – Irreparable NR: No Rating applicable

Kleinfelder will use the C&P rankings for the water storage tanks to develop a program of rehabilitation and/or O&M activities to mitigate these risks.

Task 3 – Preliminary Engineering Assessment Report (PEAR)

Kleinfelder will analyze condition assessment findings and develop a list of repairs and operation and maintenance actions in order of priority. Kleinfelder will develop preliminary planning-level opinions of probable cost for design and construction of recommended tank repair/refurbishment projects. Planning-level opinions of probable cost will be based upon recently awarded Contracts in the area.

Kleinfelder will present the prioritized list of rehabilitation projects in a tabular format for each tank, including opinions of probable construction, rehabilitation, and repair costs

3.1) Preparation of Tank Evaluation Report for the Water Storage Tanks

Kleinfelder will provide a final evaluation report for the each of the water storage tanks to be evaluated, approximately eight (8) calendar weeks after the completion of all the field assessment activities on all the tanks. The report will include the following information:

- Project background
- Existing site and facility information
- Summary of observations of coating, structural, safety & security, operational and sanitary assets
- Summary of deficiencies and further recommended actions
- Opinion of probable construction cost (OPCC)

Kleinfelder will meet with the City staff to discuss assessment work findings and receive comments on draft reports. Following receipt of comments, Kleinfelder will finalize the reports.

City responsibilities include review and comment on draft evaluation reports.

Task 4 – Asset and Project Prioritization

Kleinfelder will develop a preliminary risk model to assess the criticality of each tank. The premise for the development of a criticality model is to use risk as means for prioritizing investments. Risk is a function of an asset’s “likelihood of failure” and its “consequence of failure”:

$$\text{Risk} = \text{Likelihood of Failure (LoF)} \times \text{Consequence of Failure (CoF)}$$

The condition, performance, and code compliance ratings for each asset (as determined during the tank condition assessments in Task 2) will be used to assess the asset’s likelihood of failure score shown in the following subtask.

4.1) Risk Workshop

To address the asset’s criticality, Kleinfelder will develop a preliminary set of “consequences of failure”, which will be shared and discussed with the City during a 2-hour risk workshop. Preliminary consequence factors may include:

- Compromised Water Quality
- Decreased Water Flow / Pressure
- Increased Cost to Repair or Operate
- Regulatory Non-Compliance
- Decline in Public Relations
- Decreased Worker Safety
- Decreased Security

The following items will be addressed during this workshop:

- Overview of Asset Management Concepts
- Risk and its components
- Consequence of failure factors to include
- Scoring system
- Weights

4.2) Risk Analysis

Kleinfelder will implement the consequence factors with their corresponding weights, and final risk score calculations in the asset database.

Each asset will be assessed under each consequence factor with their corresponding score, following the directives agreed upon during the risk workshop. Kleinfelder will finalize the risk analysis by calculating the risk scores for each asset of each tank. This score will be the basis for prioritization of rehabilitation projects and operations and maintenance actions at the most critical, highest risk tanks in Task 4.

Risk scores at the asset level will be used to:

- 1) Prioritize recommended actions at the tank level
- 2) Bundle recommended actions into projects
- 3) Roll-up risk scores from the asset level to the project level and tank level
- 4) Compare and prioritize recommendations and projects between tanks

Kleinfelder will analyze water storage facility criticality assessment findings and develop a list of repairs and operation and maintenance actions in order of priority. Kleinfelder will develop preliminary planning-level opinions of probable cost for design and construction of recommended tank repair/refurbishment projects.

Kleinfelder will present the prioritized list of rehabilitation projects (Tank CIP) in a tabular format, including opinions of probable construction, rehabilitation and repair costs. Kleinfelder will present a separate prioritized list of proposed repair work, which can be undertaken by City O&M staff. Kleinfelder will present recommendations as a 5-year capital improvement plan (CIP) which identifies a prioritized plan for tank rehabilitation.

4.3) Evaluation Report and Capital Plan

Kleinfelder will provide the evaluation report and capital plan (CIP Report), approximately four to six weeks after the completion of all the preliminary evaluation assessment report per Task 3. The report will include the following information:

- Project background
- Existing site and facility information
- Summary of observations of coating, structural, safety & security, and operational assets
- Summary of deficiencies and further recommended actions
- Opinion of probable construction cost
- Prioritized list of rehabilitation projects in a tabular format for each tank, including opinions of probable construction, rehabilitation, estimated costs and implementation year
- Prioritized list of proposed repair work, which can be undertaken by the City's O&M staff.

Kleinfelder will meet with the City staff to discuss assessment work findings and receive comments on draft reports. Following receipt of comments, Kleinfelder will finalize the reports. City responsibilities include review and comment on draft evaluation reports.

PRINTED AND ELECTRONIC DELIVERABLES

One complete copy of the evaluation report, signed and sealed by the Engineer registered in the State of Texas, will be provided. Electronic copies of these reports will also be provided in pdf format. The city staff will receive copies of the draft reports for each tank. Kleinfelder will respond to any comments received from the City staff on the draft reports and produce final versions of the reports.

The City responsibilities include:

- Meet with Kleinfelder staff and provide input on format for cost tables
- Review and comment on draft and final evaluation reports

INFORMATION/SERVICES PROVIDED BY THE OWNER

Owner shall:

- Designate in writing a person to act as their representative, with respect to the services rendered in this proposal.
- Indicate a point-of-contact at the Project Site location that can relay safety procedures, grant site access/escort, and indicate location of existing subsurface utilities/structures.
- Obtain rights-of-entry, permits, easements, landowner permission, and all other authorizations and permits required to perform the services described in this proposal.
- If available, provide reports, plans, and records of tank planning, design, construction and maintenance.
- Fill all tanks to highest operational level as per the agreed schedule and be ready to isolate the tank from the distribution system during the assessment of the tank if needed.
- Site access to all the tanks on four (4) consecutive days (Monday through Friday) for assessment or within a span of one (1) week.

ADDITIONAL SERVICES

The following services are not included in the *Scope of Basic Services* and will be considered as *Additional Services*, if and when they are required or requested:

- Tank Cleaning (sediment removal)
- The services of specialty sub-consultants or other special outside services other than those described in the above Scope.
- Assessment of third party communication systems installed on the tanks.
- Meetings, other than those described in the above Scope.
- Additional report copies or submittals; or report revisions after final submission.
- Additional or increased insurance coverage (if available) other than described in the Engineering Services Contract.
- Coordination with regulatory agencies or customer cities other than described in the above Scope.
- Design & construction services for the recommended rehabilitation of any tank.
- Any other services not specifically included in the above Scope.
- Tank disinfection.
- An analysis of Electric Power Bills.
- An evaluation of any wireless communication or radio path study.
- An evaluation of the graphical user interface SCADA top end.
- An evaluation of the tank mixing and CFD Modeling.

SCHEDULE

Kleinfelder anticipates the following schedule which is dependent on weather and timely review by the City:

- Kick-off/Tank Assessment preparation – 3 to 4 weeks from the notice to proceed
- Mobilization/Field work – 1 to 2 weeks
- Tank Assessment Report Preparation – 8 to 10 weeks after completion of field work
- CIP Report – 4 to 6 weeks after the assessment reports have been approved by the City.

COMPENSATION

Kleinfelder proposes to perform Task 1 through 4 for a total lump sum fee in the amount of **\$119,374**. The lump sum fees include applicable labor, overhead, and expenses. The fee breakdown by Task is listed below.

Task 1 – Project Planning & Management	\$10,775
Task 2 – Condition Assessment of Tanks	\$35,897
Task 3 – Preliminary Engineering Assessment Report	\$45,411
Task 4 – Determine Cost & Prioritization	\$27,291
Total Lump Sum Fee	\$119,374.00

The lump sum fee will not be exceeded without prior approval. Invoices will be issued on a monthly basis. The net cash amount of this invoice is payable on presentation of the invoice. The City and Kleinfelder may subsequently agree in writing to provide for additional services to be rendered under this agreement for additional, negotiated compensation.

LIMITATIONS

The fee specified in the proposal is based upon the assumption that the site is accessible and is reflective of the field conditions proposed. If weather, access, or site conditions restrict our field operations, we may need to revise our fee estimate.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of existing facilities conditions can be a difficult challenge. Although risk can never be eliminated, more-detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. Acceptance of this proposal will indicate that the City of Keller has reviewed the document and determined that it does not need or want a greater level of service than provided. It is the City of Keller's obligation to contact Kleinfelder if it desires an explanation of any of the services offered and the risks associated therewith. Any exceptions should be noted and may result in higher fees.

Regulations and professional standards applicable to Kleinfelder's services are continually evolving. Techniques are, by necessity, often new and relatively untried. Different professionals may reasonably adopt different approaches to similar problems. As such, our services are intended to provide the City of Keller with a source of professional advice, opinions and recommendations based on a limited number of field observations and tests, collected and performed in accordance with the generally accepted practice that exists at the time, and may depend on, and be qualified by, information gathered previously by others and provided to Kleinfelder by the City of Keller.

TERMS OF ENGAGEMENT

Please indicate your approval of the proposal by signing the attached Master Services Agreement and Work Order and returning the entire document to our office. A fully executed copy will be returned to you. Any modifications of the attached language must be accepted by both parties and may result in an increase in scope and compensation. Acceptance of the proposal indicates The City of Keller's review and understanding of the scope of services, budget and terms. The City of Keller and Kleinfelder may subsequently agree in writing to provide for additional services to be rendered under this agreement for additional, negotiated compensation. This proposal is valid for a period of 45 days from the date of this proposal.

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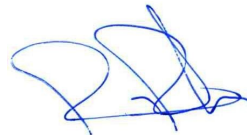
We appreciate the opportunity to provide you with this proposal and look forward to working with you on this project. If you have any questions or wish to discuss, please contact us at 972.868.5900.

Sincerely,

KLEINFELDER, INC.



CP Nawal, PE
Project Manager



David Boes, PG
VP, Area Manager