PROPOSAL TO ACQUIRE, OWN AND OPERATE THE WATER SYSTEM AT TINKER AIR FORCE BASE, OKLAHOMA CITY, OK

VOLUME I ~ TECHNICAL PROPOSAL

PRESENTED BY: THE CITY OF OKLAHOMA CITY AND

THE CITY OF OKLAHOMA CITY WATER UTILITIES TRUST

Solicitation No. SPE600-14-R-0800

Tables

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Acronyms and Terminology Used in the Proposal

This section comprises the acronyms used throughout the proposal.

AAEC	AACE International (formerly the Association for the Advancement of Cost Engineering)
ACM	Asbestos-Containing Materials
ACURRP	Annual Capital Upgrades and Renewal and Replacements Plan
ADA	Americans with Disabilities Act
ASCE	American Society of Civil Engineers
AWWA	American Water Works Association
Base	Tinker Air Force Base
Base CE	Tinker Air Force Base Civil Engineering
CAD-CAM	Computer-Aided Design and Computer-Aided Manufacturing
CCR	Consumer Confidence Report
CDBG	Community Development Block Grant
CFR	Code of Federal Regulations
CIP	Capital Improvement Plan
City	The City of Oklahoma City
CM	Corrective Maintenance
CMMS	Computerized Maintenance Management System
CO	Contracting Officer
COR	Contracting Officer's Representative
CPA	Certified Public Accountant
CPR	Cardiopulmonary Resuscitation
Day(s)	Calendar Day(s), unless otherwise noted
DCC	Department Coordination Center (also known as an Emergency Operations Center)
DLA	Defense Logistics Agency – Energy
DoD	Department of Defense
EAL	Emergency Action Level
EIT	Engineer-in-Training
EM	Engineers Manual
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
FOG	Fats, Oils, Greases
FTE	Full Time Equivalent
GIS	Geographic Information System
GO	General Obligation Bond
gpm	gallon(s) per minute
GPS/GIS	Global Positioning System/Geographic Information System
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
HVAC	Heating, Ventilating and Air Conditioning

I&C	Instrumentation and Control
IFC	International Fire Code
IMT	Incident Management Team
ISDC	Initial System Deficiency Correction
JHA/PJHB	Job Hazard Analysis/Pre-Job Hazard Briefing
LBP	Lead Based Paint
LF	Linear Feet
LOTO	Lock Out/Tag Out
MEC	Munitions and Explosives of Concern
MEL	Master Equipment List
MIS	Management Information Systems
MSDSs	Material Safety Data Sheets
NACE	National Association of Corrosion Engineers
NFPA	National Fire Protection Association
O&M	Operations and Maintenance
O&M/QM	Operations and Maintenance/Quality Management (Plan)
O/W	Oil/Water
OCWUT	Oklahoma City Water Utilities Trust
ODEQ	Oklahoma Department of Environmental Quality
OKCEM	Oklahoma City Emergency Manager
OSHA	Occupational Safety and Health Administration
OWRB	Oklahoma Water Resources Board
PEOSH	Public Employee Occupational Safety & Health
PM	Preventive Maintenance
PPE	Personal Protective Equipment
psi	pounds per square inch
psig	pounds per square inch gauge
QA/QC	Quality Assurance/Quality Control
R&R	Renewal and Replacement
RCN	Replacement Cost New
RCNLD	Replacement Cost New Less Depreciation
RFP	Request for Proposal
RPM	Revolutions per Minute
SAP/EAM	SAP Enterprise Asset Management
SCADA	Supervisory Control and Data Acquisition
SCBA	Self-contained Breathing Apparatus
SDSFIE	Spatial Data Standards for Facilities, Infrastructure, and Environment
SOP	Standard Operating Procedure
SOW	Scope of Work
SPCC	Spill Prevention Containment and Control
SWMU	Solid Waste Management Units
TAFB	Tinker Air Force Base
TRUST	Oklahoma City Water Utilities Trust
UAW	Unaccounted-for-Water
UFC	Unified Facilities Criteria
USACE	United States Army Corp of Engineers
UXO	Unexploded Ordnance
VA	Vulnerability Assessments
VFD	Variable Frequency Drive
WCU	Water Capital Upgrade
WDC	Water Deficiency Correction

WEF	Water Environment Federation
WO	Work Order
WRR	Water Renewals and Replacements
WST	Water System Characterization Studies
WWCU	Wastewater Capital Upgrade
WWDC	Wastewater Deficiency Correction
WWRR	Wastewater Renewals and Replacements
WWST	Wastewater System Characterization Studies

Volume I. Technical Proposal

Introduction

General

The Oklahoma City Water Utilities Trust (TRUST) is pleased to submit the following proposal for the acquisition, operation, maintenance, and upgrading of utility service at Tinker Air Force Base (TAFB). The TRUST presents this proposal in response to Solicitation No. SPE600-14-R-0800 including Amendments 0001 through 0002 (Solicitation) that was initially issued by the Defense Logistics Agency – Energy (DLA Energy) on October 31, 2013. The TRUST reserves the right to modify its proposal, upon request of the Government.

Description of the TRUST

The City of Oklahoma City (The City) would become the owner of the TAFB water system and lease it to the TRUST to operate and maintain if the Government accepts this Proposal. The TRUST would have full responsibility for funding the required services provided by The City pursuant to a Contract with the Government. The TRUST finances the operation, maintenance and expansion of the City water system through City employees and independent contractors.

The TRUST is a Public Trust established under the conditions of the Oklahoma Public Trusts Act, its sole beneficiary being The City. The City Manager, the Mayor, one Council person, and two citizens of The City who are appointed by the City Council serve as trustees of the TRUST. The purpose of the TRUST is to provide financing, through loans and the issuance of revenue bonds or other debt instruments, for the construction and acquisition of water and wastewater facilities and other general improvements to and for the extension of the water and wastewater system serving the City.

The City currently provides water and water system O&M to approximately 300,000 customers and also sells treated water to various communities in and around Oklahoma City. The City has extensive resources available to ensure the delivery of water 24/7, including a staffing pool of over 600 people, with a vast array of in-house equipment and on-call, local subcontractors.

Licenses and Certifications to Provide Water Service

The City water system is regulated by the City Council of The City of Oklahoma City. The City is permitted to operate its existing water system by the Oklahoma Department of Environmental Quality (ODEQ). The City requires staff to be licensed ODEQ operators based on their level of interaction with the system and as required by ODEQ.

Summary of Proposal

The TRUST is pleased to submit its proposal in response to the Government's Solicitation for the privatization of the TAFB water system. The TRUST has thoroughly reviewed the Solicitation documents and related amendments, conducted two site visits, and reviewed available technical data. The TRUST believes that its proposal is responsive to the Solicitation, and that it is ready, willing, and able to fulfil the Government's requirements for the ongoing operation, maintenance, and upgrade of the TAFB water system as provided herein.

As an existing provider of water service in Oklahoma City and surrounding areas, The City has proven in-house engineering expertise, water system operations experience and financial strength to manage and upgrade the TAFB water system to meet TAFB's short-term and long-range water system needs.

It is the TRUST's intention to develop and maintain strong and open lines of communication between its operating staff and TAFB personnel from the Transition Period through the life of the Contract. The TRUST

desires to ensure that the water system at TAFB is reliable and assists in keeping TAFB at the forefront of the Air Force Material Command and all other TAFB attachments.

The TRUST will comply with State of Oklahoma and Federal regulations and safe drinking water standards concerning water quality, including the Safe Drinking Water Act and the Clean Water Act.

The TRUST will establish an on-site presence at TAFB, with additional resources available from the rest of the TRUST's resources as needed. The TRUST's proposal includes staff that will be on-site during normal duty hours and other Full Time Equivalent (FTE) positions that will serve TAFB as needed. The TRUST will also use pre-qualified sub-contractors for construction and maintenance activities that require additional personnel and equipment. The TRUST will supply necessary equipment, tools, vehicles and supplies and provide appropriate training to City personnel for the effective performance of their duties. The TRUST proposes an operations and maintenance plan that includes preventive measures and emergency response actions necessary to ensure reliable service. In addition, the TRUST is offering an approach for repairing, replacing and upgrading the water system that identifies the lowest life cycle cost improvements while conforming to water utility industry practices. The TRUST will contract with engineers, architects and consultants as may be necessary to evaluate the TAFB system and provide services to the TRUST.

The TRUST is dedicated to providing the level of service requested in the Solicitation. The TRUST hopes that its proposal is favorably considered and looks forward to becoming the water utility serving TAFB.

Advantages of the TRUST

The TRUST offers significant advantages to provision of water services at TAFB, including:

Extensive Resources: The City has over 600 utility-focused staff members to utilize; these staff members are trained and experienced in all aspects of water operations and management, engineering and customer service. The City has the necessary equipment and tools necessary to reliably operate and maintain a water system the size of TAFB's. The City also provides superior economies of scale because it already provides service for a large community.

Capital Planning: The TRUST has a long history of planning, funding and construction water system improvements. The TRUST also has a contracted Program Manager that has provided support to successful Department of Defense Utilities Privatization contractors; this Program Manager will assist the TRUST in managing its Annual Capital Upgraded and Renewal and Replacement Plan (Annual Plan) work to ensure that the Annual Plan meets the needs of both TAFB and the TRUST.

Financial Stability: The TRUST has an excellent credit rating and has significant resources available to ensure that the TAFB water system is operated effectively, capital upgrades can be made, and emergencies can be responded to if they arise.

Matrix of Proposal Element Responses

C SECTION	REQUIREMENT		SUBFACTOR LOCATION
C.3.2	Performance Standards		Subfactor 2
C.3.3	Sub-Metering		Subfactor 2
C.3.3.1	Future Sub-Meters		Subfactor 2
C.3.4	Energy and/or Water Efficiencies and Conservation and Renewable Energy Generation		Subfactor 2
C.3.5	Commodity Supply		Subfactor 4(Alt)
C.3.6	Wastewater Effluent Disposal		Subfactor 2

C SECTION	REQUIREMENT		SUBFACTOR LOCATION
C.5.1.1	Transfer of Title		Subfactor 4
C.5.1.2	Tools, Vehicles, and Equipment		Subfactor 4
C.5.1.2.1	Radiation Causing Devices		Subfactor 2
C.5.1.3	Placement of Utility Systems		Subfactor 2
C.5.1.4	Contractor Facilities		Subfactor 3
C.5.1.5	Record Drawings		Subfactor 2
C.5.1.6	Disposition of Removed or Salvaged Materials		Subfactor 2
C.5.1.7	Liens and Mortgages		Subfactor 2
C.5.2	Personnel		Subfactor 2
C.5.2.1	Speaking, Reading and Understanding English		Subfactor 2
C.5.2.2	Personnel Appearance and Identification		Subfactor 2
C.5.2.3	Employee Certification		Subfactor 2
C.5.2.4	Installation's Rules Apply to Contractor		Subfactor 2
C.5.2.5	Controlled Access Areas		Subfactor 2
C.5.2.6	Conflict of Interest		Subfactor 2
C.5.2.7	Employment of Military Personnel		Subfactor 2
C.5.2.8	Employment of Quality Assurance Representative Personnel		Subfactor 2
C.5.3	Contractor Vehicles		Subfactor 2
C.5.4	Contractor Communications Devices		Subfactor 2
C.5.5	Contractor Advertising		Subfactor 2
C.7	Response to Service Interruptions/Contingencies and Catastrophes		Subfactor 1
C.8	Repair Response Procedures		Subfactor 1
C.8.1	Notification Procedures		Subfactor 1
C.8.2	Emergency Service Requests		Subfactor 1
C.8.3	Urgent Service Requests		Subfactor 1
C.8.4	Routine Service Requests		Subfactor 1
C.9	Coordination of Work		Subfactor 1
C.9.1	Routine Work		Subfactor 1
C.9.2	Routine, Urgent and Emergency Service Requests		Subfactor 1
C.9.2.1	Scheduled Utility Services Interruptions		Subfactor 1
C.9.3	Construction and Restoration of Site		Subfactor 1
C.9.3.1	Excavation Permits		Subfactor 1
C.9.3.2	Underground Utility Location		Subfactor 1
C.9.4	Duty Hours		Subfactor 1
C.9.5	Coordination Meetings		Subfactor 1
C.9.6	Exercises and Crisis Situations Requiring Utility Support		Subfactor 1

C SECTION	REQUIREMENT		SUBFACTOR LOCATION
C.9.7	Government Operation		Subfactor 1
C.9.7.1	Contingencies		Subfactor 1
C.9.7.2	Contractor Non-Performance		Subfactor 1
C.9.8	Plant Control		Subfactor 1
C.10	Environmental Compliance		Subfactor 2
C.10.1	Permit Compliance		Subfactor 2
C.10.2	Spill Contingencies		Subfactor 2
C.10.3	Work in Environmentally Sensitive Areas		Subfactor 2
C.10.4	Environmental Impact Assessments		Subfactor 2
C.10.5	Hazardous Material and Waste Minimization		Subfactor 2
C.10.6	Environmental Response		Subfactor 2
C.10.7	Asbestos and Lead-based Paint		Subfactor 2
C.10.8	Environmental Restoration Program		Subfactor 2
C.11	SDCs/Upgrades/Connections and Renewals and Replacements		Subfactor 3
C.11.1	Responsibility		Subfactor 3
C.11.2	Initial System Deficiency Corrections/Connection Charges		Subfactor 3
C.11.4	Annual SDC/Upgrades/Connections and R&R Plan		Subfactor 3
C.11.4.1	SDCs/Upgrades		Subfactor 3
C.11.4.2	Renewals and Replacements		Subfactor 3
C.11.4.3	Requirements and Standards		Subfactor 3
C.11.4.4	Anticipated Connections and Disconnections		Subfactor 4
C.11.5	Connections and Disconnections		Subfactor 3
C.11.5.1	Temporary Connections		Subfactor 3
C.11.5.2	Permanent Connections		Subfactor 3
C.11.5.3	Third Party Construction		Subfactor 3
C.12	Operations and Maintenance/Quality Management		Subfactor 2
C.13	Operational Transition Plan		Subfactor 4
C.14	Historical , Architectural, & Landscaping Requirements		Subfactor 2
C.15	Specialty Training		Subfactor 2

Subfactor 1. Service Interruption/Contingency and Catastrophic Loss Plan

This section comprises the TRUST's Service Interruption/Contingency and Catastrophic Loss Plan for the delivery of dependable utilities 365 days per year at Tinker Air Force Base (TAFB or Base). This section was developed based upon Sections C.7 and C.8, and in accordance with Section L.4.1 of the RFP and includes:

- 1.1 Service Interruption/Contingency
  - 1.1.1 Causes of Interruption
  - 1.1.2 Procedures for Handling Service Calls
  - 1.1.3 Response and Remedy Downgrade Times
  - 1.1.4 Estimated Time for Establishment of Temporary Service
  - 1.1.5 Estimated Time for Reestablishment of Permanent Service
  - 1.1.6 Government Notification Procedures
  - 1.1.7 Emergency Restoration Plan
  - 1.1.8 Installation-Specific Requirements
  - 1.1.9 Available Resources and Staffing
- 1.2 Catastrophic Loss
  - 1.2.1 Protection from Catastrophic Loss
  - 1.2.2 Service Provision after Catastrophic Loss
  - 1.2.3 Reliance on FEMA or Government Relief
  - 1.2.4 Catastrophic Insurance

The TRUST will obtain Government consent prior to making any material changes to this plan. However, Government consent will be presumed whenever changes to this plan are required or necessary to comply with Federal or State standards.

1.1 Service Interruption/Contingency

The City of Oklahoma City (The City) has been operating its water system for over 100 years. As such, The City has extensive experience with service interruptions and developing contingency plans to mitigate and respond to interruptions. The following plan incorporates The City and the TRUST's existing response and mitigation procedures.

1.1.1 Causes of Interruption

Service interruption can be caused by a variety of natural and human-caused circumstances. The TRUST has experience with and related procedures that address a variety of such circumstances, some of which are discussed in detail herein. **Table 1-1**, below, is from the TRUST's existing Emergency Response Plan (discussed in Section 1.1.7, below). This plan represents the areas of interruption that the TRUST has analyzed and has written response procedures.

Table 1-1. Emergency Response Plan Threats and Hazards

Emergency Event	Most Likely Cause		
	Accidental	Malevolent Act	Natural
Flood			√
Dam Failure		√	√
Tornado, High Wind, and Ice Storm			√
Earthquake			√
Fire/Explosion	√	√	√
Power Outage	√	√	√
Systems Failure	√	√	√
Spill, Hazardous Material	√	√	√
Bombing/Bomb Threat		√	
Intrusion/Security Breach/Vandalism		√	
Terrorist/Hostile Act/Civil Disturbance		√	
Kidnap/Hostage Situation		√	
Active Shooter		√	
Cyber Attack		√	
Medical Illness/Injury	√	√	√
Water Contamination	√	√	√
Water Supply Interruption	√	√	√

Based upon many years of operating utilities, the TRUST has found that standardization of inventory items often reduces cost and improves service reliability to its customers in the case of a service interruption. Benefits of a standardized inventory are inventory cost reduction and improved efficiency of repairing items. The TRUST is able to carry the most often used repair parts on its vehicles, which may allow for immediate repairs without having to return to the inventory supply area to secure the correct part and then return to the field location to begin repairs. Standardized inventory items help reduce unnecessary travel requirements.

Another advantage of standardizing equipment and materials is the improved availability of repair parts. It will be the TRUST's intent to standardize as many TAFB water system components as possible. Standardization of inventory also favors cost containment for operations. Specific components identified for standardization include, but are not limited to, pipes, control panels, water meters, fire hydrants and valves. A reserve of repair parts are maintained by the TRUST for use in emergencies and additional materials are available in Oklahoma City through the TRUST's existing vendors.

Interruptions as a Result of a Water Main Break

Water main breaks can result in a loss of pressure which could disrupt service to TAFB. The TRUST has extensive experience in repairing water mains .

TRUST staff will investigate any identified sudden loss of pressure within the system or insufficient water availability at customer locations. Valves will be operated to isolate the main break; this will allow crews access for repair work while mitigating service disruptions at other portions of the water system. Once repairs are completed, the affected water distribution lines will be disinfected, tested and returned to service.

The Contracting Officer's Representative (COR) will be notified of the situation and provided a report to include the known extent of the problem and the estimated time to restore service (if the timeframe is

known). Once the incident has been corrected and all cleanup has been completed, a final report will be produced documenting the service interruption, corrective actions taken, cause of the break and, if appropriate, measures taken to prevent future similar events. These reports will be kept by the TRUST per the times set forth in Subfactor 2.2.4. Reports will be forwarded to applicable regulatory agencies if and as required, and a copy of all required reports will be provided to the Base Civil Engineer (CE).

Interruptions as a Result of Human Error

In cases where an interruption is caused by human error via a City employee, the interruption is normally identified quickly and an operator often has the ability to mitigate the event before it causes additional problems throughout the water system.

The most likely accidental damage would be caused to mechanical equipment, valves, control panels or structural equipment of the water system. An operator could accidentally damage equipment or components and cause water service disruption within the service lines or to segments of the water system. An operator could also inadvertently operate valves that would lead to several types of problems with portions of the water system.

Human error could also produce improper maintenance or service of valves, improper connection of bypass pumps to the power supply, or improper operation of fire hydrant operating nuts causing damage to the valve. These events can be mitigated by redundancy in the water system and having well-trained and State-certified water system operators. It is The City's policy to employ State-licensed operators to operate the water system, as required by the Oklahoma Department of Environmental Quality (ODEQ).

The likelihood of damage by an operator to water system piping components is considered remote; these facilities and structures are difficult to damage through inadvertent acts.

City employees will be trained in the operation and maintenance (O&M) of the water system as well as in health and safety issues in and around the system. The water system will be maintained in a responsible manner so that equipment failures will be kept to a minimum.

Non-City employees, such as Fire Department representatives or private contractors, will not be permitted to touch the TAFB water system without completing a Memorandum of Understanding or similar agreement that provides written guidelines on what may be operated and how.

Interruptions as a Result of Accidental Destruction (including Vehicular Collision)

For interruptions due to accidental destruction, the TRUST will immediately notify the customer and the COR of the situation. If the destruction is isolated to one component, then the component will be repaired or replaced. If the destruction covers a wider segment of the water system, the on-site staff will prioritize efforts to complete repair or replacement. If additional assistance is needed, staff will promptly contact the Site Manager for additional resources. Those resources may be from existing TRUST resources or subcontracted businesses in the local area. The urgency of repairs and the degree of expertise required to restore service will determine the resources that are applied.

Interruptions as a Result of Equipment Failure

There are relatively few pieces of equipment in the water system that are prone to failure. The most likely event is a failure of an isolation valve or a pump or electric/control panels. Proactive maintenance, including proper lubrication, exercising valves and isolation equipment, servicing pressure reducing devices, routinely checking motors and pumps, and proper maintenance of electronic controls, contributes to enhanced reliability. The TRUST understands preventive maintenance practices and believes proper application of such practices will reduce these types of service interruptions.

Interruptions as a Result of Sabotage or Vandalism

In the event of damage to the water system due to sabotage or vandalism, the TRUST will first take steps to assure the security of its personnel and the affected area, including summoning TAFB Security Forces. Once the area or situation is determined to be secure, the TRUST's responders will proceed to assess and isolate the damage, advise the COR, and proceed to initiate repairs, calling upon resources as required. City staff will take Department of Defense (DoD) Level I Antiterrorism Awareness Training course as provided by DoD Joint Knowledge Online.

Interruptions as a Result of Public Enemy

In the event of interruptions caused by acts of a public enemy, such as an attack by a foreign government, terrorist acts, etc., the TRUST will respond to TAFB's needs with available resources. In so doing, the TRUST will be guided by the directions of the COR and will attempt to restore service to TAFB facilities in accordance with a restoration plan (discussed in 1.1.3). City staff will take Department of Defense (DoD) Level I Antiterrorism Awareness Training course as provided by DoD Joint Knowledge Online.

Interruptions as a Result of Employee Strikes

The TRUST pursues orderly negotiations with its existing union and has not had a strike since the unionization of its service employees. The annual union contract includes a clause, Article 6, Prohibition of Strikes, that prohibits the existing union for organizing and engaging in any strike. However, if an employee strike were to occur and cause a service interruption, the TRUST would resume operations using TRUST Management Personnel and contracted local personnel until the situation is stabilized. On-site operations and engineering staff will be management employees and are not subject to strike.

Interruptions as a Result of Cease & Desist Orders

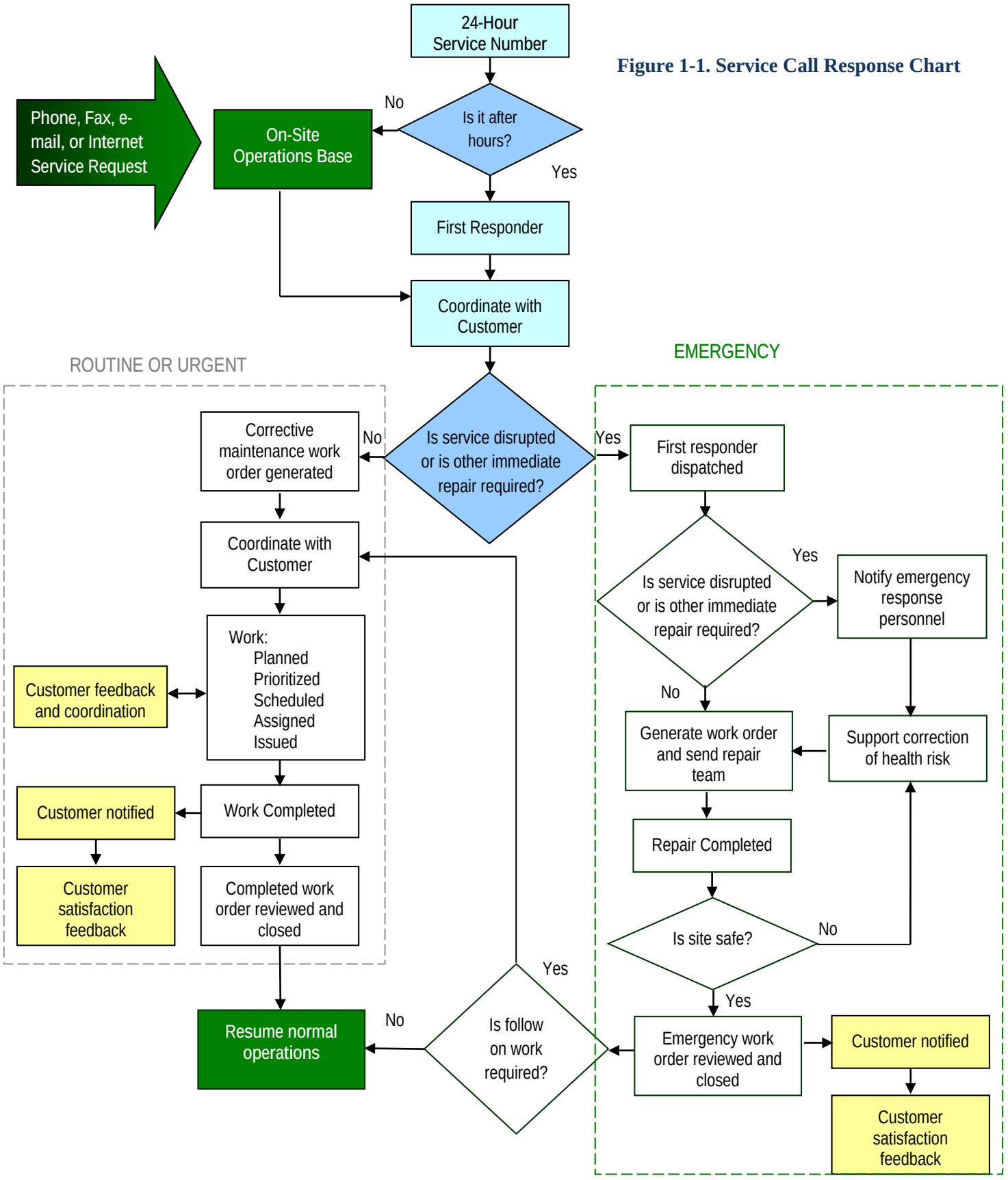
In the unlikely event that some sort of court order or regulatory agency order, such as a Notice of Violation, leads to a service interruption, the TRUST would provide TAFB with all reasonable cooperation by way of data and knowledgeable personnel to assist in responding to and resolving any such order, and once the order was removed, the TRUST would reestablish service as soon as possible to TAFB.

1.1.2 Procedures for Handling Service Calls

An overview of the TRUST's procedures for handling the various types of service calls is provided in **Figure 1-1**. The TRUST will maintain records of all service request calls, including the time of the call, the time of the service response, the cause of the service request, the action taken, and the time and date of service request completion. These records will be maintained according to The City of Oklahoma City Records Retention Policy, which states that such records will be kept for 5 years (see Subfactor 2, Table 2-8 for more detail).

If the service request affects building operations, the TRUST will coordinate the work with the person responsible for the building or facility. All emergency service requests, or emergencies identified by the TRUST, will be reported to the COR. Upon award, the TRUST will develop the procedure for notification after hours.

Figure 1-1. Service Call Response Chart



1.1.3 Response and Remedy Downgrade Times

The TRUST has an established response procedure that it will continue to follow at TAFB. Response times begin to be tracked when the service call is received, triaged and dispatched to the first responding TRUST representative. These procedures are discussed below:

- Code 1 issues are classified as an emergency, where property is being destroyed or there is an immediate danger to health, safety and welfare (Emergency). A TRUST representative with knowledge of the TAFB system and Subfactor 1 will be on-site within one hour during normal duty hours or at the TAFB gate within one hour during non-duty hours and will mitigate the emergency as soon as possible, and a repair crew will be on-site within two hours during normal duty hours or at the TAFB gate within two hours during non-duty hours. The issue will be remedied or downgraded to Code 2 or 3 (Urgent or Routine) within 24 hours.
- Code 2 issues are also classified as emergencies, but the potential damage and the danger to health, safety and welfare is minimal (Urgent). A TRUST representative with knowledge of the TAFB system and Subfactor 1 will be on-site within two hours and will mitigate the issue as soon as possible. A repair crew will be on-site promptly, but no greater than 24 hours. Code 2 issues will be remedied within five calendar days.
- Code 3 issues are classified as low priority (Routine). A TRUST representative with knowledge of the system and Subfactor 1 will be on-site within 24 hours to assess and mitigate the issue, and repairs are completed within 30 days. Code 3 issues will be remedied during normal duty hours; and will be coordinated with the COR at least two weeks (unless waived by mutual agreement) prior to beginning work if an outage is required.

During normal duty hours, the initial TRUST response will be made by on-site staff; during non-duty hours, the initial response will be made by on-call staff. The TRUST may rely on off-site machinery to repair service interruptions. In Code 1 (Emergency) situations, the TRUST will alert Security Forces before the equipment arrives at the specified contractor gate so that expedited entry may be made. In all other events, the TRUST will use the specified contractor gate under normal entry conditions. The TRUST has a large supply of personnel and equipment at the ready for responding to service interruptions; the daytime photographs below show reserve fleet not already deployed in the field during a typical service day.

The timely restoration of services is the objective of any service interruption response. Time to accomplish restoration of services is contingent on the cause and magnitude of the service interruption.

The TRUST's repair crews will work continuously on any emergency situation until the emergency condition is mitigated. This is standard practice. In most cases, when the required repair is not complicated, the maintenance crew will make the permanent repair immediately. However, in situations where there is no particular urgency to complete the repairs, the required work may be rescheduled to enable a more effective use of resources.

For other, more widespread service interruptions, the time to restore service will be impacted by numerous factors such as weather, access to the service interruption site, and cause of the interruption. The TRUST will work with the appropriate personnel at TAFB to establish a prioritized list of critical facilities requiring rapid response and a procedure for their restoration.

1.1.4 Estimated Time for Establishment of Temporary Service

The TRUST's practice is to work continuously on any repair situation until a permanent repair is completed. Temporary solutions to water service interruptions are not desirable and will only be implemented in cases where permanent repairs cannot be completed due to unforeseen circumstances such as unavailable parts or equipment. The TRUST will not, at any time, provide temporary service that does not meet regulatory requirements. TRUST on-site operations staff will monitor system performance on a very frequent basis during implementation of any temporary measure. The TRUST's typical repair time is 4-8 hours; therefore, temporary service should not be a common occurrence.

1. *Temporary measures where service interruptions affect only isolated portions of the system or single buildings:* There may be instances where line breaks or other failures will require areas to be served through temporary means. Measures that can be taken may include, but are not necessarily limited to, the following:
    a. Operate valves so that service can be fed from other directions in the water system.
    b. Utilize portable generators at a booster pump station or tank site where equipment failure or loss of power is the cause of the service interruption.
    c. If it appears the repairs will take more than a day or two, measures will be taken to transport potable water from an approved source for sanitary and drinking purposes by using sanitized, approved tank vehicles or by bringing in bottled water.
2. *Temporary measures where service interruptions affect the entire system:* In the case of complete service interruptions due to severe weather, or other catastrophic events, the TRUST will implement its procedures that call for development of a complete, coordinated plan of action to alleviate problems and to restore service in a timely manner. Measures that may be used, as appropriate, would include:
    a. Use of portable generators and portable pumps as needed.
    b. Transporting in potable water from an approved source for sanitary and drinking purposes by using sanitized, approved tank vehicles, or bringing in bottled water.
    c. Implementation of demand reduction and water use restrictions.

1.1.5 Estimated Time for Reestablishment of Permanent Service

The TRUST's practice is to work continuously on any repair situation until a permanent repair is completed. Typically, the TRUST's practices allow permanent service to be re-established within 24 hours. Large events that require subcontractor assistance may take up to 72 hours. Certain situations, such as the loss of a water tank, may require much lengthier times to fully resolve. In cases such as this, the TRUST will

execute its work as efficiently as possible and will maintain communication with TAFB regarding the estimated timeline for re-establishment of permanent service.

1.1.6 Government Notification Procedures

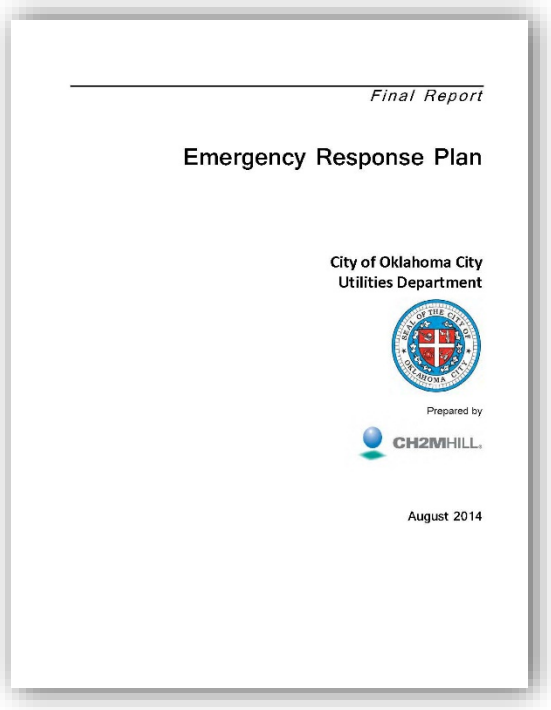
TAFB personnel will be able to contact TRUST on-site personnel or the TRUST dispatch office 24 hours a day, seven days a week, via a local landline number. In the event that on-site personnel are unavailable, calls will be automatically forwarded to the TRUST dispatch office. The TRUST will provide individual mobile phone numbers of key staff to appropriate TAFB personnel.

Dispatch office personnel are trained to diagnose reported water or wastewater issues and dispatch crews accordingly. If the TRUST dispatch office is contacted during normal duty hours, it will contact the on-site office for immediate support. The photographs below are from the existing TRUST dispatch office.

1.1.7 Emergency Restoration Plan

Widespread emergency service interruptions may be the result of a number of different causes, for example major storms or natural disasters, sabotage, acts of the public enemy, or environmental concerns. The key to the successful service restoration in these events is prior planning. The TRUST has an established Emergency Response Plan (ERP) that it will use as baseline guidance for service restoration after a widespread outage. The following discussion is a summarization of the TRUST's ERP. The ERP is routinely updated to match changes in service and operational requirements and practices.

In the event of multiple, concurrent service interruptions, the on-site office will most likely receive calls from TAFB officials or from various facilities at TAFB. Based on the agreed-upon service restoration priority list, the on-site staff will prioritize interruptions and respond with supplemental crews as needed. TRUST personnel will investigate and control all situations until appropriate personnel and equipment have arrived at the site. Local sub-contractor(s) that have been pre-qualified and pre-contracted for emergency response may be summoned to supplement TRUST personnel in the event of numerous or problematic interruptions.

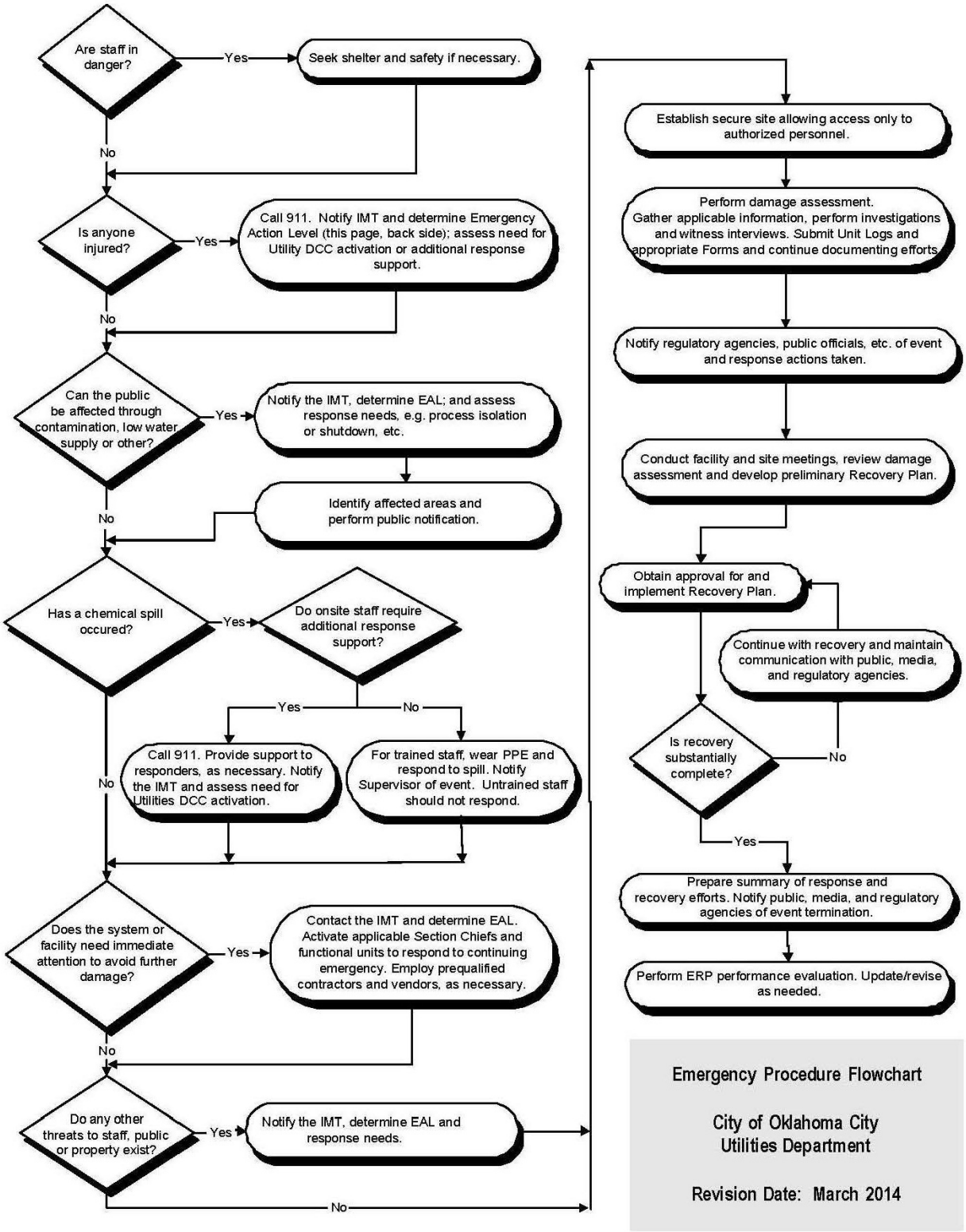


It is usually possible to anticipate major storms, such as severe storms capable of producing tornadoes, snow and/or ice storms, windstorms, etc., far enough in advance to allow implementation of contingency and precautionary measures. Initial actions will consist of securing all vulnerable equipment and facilities to the extent possible, reducing the chances of damage due to the impending weather. When the TRUST can reasonably anticipate the probability of damage to the TAFB water system from an approaching weather event, it will stage personnel and other resources that it is capable of gathering at TAFB in advance of the weather event. In this way, the TRUST will be in a position to quickly deploy utility crews and equipment. In addition, standby power generators may be used to ensure continuous operation of pumps, and water tanks will be kept full. This level of readiness supports availability of emergency water supply for firefighting and other contingencies.

Once interruptions begin to occur, the TRUST will assess and prioritize each incident in accordance with its service restoration plan and will assign crews or sub-contractors as necessary. Service will be restored according to the prioritization plan. In the event of unanticipated storms or disasters, the TRUST will respond to interruptions first by assessing damage and then by summoning additional resources (personnel, equipment, materials, etc.) as necessary to make the repairs. Interruptions will be isolated as much as possible and their causes identified. The personnel, equipment, materials, and available crews will then be allocated. The TRUST will keep the COR informed of the status of the emergency repair effort and the anticipated time to restore service.

If acts of destruction occur outside TAFB causing an interruption of service, the TRUST will respond to this type of interruption in a similar manner as it will for any internal interruption. **Figure 1-2** notes the TRUST's guidelines for the emergency response process.

Figure 1-2. Emergency Procedure Flowchart



1.1.8 Installation-Specific Requirements

The TRUST will participate in quarterly (at a minimum) emergency exercise and crisis situation workshops as requested in Attachment JA3 of the Solicitation.

The TRUST proposes that TAFB join in the TRUST's annual exercise program. Annual exercises are conducted per a schedule included in Section 7.3, Exercises, of the ERP. The schedule includes a drill exercise annually, a functional exercise every three years, and a full scale exercise every five years.

1.1.9 Available Resources and Staffing

The TRUST's proposed staffing is discussed in detail in Subfactor 2. The TRUST proposes to have various on-site staff during normal duty hours; these staff members will provide the first line of response during a service interruption. As guided by the cause of the interruption, on-site TRUST staff will initiate a response from appropriate TRUST and subcontracted resources. The TRUST is able to pull resources from a total City staff of over 600 utility-focused people and has access to a large variety of existing equipment with which to rely upon during a service interruption. Normal duty hours for on-site staff will be 0730 to 1600.

1.2 Catastrophic Loss

Oklahoma City and the surrounding areas are not immune to catastrophic events (a catastrophic loss or event includes but is not limited to widespread vandalism, acts of God, or a Public Enemy); therefore, the TRUST has well-established procedures in place to mitigate and respond to such events.

1.2.1 Protection from Catastrophic Loss

The TRUST has participated in the creation of the Oklahoma City Hazard Mitigation Plan and subsequent five-year updates, the most recent being produced in 2011. Natural and human-caused hazards pose a threat to every citizen within the City of Oklahoma City (The City) on some level and frequency. Often, the reality of potential hazards to a community are not fully understood or realized until a major disaster occurs. It is then that a community experiences the extreme hardship of significant human and economic losses. The process of hazard mitigation planning is the first step toward protecting a community from losses associated with hazards and resulting disasters. The Federal Emergency Management Agency (FEMA), with regard to hazard mitigation planning, provides the following definitions:

- *Hazard Mitigation* - any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.
- *Planning* - the act or process of making or carrying out plans, specifically, the establishment of goals, policies, and procedures for a social or economic unit.

The process of hazard mitigation planning is a critical part of any community's planning program. As most hazards occur infrequently, mitigation programs for hazards are usually initiated and funded as a reaction to recover from the most recent disaster event. This form of hazard mitigation response is typically more costly, both in property and human losses, than is pre-disaster planning and mitigation.

The City of Oklahoma City Hazard Mitigation Plan includes a detailed characterization of natural and man-made hazards in the City; a risk assessment that describes potential losses to physical assets, people and operations; a set of goals, objectives, and actions that will guide the City's mitigation program in coming years; and a detailed strategy for implementation and monitoring results.

The 2011 update to the Hazard Mitigation Plan focused on the hazards with the highest potential for causing damage to buildings and other physical assets, injuries and fatalities to the residents of the City and disruption of government and business operations in the City. These hazards include floods, severe winter

storms, extreme heat, severe summer storms, and tornadoes producing high winds. Additional hazards, identified in the State of Oklahoma Mitigation Plan, are also discussed.

Natural hazards profiled in the plan include:

1. Tornadoes
2. High Winds
3. Severe Thunder Storms
    a. Lightning
    b. Hail
4. Severe Winter Storms
5. Flood
6. Extreme Heat
7. Drought
8. Wildfires
9. Earthquakes

Human-caused hazards identified in the plan include:

1. Hazardous Materials
    a. Hazardous Material Transport
    b. Hazardous Material Storage
    c. Clandestine Laboratories
    d. Radiological Emergencies
2. Terrorism
    a. Sabotage/Weapons of Mass Destruction
    b. Cyber Terrorism
    c. Agricultural Terrorism
3. Pandemic Flu
4. Urban Fires
5. Dam Failures

The plan includes a detailed characterization of natural and person-caused hazards in the City; a risk assessment that describes potential losses to physical assets, people, and operations; and a set of goals, objectives, and actions that will guide the City's mitigation program in coming years, including a detailed strategy for implementation and monitoring results.

The TRUST also has experience in completing Water Vulnerability Assessments (VA) for its existing system. The most recent VA update was completed in 2013. The risks identified in each VA update have mitigation measures which are implemented as time and budget allow.

The TRUST maintains strong capital cash reserves and operations and maintenance reserves; funds a significant portion of its Capital Improvement Plan (CIP) with cash; and has strong credit in a commercial paper program, and all evidenced by its AAA long-term debt rating by Standard & Poor. In addition, the TRUST and the City are committed to applying for reimbursement FEMA funds, State Emergency Funds, and other grants, if and as available after an emergency and/or catastrophic event.

The TRUST is currently in the process of enhancing its infrastructure at the Draper Water Treatment Plant through a Community Development Block Grant (CDBG) Disaster Recovery grant and FEMA Pre-Disaster Mitigation Grant that will provide for additional electrical service reliability and allows for the installation of emergency standby generators to enable the plant to remain on line during catastrophic events.

1.2.2 Service Provision after Catastrophic Loss

The TRUST will utilize the Oklahoma City Utilities Department Emergency Response Plan (ERP) for bringing the system back to service in the event of a catastrophic loss. Other City of Oklahoma City plans referenced in the Utilities ERP are:

- Emergency Operations Plan
- Hazard Mitigation Plan
- Evacuation Plan
- Dam Emergency Action Plan
- Debris Management Plan
- OKC Public Protection Evacuation Annex

Section 4.4 of the ERP, the Response Phase, states:

> Depending on the type and severity of an emergency incident, protective actions may be required. Specific protective actions are identified in the scenario specific checklists for each emergency. Determination of protective actions depends on the Emergency Action Level (EAL) (Section 2) of the event, assessment of the event, and/or external first responders' suggestions upon arrival.
>
> Response is the actual provision of emergency services during a crisis. These activities are intended to reduce injuries, ensure employee safety, minimize facility damage, and facilitate recovery. Response activities include warning; isolating and controlling the incident; assessing damage; establishing temporary service; and other similar operations. Response may include, but is not limited to the following:
>
> 1. Initiation of response activities
> 2. Activation of the Utilities Department Coordination Center (DCC), also known as an Emergency Operations Center (EOC), as necessary
> 3. Coordination of all operations through the Utilities DCC
> 4. Release of public information
> 5. Control of false stories or rumors regarding event and effects
> 6. Scheduling of news conferences
> 7. Coordination with Oklahoma City Emergency Manager (OKCEM)
> 8. Establishment of staging areas for applicable facilities
>
> Section 4.4 (Response Phase) contains the following sub-sections:
>
> 4.4.1 General Response
> 4.4.2 Emergency Checklists
> 4.4.3 Initial Operations
> 4.4.4 Sustained Operations
>
> Section 4.5 (Recovery Phase) contains the following sub-sections:
>
> 4.5.1 Recovery Planning and Organization

4.5.2 Recovery Operations
4.5.3 Damage Assessment and Recovery Planning

The ERP is considered a confidential document due to the nature of its contents; it can and will be supplied to appropriate TAFB personnel if the TRUST is awarded the contract.

1.2.3 Reliance on FEMA or Government Relief

As mentioned above, the TRUST and the City are committed to applying for reimbursement FEMA funds, state emergency funds, and other grants, if and as available after an emergency and/or catastrophic event. The TRUST's cash reserves and strong credit will enable initial responses as necessary in order to provide service after a catastrophic event.

1.2.4 Catastrophic Insurance

The TRUST and the City are self-insured for linear assets, parts, vehicles and minor assets; all structures are insured separately through commercially-available insurance. The TRUST's current insurance provider is Zurich. The standard deductible is $500,000 and the combined limits of liability are $750,000,000. This coverage would be extended to all TAFB water well pump houses, booster pump buildings and the five water storage tanks. Additionally, coverage will also be extended to any new coverable assets installed during the contract period. An estimated cost for this coverage is included in the Price Proposal.

Subfactor 2. Operations and Maintenance/Quality Management Plan

This section comprises the TRUST's Operations and Maintenance (O&M) and Quality Management Plan for accomplishing the delivery of dependable utilities service 365 days per year at Tinker Air Force Base (TAFB). This section was developed based upon Section C, Paragraph C.3, C.12, and in accordance with Section L.4.2 of the RFP and includes:

- 2.1 O&M Plan
  - 2.1.1 Staffing Plan
  - 2.1.2 Process Optimization Overview
  - 2.1.3 Management Information System
  - 2.1.4 Water System Operations
  - 2.1.5 Maintenance Program
  - 2.1.6 How Performance Standards and/or Specifications Will be Met
- 2.2 Quality Management Plan
  - 2.2.1 Operating and Maintaining the Utility Systems That Will Satisfy Contract Requirements
  - 2.2.2 Obtaining Customer Feedback and Process Improvements
  - 2.2.3 System Inspections and Quality Assessment Procedures and Techniques
  - 2.2.4 Recordkeeping Processes
  - 2.2.5 Environmental Compliance Plan
  - 2.2.6 How Performance Standards and/or Specifications Will be Met
  - 2.2.7 Other Standards and Specifications
  - 2.2.8 Process for Implementation of Government Requested Facility Expansions
  - 2.2.9 Compliance with Applicable Environmental, Safety, and OSHA Laws and Regulations
  - 2.2.10 Opportunities for Efficiencies in Utility Operations
  - 2.2.11 Managing and Accessing Technical Information
  - 2.2.12 Specialty Skills Training
  - 2.2.13 Quality Awards and Certifications
  - 2.2.14 Staffing Plan/Qualifications

2.1 O&M Plan

The TRUST will provide proven, cost effective solutions for water treatment (defined as chlorination only) at the well heads and distribution that will provide reliable, cost effective, and compliant services over the term of the contract. The following engineering and management practices will be implemented in order to achieve these objectives.

The purpose of the O&M Plan is to consolidate data on the background, principles, and purpose of each process in the water system. The O&M Plan will provide the TRUST with a clear understanding of the goals and process objectives, and will serve as a single reference for locating all the information and approaches necessary to successfully operate the water system. The O&M Plan is a valuable resource for the operating staff to refresh their understanding of the operating processes. For the project management team, the O&M Plan will provide a reference document to record and list the process goals, objectives, and basic operating parameters.

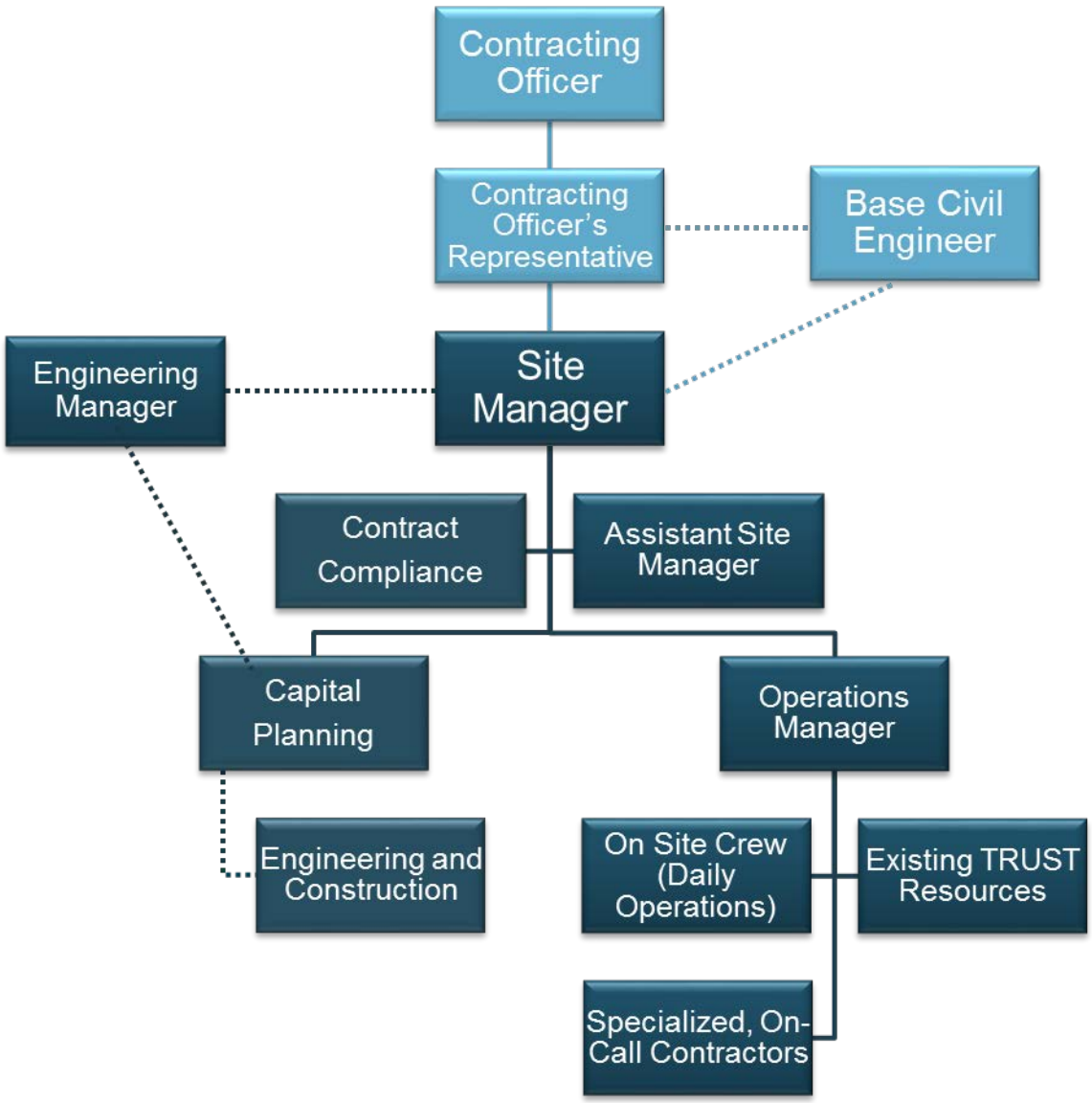
2.1.1 Staffing Plan

The TRUST is proposing to operate the water system at TAFB. The TRUST will have City employees based at TAFB so that they are available to respond to diagnose and mitigate the O&M needs of the water system and to plan and implement the Annual Capital Upgrades and Renewal and Replacements Plan (ACURRP). The TRUST's proposal assumes that both the water and wastewater systems will be awarded to the TRUST; however, the TRUST has provided Full Time Equivalent (FTE) staffing needs for both the dual system and a single system award.

Staffing Model and Structure

The TRUST proposes to use a staffing model whereby a manager is placed in charge of dedicated staff who have numerous resources available to meet the daily and emergency needs of the utility system being operated. The proposed staffing model is shown in **Figure 2-1** below.

Figure 2-1. The TRUST's Staffing Model



The staffing model has been created to both meet the needs of TAFB and also to correlate alongside the TRUST's current organizational structure. The model is led by a Site Manager who will be responsible for ensuring that the delivery of satisfactory water service to TAFB. The Site Manager will accomplish through managing, training and developing personnel and performance metrics that are developed in order to meet Government requirements.

On-site operations will be staffed by a small team of cross-trained individuals that will be trained and certified to maintain daily operations, respond to, downgrade and/or remediate emergency situations, and to direct off-site support. Implementation of the ACURRP will be led by an internal civil engineer with dedicated support from a subcontracted Program Consultant.

The Site Manager will have authority to utilize the resources assigned to satisfy the needs of TAFB and to secure additional resources (in house or subcontracts) as needed to react to any situations including natural or other disasters, which might affect safe, reliable service. The Site Manager will office at TAFB along with the on-site operations staff. The Site Manager will also have an Assistant Site Manager in the on-site office to assist with daily activities and provide redundancy in case of absence. The Trust will incorporate its management programs, which provide a defined approach to both engineering and O&M.

Roles and Responsibilities

Roles and responsibilities of the proposed staffing are highlighted in **Table 2-1**. Detailed position descriptions, including training, certifications, experience and education are included in **Appendix A**. TRUST resources not located at TAFB are Full Time Equivalent (FTE) positions.

Table 2-1. Roles and Responsibilities of the TRUST's TAFB Water System Staffing

Water FTE	Combined W & WW FTE	Title	Description and Responsibility	Location
1	1	Site Manager	Responsible for day to day operations and maintenance of all utility systems at TAFB Responsible for ensuring satisfactory service is provided to TAFB Responsible for coordinating all Capital Improvement and R&R Projects Responsible for contract compliance Responsible for budgetary control of the Contract Responsible for direct oversight of operation and maintenance functions at TAFB Attend meetings with TAFB as required Reports to Utilities Department Director	TAFB
1	1	Assistant Site Manager	Responsible for day to day operations and maintenance of all utility systems at TAFB Responsible for coordinating all Capital Improvement and R&R Projects Responsible for contract compliance Responsible for direct oversight of operation and maintenance functions at TAFB Attend meetings with TAFB as required Reports to Site Manager	TAFB

Water FTE	Combined W & WW FTE	Title	Description and Responsibility	Location
1	1	Financial Specialist	Responsible for serving as the initial corporate image in answering the telephone and greeting visitors. Responsibilities include: annual budget preparation, payroll, production reporting, procedure updates, filing, document storage and retrieval and maintenance of office and telecommunications equipment. Training O&M personnel in administrative procedures. Responsible for oversight of data entry of accounting information. Processes confidential reports and other data. Prepare necessary purchase orders and invoices for approval. Reports to Site Manager	TAFB
1	1	Operations Manager	Perform administrative and project related administrative duties. Supervises semi-skilled and technical trades classifications routinely involved in field maintenance or construction activity. Prioritize and distribute assignments to a specialized work unit or multiple work crews. Review work orders and schedule work activities. Demonstrate proper safety and work procedures to subordinates, to ensure the efficient and safe completion of their assignments. Compile information for reports, budget, goals and objectives. Perform routine inspections of work in progress and upon completion. Record and report work progress. Maintain records of maintenance and equipment usage. Respond to routine complaints or inquiries by correcting problems or investigating the nature of complaints and responding verbally or in writing. Work independently and be responsible for quality of workmanship and procedures followed to carry out a given work assignment. ODEQ Class B Reports to Site Manager	TAFB

Water FTE	Combined W & WW FTE	Title	Description and Responsibility	Location
7	7	Water Supply Operator	Perform routine inspections of work in progress and upon completion. Record and report work progress. Maintain records of maintenance and equipment usage. Respond to routine complaints or inquiries by correcting problems or investigating the nature of complaints and responding verbally or in writing. Work independently and be responsible for quality of workmanship and procedures followed to carry out a given work assignment. Supervises semi-skilled and technical trades classifications routinely involved in field maintenance or construction activity. Responsible for water balance oversight Responsible for well and pump maintenance Responsible for booster pump station maintenance Responsible for chemical system maintenance ODEQ Class B Perform duties 24/7 until SCADA is fully implemented Reports to Operations Manager	TAFB
1	1	Mechanic Supervisor	Responsible for well and pump maintenance Responsible for booster pump station maintenance Responsible for chemical system maintenance ODEQ Class D Reports to Operations Manager	TAFB
1	1	SAP/EAM Analyst	Supports integration with SAP/EAM Adds inventory items, O&M manuals, material requirements to SAP/EAM Assigns and tracks work orders Reports to Site Manager	TAFB
1	1	Data Technician	Responsible for data entry of purchasing requests, payroll, invoices Maintains electronic data for on-site functions Reports to Office Manager	TAFB
1	2	Mechanic I	Responsible for well and pump maintenance	OKC WTP

Water FTE	Combined W & WW FTE	Title	Description and Responsibility	Location
			Responsible for booster pump station maintenance Responsible for chemical system maintenance Responds to on-site service calls Part of the TRUST's Water Quality Division	
2	4	Mechanic II	Responsible for well and pump maintenance Responsible for booster pump station maintenance Responsible for chemical system maintenance Responds to on-site service calls Part of the TRUST's Water Quality Division	OKC WTP
0.3	1	Electrician	Responsible for maintenance and repair of electrical items on pumps, motors, etc. Part of…	OKC WTP
0.5	1	Health and Safety Analyst	Responsible for coordinating safety and training programs Tracks TRUST employee licenses and certifications Responsible for related reporting requirements Attends TAFB exercises as required Part of the TRUST's Administration Division	OKC HQ
0.5	1	SCADA Analyst	Supports implementation of SCADA Responsible for maintaining SCADA Supports integration with SAP/EAM Responsible for maintaining SAP/EAM integration Part of the TRUST's Administration Division	OKC HQ
0.1	1	Construction Equipment Operator	Drive and/or operate various pieces of light and heavy construction equipment. Responsible for following all safety and maintenance procedures relating to the proper operation and condition of the assigned equipment. Complete specific tasks using: front-end loaders, graders, dozers, slurry seal machines, tractors, backhoes, tandem trucks, tractor-trailer rigs, vectors, and slope mowers. May be required to use specialized attachments such as snow brooms, snow-blowers, power brooms, and crawlers.	Line Maint. Shop

Water FTE	Combined W & WW FTE	Title	Description and Responsibility	Location
			Be able to work independently to deliver materials and equipment or in conjunction with other workers and equipment while on maintenance or construction projects. In absence of the supervisor, assume the lead-worker responsibility for other employees, equipment, and effective completion of projects. May be required to perform crew or maintenance type tasks. Responds to on-site service calls, main breaks and related tasks Part of the TRUST's Line Maintenance Division	
0.3	0.6	Pipeline Mechanic	Supervise crew of Utility workers responsible for maintenance and repair of water distribution system. Full responsibility for vehicles and equipment on the job, work performed by the crew, and the safety of the crew (including the enforcement of safety regulations and procedures regarding manpower and equipment usage). Equipment operation may include: dump trucks, flatbed trucks, tandem trucks, backhoes, and front-end loaders. Interact with public, outside utility agencies, and other personnel as necessary. Complete work orders, safety reports, and other work related to activity reports on a daily basis. Responds to on-site service calls, main breaks and related tasks Responsible for cathodic protection system maintenance Part of the TRUST's Line Maintenance Division	Line Maint. Shop
0.8	3.1	Laborer	Performs routine line maintenance and servicing operations for the sewer collection system (e.g., sewer lines, pumps, manholes) Work as part of a crew, averaging two to three persons and work in close proximity to one another in a cooperative effort. Complete assigned tasks. Responds to on-site service calls, main breaks and related tasks Part of the TRUST's Line Maintenance Division	Line Maint. Shop

Water FTE	Combined W & WW FTE	Title	Description and Responsibility	Location
0	Various	Various	Wastewater System positions not part of the Water System	Various
19.5	**28.7**	**TOTAL**		

Personnel that will be located on-site have been identified above and are discussed in the remainder of this section. These individuals will be assigned specific duties at locations to be determined each day depending on work schedules, maintenance requirements, and other workload considerations. Off-site staff will operate out of central Oklahoma City at The City's office sites.

On-Site Operations Staff

The combined water and wastewater systems at TAFB will require 4 full-time Oklahoma Department of Environmental Quality (ODEQ) licensed employees *once SCADA is fully implemented*. The 4 FTEs will be split as follows:

- 1 FTE – Operations Managers, ODEQ Class B Operator (0.5 water-focused, 0.5 wastewater-focused)
- 2 FTEs – Water Supply Operator, ODEQ Class B Operator (water only)
- 1 FTEs – Mechanic Supervisor, ODEQ Class D Operator (0.5 water-focused, 0.5 wastewater-focused)

The TRUST's proposed cross-trained staffing will be able to provide coverage throughout the normal business hours of the utility as well as provide callout coverage for emergencies. The employees assigned to TAFB will provide backup and redundancy as utility operators for this program.

> *Before the TRUST's SCADA is implemented, 24/7 on site personnel and additional will be required. The FTEs required during this time are shown in the table above.*

Tasks that require more personnel than are available on-site will be completed by off-site TRUST employees and/or subcontractors. The cross-trained operations staff will coordinate this work and provide location and communication assistance during these times.

Other On-Site Staff

The following additional staff, whose responsibilities are described in **Table 2-1**, above, will also be on-site during normal duty hours:

- Financial Specialist
- Data Technician
- SAP/EAM Analyst

Staffing Redundancies and Overtime

The TRUST is able to utilize resources from a City staff of over 600 utility-focused people; the TRUST will have the ability to meet critical personnel demands at all times. When any of the dedicated on-staff are sick or on leave, the TRUST will provide back-up personnel by applying one or more of the following solutions:

- Basic cross-training of on-site operations personnel allows for on-site staff to be applied where most needed between the water and wastewater systems. All operators will possess the appropriate ODEQ certification for the system they are maintaining.
- Staff will occasionally work overtime hours on a limited basis to cover temporary vacancies.
- The TRUST can bring certified operators and other properly trained personnel to TAFB on short notice from its existing service area surrounding TAFB.
- Subcontracted resources, yet to be determined, may be added to meet additional Government and TAFB contract and service needs or requirements.

Additional Resources

The TRUST's staffing plan takes the most cost-effective approach possible to provide utilities services to TAFB. This approach allows a multi-tasked optimal staff size to provide the broadest range of services, thus reducing redundancy among staff and allowing for the self-performance of most tasks. Additional resources to ensure prompt response during this contract and to emergency situations include:

- Subcontractors
- Equipment and Inventory
- The TRUST's Resources
- Program Consultant: The Program Consultant will provide support for consultant and contractor selection for the design and construction of ACURRP projects. Due to the level of expected construction related to the ACURRP, the Program Consultant is anticipated to have multiple dedicated employees and subcontractors assigned to this effort. The Program Consultant will also provide support for setting up and maintaining the TRUST's TAFB-specific Geographic Information System (GIS), contract compliance and system characterization and periodic studies.

Subcontractors

The TRUST possesses internal expertise in all areas of this contract. The TRUST's management, engineering, purchasing, as well as construction equipment and manpower, are available to respond to outages if required. The TRUST intends to use local subcontractors for selected work and service to the extent it is practical and provides the best price to TAFB or as may be necessary to meet agreed timelines or implementation plans. Most of the anticipated subcontractors have worked with the TRUST previously and many currently have annual, on-call contracts in place. *Annual, on-call contracts are subject to change annually and can be added as needed; thus, names mentioned below are subject to change.*

Controls and electronic installation and repair support may be subcontracted to small businesses. For example, Haynes Equipment already performs SCADA and telemetry work for the TRUST. They have an office in Oklahoma City.

For **testing and independent verification testing**, the water samples might be submitted to Red River Environmental Lab & Consulting. The lab provides independent lab testing of water and wastewater samples for the TRUST. With agreements already in place, the lab would provide testing under established pricing schedules that takes advantage of quantity discounts realized by the total volume of tests performed in a year.

Construction services are provided through the TRUST's established procurement procedures. Any project exceeding the in-house capability of the TRUST would be accomplished through this process.

Specialty contract services will be available through in-place agreement with companies such as Duke's Root Control for chemical root control services, Evans Enterprises for pump and motor rewinding and

repair, or Metro Technology Centers for professional training services. A subcontractor will be used for all utility locate services.

Equipment and Inventory

Any additional equipment and inventory required for the TAFB effort will be procured during the transition period. The TRUST anticipates using pickup truck or service vans for transportation and necessary hand tools and personal protective equipment (PPE). Heavy-duty equipment will be made available as-needed from the TRUST's existing resources (see below).

To ensure that critical materials are available, the TRUST will implement a demand-based materials inventory program. In this manner, reorders will be timely and reflect typical delivery schedules. The TRUST's automated work management system, which is based on the specific inventory of equipment at TAFB and the recurrent management requirements for that equipment, will enable tracking of materials required for preventive maintenance (PM) and parts with abnormal failure rates. Where critical parts or assemblies are determined to have long lead procurement terms, the TRUST will have a goal of maintaining adequate spares.

The TRUST's Resources

The TRUST is able to pull resources from a City staff of over 600 utility-focused people located in Oklahoma City. These employees are trained in a variety of areas, including water and wastewater distribution and collection O&M, specialized construction and fabrication. Additionally, the TRUST has a vast array of existing equipment that will be at its disposal as needed.

2.1.2 Process Optimization Overview

The TRUST's primary process control objective is to meet current standards for water quality imposed by Federal and State regulatory agencies, specifically ODEQ. The TRUST will meet this objective by using the following established process control strategies:

- ***Process Data Management*** - Data will be maintained electronically.
- ***Maintenance Management*** - As part of the system inventory, the TRUST will develop a Master Equipment List (MEL) and maintain it within the Management Information System (MIS). Problems and trends that cause failures can be tracked and responded to accordingly.
- ***Summary Reports*** - Summary reports will be developed from the data collected, this data can be used to develop measurement tools to determine the effectiveness of the process.

The TRUST will utilize its current operating plan for the water system that includes Standard Operating Procedures (SOPs) and, for construction of capital projects, the City of Oklahoma City (the City) Standard Specifications for Construction of Public Improvements.

Standard Operating Plan

The TRUST's O&M includes SOPs that are based on current operating practices for the TRUST. Upon award, and during its findings in the Transition Phase, the TRUST will identify any areas that may require refinement or expansion of our existing SOPs as needed for TAFB facilities. These SOPs can be updated annually and/or whenever the process or equipment is modified or changed by the TRUST. The TRUST will retain the SOPs electronically within the MIS to provide ready access for reference, field use, and updating.

SOPs are the used every day in the TRUST operations. The TRUST's SOPs are comprehensive and provide guidance to employees for various sections. Whether the SOP is for a process or for a piece of equipment, the SOPs are used as a basic guideline to be followed to ensure proper operation. SOPs provide operators with a quick reference to verify proper procedures. Even though SOPs are used in training, they are not intended to replace the training process used for new operators.

*The TRUST's existing **Standard Operating Procedures** are comprehensive and will be directly applicable to operating the water system at TAFB.*

Table of Contents (excerpt)

To provide operation of the water system and compliance with regulatory requirements, the TRUST will establish process optimization goals for TAFB facilities consistent with our current operations. **Table 2-2** presents examples of these goals.

Table 2-2. Process Optimization Goals

Function	Improvement Goal(s)
Compliance	Comply with ODEQ and local water quality requirements Comply with Public Employee Occupational Safety & Health Unit (PEOSH) requirements
Reliability and Redundancy	Provide redundancy of critical processes and reliability of all equipment by implementing comprehensive process-based maintenance programs, where applicable. Provide redundancy of electrical source feeds to increase reliability.
Energy	Use variable speed drive equipment where possible to reduce electrical usage.
O&M Cost	Reduce O&M cost through best management practices of labor and resources.
Staffing	Train and utilize qualified existing staff for available positions to the full benefit of the facility
Conservation	Provide educational information for water conservation.

Standard Specifications for Construction of Public Improvements

The City's Standard Specifications will govern all new construction for the water system. **Figure 2-2** highlights the contents of the standard specifications.

Figure 2-2. Standard Specifications for Construction

STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS

Summary of Amendments and Revisions
SECTION 100 - General/Provisions
SECTION 200 - Earthwork
SECTION 300 - Pavement & Surface Course
SECTION 400 - Structures Construction
SECTION 500 - Water
SECTION 600 - Sanitary Sewer
SECTION 700 - Traffic Control
SECTION 800 - Incidental Construction
SECTION 900 - Materials

2.1.3 Management Information System (MIS)

The TRUST currently uses an MIS with the core software SAP/EAM (Enterprise Asset Management), to support water utility services for its customers. **Table 2-3** is an overview of the functionality of the TRUST's MIS in place.

Table 2-3. The TRUST Management Information System Components

Software	Functions
SAP	EAM (Enterprise Asset Management)
	CIS (Customer Information & Billing Services)
	BI (Business Intelligence) - Reporting
	LIMS (Laboratory Information Management System)
CityWorks	Line maintenance, Work order tracking
Wonderware	SCADA
PeopleSoft	Benefits, Financial information / Accounting Personnel records & training
KRONOS	Timekeeping
ESRI	GIS / Mapping

SAP/EAM has the capability of (for TAFB assets entered into SAP/EAM after Contract Start Date):

- Maintaining repair records for each piece of equipment within the system
- Scheduling and monitoring preventive maintenance (PM) activities
- Issuing work orders and purchase orders
- Maintaining spare parts inventories
- Tracking repair warrantees

- Issue exception reports, equipment status reports, and an equipment repair priority report
- Equipment reports that provide specific information based on manufacturer, type, location, or operating system and subsystem. Reports focus on issues such as job completion reports, work order status, and manpower utilization.

During the transition period, the TRUST will conduct a study to determine what software is directly applicable and useable for TAFB reporting requirements. If it is determined that current software is not sufficient to meet the TAFB requirements, the TRUST will prepare a proposal for the development and implementation of an update to its existing MIS that will meet contract requirements and work within the TRUST's MIS.

2.1.4 Water System Operations

The TRUST will provide operations, maintenance, and management for all components of the water system including wells, tanks, pump stations, and all piping as identified in the RFP Section JA3. Staffing was described earlier in Section 2.1.1. The TRUST will assume ownership and responsibility for the system up to the points of demarcation as identified in the RFP Section JA3.

The TRUST will develop a strategy to operate the water system and evaluate the current status of operations. The strategies and benefits are listed in **Table 2-4**. Maintenance needs will be cataloged and prioritized at all facilities according to the following requirements:

A. Maintaining required water quality,

B. Maintaining service to TAFB, and

C. Cost of equipment.

Table 2-4. Operational and Maintenance Strategies for the Water System

Operational Condition	The TRUST	Benefits
Operator Quality Assurance /Quality Control (QA/QC)	Focused QA/QC targets; targeted to process optimization and regulatory scrutiny.	Process optimization, lower operating costs, and adherence to regulatory requirements set by ODEQ.
Preventive Maintenance (PM) Scheduling	Condition-based scheduling of PM tasks.	Lower life-cycle equipment costs; more reliable system.
Water System	Conduct annual water balance for the water system.	Annually assess water loss and identify sources.
Remote Monitoring	Evaluate system and as repairs are made, add system into the TRUST SCADA.	Optimize staff and detect problems proactively. Brings system up to City standards.

Operation of the water system will be in accordance with ODEQ. The TRUST will coordinate with the TAFB Fire Department prior to any testing, repair, or maintenance of the fire hydrants. The TRUST will staff the water system to carry out routine maintenance activities 5 days a week, during normal duty hours. Additionally, these employees will be available for emergency call out 24/7.

The TRUST's approach to water system maintenance includes:

- Respond to emergency calls 24/7 to investigate and restore outages.
- Track the locations of service calls and high-maintenance areas to prioritize repair and PM activities on the system.

2.1.5 Maintenance Program

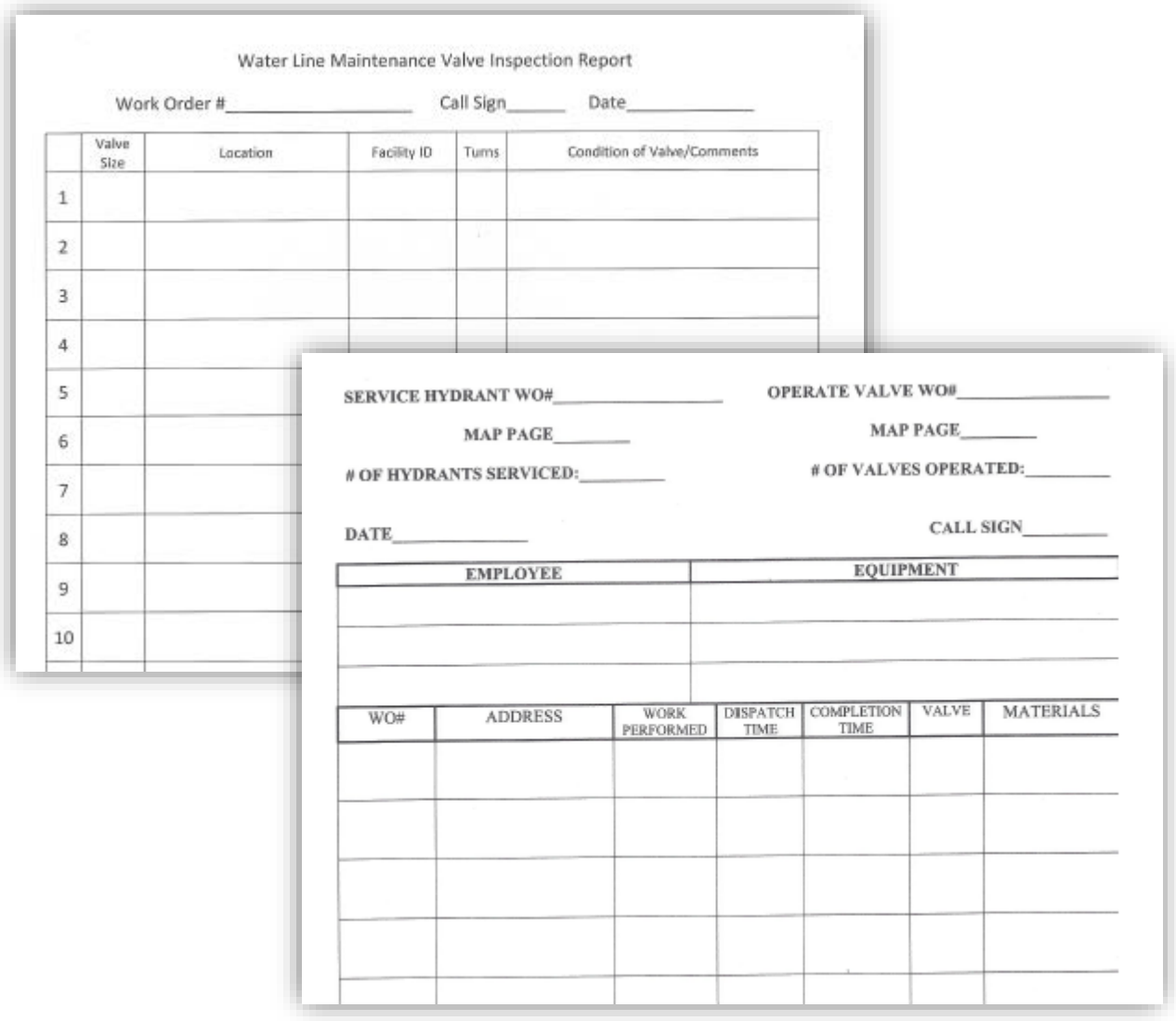
The TRUST's maintenance program has the following objectives:

- Maintain equipment in a manner that sustains its operational life.
- Provide timely and cost-effective response to both typical and emergency conditions.
- Safety of personnel and equipment.
- Enforce equipment warranties.
- Maintain the facilities to preserve aesthetics and protect against deterioration.

The TRUST will utilize the MIS to monitor the condition of the facilities and schedule routine inspections, maintenance, and repairs. SAP/EAM is used to track performance, service history, and repair costs.

Example inspection sheets and checklists used in O&M activities are presented as **Figure 2-3**.

Figure 2-3. Example Checklists for the Water System



Water Line Maintenance Valve Inspection Report

Work Order #_____ Call Sign_____ Date_____

	Valve Size	Location	Facility ID	Turns	Condition of Valve/Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

SERVICE HYDRANT WO#_____ OPERATE VALVE WO#_____

MAP PAGE_____ MAP PAGE_____

OF HYDRANTS SERVICED:_____ # OF VALVES OPERATED:_____

DATE_____ CALL SIGN_____

EMPLOYEE	EQUIPMENT

WO#	ADDRESS	WORK PERFORMED	DISPATCH TIME	COMPLETION TIME	VALVE	MATERIALS

For example, the TRUST's mechanics have scheduled routes assigned. Each maintains a checklist that covers checking the pumps, motors, level control units, flow meters, and generators. Once the crews perform their routes, the checklists are submitted into the MIS.

The data generated is used to evaluate the need for replacement or rehabilitation of the system. Using the equipment condition data developed during the transition phase, the "criticality of failure" factor will be established for each piece of equipment. Using the criticality of failure, along with the maintenance characteristics and the availability of replacement parts, the TRUST will develop a maintenance strategy for each piece of equipment. This strategy provides:

- Sources of spare parts and replacements are planned, and availability is targeted to the needs of the specific facility to minimize both scheduled and unscheduled downtime.
- Maintenance skill requirements are determined, skill gaps identified, and training planned and implemented.

The maintenance strategy selected for each piece of equipment is typically based on these levels of maintenance – preventive maintenance and corrective maintenance – as described below.

- **Preventive Maintenance (PM)** is defined as routine and/or repetitive activities required or recommended by the equipment or facility manufacturer or the TRUST to maximize the service life and reliability of the system components.
- **Corrective Maintenance (CM)** encompasses activities required for operational continuity, safety, and performance. The status of CM work orders will be maintained in the MIS and work will be scheduled to the extent possible with groups of equipment to save time and reduce labor requirements. Based on the TRUST' maintenance evaluation, critical spare parts will be stocked onsite or held in reserve at the TRUST's warehouse to reduce downtime. Maintenance will be scheduled and its completion monitored using the MIS.

The basic components of the TRUST's maintenance approach are described below.

PM Plan. The TRUST's approach to minor (routine) maintenance focuses on PM. Proper PM decreases the total lifecycle cost of equipment or facilities. The lifecycle cost of equipment and facilities that have been properly maintained is a fraction of that which has been poorly maintained.

Upon award, the TRUST will start by creating a master equipment list (MEL). All equipment identified in the MEL will be assigned a unique asset number and location code and entered into the MIS. Once this is completed, the detailed nameplate data will be entered for each asset. The TRUST will enter PM tasks and frequencies into the MIS. Specific tasks, frequencies and PM procedures will be based on the manufacturer's O&M manual, and ODEQ standards.

Each PM task will be assigned an identification number that will be unique to the task being performed. This unique PM task will describe the procedure needed, tools required, materials needed, all safety requirements, and any Air Force issues involved. Each PM task will also be assigned a cycle for completion. For example, a generator oil change may occur once per year whereas a vehicle oil change would occur on a quarterly cycle.

Each individual PM task will contain the date of the last revision, drawing reference numbers, O&M manual number, and location as well as any other documents that relate to the operation or maintenance of the equipment requiring maintenance.

CM Plan. CM is defined as non-repetitive activities necessary to correct a malfunction or replace a failed component of the facilities for operational continuity, safety, and performance. CM activities generally are performed because of failure of system components. CM provides:

- Increased process reliance due to decreased critical equipment failure.
- Reduced manpower costs due to improved job planning and scheduling.
- Reduced overall repair costs due to proactive repairs of minor issues before they cause more equipment damage.
- Reduced capital improvement costs due to increased equipment life spans.

The standard maintenance procedures include documents with staffing requirements to accomplish the CM tasks. The procedures will include lists of tools, instruments and materials to perform each task. The procedures will be part of the MIS and can be printed in hard copy to assist the maintenance staff in performing the maintenance procedure.

The MEL will provide a valuable tool by maintaining a record of information on each piece of equipment. This information will be searchable by equipment type, location, application, manufacturer, and repair type. By using this data, the TRUST will be able to make the best overall decisions for equipment needs.

2.1.6 How Performance Standards and/or Specifications Will be Met

It is the TRUST's goal to implement verifiable performance measures in providing utility services to its customers. Performance standards and/or specifications for the provision of the proposed utility service are highlighted in Subfactor Section 2.2.6 and include the TRUST's proposed performance standards based upon the RFP Table L-1.

2.2 Quality Management Plan

The TRUST has developed this Quality Management Plan in accordance with Section L.4.2 and paragraph C.12 of the RFP. This Quality Management Plan presents how the TRUST plans to implement a system of quality assessment procedures and techniques to operate and maintain the utility systems in a manner that will satisfy, at a minimum, the requirements of this solicitation.

2.2.1 Operating and Maintaining the Utility Systems That Will Satisfy Contract Requirements

Section 2.1 O&M Plan, describes the procedures that the TRUST uses in providing water services to the community and also proposes to implement in the O&M of the utility systems at TAFB. Proposed operational strategies, presented in Section 2.2.6, demonstrate the TRUST's ability to provide O&M of the water system in accordance with all applicable federal, state, and local laws/regulations. The TRUST is specifically organized to provide water and wastewater services to Oklahoma City and the surrounding area. An overview of the TRUST business lines which outlines internal support organization is depicted in **Table 2-5**.

Table 2-5. The TRUST's Business Lines Provide a Network of Support

Business Line	Programs
Administrative	▪ Business services ▪ Executive leadership
Customer Service	▪ Meter maintenance and reading ▪ Field support ▪ Customer service/Billing
Engineering	▪ Private development ▪ Design ▪ Infrastructure records
Line Maintenance	▪ Water line ▪ Wastewater line ▪ Line maintenance fleet operations

Business Line	Programs
Water Quality	▪ Raw water supply ▪ Laboratory % system quality ▪ Water treatment ▪ Water trust property maintenance
Wastewater Quality	▪ Lift stations ▪ Wastewater meter maintenance and reading ▪ Wastewater treatment ▪ Industrial waste program

The remainder of this section provides a narrative overview as to how the TRUST plans to operate and maintain the utility systems in a manner that will satisfy the RFP requirements.

Water Distribution - All activities of the TAFB water system operated by the TRUST will be governed by the standards of performance and guidance provided by ODEQ and the City of Oklahoma City. The City's Standard Operating Procedures will govern all aspects of how the TRUST will maintain and operate the water system. The TRUST's existing Standard Operating Procedures are comprehensive and will be directly applicable to operating the water system at TAFB. These references are stored at the TRUST offices and are used routinely by the operations and engineering staff. Water quality standards will be maintained in accordance with ODEQ established standards for drinking water.

Water Treatment - Water treatment at TAFB consists of chlorination of all wells and fluoridation of the groundwater wells serving the residential community. These activities are governed by the professional standards imposed by the Oklahoma Water Resources Board (OWRB) and ODEQ. Secondary water, provided by the City, is treated in accordance with ODEQ regulations prior to entering into the water system. Operators will be required to monitor operations of all aspects of the water supply system to assist staff in their monitoring and diagnostics of supply and treatment conditions.

It is the TRUST's intention that water service will not be interrupted except when necessary maintenance is required or new services are added to the water system. In instances where a situation arises that disrupts water operations, the on-site utility operator will identify the problem and restore water service as described in Subfactor 1.

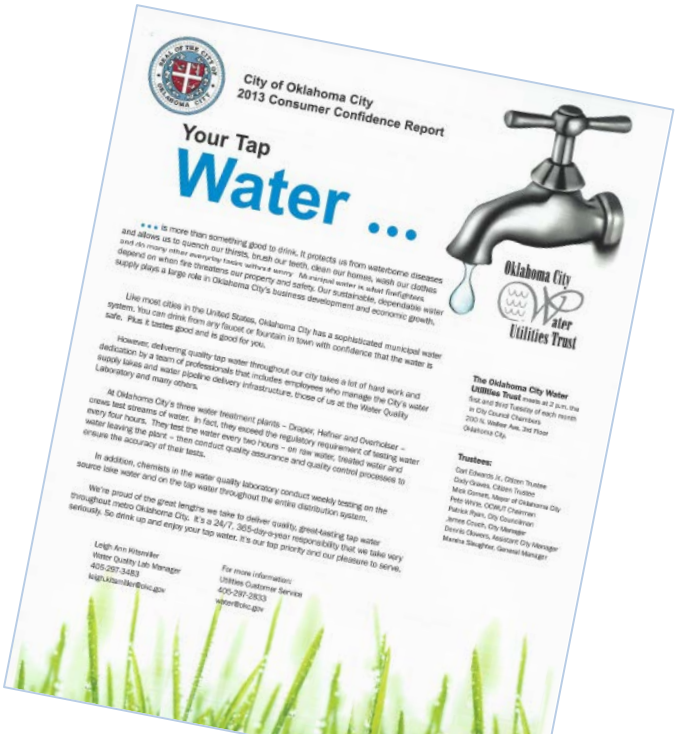
2.2.2 Obtaining Customer Feedback and Process Improvements

The TRUST appreciates feedback. An overview of the TRUST's customer feedback and process improvement process is best demonstrated through the results from an annual Citizen Survey, which is conducted by an independent party. Surveys are mailed to a random sample of households in the City to assess citizen satisfaction with the delivery of major city services and to help determine priorities for the community as part of the City's ongoing planning process. The FY2015 survey indicated that:

- 86% of customers surveyed are satisfied with water services
- 81% of customers surveyed are satisfied with wastewater services

The TRUST's strategy for growth and expansion is to continue facility improvement and equipment replacement based on age and maintenance issues, as well as to continue to monitor trends in customer concerns and system performance and adjust business practices accordingly. The TRUST will form an open, communicative relationship with the COR that engenders trust and encourages feedback.

The EPA requires the annual preparation and mailing of a Consumer Confidence Report (CCR) to all customers of a public water system. The TRUST has prepared a CCR each year since the requirement was established. This single report provides a snapshot of the previous year regarding water quality, results of testing during the year and any other items of interest to the customers. The CCR has also been used as a method to communicate with customers about important upcoming events that will affect the utility. Included in the CCR are not only results of water quality tests, but also a section regarding information on the parameters used in the testing, a section informing customers who to call in the event of a problem and water conservation tips.



…We're proud of the great lengths we take to deliver quality, great tasting tap water throughout metro Oklahoma City. It is a 24/7, 365-day-a-year responsibility that we take very seriously. So drink up and enjoy your tap water. It's our top priority…

Examples of internal metrics of customer service and process improvement are highlighted in **Table 2-6**.

Table 2-6. Examples of TRUST Customer Service Performance Metrics

Program	Key Measure
Field Support	✓ % of water emergencies priorities are resolved within one hour of notification by dispatch
Customer Service/Billing	✓ % of utility customer calls resolved on first contact

2.2.3 System Inspections and Quality Assessment Procedures and Techniques

Each of the TRUST's business lines outlined in **Figure 2-5** perform against internal quantitative metrics to maintain the quality of service which include:

- Results
- Outputs
- Demands
- Efficiency

Each year, the TRUST obtains these results and reviews overall performance and key achievements that are incorporated into the Annual Strategic Business Plan. Examples of these are shown in **Table 2-7**.

Table 2-7. Examples of TRUST Performance Metrics

Measure	Field Support	Design	Water Line Maintenance
Results	✓ % of water emergencies priorities resolved within one hour of notification by dispatch	✓ % of projects completing construction within the contract time ✓	✓ % of water main breaks repaired within 72 hours ✓ % of water line maintenance work orders completed within 72 hours
Outputs	✓ % of new water service construction inspections completed ✓ % of water service notifications completed	✓ No. of construction projects completed ✓ $ awarded for engineering and construction projects	✓ No. of water main repairs made ✓ No. of service line repairs made ✓ No. of hydrant repairs made ✓ No. of valve repairs made
Demands	✓ No. of new water service construction inspection requests ✓ No. of water service notifications received	✓ Reflected in target output	✓ No. of water line maintenance work orders initiated
Efficiency	✓ $ program expenditure per water service notification completed	✓ $ program expenditure per project completed	✓ $ maintenance expenditure per repair made

Inspection schedules and checklists will be developed for major O&M elements and for each major capital improvement project. The completion of scheduled O&M inspections will be conducted by an assigned employee (such as a mechanic) and tracked by the responsible supervisor. Construction inspection will be completed by subcontracted engineering and/or construction management consultants.

The employees performing inspections are trained and qualified to perform the assigned inspections t. Qualifications include having the knowledge and experience regarding the equipment or operation they are inspecting, and being familiar with the inspection procedure. Inspectors will review inspection schedules and perform assigned inspections accordingly, reporting any discrepancies or nonconformance to the responsible supervisor who will review findings and initiate corrective action as required. These personnel have the authority to stop any activity that they feel may threaten the health and safety of personnel or the efficiency of operations.

Major capital improvement projects inspection plans will be reviewed and approved by the Site Manager. For each definable feature of work established by the Site Manager, the following events could be included in the inspection/quality assessment:

1. Confirm that the appropriate technical specifications are incorporated into the project delivery plan and review said specifications with the working foreman.
2. Confirm that the appropriate contract drawings are incorporated into the project plan and review said drawings with the working foreman.
3. Verify with the working superintendent that all shop drawings and submittals have been approved by the proper approving authority (including factory test results, when required).
4. Confirm with the working foreman that the testing plan coincides with the delivery plan and that adequate testing is called for to assure quality delivery.

5. Confirm scope of preliminary work required at the work site and examine the work area with the working foreman to confirm required preliminary work has been properly completed.
6. Confirm availability of required materials and equipment. Examine same with the working foreman to confirm compliance with approved submittals. Examine mock-ups and any sample work product to confirm compliance with approved submittals.
7. Review the site safety plan and activity hazard analysis with the working foreman to ensure that safety concerns are adequately addressed and applicable safety requirements have been incorporated into the plan. Confirm that the appropriate Material Safety Data Sheets (MSDSs) have been identified and properly submitted.
8. Discuss with the working foreman construction methods to be employed during the remedial action. Identify checkpoints and areas of evaluation that will allow determination that the appropriate quality of construction is being achieved.

The Site Manager will monitor performance of the water system under his/her purview through a review of reports, operating parameters of equipment, work order status, and accomplishment of Renewal and Replacement (R&R) projects.

2.2.4 Recordkeeping Processes

The TRUST, TAFB, regulators, and other parties need timely access to specific utility information. Record retention processes for the TRUST are defined by the Records Retention Manual for the City of Oklahoma City. **Table 2-8** shows the types and formats of information retained by the TRUST.

Table 2-8. The City of Oklahoma City Records Retention Manual, Types and Formats of Information to be Maintained

Information Type	Typical Format	The TRUST's Policy	RFP Requirement
Utility system maps – including water line maps, sewer line maps	Electronic	Permanent until superseded	Not Found
As-builts, specifications, O&M manuals, and infrastructure records	Electronic, hard copy	Permanent until superseded	Hard copies of record drawings in service area
Engineering Drawings	Electronic	Life of bond + 3 years	Not Found
GIS Data	Electronic		Permanent until superseded
Service Request Calls	Electronic	5 years	2 years
Equipment Inventory	Electronic	10 years	Not Found
Inspection records (e.g. Fire hydrants, plumbing, construction, storm water, sewer)	Electronic	5 years	Not Found
Permits (including stormwater quality)	Electronic, Hardcopy	3-5 years from expiration of permit	Not Found
Accounting Records	Electronic, Hardcopy	5 years	Not Found
Water meters (e-reading, utility billing system records)	Electronic	2 years	Not Found
Contract Documents, Modifications	Electronic, Hardcopy		Permanent until superseded

As system upgrades and expansion activities take place, the system inventory and asset valuation will be updated and kept current with renewal or depreciation of the assets.

It is anticipated that the continued maintenance and service of the water system will provide additional information on the location of utilities. This information will be input to the GIS and the resultant maps will be updated periodically so that maintenance crews will have up-to-date information in the field and ensure that the documented system configuration is as accurate as possible. The TRUST will also provide information to allow for updates to the Base GIS on an annual basis in conjunction with submission of the ACURRP.

As indicated in RFP, Section C.5.1.5, the TRUST will maintain record drawings for all existing and new facilities installed by the TRUST within the service area. Upon reasonable request and with reasonable notice, TAFB will be allowed to use and copy such drawings. The TRUST will provide available drawings to TAFB in the form of CAD-CAM files using the latest release software compatible with TAFB systems. The TRUST will provide all updates and changes to utility system maps in both hard copy (full size) and electronic media formats to ensure delineation of water system components within one year of contract award and annually thereafter as necessary.

2.2.5 Environmental Compliance Plan

This section is not applicable to the Water System. Other environmental compliance requirements for the utility systems are discussed in Section 2.2.9 in this section.

2.2.6 How Performance Standards and/or Specifications Will be Met

It is the TRUST's goal to implement verifiable performance measures in providing utility services to our customers. Performance standards and/or specifications for the provision of the proposed utility service are highlighted in **Table 2-9** and include proposed performance standards based upon the RFP Table L-1. The TRUST's standards and performance indicators are based upon SOPs, City ordinances and policy, and ODEQ requirements as discussed earlier in this section.

Table 2-9. Proposed Performance Standards for the Water System

Measure (L.2.4.1)	Performance Indicator (JA3.3)	Proposed Standard
Water Quality	System is currently in compliance with and will remain in compliance with the Oklahoma Department of Environmental Quality/State of Oklahoma permit requirements.	Per J Attachment Section JA3.2.1, the Government will retain ownership of all water and pumping rights, OWRB permits and wells EXCLUSIVE of the casing. The permits will remain in the name of TAFB; therefore the Government will be responsible for groundwater quality. Per JA3.10, the Government will transfer ODEQ permit WL000055050399 for the water system to the TRUST. Maintain water quality standards in compliance with ODEQ.
Reliability	Provide water services to all customers 24/7.	Water service interruptions will be prioritized as Emergency, Urgent or Routine and responded to as noted in Subfactor 1.1.3.
Recurring and Preventative Maintenance (PM)	Percentage of PM work orders completed versus scheduled.	As the system improvements (CIP) are made and once the system is replaced, >90% completed as scheduled should be attainable.
Sampling/Analysis	QA/QC compliance; Performance evaluation testing utilizing blind samples.	Water will be sampled as required by ODEQ.

Measure (L.2.4.1)	Performance Indicator (JA3.3)	Proposed Standard
Maintaining System Pressure	Deliver water at the system's normal operating pressure and according to NFPA and AWWA standards.	ODEQ requires the TRUST to maintain a normal operating pressure of 25 psig. Should TAFB have unique pressure requirements at certain facilities, IFC codes must be met with any capital improvements such as providing booster pumps at those facilities.
Demand and Distribution Capacity	Water hydrant flushing, establish annual valve exercise program, establish preventive maintenance program for pumps and other electromechanical equipment. Provide support to Installation for emergency and crisis situations.	Given the condition of the infrastructure (much of which has exceeded its useful life), the TRUST would plan to eliminate unnecessary actions/procedures that would stress the aging infrastructure or cause unnecessary outages. Once the system is replaced, a routine ODEQ flushing and valve exercise program will be implemented, and the support to the installation emergency and crisis situations will be provided.
Water Storage	Storage tank water elevation.	To be addressed in Project Number WO 44092, Elevated Storage Tanks, Basewide.
Fire Flow Capacity/Duration	Provide at the system's normal operating pressure, NFPA, and AWWA standards.	ODEQ requires the TRUST to maintain a normal operating pressure of 25 psig. Should TAFB have unique pressure requirements at certain facilities, IFC codes must be met with any capital improvements such as providing booster pumps at those facilities.
Corrosion Control (to include cathodic protection)	Each tank contains cathodic protection to enhance corrosion resistance. The cathodic protection systems are impressed current type, and regularly maintained.	During transition, the TRUST recommends performing an investigation of current tank cathodic protection system (replaced in 1997) and will make recommendations to bring it into working order; which will be a future capital upgrade. If in good working order, the system will be maintained to ODEQ standards.
Minimization of Leaks and Losses	Leaks and/or pipe bursts	The water system will be replaced to meet Oklahoma City standards (tight, no leaks to meet ODEQ requirements). The TRUST will maintain the system to ensure that any leaks or breaks to the systems are repaired.
Minimization of Water Use	Accuracy of meter readings.	Not applicable to the TRUST. If the Government desires to do so, water consumption meters can be installed at facilities to monitor usage so that they can affect conservation measures. The TRUST can provide training in this area.
Safety of Government Personnel and Property	Training, Accident Incident Rate. During construction related projects, maintain temporary facilities, controls, and safety considerations.	The TRUST will incorporate into its construction specification requirements for all contractors to follow all federal, state, and local laws and regulations relating to these activities at all times. Oklahoma City employees will be provided PEOSH safety training through Metro Technology Center. The TRUST currently has an Injury & Illness Prevention Plan in place to address worker safety. This plan has reduced injuries since it

Measure (L.2.4.1)	Performance Indicator (JA3.3)	Proposed Standard
		was implemented. All safety policies and procedures are in the Utilities Department Safety Manual.
Service Connection Standards and Specifications	Service connections installed in accordance with standards.	Perform work per City of Oklahoma City Construction Standards and Specifications and ODEQ standards.
Exterior Backflow Prevention	Backflow Prevention System kept in working order. Compliance with state regulations	Work is performed in compliance with State of Oklahoma and federally accepted programs.
Water and Sewer Line Separation	Water and Sewer line separation in accordance with State of Oklahoma requirements.	Work is performed in compliance with City of Oklahoma City Construction Standards and Specifications and ODEQ standards
New Construction Standards	Standards drafted and adopted. Government requirement to approve serviceability and types of materials used as referenced in J attachment	Work is performed in compliance with City of Oklahoma City Construction Standards and Specifications and ODEQ standards.
Commissioning Standards	All projects with estimated costs of $150,000 or greater will be commissioned by an independent source.	The TRUST utilizes engineering consultants for project closeout/ commissioning reports. Work is reviewed thoroughly by the TRUST engineering prior to acceptance of final work.
Color Identification and Markings	Color coding of plant piping according to Industry standards.	Not applicable to this system.
System Inspections	Standards drafted and adopted.	SOPs provide for visual inspection of observable inventory on a regular basis. For example, operating wellheads will be visually inspected daily as the TRUST performs O&M of the water system. More in depth inspections will be at an additional cost.
Meter and Equipment Calibration	Meters and equipment operational within manufactures specs.	Not applicable to the current inventory. Any new meters installed will be maintained per the manufacturer's specifications should any meters be installed.
Service Interruption Frequency	Provide water services to all customers 24/7. Maximum of 8 hours of system-wide outage per year.	No standards are available for equipment that is past its useful service life. The system characterization studies will target all pipe greater than 50 years old. As portions of the system are replaced, the system will be maintained to ODEQ standards.
Operating Permits	Operated under appropriate permits.	Per J Attachment Section JA3.2.1, the Government will retain ownership of all water and pumping rights, OWRB permits and wells EXCLUSIVE of the casing. The permits will remain in the name of TAFB; therefore the Government will be responsible for groundwater quality. Per JA3.10, the Government will transfer ODEQ permit WL000055050399 for the water system to the TRUST. Maintain water quality standards in compliance with ODEQ.
Employee Certifications	Training and certifications.	Operator requirements for well systems will meet ODEQ license requirements. The TRUST maintains relevant certification requirements through use of Metro

Measure (L.2.4.1)	Performance Indicator (JA3.3)	Proposed Standard
		Technology Centers for certifications such as ODEQ Water & Wastewater Operator certifications.
Disaster Recovery	Support Base Civil Engineer Control Center for exercises and crisis situations.	Support the Base Civil Engineer Control Center for exercises and crisis situations quarterly, if necessary, to maintain preparedness.

2.2.7 Other Standards and Specifications

The following standards and specifications (not established in the RFP) are applicable to the utility services that the TRUST will apply in providing utility services to TAFB.

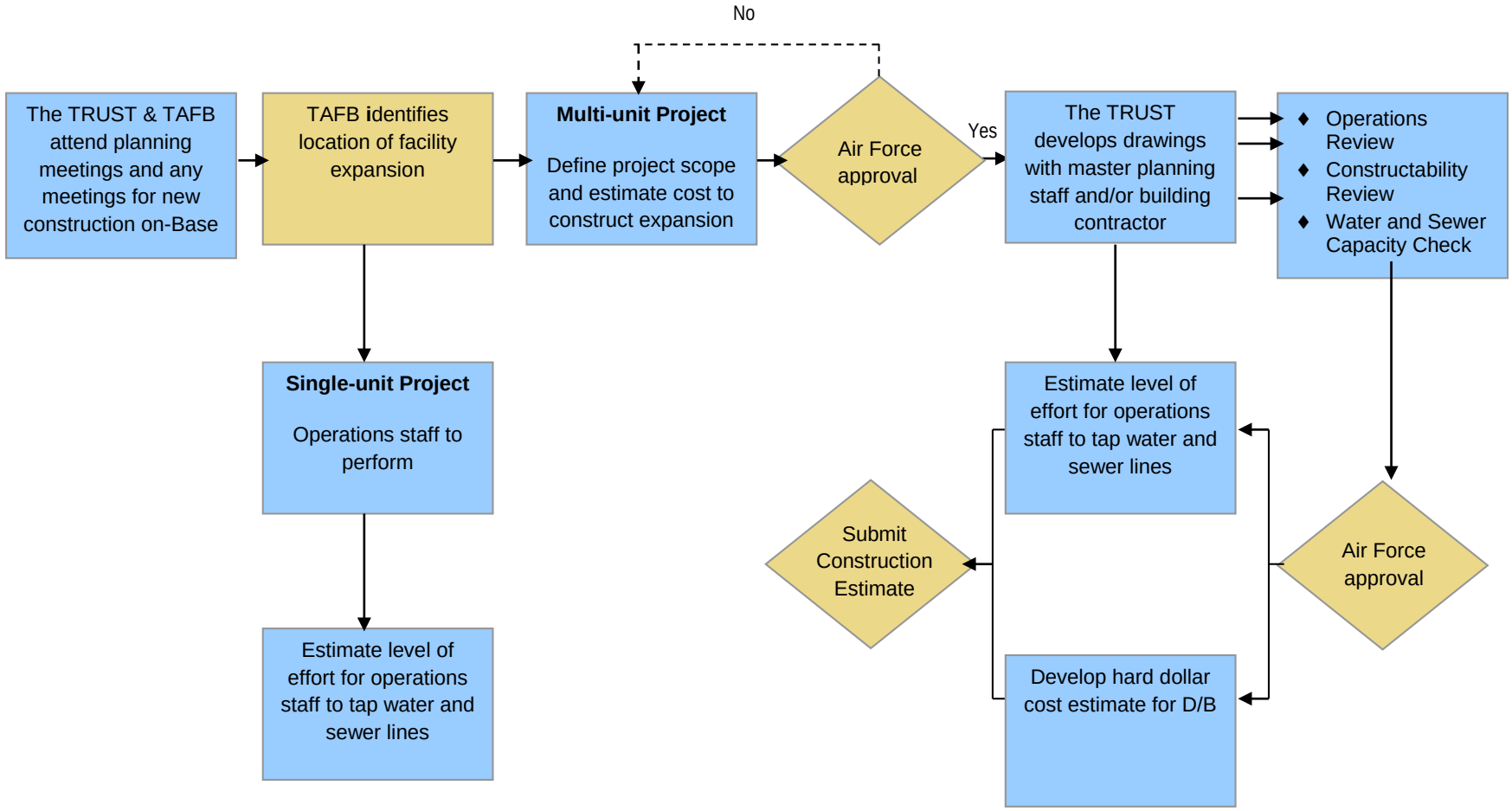
- City of Oklahoma City *Standard Specifications for Construction of Public Improvements*
- City of Oklahoma City *Standard Operating Procedures Manual*
- City of Oklahoma City *Public Works Department Standards (AutoCAD standards)*
- Oklahoma Administrative Code, Title 252:626 (for wellheads)
- Oklahoma Department of Environmental Quality (within jurisdiction of EPA)
- EPA Laws and Regulations
- Clean Water Act
- Safe Drinking Water Act
- Oklahoma City Charter and Ordinances
- Oklahoma Water Resources Board
- State of Oklahoma Laws and Regulations
- Public Employee Occupational Safety & Health (PEOSH) – within jurisdiction of OSHA

The most recent edition of reference materials published by the American Water Works Association (AWWA), Water Environment Federation (WEF), American Society of Civil Engineers (ASCE), National Fire Protection Association (NFPA), and Factory Mutual Global are also used for reference and compliance.

2.2.8 Process for Implementation of Government Requested Facility Expansions

The TRUST will provide water service to the established Point of Demarcation of any facility as requested by the Government at TAFB through contract modifications. The process flow chart that describes how the TRUST anticipates to implement expansions to the utility systems is shown in **Figure 2-4**. The primary drivers for expansion are upgrades to the system to serve new Government-requested facilities. The TRUST staff will meet regularly with the COR and TAFB staff to coordinate and account for new facilities that are planned for construction and any new service connections or disconnections required. When TAFB adds a new project to the 5-year Master Plan for the Base, the TRUST will categorize each project to determine whether it can be managed by the on-site operations staff or whether the size of the project warrants initiating a full-scale capital upgrade project team.

Figure 2-4. New Connection Process Flowchart



The two size categories include the following:

1. Single Unit Project— The TRUST staff will review each application/contract modification and provide approval once a checklist is completed. The checklist provides information on where the new service will attach to; and when construction will take place so a TRUST employee can be on-site to inspect the work by the contractor; and the proposed materials of construction, backfill, and restoration plans for existing sidewalks, curb and gutters, and paving sections. The operations staff will be responsible for interacting with the general contractor and making the service connection to the existing system. Regardless if the tenant is TAFB or a private contractor, time spent by operations staff on new connections projects will be tracked for compensation.

2. Multi-unit or "Development" Project—When TAFB undertakes a major development, such as a new barracks complex or a set of office buildings, and issues a contract modification; the TRUST will engage a capital upgrade project team to facilitate expansion of the utility systems. New construction projects will be accounted for by periodic reviews of the TAFB Master Plan for both short- and long-term planning. The TRUST staff will meet regularly with the COR and Base staff at the base to receive the latest information on the construction schedules for new facilities. The TRUST will design the new utility facilities and manage the construction with an on-site supervisor. The Engineering Manager will coordinate with TAFB and the general contractor for the multi-unit project to obtain drawings, develop cost estimates, and share information. The process flowchart in **Figure 2-4** shows the three phases of project development, including defining scope, design, and finalizing cost.

The need for extending the water system will be determined after the TRUST is informed of new facilities or change in use of existing facilities. In addition to design and construction of new utility facilities, the TRUST will estimate water demands to size any new service infrastructure based on projected construction data provided by TAFB. The plan will include these modeling projects to accommodate the future uses due to the expansion, alteration, and upgrade of the facilities at TAFB. New demands and new sources will be added to the water hydraulic model respectively to determine the effect of multi-unit projects on both systems. The ACURRP process will account for changes in the use of facilities that will result in changes to the water and wastewater flow from the facilities. Increases in flow will be used in the hydraulic model to determine the impact on the wastewater system.

New service connections and special requirements will be provided to the TRUST and directly billed to the Government. New connection charges will include actual costs for the installation of any service, including permits, engineering, inspection, testing, administration, materials, supplies and construction.

2.2.9 Compliance with Applicable Environmental, Safety, and OSHA Laws and Regulations

The TRUST will oversee the environmental and safety component with qualified and trained personnel, while identifying opportunities for other effective compliance strategies. The TRUST will operate the system to promote environmental sustainability and wildlife protection, source reduction, pollution prevention, and energy conservation.

The TRUST will implement existing policies and procedures to support these environmental objectives. The TRUST currently has environmental policies and procedures related to waste management; hazardous material identification; and management of ozone depleting substances, radioactive materials, toxic chemicals, and asbestos-containing materials (ACM), and will modify them as appropriate to address the specific O&M activities at TAFB. The following describes the approach to maintaining compliance with environmental, safety, and OSHA laws and regulations.

2.2.9.1 Environmental Compliance

ODEQ requires permitting, monitoring and reporting of activities that are part of the terms and conditions of this contract and includes the following:

- Operating wellheads;
- Potable water distribution system; and
- Environmental conditions associated with operation and/or modifications of the water distribution utility systems.

The overall goal of the TRUST's strategy is to comply with the regulatory requirements, while achieving contract terms and conditions that are mutually acceptable to TAFB and the TRUST. Upon award of the contract, the TRUST will develop a regulatory strategy plan that will identify all state and local regulatory and policy issues that may impact the utility privatization, along with the specific approaches to effectively address and manage these issues. **Table 2-10** summarizes the environmental regulatory programs that apply to TAFB including program applicability and regulating agency.

With a focus on environmental stewardship, the TRUST will continue to educate the community to save resources while making various operations more efficient:

- Developed a public water education program in partnership with Oklahoma State University
- Launched SqueezeEveryDrop.com, the water conservation website
- Rolled out FOGzie outreach program to educate the community on disposing Fats, Oils and Grease properly to minimize impact on sewer lines

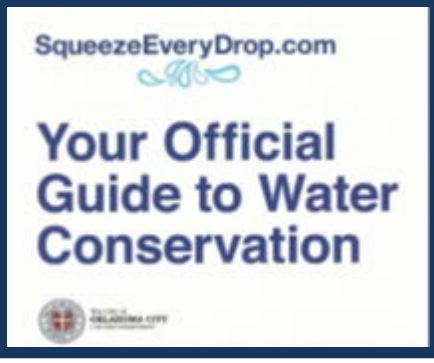


Table 2-10. TAFB Environmental Regulatory Compliance Summary

Utility System Applicability			
Regulatory / Permitting Program	**Water**	**Wastewater**	**Regulating Agency**
40 CFR 503		√	EPA
Contract Operator Certification	√	√	ODEQ, ODOT
Drinking Water Standards	√		EPA, ODEQ
Hazardous Waste			EPA, ODEQ
Solid Waste			EPA, ODEQ
SARA Title III	√	√	EPA
Construction Permit	√	√	ODEQ
TSCA			EPA
PSD/NESHAPS			EPA/ODEQ

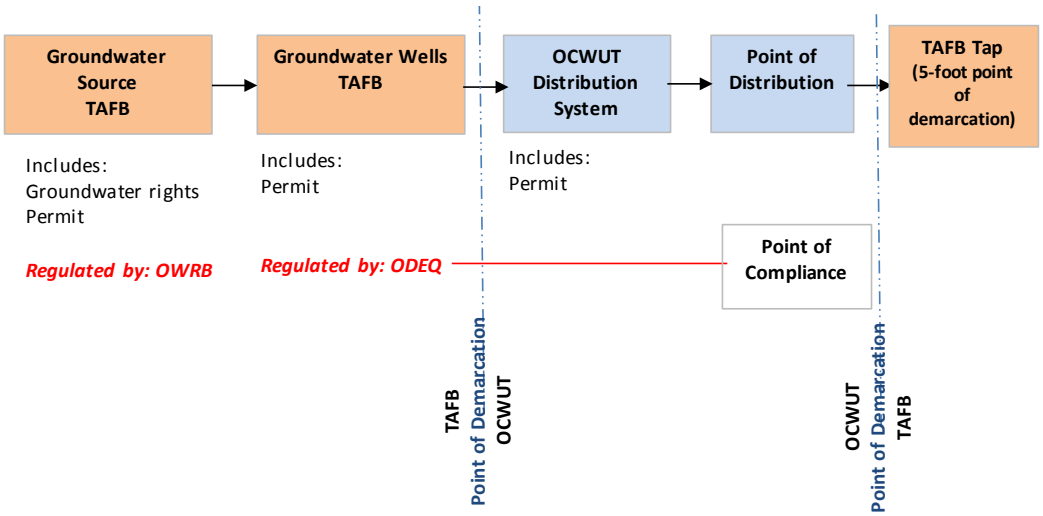
Note:
ODEQ Oklahoma Department of Environmental Quality
EPA U.S. Environmental Protection Agency
DOT Department of Transportation

The following describes the approach to comply with the regulatory requirements, and address and manage the influences the regulatory agencies may exert on these water system operations.

Water System

The operator certification for the water system will be in accordance with the ODEQ operator certification program for the State of Oklahoma. The system rating will determine the level of certification the operators must possess. It is the TRUST's policy that all operators working on the water system will attain and maintain their required certifications as a condition of employment. Periodic continuing education credits are required and those training sessions are reported and approved by the TRUST's training manager. The TRUST's understanding of the environmental compliance of the water system is depicted in **Figure 2-5**. The TRUST assumes that TAFB will remain responsible for the quality of the groundwater being pumped (quality before treatment at the wellhead).

Figure 2-5. TAFB Environmental Regulatory Compliance for the Water System



Other Environmental Conditions

Other environmental conditions, such as asbestos containing materials (ACMs), lead based paint (LBP), solid waste management units (SWMUs), munitions and explosives of concern (MEC), unexploded ordnance (UXO), and spills and releases, are also addressed below. The TRUST maintains no responsibility for existing conditions that may cause contaminants to leach into treated water in the water system, including, but not limited to, asbestos or lead leaching from existing distribution pipes into the treated water being distributed.

Asbestos Containing Materials (ACM) and Lead-Based Paints (LBP). At this time, the TRUST is not aware of any ACM or LBP. Any ACM or LBP contained in the buildings, structures, equipment and appurtenances designated for transfer under this contract will be addressed in accordance with personnel Safety and Health requirements. The ACM and LBP abatement activities and the management of wastes generated during the abatement activities will be conducted in accordance with the applicable regulations.

Solid Waste Management Units (SWMU). At this time, the TRUST is not aware of any SWMUs or other contamination. The TRUST understands that the Air Force will retain the responsibility and liability for investigation, response, remediation, and compliance actions to address past contamination and environmental conditions. The TRUST will coordinate with the Air Force for activities associated with utility components located within SWMUs or areas of past contamination such that planning and execution of contamination assessment and remediation actions by the Air Force can be accomplished with full

compliance with the applicable regulations and reduced disruption of utility services. The TRUST assumes that any contaminated excavated materials will be handled and disposed of by the Air Force.

Military Munitions. MEC and UXO assessment and/or removal is not currently being enforced under environmental regulatory programs. Potential UXO presence in areas designated for disturbance under this contract will be cleared by the Government, prior to land disturbance activities. In the event that UXOs are discovered in previously cleared areas, the TRUST will support the Air Force in planning and response actions consistent with the applicable requirements and policies.

Spills and Releases. The TRUST will take precautions to prevent oil and hazardous material spills or releases due to activities associated with the operation and maintenance of the water system. The TRUST will conduct any response action and reporting in accordance with its Spill Prevention Containment and Control (SPCC) Plan (to be developed in the transition period), and applicable regulations. The TRUST will comply with all Emergency Planning and Community Right-to-Know Act (EPCRA) and will submit all requested information to TAFB's compliance office.

2.2.9.2 Safety and OSHA Compliance

The safety strategy recommended in this section consists of several distinct activities:

- Implement a comprehensive Safety Management program through the City of Oklahoma City Utilities Department Employee Safety Manual.
- Develop a site-specific Safety and Health Plan, with safety procedures and systems to support the TRUST's safety program.
- Train employees at all levels in regards to OSHA requirements (29 CFR 1910 General Industry and 29 CFR 1926 Construction)
- Promote individual responsibility for Safety and Health standards in every task.

Safety Management

The TRUST is committed to sound safety management principles that are designed to manage risks in order to reduce accidents and injuries. The approach to a sound safety management program must include integrating safety into all aspects of the work. The TRUST will accomplish this objective by:

(1) Train and educate employees about the Safety and Health Plan; and

(2) Involve employees in the work planning process, development of the Safety and Health Plan, and development and updating of procedures.

The TRUST encourages all employees to take ownership of the Safety and Health Plan in order to obtain zero accidents and zero environmental incidents. The safety and health of workers and the public are protected by identifying, analyzing, and mitigating hazards and implementing effective work practices. The TRUST will not compromise safety for the sake of any other objective.

There are several avenues that the TRUST use in order to accomplish improvements in our safety program including:

- Initial inspection of work site to understand what issues are present.
- The generation of a site-specific Safety and Health Plan that is tailored to the needs of the TAFB work site and the implementation of revisions to the Safety and Health Plan that may be needed to address new or unrecognized work activities.

- The training of employees on the requirements and information included in the Safety and Health Plan as well as other mandated training.
- Regularly scheduled site/work area inspections that can lead to quick hazard identification and therefore control of these hazards.
- The hazard abatement Job Hazard Analysis/Pre-Job Hazard Briefing (JHA/PJHB) process which will need the input of all persons involved in the work being planned.
- Gathering and utilizing employee feedback to continually improve our processes.
- Empower employees to stop work if safety or gross violations of work requirements occur.
- Employees are encouraged to be involved and to express concerns and to assist in the JHA/PJHB process.

By using the above mentioned procedures, the TRUST strives to continuously improve working conditions for employees, lower operating costs for employers, and maintain a workplace that is socially responsible.

Current TRUST Safety Procedures include:

General Safety Procedures
Steering Safety Meeting Procedure
Announced Safety Walk Procedure
Weekly Safety Talk Procedure
Monthly Divisional Staff Safety Meetings
Access to Medical and Exposure Records
Accident Management – Incident Reporting & Investigation
Transitional Work Program
Confined Space Entry Procedure
Electrical
Emergency Procedure – Chlorine Release
Employee Contact Procedure
Excavation Safety Procedure
Fall Protection
Fire Prevention
First Aid & Blood borne Pathogens Program
Hazard Communications Program
Hazardous Waste Disposal Procedure
Hot Work Procedure
Industrial Trucks (including Forklifts)
Laboratory Chemical Hygiene Plan
Lifting & Hoisting Devices
Lockout/Tag out Procedures
Motor Vehicle Operations
PPE Procedures
Pressure Vessel and Relief Valve Program
Process Safety Management
Wireless Communication
Work Zone Safety Procedures
Ladder Safety Program
Contractor Safety Procedure

Safety and Health Plan

The TRUST will develop a complete site-specific Safety and Health Plan during transition, before transfer of full O&M responsibility from the Government. The Safety and Health Plan will establish work practices necessary for the safety of all personnel throughout the contract, and will include provisions for accident prevention strategies consistent with Air Force, OSHA and State Department of Labor requirements. Risks will be identified and included in our preliminary safety action plan and will be further developed during operations. This safety action plan will identify deficiencies, assign responsibilities, and mandate timelines for completion. The TRUST will maintain our Safety and Health Plan current throughout the contract and submit updates annually as they occur to the COR.

All project operations will be performed in accordance with applicable sections of OSHA Standards, 29 CFR 1910 and 29 CFR 1926, United States Department of Defense, United States Air Force Regulations, and all other applicable policies and procedures incorporated into the contract for this work activity. All personnel, subcontractors, and visitors will be required to comply with the requirements of the Safety and Health Plan. The site Safety and Health Plan will include a discussion of:

- Safety Requirements and Systems
- Hazard Assessment and Control
- Personal Protective Equipment

- Personnel Medical Surveillance
- Project Appearance and Housekeeping

Safety Requirements and Systems

Work on the water system will be required to comply with all regulatory health and safety laws including PEOSH and any other local administration agency rules. Specific safety requirements are anticipated to address each of the following areas:

- Confined space procedures and training
- Asbestos training
- Machine guarding
- Hazard Communications
- Non-potable water signage throughout TAFB
- Inspections of safety and emergency equipment
- Personal protective equipment
- Walking and Working Surfaces
- Electrical Safety
- Security monitoring at booster and lift stations
- Housekeeping
- Bloodborne Pathogens
- Control of Hazardous Energy
- Excavation Safety
- Welding, Burning, and Hotwork
- Hazardous Material Safety
- Fall Protection
- Fire Protection
- Material Handling and Storage
- Hand and Powered Portable Tools
- Compressed Gases

Hazard Assessment and Control

There are various tools utilized by the TRUST for hazard identification:

- JHA and PJHB
- Informal discussions with the Health and Safety Analyst
- Written work orders
- Safety inspections
- Work Plans
- QA and Safety audits

As required by the Safety and Health Plan, the TRUST will develop a JHA for complex work that may introduce new hazards not previously addressed. These JHAs will provide a detailed, job-specific hazard assessment that addresses each step of the work process, the hazards involved, and the controls for those hazards. Employees who will perform the job tasks will participate in preparation of the JHA such that they can ensure that all necessary steps for completion of work have been identified and evaluated in addressing the appropriate measures to control or mitigate the hazards. As a part of this JHA, personal protective equipment (PPE) and applicable permits will also be identified.

It is the responsibility of every TRUST employee to identify and aid in the correction of all work area physical and behavioral hazards. Our vision statement is simple and demonstrates the open safety culture from top management to field workers – ***There is no job, schedule, or shortcut worth getting hurt over.***

Personal Protective Equipment

During new employee orientation, employees will be provided initial PPE along with introductory training on the required PPE and how to use and maintain it in a sanitary and reliable condition. JHAs, SOPs, MSDSs, and site-specific plans identify the proper PPE that will be worn when conducting each task. In addition, the Site Manager and Health and Safety Analyst will ensure that each individual has the proper PPE and is trained in its use. The TRUST requires that annual refresher training be conducted on the proper wear and care of the PPE.

Typical PPE used by the TRUST staff for utility operations includes the following: hard hats, eye protection, face protection, steel-toed shoes and rubber boots, level 'B' chlorine protective suits, ear protection, uniforms (long sleeve), rain suits, rubber gloves, electrical gloves, and rubber aprons. Portable eyewashes, first aid kits, defibrillator, and gas SCBA devices can be available.

The TRUST assumes that no safety-related equipment will be provided by the Government. Therefore, the TRUST intends to use the following equipment, as a minimum, for TAFB:

- Portable gas monitors for confined-space work,
- PPE as mentioned above,
- Confined space equipment,
- Traffic control equipment (cones, barricades),
- Site-specific training tools (videos, training courses), and
- A service agreement with an Industrial Hygiene provider.

Personnel Medical Surveillance

The TRUST requires that all new employees receive a physical prior to employment to establish a baseline medical condition prior to beginning their duties. This physical also includes a mandatory drug screening. Random drug testing based upon reasonable suspicion is also standard procedure.

Employees working with hazardous materials will receive an annual physical as required under 29 CFR 1910. Additionally, these individuals will be required to receive 40-hour Hazardous Workers Training (HAZWOPER).

Project Appearance and Housekeeping

One of the key issues in ensuring a safe and orderly work place is to maintain the facilities in a manner that always promotes safety. A work place that lacks proper housekeeping invites accidents and poor performance to standards. Proper housekeeping is required so that facilities are free of debris and equipment is properly maintained to minimize the potential for on-site accidents.

Health and Safety Training

Prior to commencement of site activities, the Health and Safety Analyst will train and educate all new employees. Employees will be informed of the nature and degree of exposure to hazards that are likely to result from performance of work activities. The TRUST will require that all personnel entering the site are trained and educated on applicable OSHA and City standards

As an integral part of the overall training program for the utility systems, general and site-specific safety training courses will be introduced. Specialized courses such as CPR/first aid, hazardous materials handling, confined space entry, and others will be held to provide a safe, accident free work environment. The emphasis will be on results, not training for training's sake.

Safety is a continuous part of every employee's daily activities, it is integrated into every part of the training program. In addition to the specialized courses and drills already described, safety tips, warnings, and recommendations will be common elements of the TRUST's SOPs. Special maintenance training will be held as assurance that proper tools and techniques are used at all times to avoid accident and injury.

The safety training program will be subject to initial assessment, planning, and re-evaluation. Safety training will be the primary responsibility of the Health and Safety Analyst. Safety training will be subject to the scrutiny of the Health and Safety Analyst and to the policies of the TRUST Safety Program to provide effective staff training and proper resources. Training opportunities will include formal training classes, quarterly safety team meetings, safety newsletters, tailgate meetings, and other safety-related materials. Some examples of topics addressed in the safety meetings may include:

- Hazard recognition
- Individual responsibility
- Safety regulations
- Problem solving
- Chemical safety
- Material handling
- Safe work practices
- General employee safety and health
- Current working conditions
- Safety and Health Plan reviews
- Specialized topics such as confined space entry and lockout/tagout

Specific training is discussed further in Section 2.2.12 Specialty Skills Training.

Responsibility for Safety and Health

Each employee is directly responsible for ensuring their own safety as well as the safety of other team members. Employees will be dedicated to establishing a safe environment in which work is performed without injury or illness to employees, visitors, or the public by complying with all Air Force, federal, state, and local safety requirements, legislation, and regulations. However, the formal Health and Safety team begins with the Health and Safety Analyst who provides input into implementing the TRUST's safety program including procedures, policies, QA/QC, and planning and measurement systems.

A key aspect of the TRUST's safety program is the oversight of the project by our Health and Safety Analyst. The Health and Safety Analyst is responsible for periodic safety assessments of the facility and follow-up reviews to ensure that all issues have been identified and addressed. The TRUST employees have the authority to enforce safety requirements for the TRUST staff and facilities. During the transition to privatization, a detailed safety review will be conducted, and the necessary safety equipment and facility improvements will be identified and acquired. The Health and Safety Analyst will be directly involved in the start-up of the project, development of the Safety and Health Plan, and training of the employees.

As part of the TRUST's standard practice, annual safety reviews of the facility will be conducted. This review will cover training records, site-specific safety plans, work environment, and work practices. A corrective action plan matrix will be finalized for a systematic approach to mitigate safety concerns in order to meet all Air Force, OSHA, state, and local requirements for the project. Upon completion of a comprehensive review, a formal report will be sent to the COR.

2.2.10 Opportunities for Efficiencies in Utility Operations

The TRUST will provide efficient operation of the water system and compliance with regulatory requirements; the TRUST will seek ways to establish process optimization goals for TAFB's water system. The following paragraphs provide brief discussions of opportunities for efficiencies identified during review of the material made available to the TRUST during the procurement phase.

Upgrade Wells

- Automate chlorine dosing in replacement or upgrade of the flowmeters at each of 23 operating wells: The Initial System Deficiency Corrections (ISDCs) specified flowmeters should be required to have signal output capabilities for automated chlorine dosing. Automated chlorine dosing will smooth out dosage rates and therefore reduce lead/lag swings in concentrations seen in water supply. Real-time readings and dosage rate adjustments will provide a savings in chemical costs by reducing the probability of inadvertently overdosing.
- Add fluoride inventory control facilities including day tank or weigh cells at the two locations currently storing and dosing fluoride into the potable water serving only the residential area.
- Replace blower heaters in well buildings with infrared heaters that provide more efficient heating at lower cost

Booster Station Alteration

- Add variable frequency drives (VFDs) to the new booster pumps (WCU10): VFDs provide power consumption efficiency and potentially reduces demand charges, only using power required to meet minimum pressure setpoint. VFDs also lessen water main breaks and reduce surge.

Supervisory Control and Data Acquisition (SCADA) Improvements

- SCADA improvements are required at the water facilities at TAFB to comply with existing the TRUST communication protocols.
- Currently, TAFB has a minimal SCADA system, which does not have remote operational permissions and requires the entire system to be manually monitored and operated. The existing TRUST connections have locally read meters for recording totalized consumption – these meters were installed for the purposes of billing. The TRUST could modify these meter stations to replace the existing mechanical meters with magnetic flowmeters which have remote read capability with real-time flow monitoring.

2.2.11 Managing and Accessing Technical Information

The TRUST's MIS is a tool that allows effective communication internally. Proper record-keeping and reporting are vital to enable all parties to make knowledgeable decisions regarding capital replacement or other matters that could impact the future of rates. The MIS is designed to keep current and past records secure yet accessible. In Section 2.2.4, the types and formats of information retained were described. The types of information will evolve and grow from the time of contract award as capital improvement and renewal and replacement projects are designed, constructed, and operated.

Because the TRUST personnel, the installation, and other parties will continuously require access to utility information, the TRUST employs several effective tools, as highlighted in **Table 2-11**, to manage various types of information and locate documents quickly. The TRUST intends to manage all of the TAFB technical information and incorporate it into both our existing flexible information and document/record management systems for efficient retrieval and organization. During the transition period, the TRUST will review our approach to managing technical information with the installation to ensure it supports the mission and TAFB's technical requirements.

Table 2-11. Current Components of the TRUST's Technical Information Tools

Name	Description	Software Company
Enterprise Asset Management	CMMS, Asset Management, GIS, Maintenance	SAP/EAM
Windows (Word, Excel, PowerPoint, etc.)	Reporting, Spreadsheets	Microsoft
Microsoft Project	Scheduling	Microsoft
Customer Service	Payroll, Billing, Customer Service	Business Warehouse
Human Resources	Records, training	PeopleSoft
AUTOCAD	Computer Aided Design	Auto Desk, Inc.
SCADA	Automated data monitoring	Wonderware

The TRUST will minimize hardcopy information that must be maintained on-site. Existing information that is received from TAFB will be scanned and stored electronically to the maximum extent possible. As a general rule, data will be archived electronically and kept according to the City of Oklahoma City Records Retention Policy (see Subfactor 2.2.4). The TRUST will maintain electronic records as previously described. Record drawings will be maintained for all existing facilities as available and all new facilities. As system upgrades and expansion activities take place, the system inventory will be updated and kept current with renewal or depreciation of the assets. The TRUST will maintain this database electronically so that the asset quantities can be tracked on an annual basis, or more often if required.

It is anticipated that work on the water system will provide additional information on the location of utilities. This additional information will be input to the GIS and the resultant maps will be updated periodically so maintenance crews will have up-to-date information in the field.

The TRUST's MIS covers aspects of O&M and budgetary information, as well as special programs designed to assist staff with any issues regarding state and federal regulatory agencies. The TRUST will submit all necessary reports to ODEQ and other regulatory representatives, with copies to the COR.

2.2.12 Specialty Skills Training

Section C.15 of the Solicitation states that the TRUST shall train TAFB employees on operation of the water system in the event the Government must resume operations, temporarily or permanently. The clause in this Section C.15 states: "Information regarding specialty training requirements is identified in the utility-specific attachment." The TRUST thoroughly reviewed the attachments and located no specialty training requirements, and therefore assumes there to be no special training required.

In place of these requirements, the TRUST notes that, as part of the quality management approach, all City employees are expected to attain the highest level of certification possible on the system they operate and maintain that level of certification through continuing educational credits. Periodic training for all operators will be scheduled. In addition to construction topics, classes in such matters as confined space training, competent man training, first aid/CPR, personal protective equipment, and hazardous communication training will be offered to TAFB utility workers. The TRUST identifies required training by department division and section for new employees and updates as required. Examples of the training provided to employees include:

- Confined Space Rescue (including annual refresher)
- Permit Required Confined Space Entry (including annual refresher)
- Respiratory Protection Training (including annual refresher)

- HAZWOPER (including annual refresher)
- HAZWOPER Awareness Level
- HAZWOPER Material Technician
- HAZWOPER Material Specialist
- HAZWOPER Incident Commander
- Hazard Communication (annual)
- Excavation, Trenching, Shoring
- Shoring & Trench Box Safety/Installation (annual)
- Fall Protection
- LOTO Awareness (including annual refresher)
- Basic Electrical Safety Qualified Person
- Basic Electrical Safety Unqualified Person
- Scaffolding Competent Person
- ODEQ Certification Class D (Waster, Wastewater, Wastewater Collection, Laboratory)
- ODEQ Certification Class C (Waster, Wastewater, Wastewater Collection, Laboratory)
- ODEQ Certification Class B (Waster, Wastewater, Wastewater Collection, Laboratory)
- ODEQ Certification Class A (Waster, Wastewater, Wastewater Collection, Laboratory)
- ODEQ Technician
- Multi-Piece Rim Handling (annual)
- Tree Trimming/Electrical Hazards (annual)
- Personnel Protective Equipment (annual)
- Emergency Action Plan (annual)
- Fire Prevention/Fire Extinguisher Training (annual)
- Bloodborne Pathogens Clean-up / E-Coli Level 2
- Bloodborne Pathogens Clean-up / E-Coli Level 1
- Hearing Conservation Program (annual)
- Asbestos / Lead Awareness
- Laboratory Safety/ Occupational Exposure to Hazardous Materials
- Mail Opening Procedure
- Work Place Violence
- Office Safety
- Ladder Safety
- Office Ergonomics/Back
- Insects & Animals/ Bite Prevention
- Back Injury Prevention
- Slips, Trips, and Falls
- Chlorine A,B,C Kit & Suit Testing / Decon
- First Aid/CPR
- Overhead Hoist & Crane Rigging Training (3-year)
- Crane Operator Certification (3-year)
- Man Basket or Aerial Lift (3-year)
- Genie / Scissor Lift (3-year)
- Forklift (3-year)
- Flagger Safety (3-year)

- Process Safety Management of Hazardous (3-year)
- Welding, Brazing & Cutting (3-year)
- Power Tool Safety (3-year)
- Scaffolding Competent Person Refresher (3-year)
- Work Zone / Barriers (3-year)

The TRUST also anticipates that employees will be required to attend TAFB-specific training such as:

- DFARS 252.236-7005 - Airfield Safety Precautions
- FAR 52.237-2 - Protection of Government Buildings, Equipment and Vegetation
- FAR 52.203-13 - Contractor Code of Business Ethics and Conduct
- Level 1 Antiterrorism Awareness Training

2.2.13 Quality Awards and Certifications

The TRUST is committed to providing the highest quality utility service to the Air Force and the community. The following highlights quality awards received:

- Best of the Best designation for best tasting water by the American Water Works Association (2007, 2013)
- Zach D. Taylor Jr. Clean Cities Vision Award for adopting clean fuel technologies

2.2.14 Staffing Plan/Qualifications

The Staffing Plan for TAFB is described in Section 2.1.1. This section includes the overall qualifications requirements for the TRUST personnel. In general, the TRUST employees working at TAFB will be qualified operators under the ODEQ operator certification. The personnel will be required to maintain their certifications and/or qualifications as a condition of employment. Personnel will also be required to attain the periodic continuing education credits necessary to retain their certificates or qualifications.

Because of the types of duties the utility workers perform, they will each be required to obtain and maintain First Aid and CPR certificates. The training will be provided by the Red Cross or other certified agency (Metro) and retraining will be scheduled to prevent certificates from lapsing.

The TRUST will provide training and certification as part of the employee's job description, annual performance review, and personal development goals. In addition to the above mentioned training, various certifications and training are highlighted in **Appendix A**, the TRUST's Standard Training, Certification, Experience and Education Requirements.

Subfactor 3. Initial System Deficiency Corrections/Upgrades/Connections and Renewals and Replacements Plan

This section comprises the TRUST's Initial System Deficiency Corrections (ISDC)/Upgrades/ Connections and Renewals and Replacements Plan methodology necessary for accomplishing the delivery of dependable utility service at Tinker Air Force Base (TAFB). This section was developed based upon Section C.11 and in accordance with Section L.4.3 of the RFP and includes:

- 3.1 Initial Capital Planning and Programming
  - 3.1.1 Initial System Deficiency Corrections (ISDC)
  - 3.1.2 Offeror Recommended Capital Upgrades
  - 3.1.3 System Characterization Studies
  - 3.1.4 Initial Renewals and Replacements
- 3.2 Conceptual Plans for Energy and Water Efficiency and Conservation
  - 3.2.1 Water Conservation
  - 3.2.2 Energy Conservation
- 3.3 Procedures for Identifying, Financing, and Scheduling Long-Term Capital Renewals and Upgrades
  - 3.3.1 Annual Capital Upgrades and Renewals and Replacement Plan
  - 3.3.2 Capacity Improvements
  - 3.3.3 Periodic Studies
  - 3.3.4 Renewals and Replacements Conceptual Methodology
  - 3.3.5 Capital Financing Process
- 3.4 Responding to Government Requests

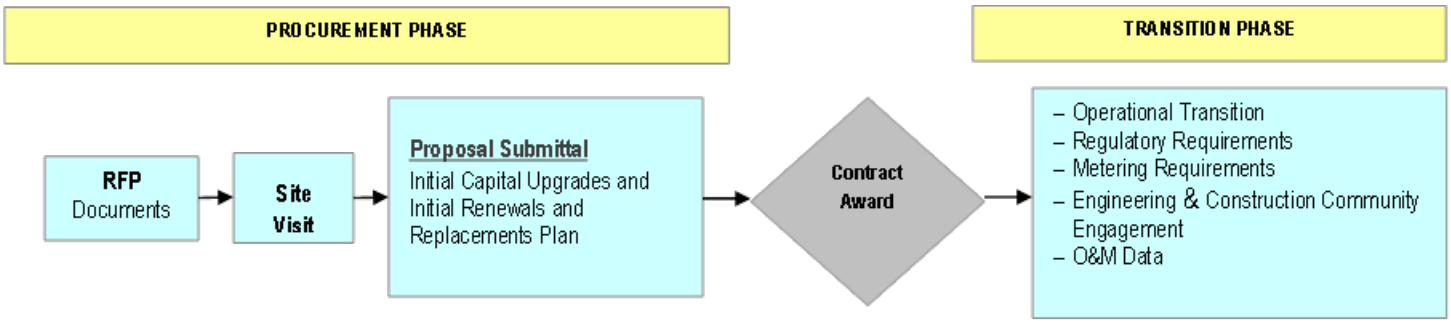
3.1 Initial Capital Planning and Programming

The guidelines and requirements listed in RFP Section L.4.3 were used to develop the purpose and scope of the initial capital upgrades and initial renewals and replacements plan. All upgrades and renewals and replacements proposed by the TRUST are based on repair or replacement of aging or failing components for system dependability and reliability.

The initial renewals and replacements are necessary to renew and replace system components that reach the end of their useful lives prior to or during the initial ten years after contract award. Actual replacements will be based on the system condition. The TRUST's operating procedures are designed to extend asset life to get the maximum value from each investment and to lower the life cycle cost to the Government.

Figure 3-1 on the following page provides a graphic representation of the process used in determining and scheduling these projects. **Appendix B** provides a more detailed view of the timing of these initial capital projects.

Figure 3-1. Initial Capital Planning and Programming Flow Diagram



3.1.1 Initial System Deficiency Corrections (ISDC)

The proposed ISDC/capital upgrade plan consists of the deficiencies identified by DLA Energy in the TAFB Solicitation SPE600-14-R-0800 (TAFB Solicitation or Solicitation) Attachment JA3, dated March 27, 2012, and additional TRUST-identified upgrades. **Table 3-1** summarizes the TRUST's proposed actions for the Water System ISDC Plan. The list of projects and the methodology behind each project's development is described in the sections below.

For the purposes of project identification a naming convention has been established as follows:

- W = Water
- DC = Deficiency Correction
- A number, added to the end of the name, to differentiate the various projects

Table 3-1. Water System ISDCs

Project No.	TAFB Project No.	Project Name	Year	Project Basis/Benefit
WDC1	WWYK050051	Well Number 8	2017-2022	Replacement water line to distribution system for system dependability and reliability as specified in Solicitation Attachment JA3.
WDC2	WO 070196	Wellheads, System-wide	2017-2022	Wellheads do not comply with Oklahoma Administrative Code, Title 252:626 as specified in Solicitation Attachment JA3.
WDC3	WO 44092	Elevated Storage Tanks, System-wide	2017-2022	Repair and replacement of aging or failing components for system dependability and reliability as specified in Solicitation Attachment JA3.
WDC4	WO 070193	Wellheads, System-wide	2017-2022	Repair and replacement of aging or failing components for system dependability and reliability as specified in Solicitation Attachment JA3.
WDC5	WWYK070192	Well No. 24, 25, and 26 to Navy Tower	2017-2022	Construction of new water main for well tie-in to Navy Tower as specified in Solicitation Attachment JA3.

Project No.	TAFB Project No.	Project Name	Year	Project Basis/Benefit
WDC6	WWYK050258	Well No. 6	2017-2022	Repair and replacement of aging or failing components for system dependability and reliability as specified in Solicitation Attachment JA3.
WDC7	WWYK050057	Well No. 9	2017-2022	Repair and replacement of aging or failing components for system dependability and reliability as specified in Solicitation Attachment JA3.
WDC8	WWYK060136A	Well No. 1	2017-2022	Plug and cap Well No. 1 and install new well and associated peripherals as specified in Solicitation Attachment JA3.
WDC9	WWYK060136B	Well No. 2	2017-2022	Replace well house and controls and elevate well as specified in Solicitation Attachment JA3.
WDC10	WO 42412	Oklahoma City Water Utility Trust supply points, east and west side of Tinker AFB	2017-2022	Install new booster pump stations at both TRUST water supply feeds on the east and west sides of the Base as specified in Solicitation Attachment JA3.

The following provides a summary description of each of the proposed ISDC projects for the TAFB Water System, as identified by DLA Energy and TAFB.

WDC1: Well Number 8

The water line from Well Number 8 to the distribution system has failed and requires replacement. The estimated scope includes 1,500 linear feet of 10-inch piping with approximately 167 linear feet beneath the interstate highway.

WDC2: Wellheads, System-Wide

Wellheads do not comply with Oklahoma Administrative Code, Title 252:626. Therefore, these shall be upgraded to a compliant status by addressing, without limitation, items such as: meters, pressure gages, check valves, air/vacuum valves, sampling taps, electric system and well drawdown gage. These facilities shall be upgraded: 4044, 36, 604, 665, 764, 849, 901, 1012, 2109, 2113, 2119, 2127, 3209, 3211, 3213, 3801, 3802, 3803, 50414, 53902, 55300, and 56601.

WDC3: Elevated Storage Tanks, System-Wide

Replace control valves at each of the five elevated water storage tanks. The tank control valves are not operating properly and require replacement. The estimated scope of the project includes replacing the altitude valve, check valve, gate valves, and ancillary piping and fittings at each tower. Additional scope includes installing an altitude valve in the inlet line and a check valve in the outlet line of each tank where an inlet/outlet bypass does not currently exist. If tanks have only one line, then construction of an inlet loop and utility vault adjacent to the existing line will be completed.

WDC4: Wellheads, System-Wide

Install in-line filters for each of the 23 operating wells to address a sand problem in the discharge piping of each well. Filters will have a removable screen that is sized to filter-out sand and silt particles that are pumped from the well into the water system.

WDC5: Well No. 24, 25, and 26 to Navy Tower

Construct a new pipeline connecting Well Nos. 24, 25, and 26 to the Navy Tower. The estimated scope is to install approximately 10,500 linear feet of 10-inch diameter piping, nine 10-inch gate valves, five fire hydrants, 50 linear feet of 6-inch piping (estimated 10 feet per fire hydrant), five 6-inch gate valves (one for each fire hydrant), and one 12-inch gate valve on the existing 12-inch piping. The scope accounts for directional boring beneath paved surfaces at roadway crossings.

WDC6: Well No. 6

Replace old Well No. 6 with a new well. The estimated scope of this project is to install a new well complete with casing, chlorination, pump and pump column, manual switch, disconnect and lugs to hook up a portable generator for backup power and all necessary valves and controls. The scope of this project does not include the capping of old Well No. 6.

WDC7: Well No. 9

Replace old Well No. 9 with a new well. The estimated scope of this project is to install a new well complete with casing, chlorination, pump and pump column, manual switch, disconnect and lugs to hook up a portable generator for backup power and all necessary valves and controls. The scope of this project does not include the capping of old Well No. 9.

WDC8: Well No. 1

Plug and Cap Well No. 1 and replace its capacity with new well on TAFB. The estimated scope of this project is to install a new well complete with casing, chlorination, pump and pump column, manual switch, disconnect and lugs for generator hook-up and all necessary valves and controls.

WDC9: Well No. 2

Revise Well No. 2's elevation. Currently, the pump for Well No. 2 is located approximately 8 feet below grade. The Government's required scope is to raise the level of the well approximately 10 to 12 feet so that the pump is located above grade. A new well house will be constructed, including all appropriate controls and trim including a diesel generator for backup power and additional considerations for including individual chlorination at the well.

WDC10: TRUST Supply Points, East and West Side of Tinker AFB

Install new booster pump stations at both TRUST water supply feeds on the east and west sides of TAFB. Currently, the TRUST distribution pressure is lower than TAFB distribution pressure and water cannot enter TAFB's water system from these locations. The estimated scope includes installing two booster pump stations with two pumps each, rated for 900 gallons per minutes (gpm) at 75 pounds per square inch (psi) total head. Included in the estimate are all required ancillary equipment and components, as well as any required permits.

3.1.2 Offeror Recommended Capital Upgrades

The proposed capital upgrade plan consists of TRUST-identified upgrades developed through review of documents provided in the Technical Library and based on the TRUST's technical and operational knowledge. **Table 3-2** summarizes the TRUST's proposed actions for the water system Capital Upgrade Plan. The list of projects and the methodology behind each project's development is described in the sections below.

For the purposes of project identification a naming convention has been established as follows:

- W = Water
- CU = Capital Upgrade
- A number, added to the end of the name, to differentiate the various projects

Table 3-2. Water Distribution System Capital Upgrades

Project No.	TAFB Project No.	Project Name	Year	Project Basis/Benefit
WCU1	TRUST-Identified	Well Upgrades, System-wide	2017	Automate chlorine dosing to new well flow meter.
WCU2	TRUST-Identified	Well Upgrades, System-wide	2017	Add automated measured fluoride stations at two locations in the water system.
WCU3	TRUST-Identified	Well Upgrades, System-wide	2017	Add fluoride inventory control facilities at both the (fluoride) stations.
WCU4	TRUST-Identified	Well Upgrades, System-wide	2017	Add chlorine gas scrubber at nineteen locations in the water system.
WCU5	TRUST-Identified	Water Storage Tanks, System-wide	2017	Provide remote read capabilities and improve secure access.
WCU6	TRUST-Identified	Upgrade Water Quality Monitoring	2017	Upgrade water quality monitoring for each service area – online.
WCU7	TRUST-Identified	Booster Station Alternate	2017	Add variable-frequency drives (VFDs) to the new booster pumps described in WDC10.
WCU8	TRUST-Identified	SCADA Improvements, System-wide	2017	SCADA improvements.
WCU9	TRUST-Identified	Raise Well No. 3 and No. 5	2017 - 2019	Wellhead No. 3 and No. 5 are below grade and are to be raised to comply with code.
WCU10	TRUST-Identified	Water System Modifications to achieve UFC requirements – 1,293 feet 6 inch	2017 - 2019	Upgrade and modify the water storage and distribution system.
WCU11	TRUST-Identified	Water System Modifications to achieve UFC requirements– 3,192 feet 8 inch	2017 - 2019	Upgrade and modify the water storage and distribution system.
WCU12	TRUST-Identified	Water System Modifications to achieve UFC requirements– 897 feet 10 inch	2017 - 2019	Upgrade and modify the water storage and distribution system.
WCU13	TRUST-Identified	Water System Modifications to achieve UFC requirements – 2,220 feet 12 inch	2017 - 2019	Upgrade and modify the water storage and distribution system.
WCU14	TRUST-Identified	Water System Modifications to achieve UFC requirements – replace pressure reducing valves	2017 - 2019	Upgrade and modify the water storage and distribution system.
WCU15	TRUST-Identified	Water System Modifications to achieve UFC requirements – add fire hydrants	2017 - 2019	Upgrade and modify the water storage and distribution system.
WCU16	TRUST-Identified	Water System Modifications to achieve UFC requirements – Four 500,000 gallon tanks	2017 - 2019	Upgrade and modify the water storage and distribution system.

Project No.	TAFB Project No.	Project Name	Year	Project Basis/Benefit
WCU17	TRUST-Identified	Raise East and West Backflow Preventers to above grade	2017 - 2019	Prevent potential cross contamination
WCU18	TRUST-Identified	Well Pump No. 27 Replacement	2017 - 2019	Replace failed pump and modify existing local tank and booster station
WCU19	TRUST-Identified	TRUST Operations Building	2017	Construct operations building for on-site staff

WCU1: Well Upgrades, System-Wide

This project will automate chlorine dosing by replacement or upgrade of the flow meters at 18 operating wells, plus one grouped location. The flow meters will have signal output capabilities to support automated chlorine dosing. Automated chlorine dosing will smooth out dosage rates and therefore reduce lead/lag swings in concentrations seen in potable water supply. Real-time readings and dosage rate adjustments will provide a savings in chemical costs by reducing the probability of inadvertently overdosing.

WCU2: Well Upgrades, System-Wide

Replace or upgrade flow meter with signal capabilities at two locations in the water distribution system for automated fluoride dosing and measurement. The addition of fluoride through an automated, measured, flow will avoid over or underfeeding. Line meters with signal control capabilities are required for fluoride dosing. This includes related local instrumentation with remote alarming.

WCU3: Well Upgrades, System-Wide

Add fluoride inventory control facilities including day tank or weigh cells at both fluoride dosing stations/ locations. Inventory control measures will allow for better planning with regards to chemical delivery and reduce the amount of time required to manually check tank or tote levels and is required by treatment design standards. This increases personnel safety. This capital upgrade includes facility rehabilitation and degraded equipment replacement.

WCU4: Well Upgrades, System-Wide

Install a new chlorine gas cylinder scrubber at 19 operating locations on active cylinders. Scrubber systems are designed to capture cylinder ruptures and prevent the escape of toxic chlorine gas should a catastrophic cylinder failure take place. This includes related local instrumentation with remote alarming. This increases personnel safety.

WCU5: Water Storage Tanks, System-Wide

All five water storage tanks will require remote water level reading Supervisory Control and Data Acquisition (SCADA) equipment (local instrumentation). Improved secure access facilities, such as ladder locks and hatch locks, are to be installed. Remote level monitoring will improve system reliability by providing operators with an accurate indication of operating conditions. Increased safety and security measures reduce the risk of injury or water system contamination.

WCU6: Upgrade Water Quality Monitoring

Add water quality monitoring capabilities in six distributed locations. Signal output capabilities are required to monitor water quality online including temp, chlorine residual, turbidity, conductivity, and pressure. Real-time monitoring of various water quality constituents will allow flexibility in the management of the system as a whole. Operators will be alerted immediately at the control room should there be a sudden change in system performance (such as a sudden loss of chlorine residual or spike in

system pressure) allowing for better protection of capital investments and reduced downtime. Automated water quality monitoring and cataloguing will also facilitate reporting requirements and reduce the need for manual data entry. This includes related local instrumentation with remote reporting.

WCU7: Booster Station Alteration

Add variable frequency drives (VFDs) to the new booster pumps described in WDC10. VFD pump control will allow for smoother operation and consistent delivery pressures at the TRUST connection points, resulting in less variation in well operations and system pressures. VFDs will also allow for a more consistent delivery of potable water at a set pressure. This includes local devices with remote reporting of status and operating condition.

WCU8: SCADA Improvements, System-Wide

SCADA improvements are required at the water facilities at TAFB to comply with existing TRUST communication protocols. Installing a SCADA system provides several benefits:

- Allows for remote operation of select infrastructure
- Reports critical operational parameters back to a central location for monitoring and, when necessary, reduced reaction time
- Provides withdrawal records through feed well meter signal output

This capital upgrade includes the transmission and communication system for digital and analog signals and is not intended to include the local instrument devices identified under other capital upgrades.

WCU9: Raise Well No. 3 and Well No. 5

Four wells are below grade in the Tinker water system – Well No. 1, 2, 3 and 5. Under the ISDCs, Well No. 1 is replaced and Well No. 2 is raised – leaving no action taken on Wells No. 3 and No. 5. This capital upgrade includes the raising of these two wells to prevent surface flooding and to comply with code.

WCU10: Water System Modifications to Achieve UFC Requirements

Several upgrades and modifications to the water storage and distribution system were recommended in the 2005 *Water Distribution System Hydraulic Model Technical Report*, under the flow conditions of maximum demand plus fire flow. These improvements included modifications such as additional storage, upsizing of existing lines, pressure reducing valve replacements and hydrant additions. The improvements were based on the UFC fire code of 20 psi at the tap under the flow conditions of maximum demand plus fire flow. If the system is awarded to the TRUST, the TRUST will be required by ODEQ to meet ODEQ criteria, which is more stringent at 25 psi at the tap under the flow conditions of maximum demand plus fire flow. This capital upgrade is based upon the data supplied in the Solicitation, Attachment JA3 (2005 *Water Distribution System Hydraulic Model Technical Report*). Hydraulic modeling will be updated as a part of WST3 and may impact recommended system changes.

This capital upgrade project is estimated to be 1,293 linear feet of underground waterline replacement, upsizing to 6-inch.

WCU11: Water System Modifications to Achieve UFC Requirements

Several upgrades and modifications to the water storage and distribution system were recommended in the 2005 *Water Distribution System Hydraulic Model Technical Report*, under the flow conditions of maximum demand plus fire flow. These improvements included modifications such as additional storage, upsizing of existing lines, pressure reducing valve replacements and hydrant additions. The improvements were based on the UFC fire code of 20 psi at the tap under the flow conditions of maximum demand plus fire flow. If the system is awarded to the TRUST, the TRUST will be required by ODEQ to meet ODEQ

criteria, which is more stringent at 25 psi at the tap under the flow conditions of maximum demand plus fire flow. This capital upgrade is based upon the data supplied in the Solicitation, Attachment JA3 (2005 *Water Distribution System Hydraulic Model Technical Report*). Hydraulic modeling will be updated as a part of WST3 and may impact recommended system changes.

This capital upgrade project is estimated to be 3,192 linear feet of underground waterline replacement, upsizing to 8-inch.

WCU12: Water System Modifications to Achieve UFC Requirements

Several upgrades and modifications to the water storage and distribution system were recommended in the 2005 *Water Distribution System Hydraulic Model Technical Report*, under the flow conditions of maximum demand plus fire flow. These improvements included modifications such as additional storage, upsizing of existing lines, pressure reducing valve replacements and hydrant additions. The improvements were based on the UFC fire code of 20 psi at the tap under the flow conditions of maximum demand plus fire flow. If the system is awarded to the TRUST, the TRUST will be required by ODEQ to meet ODEQ criteria, which is more stringent at 25 psi at the tap under the flow conditions of maximum demand plus fire flow. This capital upgrade is based upon the data supplied in the Solicitation, Attachment JA3 (2005 *Water Distribution System Hydraulic Model Technical Report*). Hydraulic modeling will be updated as a part of WST3 and may impact recommended system changes.

This capital upgrade project is estimated to be 897 linear feet of underground waterline replacement, upsizing to 10-inch.

WCU13: Water System Modifications to Achieve UFC Requirements

Several upgrades and modifications to the water storage and distribution system were recommended in the 2005 *Water Distribution System Hydraulic Model Technical Report*, under the flow conditions of maximum demand plus fire flow. These improvements included modifications such as additional storage, upsizing of existing lines, pressure reducing valve replacements and hydrant additions. The improvements were based on the UFC fire code of 20 psi at the tap under the flow conditions of maximum demand plus fire flow. If the privatization proposal is accepted, the TRUST will be required by ODEQ to meet ODEQ criteria, which is more stringent at 25 psi at the tap under the flow conditions of maximum demand plus fire flow. This capital upgrade is based upon the data supplied in the Solicitation, Attachment JA3 (2005 *Water Distribution System Hydraulic Model Technical Report*). Hydraulic modeling will be updated as a part of WST3 and may impact recommended system changes.

This capital upgrade project is estimated to be 2,220 linear feet of underground waterline replacement, upsizing to 12-inch.

WCU14: Water System Modifications to Achieve UFC Requirements

Several upgrades and modifications to the water storage and distribution system were recommended in the 2005 *Water Distribution System Hydraulic Model Technical Report*, under the flow conditions of maximum demand plus fire flow. These improvements included modifications such as additional storage, upsizing of existing lines, pressure reducing valve replacements and hydrant additions. The improvements were based on the UFC fire code of 20 psi at the tap under the flow conditions of maximum demand plus fire flow. If the system is awarded to the TRUST, the TRUST will be required by ODEQ to meet ODEQ criteria, which is more stringent at 25 psi at the tap under the flow conditions of maximum demand plus fire flow. This capital upgrade is based upon the data supplied in the Solicitation, Attachment JA3 (2005 *Water Distribution System Hydraulic Model Technical Report*). Hydraulic modeling will be updated as a part of WST3 and may impact recommended system changes.

This capital upgrade project is for the replacement of four existing pressure reducing valves.

WCU15: Water System Modifications to Achieve UFC Requirements

Several upgrades and modifications to the water storage and distribution system were recommended in the 2005 *Water Distribution System Hydraulic Model Technical Report*, under the flow conditions of maximum demand plus fire flow. These improvements included modifications such as additional storage, upsizing of existing lines, pressure reducing valve replacements and hydrant additions. The improvements were based on the UFC fire code of 20 psi at the tap under the flow conditions of maximum demand plus fire flow. If the system is awarded to the TRUST, the TRUST will be required by ODEQ to meet ODEQ criteria, which is more stringent at 25 psi at the tap under the flow conditions of maximum demand plus fire flow. This capital upgrade is based upon the data supplied in the Solicitation, Attachment JA3 (2005 *Water Distribution System Hydraulic Model Technical Report*). Hydraulic modeling will be updated as a part of WST3 and may impact recommended system changes.

This Capital Upgrade project is for the supply and installation of additional fire hydrants to meet UFC code.

WCU16: Water System Modifications to achieve UFC requirements

Several upgrades and modifications to the water storage and distribution system were recommended in the 2005 *Water Distribution System Hydraulic Model Technical Report*, under the flow conditions of maximum demand plus fire flow. These improvements included modifications such as additional storage, upsizing of existing lines, pressure reducing valve replacements and hydrant additions. The improvements were based on the UFC fire code of 20 psi at the tap under the flow conditions of maximum demand plus fire flow. If the system is awarded to the TRUST, the TRUST will be required by ODEQ to meet ODEQ criteria, which is more stringent at 25 psi at the tap under the flow conditions of maximum demand plus fire flow. This capital upgrade is based upon the data supplied in the Solicitation, Attachment JA3 (2005 *Water Distribution System Hydraulic Model Technical Report*). Hydraulic modeling will be updated as a part of WST3 and may impact recommended system changes.

This capital upgrade project is for the additional of four 500,000 gallon elevated storage tanks to provide additional potable water storage, improving fire response and redundancy to allow for tank maintenance.

WCU17: Raise Existing Backflow Preventers

The existing backflow preventers at the two connections to the TRUST system are in a below ground vault, which if flooded could risk potential cross-contamination of the water system. This capital upgrade is to re-construct the east and west backflow prevention stations at the TRUST connection points above grade.

WCU18: Well Pump No. 27 Replacement

Well No. 27 Pump has failed and requires replacement, along with modifications to the local booster pump station and potable water storage tank. The current water supply system at the EIW area utilizes Well No. 27, along with the local water booster pump and storage tank. Current operations would indicate equipment replacement is required to re-establish the fire protection system, supply independent of the potable water system. This capital upgrade would include local instrumentation and metering, along with SCDA communications.

WCU19: TRUST Operations Building

The TRUST will need an on-site facility where on-site staff may office and keep spare parts and materials. The facility will include office and cubicle space for the assigned on-site employees, a conference room, a restroom and break room. The facility will also include parking for on-site vehicles and storage for materials.

3.1.3 System Characterization Studies

Several system characterization studies will be executed for the TAFB water system by the TRUST and its subcontractors. These studies will provide the basis to manage and upgrade the water system in a cost-effective and responsible manner, and will improve the TRUST's delivery of reliable and effective utility service to TAFB. The results of the studies will enable the TRUST to identify and prioritize future capital upgrades and renewals and replacements and to properly size facilities to address TAFB's long-term needs. **Table 3-3** summarizes the proposed studies for the Water Distribution System. The list of projects is described below along with a brief scope for each project.

For the purposes of project identification, a naming convention was established as follows:

- W=Water
- ST=System Characterization Studies
- A number was also added to the end of the name to differentiate the various projects

Table 3-3. Water System Characterization Studies Summary

Project No.	Project Name	Start Year	Project Basis/Benefit
WST1	Water System Inventory and Valuation	2015	System inventory and valuation will be conducted and value of assets will be estimated.
WST2	Condition Assessment of Water System	2016	Collect inventory and survey data and inspect wells, tanks and booster stations.
WST3	Water System Hydraulic Model	2016	Evaluate capacity of water system using a hydraulic model.
WST4	Develop TAFB Water System Master Plan	2016	Develop a Water Master Plan that addresses capacity needs for existing and future flows.
WST5	Develop Instrumentation and Control (I&C) Master Plan	2015	Develop Instrumentation and Control Master Plan for Water System that will evaluate I&C requirements of existing and proposed future water system.
WST6	Environmental Study	2016	Provide limited environmental study of proposed capital improvement projects.
WST7	Water Vulnerability Assessments	2016	Complete Water Vulnerability Assessments and Report Deficiencies after declassification by the Government.
WST8	Management Information Systems	2015	Study will be conducted to determine what software is directly applicable and useable for TAFB reporting requirements.
WST9	Regulatory Strategy Plan	2015	Regulatory Strategy Plan will be developed to recommend practices and strategies to comply with regulatory agency requirements.
WST10	Parts and Supplies Analysis	2015	Comprehensive list of supplies and replacement parts will be developed for the water system.
WST11	Health and Safety Plan	2015	Health and Safety Plan will be developed to establish work practices necessary to ensure the safety of all personnel throughout the contract.

The results of these studies will enable the TRUST to develop and prioritize a list of upgrades and to design and size proposed improvements to the water system for the Annual Capital Upgrade and Renewals and Replacements Plan (Annual Plan or ACURRP).

The following provides a summary description of each of the proposed system characterization studies for the TAFB water system.

WST1: Water System Inventory and Valuation

The inventory, as provided in Solicitation Attachment JA3, will be updated under WST1. Each inventory item will be listed down to the major component level. For each line item, a "replacement cost new" (RCN) estimate and "replacement cost new less depreciation" (RCNLD) using the straight-line depreciation method will be prepared. This approach will be used together with information on specific capital expansion, upgrade and renewal projects as a metric for determining the appropriate capital investment rate to increase and maintain the value of the water system assets.

The existing water system inventory will need to be refined to capture details on all of the assets. This will include GIS survey to collect the physical attributes of the water systems, including SDSFIE-compliant coordinates of water storage tanks, fire hydrants, booster pump stations, wells, and valves.

In order to establish what information already exists and what new information needs to be collected, a gap analysis will be performed on the GIS database provided by TAFB. Existing GIS files/data will be validated and will be analyzed for content, accuracy, and known CAD drawings will be converted (when necessary) into GIS and populated with attributes. The water system GIS database will be populated with the new inventory and GIS survey data. If feasible, accessible valve lids will be inspected to record the elevation of each valve nut.

The existing mapping of the water system will be used to establish the inventory for the remainder of the water distribution pipelines. At the pump stations and well sites, major system components such as containment structures, pumps, tanks, motor control centers, pump houses, supervisory control and data acquisition (SCADA) system, and other ancillary equipment will be accounted in the inventory file.

WST2: Condition Assessment of Water System

A water system condition assessment program will be established to define the system in terms of age, functional state and condition, and to prioritize maintenance and system upgrades. These assessments will be input into an asset integrity management and capital planning software (Tool) and the water system hydraulic model. The Tool will identify cyclical replacement schedules for facilities and will prioritize facilities for renewal.

A deficiency analysis report will be generated upon completion of the inventory and condition assessment studies for TAFB. The report will provide the condition assessment results and analyze/identify deficiencies in system capacity, compliance, efficiency, and reliability. These deficiencies then will be used to develop the first Annual Capital Upgrades and Renewals and Replacements Plan.

A corrosion assessment specialty subcontractor will complete cathodic protection inspection for the five existing elevated steel water storage tanks. The existing cathodic protection systems will be evaluated by interviewing staff, reviewing documents and performing site inspection. The subcontractor will be responsible for determining the cathodic protection system's effectiveness in accordance with contract specifications, common engineering practices, and NACE Standard Recommended Practice.

WST3: Water System Hydraulic Model

A water system hydraulic model will be created with the inventory data collected during WST1. All electronic input files (e.g. inventory, system water demands, and fire flows) will either be used from an existing water system hydraulic model (if one exists) or the files will be built based on available water

demand, inventory, and fire flow data. The model input files shall be updated based upon the new inventory and GIS data for all main water pipes.

Creating the hydraulic model will include: a) preparing a summary of the criteria to be used in the evaluation of the distribution system, b) developing the water system inventory and GIS (refer to WST1), c) building the model components d) validating results through field testing and e) running appropriate representative scenarios.

The water system will be modeled for existing flow demands and for a design fire flow condition. Three seasonal diurnal water use graphs (summer, winter, and spring) will be developed from hourly water production and tank level data that are representative of the maximum day, minimum month and average annual water use patterns for TAFB. The diurnal patterns will be entered into the model and assigned to demand nodes for their respective scenarios. Water use will be based on water production records provided by TAFB and water demands will be based on the Air Force Installation Water Resources Analysis and Planning System Model.

The hydraulic computer model must be calibrated before model results can be considered reliable. Calibration is a process of comparing model results to actual field collected data and making subsequent adjustments or corrections to the model as necessary to reach an acceptable level of accuracy.

The model developed for the existing distribution system will be modified to include a layout of known future system piping and other facilities. Layout of known future distribution piping will only include piping 8-inch diameter and larger. Known future demands will be added and the model will be executed and evaluated under the same conditions as the existing system model.

Water demand will be calculated for known areas to be developed in the future using a unit-area method. Calculations will be based on water demand factors established and the land use plan mapping provided by TAFB. Future demands will be added to current water demands and saved as a separate demand set in the model. One demand set will be prepared for each planning horizon. Flows will be added to all appropriate future model junctions. Future controls will only be modeled during normal conditions (i.e. interconnected with no well pumps on).

WST4: Develop TAFB Water System Master Plan

The TAFB Water System Master Plan (Master Plan) will enable the TRUST to cost-effectively address anticipated growth and Operation and Maintenance (O&M) concerns at TAFB. The objective is to create a Master Plan that proactively addresses regulatory concerns, fire flow, level of service, and storage requirements. The output of the Master Plan will be a prioritized list of capital upgrades and renewal and replacement projects that will be used in the first Annual Plan.

TAFB’s existing facilities require review and evaluation to determine improvements and system modifications that are or will be required to accommodate planned development and to improve system performance and operational efficiencies. An assessment of the adequacy and capacity of the water supply source to meet current and projected needs will be part of the Master Plan development.

A systematic approach will be utilized to achieve the following objectives:

1) Update existing water system master plans.
2) Meet with TAFB staff to review plans and understand TAFB's future needs so that the needs can be analyzed and integrated into the water system Master Plan.
3) Develop a thorough understanding of system performance – increased awareness of system hydraulic condition and deficiencies utilizing a calibrated hydraulic model.
4) Enhanced system performance – optimization of flows for effective utilization of storage within the system.

5) Prioritize O&M activities – establish a proactive maintenance program, plan and budget maintenance activities.
6) Comply with regulatory requirements – provide information needed to comply with regulatory storage and pressure requirements.

Following analysis of the results of the hydraulic modeling, a prioritized list of capital upgrades for the modification of the existing water pipelines and the addition of new pipelines will be developed. Based on discussions with TAFB staff, an alternative will be selected that offers desired flexibility for further development considering potential growth scenarios.

Projects will be prioritized based on condition assessment, capacity, and coordination with TAFB and other CIP projects. Review of existing system information, review of model, and review of future growth within the site will be used to prioritize Capital Upgrades and Renewals and Replacements (R&R) projects. For the selected alternatives, planning level costs (AACE International Class 5) will be developed for all the proposed projects for capital improvement planning. This plan will include construction, contingencies, engineering, and legal costs. Based on priorities assigned and cost considerations, an implementation plan will be developed by the TRUST. The plan will provide an orderly sequence of projects to meet the most immediate needs first and to minimize disruption to TAFB to the greatest extent possible.

The findings and recommendations for enhancing the performance of the water system facilities to accommodate TAFB's anticipated growth will be summarized in a report to be submitted to TAFB for review. The report will consist of a narrative discussion of the results of the modeling including exhibits, tables, graphs, and computer analyses of the water system.

WST5: Develop Instrumentation and Control (I&C) Master Plan

In order to properly evaluate the requirements necessary to install an I&C System, a thorough study will need to be performed by the TRUST. TRUST representatives will meet with the existing water system operator and obtain data to develop an I&C Master Plan that meets existing TRUST communication protocols. The review will include existing communication methods, equipment and protocols, software development and installation, control functionality and monitoring capabilities at each well, water pump station, elevated storage tank, and chlorination and fluoridation facility.

After a careful analysis of the acquired data, a report will be generated which will detail an overall I&C Plan. This I&C Plan will be presented in such a way as to allow improvements to take place in phases with the goal of providing a complete and functioning system once all the improvements are installed. The I&C Plan will also outline a conceptual layout for the SCADA system that will provide quality service. The I&C Plan will be coordinated with TAFB.

WST6: Environmental Study

A limited environmental study will be prepared by the TRUST to determine the potential extent of impacts on the environment that may result from the proposed capital upgrade projects for the water system. Available information regarding project background, purpose and alternatives; site environmental conditions; designated wetland; and historic and current land uses will be compiled. Most of this information is expected to be available from and provided by TAFB; however, other federal, state and local agencies may be contacted as necessary to acquire maps, aerial photographs, and other relevant materials for the environmental documentation.

Inquiries to the US Fish and Wildlife Service and appropriate state agencies requesting information concerning the potential presence of federally and state protected plant and wildlife species in the vicinity of the project will be submitted. Actual field or sampling investigations are not included.

The purpose of the environmental study will be to review the projects in the Master Plan and to screen them to determine if the projects require more significant environmental documentation than a categorical exception. If more documentation is required, the TRUST will program additional studies. Standard protocols will be developed for environmental analysis during project design.

WST7: Water Vulnerability Assessments

In accordance with EPA requirements, Water Vulnerability Assessments will be performed on TAFB's water system. The sensitivity of information in the Vulnerability Assessments is paramount and the TRUST's representatives will strictly protect information from public disclosure. All public water systems were required by the EPA to have already completed the assessments; therefore, it is anticipated that although the assessment is classified by the military, the information would be available to the TRUST and water utility operator once a contract has been awarded. In the event that the Vulnerability Assessment information is not declassified where it can be used by the TRUST or operator, an internal water system vulnerability assessment will be conducted and those security measures that are appropriate will be implemented.

WST8: Management information Systems (MIS)

A Management Information Systems study will be conducted by the TRUST to determine what software is directly applicable and useable for TAFB reporting requirements. If the existing software utilized by the TRUST cannot meet the TAFB requirements from the Solicitation, a summary of recommendations will be prepared for the development and implementation of an updated MIS that will meet contract requirements and will work within the TRUST's existing MIS.

WST9: Regulatory Strategy Plan

A Regulatory Strategy Plan will be developed by the TRUST to recommend practices and strategies to comply with regulatory agency requirements. The plan will describe specific steps and actions required to successfully meet the regulatory strategy objectives.

WST10: Parts and Supplies Analysis

A review of the existing parts and supplies inventory on TAFB will be conducted by the TRUST and recommendations will be made on which materials will be housed at TAFB and which materials will be supplied to TAFB from the TRUST's existing maintenance facilities. This analysis will also make a recommendation on the space needs for the storage of parts, supplies and equipment at TAFB.

WST11: Health and Safety Plan

A site-specific Health and Safety Plan will be developed by the TRUST during the transition period, prior to the transfer of full O&M responsibility from the Government to the TRUST. The Health and Safety Plan will establish the work practices necessary to ensure the safety of all personnel throughout the contract, and will include provisions for accident prevention strategies consistent with Air Force, OSHA, PEOSH, and Oklahoma Department of Environmental Quality requirements. Risk issues will be identified and included in preliminary safety action plan and will be further developed during operations. This safety action plan will identify deficiencies, assign responsibilities, and mandate timelines for completion. At a minimum, the Safety and Health Plan will include a discussion of:

- Safety Requirements and Systems
- Hazard Assessment and Control
- Personal Protective Equipment
- Personnel Medical Surveillance
- Project Appearance and Housekeeping

3.1.4 Initial Renewals and Replacements

The following Renewals and Replacements (R&R) Scope of Work (SOW) has been developed using inventory data provided by DLA Energy in the TAFB Solicitation, Attachment JA3.

As stated in the Solicitation, Renewals and Replacements (R&R) are investments in the utility system to renew or replace system components that fail or reach the end of their useful life.

R&R is based on installation date and design life; when an item reaches its design life, it is scheduled for replacement. However, in order to effectively manage design and construction, and to ensure that TAFB's mission is not unduly interrupted, the initial schedule of R&R has been smoothed out over ten years.

Initial R&R projects will be necessary to refurbish or replace system components that have reached the end of their useful lives prior to, or during, the initial years of the contract, beginning once the WDC and WCU projects are completed. Actual replacements will be based on observed system conditions. Any inventory that has reached the end of its useful life before the beginning of the transition phase is considered "backlog".

Items slated for R&R will be prepared using System Characterization Studies, the breadth of which is described in Section 3.1.3. These studies will provide the basis for determining the items of highest priority and subsequent scheduling for R&R.

The initial R&R project list incorporates the TRUST's knowledge of system components including useful life and condition and review of the inventory and condition assessment information provided in the Solicitation documents. The water system R&R program will begin the year after all System Characterization Studies, WDC and WCU projects have been completed and the Annual Plan has been approved or accepted by DLA Energy and TAFB.

For the purposes of project identification a naming convention is as follows:

- W=Water
- RR=Renewals and Replacements
- A number was also added to the end of the name to differentiate the various projects

Table 3-4. Water System Renewals and Replacements

Project No.	Project Name	Projected Year	Project Basis/Benefit
WRR1	Pipeline, valve and hydrant R&R	2021	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR2	Water storage tank and component R&R	2021	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR3	Water well and component R&R	2021	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR4	Pipeline, valve and hydrant R&R	2022	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR5	Water storage tank and component R&R	2022	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR6	Water well and component R&R	2022	Initial R&R due to age/Reduce O&M cost, increase reliability.

Project No.	Project Name	Projected Year	Project Basis/Benefit
WRR7	Pipeline, valve and hydrant R&R	2023	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR8	Water storage tank and component R&R	2023	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR9	Water well and component R&R	2023	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR10	Pipeline, valve and hydrant R&R	2024	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR11	Water storage tank and component R&R	2024	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR12	Water well and component R&R	2024	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR13	Pipeline, valve and hydrant R&R	2025	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR14	Water storage tank and component R&R	2025	Initial R&R due to age/Reduce O&M cost, increase reliability.
WRR15	Water well and component R&R	2025	Initial R&R due to age/Reduce O&M cost, increase reliability.

WRR1: Pipeline, Valve and Hydrant Renewal & Replacement

The data in Attachment JA3 indicates that 92% of the distribution system piping, 89% of valves, and 97% of fire hydrants will have reached/exceeded designed lives by 2015. This infrastructure is considered backlog and should be replaced as soon as possible; however, such a significant amount of construction cannot be accomplished concurrently. Therefore, the replacement of backlog R&R will be managed based on replacement of highest priority infrastructure at a pace tolerable by TAFB and within capacity of the construction contractor community.

WRR1 will replace 10% of the backlog pipelines and appurtenances (approximately 9% of the total pipe system) that have exceeded their design life. The basis for determining which portions of the system will be replaced will include: age, number of maintenance related repairs, and physical condition.

WRR2: Water Storage Tank and Component Renewal and Replacement

The data in Attachment JA3 indicates that all five cathodic protection systems associated with water storage tanks will have reached design life by 2015. Therefore, these elements should be replaced as soon as possible to avoid degradation of the tanks. WRR2 will replace the highest priority cathodic protection system based on recommendations from the System Characterization Studies (study WST2).

WRR3: Water Well and Component Renewal and Replacement

The data in Attachment JA3 indicates that 64% of the existing well pumps and associated controls will have reached their design life by 2015. Additionally, 74% of well casings will have reached their design life by 2015 and should be renewed. These items are considered backlog and should be replaced or renewed. The basis for determining which wells will be rehabilitated will include; age, number of maintenance related repairs, physical condition, and ability to maintain an acceptable level of service for the water system during repairs.

WRR3 will renew and/or replace the highest priority 10% of the backlog.

WRR4: Pipeline, Valve and Hydrant Renewal & Replacement

WRR4 will replace 10% of the backlog pipelines (approximately 9% of the total pipe system), valves, and hydrants. The basis for determining which portions of the system will be replaced will include: age, number of maintenance related repairs, and physical condition.

WRR5: Water Storage Tank and Component Renewal and Replacement

WRR5 will replace the next cathodic protection system identified for replacement in the system characterization studies.

WRR5 will also include replacement of the worst one of the two 500,000 gallon elevated storage tanks that reaches design life in 2017.

WRR6: Water Well and Component Renewal and Replacement

WWRR6 will renew and/or replace the next 10% of the backlog.

WRR7: Pipeline, Valve and Hydrant Renewal & Replacement

WRR7 will replace 10% of the backlog pipelines (approximately 9% of the total pipe system), valves, and hydrants. The basis for determining which portions of the system will be replaced will include: age, number of maintenance related repairs, and physical condition.

WRR8: Water Storage Tank and Component Renewal and Replacement

WRR8 will replace the next cathodic protection system identified in the system characterization studies.

WRR9: Water Well and Component Renewal and Replacement

WRR9 will renew and/or replace the third priority 10% of the backlog.

WRR10: Pipe, Valve and Hydrant Renewal & Replacement

WRR10 will replace 10% of the backlog pipelines (approximately 9% of the total piping system), valves, and hydrants. The basis for determining which portions of the system will be replaced will include: age, number of maintenance related repairs, and physical condition.

WRR11: Water Storage Tank and Component Renewal and Replacement

WRR11 will replace the next cathodic protection system identified in the system characterization studies. WRR11 will also include replacement of the remaining 500,000 gallon elevated storage tank that reaches its useful design life in 2017.

WRR12: Water Well and Component Renewal and Replacement

WRR12 will renew and/or replace the next 10% of the backlog based on R&R priority.

WRR13: Pipe, Valve and Hydrant Renewal & Replacement

WRR13 will replace 10% of the backlog pipelines (approximately 9% of the total pipe system), valves, and hydrants. This will complete the initial R&R process of the backlog for the distribution system.

WRR14: Water Storage Tank and Component Renewal and Replacement

WRR14 will replace the final cathodic protection system identified in the system characterization studies. This will complete the R&R process of the backlog for the elevated water storage tanks and appurtenances.

WRR15: Water Well and Components Renewal and Replacement

WRR15 will renew and/or replace 10% of the backlog. This work will complete the initial R&R process of the backlog for the wells and appurtenances.

3.2 Conceptual Plans for Energy and Water Efficiency and Conservation

The TRUST will work with the Government to facilitate any future energy- and/or water-savings projects determined to reduce the Government's costs while still meeting their service requirements.

3.2.1 Water Conservation

The TRUST has established water conservation rules, to which the TAFB community will adhere. The rules are noted below.

The TRUST has entered into a contract with Oklahoma State University to develop and implement programs to educate the public about water conservation and to encourage good water practices. The TRUST and the City have invested in the recycling of treated wastewater for irrigation and the use of recycle water saves millions of gallons of potable water annually. Water conservation and good water practices are important during times of emergency and disruption of water systems and processes. To address these stressors and the need to conserve potable water and water resources the City adopts ordinances to encourage and require compliance with conservation and water restriction directives. A water conservation program enables the City Manager or designee to administer progressive water use restrictions to manage the overall water systems protecting the public health, safety and welfare of the citizens of Oklahoma City.

Progressive water conservation measures:

Stage 1 – Water Conservation – Mandatory Odd/Even Lawn Watering

Mandatory odd/even lawn watering is in place at all times. All lawn watering systems using sprinklers devices (hand watering with a hose is permitted any day) shall be limited to odd/even lawn watering based upon the location address. Odd number addresses water lawns and landscaping on odd number calendar days. Even number addresses water lawns and landscaping on even number calendar days. This applies to all customer classification: single family residences, duplexes, triplexes, homeowner association general properties, commercial, industrial, government, etc.

Stage 2 – Water Conservation – Fixed Two (2) Day Lawn Watering

In the event lake capacities are 50% or less full, mandatory fixed two (2) day per week lawn watering is implemented. In addition to all voluntary indoor water conservation efforts, outdoor lawn watering systems using sprinkler devices (hand watering with a hose is permitted any day) shall be limited to fixed two (2) day per week lawn watering. Odd number single family residences water lawns and landscaping on Sundays and Thursdays. All other customer classifications such as: duplexes, triplexes, homeowner association general properties, commercial, industrial, government, etc.; water lawns and landscaping on Tuesdays and Fridays.

Stage 3 – Water Conservation – Fixed One (1) Day Lawn Watering

In the event lake capacities are 45% or less full, mandatory fixed one (1) day per week lawn watering is implemented. In addition to all voluntary indoor water conservation efforts, outdoor lawn watering systems using sprinkler devices (hand watering with a hose is permitted any day) shall be limited to fixed one (1) day per week lawn watering. Single family residences with addresses ending in 1 or 3, shall water lawns and landscaping on Saturdays. Single family residences with addresses ending in 5, 7 or 9, shall water lawns and landscaping on Wednesdays. Single family residences with addresses ending in 0 or 2, shall water lawns and landscaping on Sundays. Single family residences with addresses ending in 4, 6, or 8, shall water on Thursdays. Duplexes, triplexes, homeowner association general properties shall water on Tuesdays. Commercial, industrial, government, etc.; shall water lawns and landscaping on Fridays.

Stage 4 – Water Conservation – Hand Watering Garden & Flower Beds Only, Commercial Car Washes with Watering Recycling Operations Only

In the event lake capacities are 40% or less full, only hand watering of garden and flower beds is permitted. In addition to voluntary indoor water conservation efforts, individual water customers at all service locations, regardless of street address, may continue to hand water garden and flower beds only. This applies to all customer classifications: single family residences, duplexes, triplexes, homeowner association general properties, golf courses, commercial, industrial, government, etc., except commercial car washes. Only commercial car washes that utilize water recycling systems will be permitted to operate.

Stage 5 – Water Conservation – Ban All Outdoor Watering

In the event lake capacities are 35% or less full, all outdoor watering is banned. Individual water customers at all service locations, regardless of street address, are prohibited from all outdoor watering and/or washing of vehicles. This applies all customer classifications: single family residences, duplexes, triplexes, homeowner association general properties, golf courses, commercial, industrial, government, etc.

Table 3-5 Water Conservation Measures and Triggers

Stage	Water Conservation Measure	Triggers
1.	Mandatory Odd/Even Lawn Watering	Required at all times
2.	Fixed 2 Day a Week Lawn Watering	Lakes 50 percent or less full
3.	Fixed 1 Day a Week Lawn Watering	Lakes 45 percent or less full
4.	Hand Watering Garden & Flower Beds only; only commercial car washes with water recycling operate	Lakes 40 percent full or less
5.	Ban All Outdoor Watering	Lakes 35 percent full or less

Terms

i. Lakes percent full: All water supply lakes are considered (Canton, Overholser, Hefner, Draper, Atoka, and McGee Creek). Lake capacity includes all water stored except that inside the flood control pool.

ii. Odd/Even Lawn Watering; calendar day matches last number of building's street address

iii. 2 day a week watering: Single family odd numbers water Saturday and Wednesday; Single family even numbers water Sunday and Thursday; All other water Tuesday and Friday. Monday is reserved for refilling treated water storage tanks

iv. 1 day a week watering: Single Family ending in 1 or 3 on Saturday; Single family ending in 0 or 2 or Sunday; Single family ending in 5,7, or 9 on Wednesday; Single family ending in 4, 6, or 8 on Thursday; all multifamily and homeowner associations on Tuesday, and all other on Friday.

Unaccounted-for-water (UAW) is the difference between the total amount of water pumped into the water system from the source(s) and the amount of metered use by the customers of the water system expressed as a percentage of the total water pumped into the system. UAW generally includes system leakage, inaccurate meters, accounting errors, and un-metered use such as firefighting, line flushing, broken water mains, etc. An industry goal of 10% or less UAW in municipal systems the size of TAFB is optimal.

Several areas listed below typically cause UAW in the type of water system at TAFB. Some are relatively easy to immediately implement a solution, while others are more complex and may not be implemented unless UAW was determined to be excessive. UAW cannot be accurately determined until meters are installed for all users or at strategic locations. Leak types one through five are easy to fix. These type valves are readily tested for leaks and testing should be done annually. Plant and large usage meters should also be tested annually. Leak type five can be difficult to identify; however, visual observation at strategic drainage and storm water system locations should be performed annually during dry conditions. Six and seven are also more difficult and will take some time and funding to implement.

1) Un-calibrated large meters
2) Check valves leaking
3) Storage overflow through leaking altitude valves, check valves, or storage tank control
4) Numerous detected but un-repaired leaks
5) A large leak into drainage ditches, storm water system, or wastewater system
6) Un-metered usage or use through defective meters
7) Numerous or large leaks into porous soils

The TRUST will undertake the following steps to decrease water loss at TAFB:

- Check valves, altitude valves and storage tank controls will be checked during the transition period. Following installation of the SCADA system, the water storage tank levels will be continuously monitored. SCADA allows for all water level information to be monitored at a central location by the TRUST. If the tank level becomes too high and is detected prior to reaching the tank overflow, water wastage will be significantly reduced.
- Designated crew response to customer requests about leaking pipes, hydrants, and other visible leaks in the water system. Maintenance will be performed on components that are found faulty by TRUST personnel. The TRUST has a leak detection program and multiple pieces of leak detection equipment already assigned to leak detection.
- Drainage ditches and storm water systems will be reviewed and strategic observation locations identified. These locations will be visually checked annually during dry conditions.
- The TRUST will incorporate the TAFB water system information into their current maps including all pipelines. This will reduce time and money spent for leak detection and system maintenance.

- The TRUST has several programs in place pertaining to water loss and conservation. Although not all would apply to TAFB services, the TRUST will work with TAFB to investigate what improvements could be made to conservation measures currently in place in the TAFB service area. Some of these might include:
    - Leak Detection and Meter Maintenance Programs
    - Plumbing Fixture Replacement
    - Plumbing Retrofit Programs
    - Residential Water Use Audits
    - Landscaping Programs
    - Educational Programs (school and community)

3.2.2 Energy Conservation

When UAW is minimized, pumping and treatment energy usage is reduced. Greater diligence in finding and correcting distribution system failures that cause wasted water not only improves system performance but conserves energy. The approach noted above will facilitate this conservation.

The TRUST will perform walk-through audits during the transition phase to assess energy efficiency with regard to motors, HVAC and lighting. Operational procedures will also be reviewed as compared with actual application.

Electric energy plays a major role in the operating cost of utilities. Electric energy conservation and cost reduction is evaluated using the following procedures:

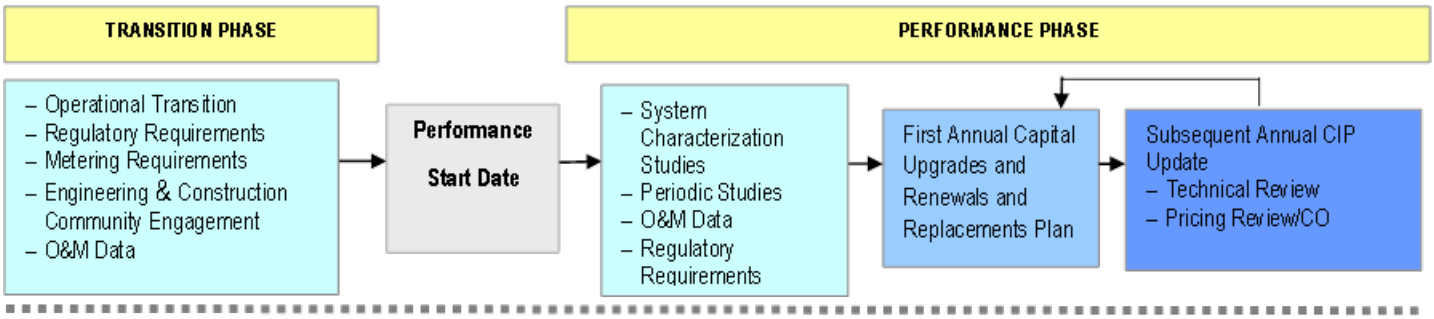
- Gather Information: During the transition period, the TRUST will collect available data on all equipment, including motor horsepower, RPM, and efficiency; pump curves; and equipment data. Where data is not available it will be obtained from the manufacturer. The data will be entered in the Management Information System (MIS) where it can be manipulated to determine the optimum-operating scenario that provides minimum electric energy cost consistent with acceptable process control.
- Energy Use Reduction:
    - Replacement of low efficiency motors will often amortize investment in one to two years.
    - Compare large equipment actual load and capacity to original design. Performance below the design basis would indicate excessive wear, misapplication, or other problem. The equipment should be checked for restricted valves, improper submergence, head/lift conditions, wear, or other operating problem. A cost analysis will be made to determine if repair/replacement is warranted.
    - Training: The most important part of an energy management plan is training of operating personnel; the TRUST will develop a training program during the transition period that is specific to TAFB. The TRUST Site Manager will be involved in the preparation of this program. Training of TRUST staff on energy use reduction will begin with the operations and maintenance personnel as soon as they are available.
    - Blower heaters will be replaced with infrared heating systems in well buildings as they are scheduled for regular replacement. Infrared uses less energy than a blower heater.
    - Water mixers installed in elevated storage tanks may be powered via solar.
- The TRUST will collect available data on all equipment: this includes pumps, fans and lighting. These will be checked for proper function to reduce unnecessary energy consumption.

3.3 Procedures for Identifying, Financing, and Scheduling Long-Term Capital Renewals and Upgrades

3.3.1 Annual Capital Upgrades and Renewals and Replacement Plan

Each year, an Annual Capital Upgrades and Renewals and Replacement Plan (Annual Plan or ACURRP) will be developed that will be the mechanism for communicating all of the known deficiencies, their proposed solutions, and schedule to implement the solution. The Annual Plan for the first year will differ from those in subsequent years because the System Characterization Studies establishing the baseline condition of the water system may alter the projects. The Annual Plan will indicate the optimum timing for facilities renewal, repair, and replacement projects that will provide the best balance between reliability and length of service life. The plan will include a "rolling" five year list of recommended upgrades and renewals and replacements.

Figure 3-2. Long Term Capital Planning and Programming Flow Diagram



The Annual Plan will also include staffing and O&M procedures, upgrades, modifications, expansions, planned replacements, and overall changes from the previous year. It is intended to serve as a tool to facilitate communication between all parties, define the course for the coming years, and set a reasonable budget for reliable service and asset management. The Annual Plan will propose costs for all recommendations and will describe the methodology used to arrive at the projects and the proposed costs.

Regulatory compliance, including drinking water quality requirements, and applicable codes including, but not limited to, health and safety codes, building codes and fire codes will be evaluated for their impact on the utility systems. All new facilities identified in the Annual Plan will be designed and constructed to meet applicable standards.

After new connections, regulatory drivers are the second leading cause of upgrades required to the water system. Water system permits and other relevant regulations, current or pending, will be reviewed on an annual basis at a minimum. The result will be a proactive approach to define capital upgrades required by such regulations to ensure current and long-term regulatory compliance. A partial list of the codes and standards to be considered in developing upgrades for water and wastewater is provided below.

- PEOSH (Oklahoma Department of Labor) - The Public Employees Occupational Safety & Health Division is responsible for the enforcement of workplace safety and health regulations in the public sector for the state of Oklahoma, including: city, county, state, public schools and universities, as well as public trusts. These employers do not fall under the jurisdiction of Federal OSHA standards.
- Americans with Disabilities Act (ADA)
- Federal Codes and Regulations such as Safe Drinking Water Act 40 CFR 141 (National Primary Drinking Water Regulations) and CFR 143 (National Secondary Drinking Water Regulations)

- EM 38 3-1.1 USACE Safety and Health Requirements Manual
- Federal EPA and ADEC Regulations
- U.S. Public Health Service Standards
- Air Force and TAFB Regulations
- National Fire Protection Association Codes and Standards
- Oklahoma Administrative Code
- AWWA
- Oklahoma Department of Environmental Quality

3.3.2 Capacity Improvements

The Solicitation documents do not provide any information and requirements related to immediate capacity improvement needs; therefore, no initial projects are included in the TRUST's response to the Solicitation. Identification of future service needs, and the associated impacts to the existing water system, will be determined by working with the planning staff at TAFB and by assessing the results of the WST3, Water System Hydraulic Model, and WST4, Develop Water System Master Plan.

3.3.3 Periodic Studies

Conducting periodic system studies consistently is key to assessing the condition and performance of the water system and identifying the need for renewals or upgrades. Some water system studies are required periodically for regulatory compliance. Each year the Annual Plan will be revisited and additions, changes, or deletion of periodic studies may be proposed. The periodic studies will define the system condition in terms of age and functional state, and verify the current adequacy of the system in terms of capacity, flow, dynamic characteristics, environmental compliance, and emergency operation. These assessments involve updating capacity analyses to define and characterize the current critical system parameters. Proposed periodic studies and their frequency are listed below, and briefly described in the subsequent sections.

- Annual Plan – Annually (as described in Subfactor 3.3.1, above)
- Capacity Evaluation Updates – Every 5 years
- Inventory, GIS, and Mapping Updates – Annually
- Leak Detection Studies – Every 5 years
- Corrosion Investigations – Every 5 years
- Condition Assessments – Annually
- Master Plan Updates – Every 5 years

Capacity Evaluation Updates

A capacity evaluation for the water system is essential to identify system capacity limitations and properly size system upgrades. System deterioration over time, system reconfiguration, extensions to the system, and the addition of new service areas may also necessitate an update to the capacity evaluation. The capacity analysis input files will be updated every 5 years based on new inventory and GPS/GIS data for the water system. The capacity evaluation will determine the adequacy of the existing water system to meet current and future needs. Based on the capacity analyses, computer modeling will be performed to identify deficiencies in the systems and to develop the most cost-effective improvements.

Inventory, GIS, and Mapping Updates

After initial updates are made to bring the existing system inventory up-to-date, new attributes due to items such as infrastructure replacements will be added to the inventory on an annual basis. The inventory data collected will be updated throughout the life of the contract. Additional physical attributes and condition attributes will be added to the inventory to meet the needs of the operations and maintenance crews. The GIS database will be populated with any new inventory and survey data collected during each year. The GIS will then be updated periodically during the year and submitted annually to the Government to show changes in the systems that are included in the Annual Plan. After initial updates are made to bring existing maps up to date, maps of the water system will be updated annually.

Leak Detection Studies

Leak detection studies will be performed every 5 years to determine losses in the water system due to unidentified leaks. High losses are generally associated with older water systems where leakage, no meters, or faulty meters are more commonplace than in new systems. Leak detection studies will identify leaks in the system and help make appropriate and cost-effective recommendations to reduce system leakage.

Corrosion Investigations

Every five years, a corrosion inspection for the steel water storage tanks will be completed. The cathodic protection system's effectiveness will be determined in accordance with contract specifications, common engineering practices, and NACE Standard Recommended Practice. An analysis and report will be produced containing the results of this effort. Elevated water tanks will be inspected for corrosion every 3 years, as recommended by AWWA M42. Tank external inspection is more visible and will be annually viewed, with significant degradation triggering a more thorough coating inspection by a specialist.

Condition Assessments

Visual inspections will be performed routinely, at a minimum annually, on above-ground infrastructure. Results will be used to determine and prioritize maintenance requirements (cleaning, point repairs, replacement, and rehabilitation).

Master Plan Updates

TAFB's existing facilities require periodic review and evaluation to determine improvements and system modifications that will be required in the future to accommodate planned development and optimize system performance and operational efficiencies. The need to update and provide the necessary capital upgrades and renewals and replacements to accommodate anticipated growth and interim improvements are the key issues to be addressed in the Water System Master Plans. Master Plan will be updated every 5 years to effectively address the key issues and anticipated growth and O&M concerns.

3.3.4 Renewals and Replacements Conceptual Methodology

R&R is based on the date of original installation and design life; in theory, when an item reaches its design life it is scheduled for replacement. The design life of each component is shown in **Table 3-6**, below and is taken from TAFB Solicitation, Attachment JA3. R&R projects will be carefully selected and managed in order to effectively manage design and construction, and to ensure that TAFB's Mission is not unduly interrupted.

Replacement of water system components will be coordinated with relevant replacement of wastewater system components in order to minimize re-work and disruption. For example, if a sewer line in one street has had a history of maintenance related issues and is a high priority for replacement, then it is likely that the adjacent water line will also be replaced as a part of the same project.

Table 3-6. Water System Component Design Lives

Item	Design Life (years)
Cast Iron Pipe	50
Polyvinyl Chloride Pipe	50
Ductile Iron Pipe (Less than 4-inch)	50
Ductile Iron Pipe (4-inch and Greater)	75
Asbestos Cement Pipe	40
Building	50
Altitude Valve	25
Pressure Regulating Valve	25
Bypass-Pressure Regulating Valve	25
Gate Valves	25
Post Indicator Valves	35
Fire Hydrants	25
Elevated Water Storage Tank	75
Magnesium Anode	15
Cable	15
Rectifier	20
Reference Cell	20
Test Station	20
Well	50
Well Pump, Motor, & Column	15
Well Electric Connections	45
Pump Controls	15
Well Water Connections	50
Below Ground Concrete Structure	60
Chlorination Equipment	20
Booster Station Pump, Piping, & Controls	30
Chlorination Station	20
Fluoridation Station	35
Backflow Prevention Device	10
Sump Pump and Appurtenances	30

Projected R&R over the 50-year life of the contract is shown in **Appendix C**. The projected dates are based on the age of installation and design life. The timing for the R&R projects will be re-examined during development of the master plan. Records and equipment will be thoroughly inspected to ensure that the inventory and subsequent R&R plan is not over or understated.

Upon completion of the initial R&R projects, as presented above, R&R will continue on a yearly basis as age and system condition warrants. The system's overall age is such that the majority of R&R work will be required in the first years of the contract.

3.3.5 Capital Financing Process

Projects will be funded by the TRUST via a financing mechanism that is suited to the type of project being undertaken. The TRUST will recover the full cost of each project from TAFB over the expected project service life using commonly accepted approaches for utility service cost recovery, detailed in the Price Proposal.

Projects in the Annual Plan will be funded by the TRUST in the design and construction phases. Once an asset is placed into service, the TRUST will then commence recovery of the asset cost from TAFB.

The TRUST will utilize bond funding to support design and construction activities for those projects that are not funded by the Government prior to design or construction.

The Annual Plan will include estimated R&R project costs for the five years addressed by the plan. Estimated R&R project costs represent the TRUST's estimated costs to complete each project based upon the information reasonably available at the time the five-year capital plan is submitted. The TRUST will recover the full cost of each R&R project from TAFB over the expected project service life using commonly accepted approaches for utility service cost recovery, detailed in the Price Proposal.

3.4 Responding to Government Requests

The primary drivers for future capital upgrade projects are often upgrades to the system to serve new facilities. The TRUST will provide service to any facility as requested by the Government at TAFB subject to revision in the Annual Plan. The TRUST will coordinate with the Government to receive annual updates to the TAFB Master Plans.

Regular meetings with Base CE planning/engineering staff at TAFB will be conducted to coordinate and account for new uses and new facilities that are planned for construction. Changes in the use of facilities and new facilities at TAFB may drive the need for expanded water distribution. Estimated demands and flow rates will be developed to size any new service infrastructure based on projected construction data. The Annual Plan will include these projects so that adequate utility service to each of the facilities at TAFB is provided.

Subfactor 4. Transition Plan

This section comprises the TRUST's Transition Plan for transitioning the delivery of utility service at Tinker Air Force Base (TAFB) from the Government to the TRUST. The TRUST desires to become familiar with the TAFB water system and establish lines of communication between the TRUST and TAFB personnel. Upon transfer, the change in ownership should be transparent to the water customers at TAFB.

This section was developed based upon Section C.13 and in accordance with Section L.4.4 of the RFP and includes:

- 4.1 Length of Transition Period
- 4.2 Connection Requirements
- 4.3 New Meters
- 4.4 Permits and Procedures
- 4.5 Inventory and Transfer Requirements
    - 4.5.1 Inventory and Transfer of Facilities and Fixed Equipment
    - 4.5.2 Inventory and Transfer of Non-fixed Equipment, Spare Parts, and Personal Property
    - 4.5.3 Transfer of Manuals and Records
    - 4.5.4 Joint Inventory Execution/Timeline
- 4.6 Meter Readings
- 4.7 Authorized Personnel and Points of Contact
- 4.8 System Characterization Studies

The TRUST will obtain Government consent prior to making any material changes to this Plan.

4.1 Length of Transition Period

The TRUST proposes a six-month transition period following Notice to Proceed. The framework for the overall schedule is shown in **Appendix D**. Calendar dates are assumed based on Contract Award occurring October 1, 2015 and Notice to Proceed being given on November 1, 2015. If these dates are not met, the TRUST's transition period will extend to nine months total in order to allow for coverage during the busier water utility summer months.

The TRUST expects that Operations and Maintenance (O&M) during the Transition will continue to be performed by TAFB.

The TRUST requests the opportunity to perform joint operations with TAFB's water system operations staff, to begin at least thirty (30) days prior to the Contract Performance Start Date and to conclude no later than the Contract Performance Start Date. This period will allow for meaningful exposure to current operational practices, operational challenges and known problems, record keeping and storage. A transfer of institutional knowledge is a goal of the joint operations activities.

The TRUST plans the following types of activities during joint operations:

> The TRUST's staff will report for work following the same schedule as current System operators and maintenance staff. Rotation of the TRUST's staff will occur so that operators are exposed to weekday and weekend operations.
>
> The TRUST's staff will "shadow" the current operators and other operations staff. "Shadowing" is defined as observing the work of the operators throughout their daily tasks, asking questions about the operation and details of the same, and being physically shown how to operate the system.

It is important that TAFB convey the expectations to the operational staff and manage the process so that institutional knowledge is transferred openly.

The TRUST would expect to be contacted whenever a service interruption or equipment breakdown occurs so that the TRUST can observe the response and repair procedures, better understand some of the challenges faced by current staff, and be prepared to react to them. The TRUST is available to be contacted 24/7 during the joint operations and requests TAFB to place this procedure into the shadowing process. The TRUST will determine if it will dispatch staff to the problem location.

Planned joint activities for the TRUST operators include:

- Learning the operation of the pump and booster stations, including testing alarm functions
- Completing daily logs
- Understanding sample collection locations, sample frequency, and parameters
- Learning key distribution system valve locations
- Understanding system contingency plans, such as those for equipment or power failure, or isolating main breaks and maintaining service
- System flushing processes for water quality purposes
- Observing responses and repair to system interruptions
- Understanding how tank level control points are varied to match system demand to maintain water quality during low demand periods
- Understanding which vendors are currently used by TAFB for services and supplies
- Securing any Installation-specific training for Environmental or Health and Safety compliance that is required of TAFB contractors
- Securing access to TAFB via appropriate gates
- Preparing monthly operating reports for submission to the state regulatory agency

4.2 Connection Requirements

Upon ownership transfer, the TRUST will be responsible for additional service points and/or deleting service points no longer required. The TRUST will obtain approval from the Contracting Officer's Representative (COR) before adding or deleting service points. Extension of temporary service to contractors for the Government will be negotiated directly with the respective contractors, with details provided to TAFB. There are no connections or disconnections required by DLA Energy in the TAFB Solicitation SPE600-14-R-0800 (TAFB Solicitation or Solicitation) Attachment JA3, dated March 27, 2012; however, there are three connections listed that are potentially necessary. The TRUST has the capability of providing either temporary or permanent connections or disconnections at the direction of the COR. For short-term construction activities, the TRUST will have the capability of providing temporary service either as an extension of the existing utility system or by providing a bypass to ensure service to the facility.

Upon approval of a connection or disconnection by the COR, the TRUST Site Manager will schedule the necessary connection or disconnection, coordinate with the requesting entity to ensure service is either provided or discontinued on the requested date and will notify affected parties of any disruption of service. The TAFB Fire Department and Security Forces will be notified if a service disruption is planned. The notices will include expected duration of the disruption, area(s) affected, and a notice when service has been restored. When service points are disconnected, the notification will also include notice to the planning section of Base CE.

Known connection and disconnection requirements will be discussed as appropriate during any periodic meetings held between the TRUST, Base CE, the COR and any Command representatives.

Scheduled Utility Outages: The TRUST will cooperate with the COR and other Government contractors to facilitate scheduled service outages and underground utility locating for operations at TAFB. Scheduled outages will be coordinated with the Base CE. Notification will include date and time of outage, a list of facilities that will be affected and the estimated duration. Additionally, the TRUST will notify customers affected by the outage. If affecting more than just a few facilities, the TRUST will submit notices suitable for publishing in the *Tinker Take Off* (Installation newspaper) for TAFB's action. Similar notification will be given for any work requiring the closure of a street. Notification of work affecting housing units will be posted on unit doors.

Digging Permits and Notifications: The TRUST will provide notice of intent to excavate in routine situations at the weekly dig permit meeting. The TRUST will mark the proposed excavation site following TAFB protocol and meet with appropriate representatives at the site to finalize excavation area. The TRUST will conduct no routine, non-emergency excavations without proper notification and authorization. The TRUST will comply with the existing TAFB excavation permit system in operating and maintaining the water system.

Emergency Digs: Emergency digs (including work classified as either emergency or urgent) will be handled in accordance with local procedures and with notification to the Base CE duty officer or emergency desk. In the event other utility (telecommunications, etc.) personnel cannot respond during an emergency, The TRUST will follow the latest utility maps (as provided by the Government at least annually) and utility markers as excavation proceeds to avoid damage to adjacent utilities; in doing so, the TRUST assumes it shall be released from any liability due to the inaccuracy or incompleteness of said maps.

4.3 New Meters

The TRUST acknowledges the Solicitation Attachment JA3 does not include any billing meters to be transferred or installed as part of the transition. The TRUST does not propose to add any meters.

4.4 Permits and Procedures

It is the TRUST's intention that the Government will authorize the TRUST to make the notification to any State or Federal Agencies that have jurisdiction regarding termination or transfer of permits required to operate the water system, and the Trust assumes that this will occur within 10 business days of Notice to Proceed. Following this initial notification, the TRUST will coordinate regulatory and environmental requirements with the State of Oklahoma, EPA and other applicable local and regional authorities. The TRUST will accept transfer or apply for new permits and process business licenses as required. The TRUST assumes all manuals, files, logs and records will be transferred from the Government to ensure continuity.

The TRUST will initiate action to transfer all relevant permits for operating the water system at TAFB during the first week of the Transition Period.

If for any reason the transfer of ownership and O&M responsibility occurs before the transfer or receipt of all permits, an agreement will be developed between the TRUST and the Government regarding compliance and liability. However, the TRUST does not anticipate that to occur.

4.5 Inventory and Transfer Requirements

A joint inventory will be conducted to facilitate the transfer of applicable infrastructure, facilities, fixed and non-fixed equipment, and specialized tools. The joint inventory will be used to update the maps of the facilities to support utility access that will be part of the Bill of Sale, and to facilitate the Government's turn

in of excess equipment and the TRUST's purchase of additional items. A sample joint inventory checklist is located in **Appendix E**.

4.5.1 Inventory and Transfer of Facilities and Fixed Equipment

The TRUST will complete the inventory jointly with Government personnel to facilitate common understanding of the assets to be transferred. The joint inventory will be accomplished by using the inventory in TAFB Solicitation Attachment JA3 as a guideline and verifying quantities and specific equipment types. This description will include (as applicable) type, material, model, serial number and condition. This inventory will be annotated on an inventory sheet provided by the TRUST as well as on the system maps so as to define location, type and quantity of utility equipment. During the joint inventory, task measurements will be taken to correctly locate relevant system components on a GIS grid map.

An inventory of all facilities and fixed equipment for the water system will be completed to facilitate system transfer. The joint inventory will occur prior to transferring ownership of the water system and be reflected in the Bill of Sale. The equipment inventory will define exactly the equipment and tools, if applicable, to be transferred with the utility system. Each inventory item will be listed down to the major component level (e.g. pump, motor) as indicated in **Table 4-1**.

Table 4-1. Types of Inventory of Data to be Collected During On-Site Familiarization

Pipes	Fire Hydrants	Tanks/Reservoirs & Pump Stations
Confirm location and size of water pipelines	Research record drawings and maps; GPS X, Y	GPS X, Y at tank locations and pump station locations
ID No.	ID No.	ID No.
Upstream node No.	X	X
Downstream node No.	Y	Y
Date of Installation (if known)	Z	Z
Depth of Bury (if known)	Size	Diameter (Capacity)
Location, type, manufacturer and number of turns for system isolation valves, if visible or noted in As-Built/Record Drawings	Type	Initial Level (feet)
	Location (pavement / grass)	Min Level (feet
	Closest Building	Max Level (feet)
Material	Digital Photo	Overflow Level (feet)
Diameter	Manufacturer and model, Draining or non-draining model	Digital Photo
Length	Hydrant valve, yes or no	Description (Nameplate data, pump manufacturer, sizes and quantity)
Upstream Invert (Sewer only)	Thread type	Control panel manufacturer
Downstream Invert (Sewer only)		Reservoir construction material
		Electrical service (phase)
		Age of pumps and hour meter readings
		Location of isolation valves
		Size, manufacturer, and location of altitude valves

4.5.2 Inventory and Transfer of Non-fixed Equipment, Spare Parts, and Personal Property

The TRUST acknowledges that the TAFB Solicitation Attachment JA3 does not include any Non-fixed Equipment, Spare Parts, and Personal Property to be transferred as part of the privatization process. As a result, the TRUST has included procurement costs of necessary specialized equipment and adequate spare

parts to support TAFB's utility system. If property such as tools, equipment, and spare parts are transferred with the utility system, the TRUST will complete an inventory of the tools and equipment. Any material or equipment not needed by the TRUST will be identified and communicated to the Government for disposal prior to transferring ownership.

4.5.3 Transfer of Manuals and Records

The TRUST needs to acquire available documentation, including but not limited to all operating manuals, work order history, as-built drawings, GIS records in ESRI format, project plans and specifications, hydrant flushing maintenance history, well production information, water quality reports, maintenance records, equipment warranty information and a copy of the TAFB Master Development Plan. This should occur as soon as possible within the transition period to enhance the transition of O&M.

Any inventory of the drawings and manuals associated with the utility systems will be compiled. The documents will be catalogued so there can be an accurate record of items being turned over. This inventory will be completed as soon as practicable following the joint inventory.

4.5.4 Joint Inventory Execution/Timeline

The TRUST will complete a joint inventory with Government personnel to facilitate common understanding of the assets to be transferred. The joint inventory will be accomplished by using the TAFB Solicitation Attachment JA3 as a guideline.

Inventory control sheets (work sheets) will be produced prior to the joint inventory and detailed information will be included for each component being transferred. In instances where the condition of a particular asset can be determined by visual observation, that information will be recorded on the inventory sheets.

Additionally, when a GIS location can be determined, that information will be included on the inventory sheet as well as verified on a map of TAFB. Items that are inventoried but were not on the Government's inventory list will be documented and that information will be provided to the Government representative participating in the joint inventory. It is anticipated that the joint inventory at TAFB can be accomplished within the first 90 days of the transition period and any discrepancies can be resolved with the COR prior to system transfer.

Ownership of the systems should be transferred to the TRUST as soon as the permits are transferred and approval to operate the system is obtained from ODEQ.

The TRUST and the Government will negotiate a specific date for ownership transfer (Contract Start Date) and a grace period for any issues of noncompliance at the time or soon after ownership transfer. At the date of this proposal submittal, the TRUST anticipates negotiating for a Contract Start Date of April 27, 2016.

4.6 Meter Readings

TAFB Solicitation Attachment JA3 does not include any meters to be transferred or installed. The TRUST does not propose to add meters as part of the Transition, and therefore no joint meter readings are necessary.

4.7 Authorized Personnel and Points of Contact

Table 4-2 shows the individuals that hold authority to sign for the final transfer of operations and property and are responsible for the work under the contract, as indicated.

Table 4-2. Signature Authority

Name/Title	Phone	Authority	Limit of Authority
Marsha Slaughter, PE OCWUT, General Manager	405-297-2422	Negotiations and Signature	Contract value
Bret Weingart OCWUT, Designee	405-297-2422	Negotiations and Signature	Contract value
Sam Samandi, PE OCWUT, Designee	405-297-2422	Negotiations and Signature	Contract value

4.8 System Characterization Studies

The TRUST proposes to conduct the following studies, which will occur or begin during the Transition Period. All studies are discussed in detail in Subfactor 3, Section 3.1, Initial Capital Planning and Programming.

For the purposes of project identification, a naming convention was established as follows:

- W=Water
- ST=System Characterization Studies
- A number was also added to the end of the name to differentiate the various projects

Table 4-3. Water System Characterization Studies Summary

Project No.	Project Name	Start Year	Project Basis/Benefit
WST1	Water System Inventory and Valuation	2015	System inventory and valuation will be conducted and value of assets will be estimated.
WST5	Develop Instrumentation and Control (I&C) Master Plan	2015	Develop Instrumentation and Control Master Plan for Water System that will evaluate I&C requirements of existing and proposed future water system.
WST8	Management Information Systems	2015	Study will be conducted to determine what software is directly applicable and useable for TAFB reporting requirements.
WST9	Regulatory Strategy Plan	2015	Regulatory Strategy Plan will be developed to recommend practices and strategies to comply with regulatory agency requirements.
WST10	Parts and Supplies Analysis	2015	Comprehensive list of supplies and replacement parts will be developed for the wastewater system.
WST11	Health and Safety Plan	2015	Health and Safety Plan will be developed to establish work practices necessary to ensure the safety of all personnel throughout the contract.

The results of these studies will enable the TRUST to develop and prioritize a list of upgrades and to design and size proposed improvements to the water system for the Annual Capital Upgrade and Renewals and Replacements Plan.

The following provides a summary description of each of the proposed system characterization studies for the TAFB water system.

WST1: Water System Inventory and Valuation

TAFB Solicitation Attachment JA3 inventory will be updated by the TRUST under WST1. Each inventory item will be listed down to the major component level. For each line item, a "replacement cost new" (RCN) estimate and "replacement cost new less depreciation" (RCNLD) using the straight-line depreciation method will be prepared. This approach will be used together with information on specific capital expansion, upgrade and renewal projects as a metric for determining the appropriate capital investment rate to maintain reliable utility service.

The existing water system inventory will need to be refined to capture details on all of the assets. This will include GIS survey to collect the physical attributes of the water system, including SDSFIE-compliant coordinates of water storage tanks, fire hydrants, booster pump stations, wells, and valves.

In order to establish what information already exists and what new information needs to be collected, a gap analysis will be performed on the GIS database provided by TAFB. Existing GIS files/data will be validated and will be analyzed for content, accuracy, and known CAD drawings will be converted (when necessary) into GIS and populated with attributes. The water system GIS database will be populated with the new inventory and GIS survey data. If feasible, accessible valve lids will be inspected to record the elevation of each valve nut.

The existing mapping of the water system will be used to establish the inventory for the remainder of the water distribution pipelines. At the pump stations and well sites, major system components such as containment structures, pumps, tanks, motor control centers, pump houses, supervisory control and data acquisition (SCADA) system, and other ancillary equipment will be accounted in the inventory file.

WST5: Develop Instrumentation and Control (I&C) Master Plan

In order to properly evaluate the requirements necessary to install an I&C System, a thorough study will need to be performed by the TRUST. TRUST representatives will meet with the existing water system operator and obtain data to develop an I&C Master Plan that meets existing TRUST communication protocols. The review will include existing communication methods, equipment and protocols, software development and installation, control functionality and monitoring capabilities at each well, water pump station, elevated storage tank, and chlorination and fluoridation facility.

After a careful analysis of the acquired data, a report will be generated which will detail an overall I&C Plan. This I&C Plan will be presented in such a way as to allow improvements to take place in phases with the goal of providing a complete and functioning system once all the improvements are installed. The I&C Plan will also outline a conceptual layout for the SCADA system that will provide quality service. The I&C Plan will be coordinated with TAFB.

WST8: Management information Systems (MIS)

A Management Information Systems study will be conducted by the TRUST to determine what software is directly applicable and useable for TAFB reporting requirements. If the existing software utilized by the TRUST cannot meet TAFB Solicitation requirements, a summary of recommendations will be prepared for the development and implementation of an updated MIS that will meet contract requirements and will work within the TRUST's existing MIS.

WST9: Regulatory Strategy Plan

A Regulatory Strategy Plan will be developed by the TRUST to recommend practices and strategies to comply with regulatory agency requirements. The plan will describe specific steps and actions required to successfully meet the regulatory strategy objectives.

WST10: Parts and Supplies Analysis

A review of the existing parts and supplies inventory on TAFB will be conducted by the TRUST and recommendations will be made on which materials will be housed at TAFB and which materials will be supplied to TAFB from the TRUST's existing maintenance facilities. This analysis will also make a recommendation on the space needs for the storage of parts, supplies and equipment at TAFB.

WST11: Health and Safety Plan

A site-specific Health and Safety Plan will be developed by the TRUST during the transition period, prior to the transfer of full O&M responsibility from the Government to the TRUST. The Health and Safety Plan will establish the work practices necessary to ensure the safety of all personnel throughout the contract, and will include provisions for accident prevention strategies consistent with Air Force, OSHA, PEOSH, and ODEQ requirements. Risk issues will be identified and included in preliminary safety action plan and will be further developed during operations. This safety action plan will identify deficiencies, assign responsibilities, and mandate timelines for completion. At a minimum, the Safety and Health Plan will include a discussion of:

- Safety Requirements and Systems
- Hazard Assessment and Control
- Personal Protective Equipment
- Personnel Medical Surveillance
- Project Appearance and Housekeeping

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

This is not the official job description, but is a draft
To be used while the Personnel Department finalizes the updated version.

DIVISION SUPERINTENDENT

JOB SUMMARY

This is a division manager position within the Utilities Department/City of Oklahoma City and is under the direction of the Department Director. The primary purpose of this classification is to manage and direct employees within a division of the Utilities Department consisting of field, clerical, technical, and/or professional staff. The position directs activities related to one of the divisions within the department: water quality, wastewater quality, customer service or solid waste. **Essential job functions include:** assigning, prioritizing, and monitoring work projects; developing and assessing divisional budget and goals and objectives; assisting in the development of departmental goals and objectives; reviewing work products and improving work methods and procedures; analyzing bids from contractors to determine the best supplier; reviewing federal, state, and local standards and regulations to ensure divisional compliance with various legal and policy guidelines; monitoring operational expenditures; developing and implementing divisional productivity improvement measures; and preparing complex technical reports for submission to City officials, federal and state agencies, etc. The employee has frequent contact with other City employees, contractors, citizens, outside agencies, etc. to exchange information or provide technical assistance regarding divisional activities. The instructions received define program objectives as well as personnel and budgetary limitations. Work is reviewed by the Department Director for program accomplishments; management effectiveness; and adherence to policies, procedures, and directives.

JOB REQUIREMENTS

-Knowledge of and skill in applying administrative and managerial principles and practices.
-Skill in verbal and written communication.
-Skill in coordinating and supervising the activities of professional, technical, and clerical staff.
-Ability to assess project needs, calculate quantities, and prepare cost estimates related to divisional operations.
-Ability to establish and maintain effective working relationships.
-Ability to plan, design, implement, and evaluate current systems and system improvements.
-Willingness to assume responsibility for work performed.

WORKING CONDITIONS

-Indoors frequently; subject to sitting, standing, walking, or using a telephone for extended periods of time.
-Outside occasionally; may be exposed to heat, cold, humidity, rain, etc.
-Subject to local travel to monitor divisional projects.
-Occasionally required to work beyond normal working hours or to change working hours.

-May be required to work varied schedules, including weekends and holidays.

DIVISION SUPERINTENDENT
Page 2

PHYSICAL REQUIREMENTS

-Near vision enough to read and draft various forms of written and machine-generated communications.
-Speech and hearing enough to communicate effectively in person and by telephone.
-Manual and finger dexterity enough to operate standard office equipment, such as a telephone, computer keyboard, ten-key, copier, fax, etc.

EVALUATION CRITERIA

-Difficulty

This is a division head-level position responsible for coordinating and managing the activities of a large or complex division consisting of clerical, technical, or professional staff. This classification requires the effective application of administrative guidelines and managerial principles to oversee the efforts of staff through section-level supervisors and other personnel. The employee must ensure that the division's goals and objectives are met. He or she may devise new management approaches or apply previously used work methods within existing guidelines and regulations. The work requires logical thinking and professional evaluation to develop alternatives and recommendations affecting divisional operations. The decisions made may affect people and activities both within and outside the City organization. The variables encountered are both abstract and concrete.

-Interpersonal Relations

The employee has frequent contact with other City employees, contractors, citizens, outside agencies, etc. to obtain or provide information or technical assistance related to Departmental activities. The use of tact and persuasiveness may be necessary to obtain understanding and cooperation.

-Supervision Given and Received

This classification plans, coordinates, and monitors the work of professional, technical, and clerical personnel. The employee assigns and reviews work projects; develops and improves methods and procedures; and assesses divisional goals, objectives, and accomplishments for timeliness and compliance with instructions, procedures, and budgetary limitations. Conferences are held with a Department Head to resolve problems and improve service levels and procedures. The instructions received define broad operational objectives. Work products are evaluated for overall effectiveness and adherence to policies, procedures, and directives.

DIVISION SUPERINTENDENT
Page 3

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

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Concept Draft
9/02

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

FINANCIAL SPECIALIST

JOB SUMMARY

This position is located in various departments within The City of Oklahoma City and is under the direction of an immediate supervisor. The Financial Specialist is an administrative position primarily responsible for managing and monitoring budgets, financial operations and/or projects. The duties performed require the utilization of previously acquired technical knowledge and skills. **Essential job functions include**: budget planning and assisting in the department's overall budget preparation; reviewing and monitoring budgetary expenditures and revenue receipts; monitoring various fund accounts and encumbering funds for special projects; and balancing accounts and calculating statistical data. Additional duties and responsibilities may include: processing and verifying reports and forms; generating spreadsheets and financial reports; conducting research and analysis of functions and activities; developing cost recovery/reduction plans; and making recommendations to reduce expenses. The employee has frequent contact with City personnel at various levels, boards/committees, outside agency representatives and citizens to exchange information regarding activities of the work unit. Information is also frequently exchanged regarding complex divisional or departmental operating policy and procedures and program functions, and to provide alternative solutions to first time-problems or non-routine issues. Assignments are received in verbal and written form from the supervisor. The work products or activities may be reviewed in progress and upon completion for soundness of judgement and general effectiveness with respect to governing policies and procedures.

JOB REQUIREMENTS

-Knowledge of current organizational, managerial, and administrative concepts and principles.
-Knowledge of and ability to utilize standard budgeting and finance procedures/practices in performance of duties.
-Skill in analyzing large quantities of financial data.
-Skill in preparing statistical and narrative reports.
-Skill in assessing and following research through to a logical conclusion.
-Skill in communicating verbally and in writing using tact and diplomacy.
-Skill in making long-range and short-range projections based on current and future needs.
-Ability to develop alternatives and make recommendations leading to improvements of organizational activities and programs.
-Ability to learn and apply knowledge of City-wide organization and administrative structure, operations, policies and procedures.

WORKING CONDITIONS

-Primarily indoors in climate controlled environment.
-Occasional local or out-of-town travel to meetings, conferences, or seminars.
-Occasionally required to work hours beyond normal scheduled work week.

FINANCIAL SPECIALIST
Page 2

PHYSICAL REQUIREMENTS

-Arm-hand steadiness and finger dexterity enough to operate a personal computers, ten-key, etc.
-Vision enough to read and write manual and machine generated reports, and verify input/output data on a computer screen, etc.
-Speech and hearing enough to understand and communicate in person and by telephone in a normal office environment.

EVALUATION CRITERIA

-Difficulty

This position requires the application of standard principles of management theory. Assisting and advising City personnel in the preparation/monitoring of budgets and in analyzing organizational problems or implementing program improvements. Independent judgement is exercised in the selection and adaption of methods, guidelines and precedents governing the field of work. Decision making involves making recommendations through the immediate supervisor on matters, which may impact primarily on the assigned work unit and/or department. Variables encountered are both abstract and concrete in nature.

-Interpersonal Relations

The employee has frequent contact with City employees at different organizational levels, boards/committees, outside agency representatives, and the general public in order to exchange information related to budgets, special projects, goals and objectives, etc. The use of tact and diplomacy are necessary to attain understanding and cooperation to achieve desired results.

-Supervision Given and Received

The Financial Specialist may provide training and functional supervision to clerical support staff by making assignments, facilitating work flow, and critically assessing work products.

The employee works independently, with minimal direct supervision. The work assignments are both general and specific in nature, and are received in verbal and written form. Instructions received define overall objectives, with minimal specificity regarding how to proceed with assignments. Work results are usually examined by a department or division head for soundness of technical judgment and quality of recommendations. Unusual problems or situations are mutually discussed with the supervisor.

FINANCIAL SPECIALIST
Page 3

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all inclusive; thus, other related activities or tasks may be assigned.

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Approval

Concept Development
10/02

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

CHIEF PLANT OPERATOR

JOB SUMMARY

This job is located in the Water/Wastewater Utilities Department with The City of Oklahoma City and is under the direction of a Water Operations Supervisor. The Chief Plant Operator acts as a shift supervisor and is primarily responsible for the safe and efficient operation of a treatment plant and/or pump station. The job requires a thorough knowledge of water/wastewater treatment operations and an ability to supervise Plant Operators engaged in maintaining and operating plant or pump station machinery. **Essential job functions include:** monitoring equipment, water and chemical flow rates; recording and compiling data for operating reports; and training and supervising Plant Operators. The Chief Plant Operator uses independent judgment in performing day-to-day tasks, with special written or verbal assignments received from a Water Operations Supervisor. Work is subject to review through evaluation of operating reports and visual inspections. Due to direct occupational health, safety and environmental concerns associated with performing both routine and non-routine water and/or wastewater operations, maintenance, and production tasks, the Chief Plant Operator is a safety sensitive classification. Therefore, current and prospective employees are required to meet and maintain specific physical standards and guidelines.

JOB REQUIREMENTS

-Knowledge of and ability to demonstrate job and safety procedures.
-Knowledge of water/wastewater plant operations.
-Skill in recording information accurately.
-Skill in communicating in verbal and written form.
-Ability to supervise and coordinate activities of Plant Operators.
-Ability to make work related decisions.
-Willingness to assume responsibility for workers and equipment.
-Ability and willingness to meet and maintain physical health standards and guidelines for the work performed.
-Willingness to exercise established environmental safety precautions for the work performed.
-Possession of a Class "B" Water Treatment Operator Certification.

WORKING CONDITIONS

-Inside and outside, exposed to heat, cold, humidity, adverse weather conditions, etc.
-Subject to working in and around standing or flowing water, raw sewage or exposed to pressurized water and equipment.
-Subject to working on or around slippery surfaces.
-Subject to climbing portable ladders to heights up to 45 ft. and climbing fixed ladders to heights up to 265 ft. above ground level to work on tanks, platforms, grating and equipment.
-Subject to climbing down portable ladders to depths of 45 ft. and climbing down fixed ladders to depths of 72 feet when working on equipment or in pits below ground.

CHIEF PLANT OPERATOR
PAGE 2

WORKING CONDITIONS (cont)

-Subject to working in confined spaces and cramped positions where limited or restricted means of entry or exit exist.
-Subject to working near moving objects such as motor vehicles and plant machinery or equipment.
-Frequently exposed to constant noise at low levels and occasional loud noise for extended periods.
-Possibility of burns when working near or around heated metals and equipment.
-Frequently exposed to chemical vapors or fumes, dust and natural respiratory hazards.
-Occasionally exposed to insects, plants and other natural agents that cause allergic reactions.
-Occasionally exposed to potentially hazardous wildlife, such as, muskrats, beavers, boars, raccoons, birds, snakes, etc.
-Occasionally exposed to toxins and irritants, such as, corrosive chemicals, acids and cleaners, fuel and other otherwise harmful substances.
-Possibility of electrocution, electrical shock, fire, or burn when working with electricity and electrical machinery.
-Possibility of chemical or thermal explosions.
-Subject to working irregular work hours, overtime, and on weekends and holidays.
-Frequently required to work rotating shifts.
-Local travel on a daily basis.
-Frequently exposed to large concentrations of noxious odors.
-Possibility of exposure to blood born pathogens, raw sewage and other infectious agents.

PHYSICAL REQUIREMENTS

-Strength enough to lift, carry, push, pull or move objects weighing up to 50 pounds frequently and/or up to 100 pounds occasionally.
-Stamina enough to exert oneself physically throughout the workday.
-Flexibility enough to bend, twist, and reach while loading and unloading materials and equipment.
-Mobility enough to continuously move oneself from place to place.
-Gross body coordination and balance enough to perform work while standing on ladders, scaffolding, catwalks, tanks, etc.
-Arm-hand steadiness enough to perform tasks such as repairing pumps, motors, valves, piping, chemical feeder, etc.
-Manual and finger dexterity enough to use hand tools and replace small equipment or components.
-Near vision enough to perform tasks such as inspect equipment and read gauges, schematics, blueprints, etc.
-Far vision enough to observe co-workers at ground level, while working on tanks, in pits, and to identify warning signs at a distance of 20 ft. etc.
-Visual color discrimination enough to identify red, green and yellow items.
-Speech and hearing enough to communicate clearly and distinctly in person and by two-way radio, understand conversation in a noisy environment, and locate malfunctions in machinery.
-Pulmonary function sufficient to use a self-contained breathing apparatus and respirator.
-Maximum body mass, including equipment weighing up to 30 lbs, not to exceed 310 lbs.

CHIEF PLANT OPERATOR
PAGE 3

EVALUATION CRITERIA

-Difficulty

This job involves monitoring and operating plant equipment and requires a thorough knowledge of water/wastewater treatment operations. Well-defined procedures cover the work, but some adaptation is required.

Decisions made are related to insuring plant machinery is maintained and functioning properly. Physical requirements and working conditions associated with certain tasks require the ability to meet and maintain specific physical standards and guidelines. Unusual problems are referred to a Water Operations Supervisor. Variables encountered are many and primarily concrete in nature.

-Interpersonal Relations

This position involves relaying work assignments to employees, and providing the supervisor with routine verbal and/or written data, as well as exchanging information related to plant activities with other plants and/or inquiring citizens.

-Supervision Given and Received

This position makes assignments to Plant Operators and reviews work performed by visual inspection. The Chief Plant Operator uses independent judgement in performing day-to-day duties, with special written or verbal assignments received from a Water Operations Supervisor. Work is subject to review through evaluation of operating reports and visual inspections.
-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all inclusive; thus, other related activities or tasks may be assigned.

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Approved

Modified 6/06

Modified
5/94

Specification Development
8/80

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

UNIT OPERATIONS SUPERVISOR

JOB SUMMARY

This job is located in various departments of The City of Oklahoma City and reports directly to a division or department head. Unit Operations Supervisor is primarily responsible for coordinating and managing staff and operational activities of multiple small work sections or a large specialized work section of clerical, administrative and technical classifications. **Essential job functions include:** preparing sectional budgets and goals and objectives reports for submission to the Division or Department Head; writing specifications for bids on equipment, materials, supplies, etc. and reviewing bids submitted to determine best supplier; monitoring operational expenditures; reviewing Federal, State and local standards and regulations to ensure compliance with guidelines; implementing productivity improvement measures; preparing complex technical reports for submission to Department Head, City Manager and/or Federal/State agencies; etc. The employee has frequent contact with division personnel, other City employees, contractors, citizens, outside agencies, other municipalities, etc. in order to obtain or provide information and/or provide administrative and technical assistance related to divisional activities. The employee works under minimal supervision. Final results are appraised as to attainment of program objectives; adherence to regulations and City policies; and effectiveness and efficiency of management.

JOB REQUIREMENTS

-Knowledge of and skill in applying general administrative and managerial techniques and methods.
-Skill in verbal and written communication.
-Ability to establish and maintain effective working relationships.
-Ability to plan, design, implement and evaluate current systems and system improvement.
-Skill in supervising and coordinating activities of administrative, technical and clerical staff.
-Skill in critically assessing and organizing a wide variety of information.
-Willingness to assume responsibility for operations of the assigned work unit(s).

WORKING CONDITIONS

-Primarily indoors in a climate controlled environment.
-Subject to sitting, standing, walking, or using a telephone for extended periods of time.
-Occasional local travel.
-Subject to working irregular hours such as overtime, weekends, and/or holidays.

UNIT OPERATIONS SUPERVISOR
Page 2

PHYSICAL REQUIREMENTS

-Vision enough to read and draft written communications.
-Speech and hearing enough to communicate in person and by telephone.
-Manual and finger dexterity enough to operate office equipment such as keyboards, telephones, 10-key, etc.

EVALUATION CRITERIA

-Difficulty

This job requires the application of administrative and management principles and techniques as well as possessing relevant technical knowledge necessary to coordinate and manage the staff and operational activities of specialized work unit(s). Technical and administrative guides exist but must be interpreted, adapted and applied on the basis of specialized training and experience. New approaches and previously unused methods are devised and applied within existing guidelines and regulations. Decisions made affecting departmental objectives impact both inside and outside the City organization. Responsibility encompasses quantity and quality of the work output of the assigned work unit(s). Variables encountered are abstract and concrete in nature.

-Interpersonal Relations

The employee has continual contact with departmental personnel, other City employees, contractors, citizens, outside agencies, other municipalities, etc. to obtain or provide information and/or provide technical assistance related to activities of the assigned work unit(s). The use of tact and persuasiveness are necessary to obtain cooperation.

-Supervision Given and Received

The Unit Operations Supervisor plans and coordinates the work activities of a large specialized work section through functional supervisors and by assigning work projects coordinating the use of personal services, equipment and material. Supervision also includes improving work methods and procedures with responsibility for the general effectiveness of activities of assigned staff.

UNIT OPERATIONS SUPERVISOR
Page 3

The employee works under minimal supervision. Typically work is not immediately reviewed but is subject to technical and administrative guidelines. Work results are appraised as to the attainment of program objectives, adherence to regulations and City policy, and effectiveness and efficiency of operations.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all inclusive, thus, other related activities or tasks may be assigned.

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Approved

Concept
3/97

Specification Revision
5/16/80

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

DATABASE TECHNICIAN

JOB SUMMARY

This position is located in various departments throughout the City of Oklahoma City, and is under the direction of an immediate supervisor. The Database Technician is a skilled clerical classification responsible for performing routine payroll, purchasing, and personnel transactions at the department and/or division level utilizing a highly complex and integrated financial management and personnel information system. Some employees may perform in only one of these specialized areas in large departments or divisions. **Essential job functions include**: operating a computer to enter, revise and verify data; reviewing work product to ensure accuracy and compliance with applicable policies and procedures; preparing standardized reports and forms; organizing and maintaining supportive documentation and records applicable to assigned functional area; providing assistance to departmental/divisional personnel; exchanging information with departmental/divisional personnel and other City employees; and performing other general clerical tasks. Assignments are general in nature with established policies and procedures providing specific parameters. Assignments are received in verbal and/or written form. The work product is reviewed by a supervisor and by individuals in the related service support unit (payroll, purchasing, personnel, etc) for accuracy and adherence to applicable policies and procedures.

JOB REQUIREMENTS

-Knowledge of and skill in performing general clerical functions.
-Skill in operating a computer terminal or personal computer to input and retrieve data from a computer system.
-Skill in organizing, recording and working accurately with large quantities of information.
-Skill in operating standard office machines.
-Skill in accurately performing mathematical computations.
-Skill in verbally relaying work related information using tact and diplomacy.
-Ability to apply knowledge of principles and procedures of payroll, purchasing, and/or human resource information functions.
-Ability to and skill in following detailed instructions and established operational procedures and policies.
-Ability to operate machinery related to work activity, i.e., computer terminals, personal computers, peripheral equipment, telephones, etc.
-Ability to prepare standardized reports and forms.
-Ability to work with minimal supervision.
-Ability to retain and recall information.
-Willingness to assume responsibility for accuracy of work product.

DATABASE TECHNICIAN
Page 2

WORKING CONDITIONS

-Primarily indoors, subject to sitting, standing, walking, or using a telephone, keyboard, video display terminal, etc. for extended periods of time.
-Subject to continuous exposure to light and glare from a video display terminal.
-Subject to continuous noises at low levels caused by personal computer, computer terminal, telephone, ten-key, keyboard, etc.
-May be required to work beyond normal work hours.
-Occasional to frequent lifting, pulling, pushing, and carrying materials weighing 30-50 lbs. Such as boxes containing computer reports.

PHYSICAL REQUIREMENTS

-Arm and hand steadiness and finger dexterity enough to operate equipment such as calculators/adding machine, keyboard, etc.
-Near vision enough to read written and machine generated documents such as invoices, computer generated reports, standardized forms, video display terminal, etc.
-Speech and hearing enough to communicate clearly and distinctly in person and by telephone.

EVALUATION CRITERIA

-Difficulty

This job requires knowledge and skills that are well-defined, but does involve the interpretation of general principles or the application of policies, procedures, etc. Job duties are prescribed by well-defined procedures, instructions, regulations, and controlling precedents; initiative is used in devising improvements in work operations. Authority is limited to applying departmental and City-wide policies and procedures to routine and recurring operations. Decisions are made on routine and recurrent tasks requiring efficiency and accuracy. Variables encountered are primarily concrete in nature. Non-standard or problematic situations are referred to a supervisor and service support units (payroll, purchasing, personnel) for resolution.

-Interpersonal Relations

The incumbent has routine contact with inter- and intra- departmental personnel and outside agencies to receive and obtain information related to work performed. Information is usually factual in nature, but some interpretation or explanation of facts may be required to obtain concurrence and cooperation.

-Supervision Given

Assignments are general in nature with established policies and procedures providing specific parameters. Assignments may be received verbally and/or in writing. Detailed instructions are provided for new procedures or changes in procedures. The work product is reviewed for completeness and accuracy by the supervisor and individuals in the related service support unit.

DATABASE TECHNICIAN
Page 3

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

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Concept Development
12-2011

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

ELECTRONIC TECHNICIAN II

JOB SUMMARY

This job is located in various departments throughout the City of Oklahoma City. Employees of this classification perform technical and supervisory work in the maintenance and repair of electronic equipment. The employee tests faulty equipment using instruments such as oscilloscopes, voltmeters, and signal generators and uses knowledge of functional operation of units to diagnose the cause of malfunctions. The equipment is repaired by replacing defective components, rewiring, adjusting mechanical parts, etc., following schematics and wiring diagrams and using electrical hand tools. Additional duties include posting information concerning work activities, materials, used, purchase requests, etc., to appropriate records. The Electronic Technician II has regular contact with Electronic Technician I's, other City employees, vendors, etc., both in person and by telephone or two-way radio, to obtain or provide factual information and to give instructions. Supervisory control is exercised over Electronic Technician I's by assigning work, providing technical assistance, and reviewing work products. The Electronic Technician II works independently following general instructions with work products subject to review at the discretion of the supervisor. General job functions include: (A) Diagnosis, (B) Repair, (C) Supervision, (D) Record keeping, and (E) Information Exchange.

DUTIES AND RESPONSIBILITIES

Diagnosis

Tests faulty equipment using instruments such as oscilloscopes, voltmeters, signal generators, etc., to locate cause of malfunctions. Examples of typical task are:

-Drives City vehicle to various locations to determine nature of repairs and/or malfunctions of equipment by visually observing and/or manually testing the equipment.

-Tests tone units and power supplies (Quindar, Sparling, Hammarlund, RFL) in the instrument cabinet, using transistor checker, capacitor checker, volt-ohm meter, etc., to ensure they are operating properly.

-Visually checks testers and repairs, if necessary, using electrical hand tools and own knowledge to ensure proper working conditions. ("Testers" are the electrical equipment located in the shop used to test and simulate actual field conditions of the equipment and components.

-Modifies and tests traffic signal control cabinets to achieve special signal operation at specific intersections and documents changes made to the system.

ELECTRONIC TECHNICIAN II
PAGE 2

Repair

Repairs electronic equipment following schematics by replacing defective components, rewiring, adjusting mechanical parts, etc., using electrical hand tools. Examples of typical tasks are:

-Repairs various electrical equipment (phase sequence meters, under and over voltage protection devices, instantaneous current devices, voltage regulators, and all solid state equipment) by performing necessary adjustments to correct the malfunction, i.e., calibrates set screws, repairs various wires, tighten bolts, etc.

-Repairs builder clutch assembly in the instrument cabinet to ensure proper water tank level and water discharge pressure. Calibrates by adjusting linkages, replacing worn cams, replacing worn clutch assemblies, etc.

-Repairs volt-ohm meters used by other City employees, by visually observing the meter to determine needed repairs and then performing necessary adjustments to correct the malfunction.

-Visually checks cabinet box at intersection to ensure proper operation of equipment. Makes repairs to controller, flashers, and components using electrical hand tools.

-Adjusts contacts and relays of electro-mechanical control devices to specifications, using a tension gauge.

Supervision

Supervises Electronic Technician I's and other City employees by assigning work, providing technical assistance, and reviewing work products. Examples of typical tasks are:

-Gives verbal assignments and instructions to Electronic Technician I's to ensure that all repairs are done. May also give verbal assignments and instructions via two-way radio to emergency control personnel.

-Reads/reviews daily work activity records of Electronic Technician I's for content and accuracy and makes additions and corrections as necessary.

-Trains Electronic Technician I's and other employees by verbal explanation and physical demonstration of tasks performed to ensure that tasks are performed correctly.

-Writes letters of reprimand to employees to ensure their compliance with Personnel policies and procedures.

-Assists in interviewing prospective employees by asking questions to determine if applicant is qualified for position.

ELECTRONIC TECHNICIAN II
PAGE 3

Record Keeping

Post various work –related information onto departmental logs and forms to maintain accurate records, order supplies, etc. Examples of typical tasks are:

-Writes on standard report form information related to maintenance and repairs completed. Form lists the repair, what detected the repair, what detected the repair, equipment used, replacement parts, date, and hours worked on that particular job.

-Writes purchase request or work order slip listing parts, equipment, etc., needed on the job and forwards to supervisor for approval.

-Writes out standard work order sheet listing weekly work activities. Gives to supervisor to be filed.

-Reads/reviews equipment specifications to ensure that all necessary information is listed prior to submitting to supervisor.

Information Exchange

Communicates with supervisor, other City employees, and outside agency personnel to provide or obtain information related to work activities.

-Talks by telephone and/or two-way radio to supervisor, Electronic Technician I's, and other City personnel to provide or obtain information related to work activities.

-Talks by telephone to vendors and various businesses to receive information concerning the prices of parts, equipment, etc., and to order materials to finish assigned jobs.

-Gives verbal assignments and instructions to Electronic Technician I's to ensure that all repairs are done. May also give verbal assignments and instructions via two-way radio to emergency control personnel.

-Calls Plant Operators by telephone when arriving at booster station to inform the operator not to turn on any electrical equipment until all repairs have been completed.

-Talks by telephone to the telephone company requesting repairs on electrical circuits to keep telephone lines operating properly. Through telephone lines, water department tones are transmitted to all booster stations, water tanks, etc. Tones are frequencies that put out a frequency signal transmitted electrically through wires to gauges to read water levels and pressures, and to automatically turn water pumps on and off at designated times to ensure proper amount of water flow.

ELECTRONIC TECHNICIAN II
PAGE 4

JOB REQUIREMENTS

-Knowledge of digital electronics.
-Skill in applying knowledge of electronic to work performed.
-Skill in interpreting schematics and wiring diagrams.
-Skill in locating and repairing equipment malfunction.
-Ability and willingness to observe standard safety practices.
-Skill in oral communication.
-Skill in recording information accurately.
-Ability to supervise Electronic Technician I's.
-Ability to make work related decisions.
-Valid Oklahoma State Driver License.

EVALULATION CRITERIA

Difficulty

This job requires a knowledge of digital electronic and the application of the principles of electronic theory to solve practical problems that occur in the field and in the shop. The employee may supervise Electronic Technician I's, Electricians, or other maintenance personnel engaged in the maintenance and repair of electronic equipment. A number of variables are involved which are both concrete and abstract in nature. Technical and administrative guides exist, but must be interpreted and applied on the basis of specialized training and experience. Within the framework of existing precedents, methods or procedures are adopted and improved to fit specific programs. Decisions and recommendations are made on activities which impact both inside and outside the City organization.

Interpersonal Relations

The employee has regular contact with supervisor, Electronic Technician I's, other maintenance personnel, and other City employees, and occasional contact with vendors, contractors, etc., both in person and by the telephone to give or secure information relating to work activities.

WORKING CONDITIONS

-Inside and outside exposed to heat, cold, humidity, and rain.
-Possibility of falls from working on and around slippery surfaces such as pump house, lift station, etc., and from repairing traffic signals in the rain, etc.
-Possibility of body injuries such as sprains, fractures, deep cuts, or loss of body members from operating equipment such as grinder, drill press, electric drills, etc., and when performing maintenance on pumps, motors, etc.
-Will work from ladders, platforms, or other equipment from 4 to 12 feet or more above flow or ground level.

ELECTRONIC TECHNICIAN II
PAGE 5

WORKING CONDITIONS (continued)

-Will work near moving machinery, power tools, and vehicles.
-Possibility of receiving second or third degree electrical burns; works with electrical power from 110 volts up to 480 volts or more.
-Occasional exposure to chemical irritants such as cleaning solvents.
-Possibility of severe electrical shock that may cause temporary respiratory and circulatory disturbance or that may result in death; works with electrical power from 110 volts up to 480 volts or more.
-Subject to 24-hour emergency call, including weekends and holidays.
-Local area travel to make repairs at traffic signal lights, pump stations, lift stations, siren installations, etc.

WORKING CONDITIONS (Water/Wastewater Utilities Department)

-Will work in high humidity areas such as pump house, lift station, chemical building, etc.
-Exposed to intermittent or continued loud and insistent noises caused by machinery such as pumps, motors, etc.
-Exposed to large amounts of dust when making repairs on the pipeline.
-Occasional to frequent exposure to chemical irritants and noxious odors when working at water and wastewater treatment plants.
-Occasionally exposed to infections caused by micro-organisms when repairing machinery and equipment used to treat water and wastewater.

PHYSICAL REQUIREMENTS

-Strength enough to lift, push, pull, or carry objects weighing 50 to 100 pounds such as pieces of equipment, power tools, motors, pumps, controllers, transformers, electric panels and cabinets, etc.
-Flexibility enough to bend, twist, and reach out to perform maintenance and repair tasks on machinery and equipment.
-Extreme arm-hand steadiness, manual dexterity, and finger dexterity enough to perform maintenance and repair tasks on electrical machinery and equipment.
-Near vision enough to read blueprints, schematics, wiring diagrams, etc., and work on small electrical parts and wires.
-Hearing enough to tell location of malfunction in equipment.

Supervision Given and Received

Employee supervises Electronic Technician I's and other personnel by making work assignments, reviewing work products, and providing technical expertise.

ELECTRONIC TECHNICIAN II
PAGE 6

Employee work primarily independently with minimal amount of supervision. Instructions received define overall objectives, with minimal specificity regarding how to proceed with assignments. Unusual problems or questions concerning work are discussed with supervisor.

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Approved
6/85

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

ENGINEERING AIDE II

JOB SUMMARY

This job is located in various departments with the City of Oklahoma City and is under the direction of an immediate supervisor. Employees of this classification must have detailed knowledge of engineering design requirements and procedures in a specific area, (i.e., water mains, storm sewer, street paving and resurfacing, zoning and subdivision review, etc.) Knowledge and skills involved in drafting engineering projects must be acquired prior to assuming the position. **Essential job functions include:** designing engineering projects that are limited in scope; determining specifications; and processing information on construction projects at various stages of development. The job involves extensive oral and written communication concerning site factors, project design, and construction. Engineering Aide II's may provide functional or technical supervision to Drafters, Computer Graphics Operators, Construction Inspectors, and/or other non-technical engineering support staff. The employee's work is reviewed for technical accuracy at the discretion of a supervisor.

JOB REQUIREMENTS

-Knowledge of engineering factors, conditions, and standards in the area of specialization.
-Skill in working projects through to completion within specified time frames.
-Skill in communicating technical information verbally and in writing.
-Skill in performing mathematical computations following standardized formulae, (i.e., geometric, trigonometric, etc.)
-Skill in reading maps and plans.
-Skill in assessing salient technical information.
-Skill in preparing accurate quantity and cost estimates for engineering projects of limited scope.
-Skill in designing solutions to drafting or design problems in the assigned area.
-Skill in critically reviewing drafting work for design, accuracy, and neatness.
-Skill in relating to others with tact and diplomacy.
-Ability to determine appropriate designs in the area of specialization.
-Ability to retain and recall information.
-Ability to supervise technical staff.

WORKING CONDITIONS

-Indoors primarily in a climate-controlled environment.
-Subject to local travel occasionally.
-Subject to occasional contact with water or wastewater at the worksite.
-May be exposed to continuous, low-level noises such as those produced by office equipment; and may be exposed to occasional, loud noises such as those produced by a dispatch radio.
-May be exposed to small concentrations of noxious air.
-Occasionally required to change work hours or to work beyond normal working hours.

PHYSICAL REQUIREMENTS

-Arm-hand steadiness and manual dexterity enough to operate standard office machines and computerized drafting/design equipment.
-Near vision enough to read and review written communications, drafts, plans, etc.
-Far vision enough to evaluate field conditions or jobsites.
-Hearing enough to understand conversation in noisy environments such as construction sites.
-Speech enough to communicate clearly and distinctly in-person and via telephone.

EVALUATION CRITERIA

-Difficulty

This classification involves designing engineering projects that are limited in scope within a specific work section. The employee must compile project specifications, reviewing design plans for compliance with City standards and ordinances, and process projects. The variables encountered are both abstract and concrete.

-Interpersonal Relations

The employee has considerable contact with departmental personnel, outside agencies, and citizens.

-Supervision Given and Received

Engineering Aide II's are responsible for supervising and reviewing limited drafting work within a specified technical area. Work assignments may be general or specific in nature and are received both verbally and in writing from an Engineering Assistant I, Engineering Assistant II, or Civil Engineer. Work products are reviewed periodically for technical accuracy by a supervisor.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

Title Change/Format Modified
7/02

Specification Revision
2/86

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

FACILITIES & PLANT MECHANIC I

JOB SUMMARY

This job is primarily located in the Water and Wastewater Treatment Divisions of the Water and Wastewater Utilities Department with The City of Oklahoma City, and is under the general direction of an immediate supervisor. The Facilities & Plant Mechanic I receives on-the-job training from a Facilities & Plant Mechanic II or other more senior individuals, and works closely with other plant personnel in performing maintenance and repair tasks. **Essential job functions include:** performing a variety of tasks related to the general maintenance of plant equipment and facilities, as well as making minor and major mechanical repairs on plant machinery and components. The Facilities & Plant Mechanic I must possess the mechanical aptitude necessary for disassembling and assembling various pump components and recognizing equipment malfunctions to ensure plant machinery remains in operable condition. Assignments are received in oral form with work product subject to periodic inspections by a supervisor. Due to direct occupational health, safety and environmental concerns associated with performing both routine and non-routine water and/or wastewater operations, maintenance, and production tasks, the Facilities and Plant Mechanic I is a safety sensitive classification. Therefore, current and prospective employees are required to meet and maintain specific physical standards and guidelines.

JOB REQUIREMENTS

-Skill in using various small and large hand tools.
-Ability to perform general maintenance on plant equipment and facilities.
-Ability to follow verbal instructions.
-Ability to make aural and visual determinations.
-Ability to perform minor and major mechanical repairs of plant machinery and components.
-Ability to retain and recall information.
-Ability to work with others.
-Ability to operate light and heavy equipment.
-Ability and willingness to meet and maintain physical health standards and guidelines for the work performed.
-Willingness to perform semi-hazardous and hazardous tasks.
-Willingness to exercise established environmental safety precautions for the work performed.
-Possession of a valid Oklahoma State Driver License.

WORKING CONDITIONS

-Inside and outside, exposed to heat, cold, humidity, adverse weather conditions, etc.
-Subject to working in and around standing or flowing water, raw sewage or exposed to pressurized water and equipment.
-Subject to working on or around slippery surfaces.

FACILITIES & PLANT MECHANIC I
PAGE 2

WORKING CONDITIONS (cont)

-Subject to climbing portable ladders to heights up to 45 ft. and climbing fixed ladders to heights of 265 ft. above ground level to work on tanks, platforms, grating and equipment.
-Subject to climbing down portable ladders to depths of 45 ft. and climbing down fixed ladders to depths of 72 feet when working on equipment or in carbon pits below ground.
-Subject to working in confined spaces and cramped positions where limited or restricted means of entry or exit exist.
-Subject to working near moving objects such as motor vehicles and plant machinery or equipment.
-Frequently exposed to constant noise at low levels and occasional loud noise for extended periods.
-Possibility of burns when working near or around heated metals and equipment.
-Frequently exposed to chemical vapors or fumes, dust and natural respiratory hazards.
-Occasionally exposed to insects, plants and other natural agents that cause allergic reactions.
-Occasionally exposed to potentially hazardous wildlife, such as, muskrats, beavers, boars, raccoons, birds, snakes, etc.
-Occasionally exposed to toxins and irritants, such as, corrosive chemicals, acids and cleaners, fuel and other otherwise harmful substances.
-Possibility of electrocution, electrical shock, fire, or burn when working with electricity and electrical machinery.
-Possibility of chemical or thermal explosions.
-Subject to working irregular work hours, overtime, and on weekends and holidays.
-Local travel on a daily basis.
-Frequently exposed to large concentrations of noxious odors.
-Possibility of exposure to blood born pathogens, raw sewage and other infectious agents.

PHYSICAL REQUIREMENTS

-Strength enough to lift, carry, push, pull or move objects weighing up to 50 pounds frequently and/or up to 100 pounds occasionally.
-Stamina enough to exert oneself physically throughout the workday.
-Flexibility enough to bend, twist, and reach while loading and unloading materials and equipment.
-Mobility enough to continuously move oneself from place to place.
-Gross body coordination and balance enough to perform work while standing on ladders, scaffolding, catwalks, tanks, etc.
-Arm-hand steadiness enough to perform tasks such as repairing pumps, motors, valves, piping, chemical feeder, etc.
-Manual and finger dexterity enough to use hand tools and replace small equipment or components.
-Near vision enough to perform tasks such as inspect equipment and read gauges, schematics, blueprints, etc.
-Far vision enough to observe co-workers at ground level, while working on tanks, in pits, and to identify warning signs at a distance of 20 ft. etc.
-Visual color discrimination enough to identify red, green and yellow items.
-Speech and hearing enough to communicate clearly and distinctly in person and by two-way radio, understand conversation in a noisy environment, and locate malfunctions in machinery.
-Pulmonary function sufficient to use a self-contained breathing apparatus and cartridge respirator.
-Maximum body mass, including equipment weighing up to 30 lbs, not to exceed 310 lbs.

FACILITIES & PLANT MECHANIC I
PAGE 3

EVALUATION CRITERIA

-Difficulty

This job consists of performing tasks related to the general maintenance and operation of plant equipment and facilities, as well as, the minor and major mechanical repair of plant machinery and components. Duties performed require a functional knowledge of plant operations and procedures, mechanical repair tools and techniques, and a familiarity with conditions that indicate equipment malfunctions. Standard guides, procedures, and safety rules govern the field of work, but some independent judgment is required in the performance of assigned duties. Physical requirements and working conditions associated with certain tasks require the ability to meet and maintain specific physical standards and guidelines. Variables encountered are many and primarily concrete in nature with unusual situations referred to a supervisor.

-Interpersonal Relations

The work involves constant with co-workers and the supervisor to exchange information concerning mechanical repair and/or maintenance tasks performed.

-Supervision Received

Work assignments are received verbally with work product reviewed through periodic inspections by an immediate supervisor.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

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Approved

Specification Revision
12/05

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

FACILITIES & PLANT MECHANIC II

JOB SUMMARY

This job is primarily located in the Water and Wastewater Treatment Divisions of the Water and Wastewater Utilities Department with The City of Oklahoma City, and is under the general direction of an immediate supervisor. The knowledge and skills to perform general maintenance and repairs of plant, facilities, equipment, and machinery are required prior to assuming the duties of this classification. **Essential functions include:** performing a variety of tasks related to the general maintenance of plant equipment and facilities; making minor and major repairs on plant, equipment, machinery and components; and performing routine inspections of maintenance and/or repair tasks performed by less experienced workers. The employee is frequently responsible for providing practical training and physical demonstration of job tasks to Facilities & Plant Mechanic I's. Assignments are received both in verbal and written form with work products inspected for quality of workmanship at the discretion of the immediate supervisor. Due to direct occupational health, safety and environmental concerns associated with performing both routine and non-routine water and/or wastewater operations, maintenance, and production tasks, the Facilities and Plant Mechanic II is a safety sensitive classification. Therefore, current and prospective employees are required to meet and maintain specific physical standards and guidelines.

JOB REQUIREMENTS

-Knowledge of procedures for tearing down and overhauling various motors and equipment components.
-Skill in monitoring plant equipment for proper operation.
-Skill in performing general maintenance on plant equipment and facilities.
-Skill in performing minor and major mechanical repairs of plant machinery and components.
-Skill in following instructions.
-Skill in utilizing a variety of tools and work aids.
-Skill in operating light and heavy equipment.
-Ability to provide verbal instructions and physical demonstrations of tasks performed to Facilities & Plant Mechanic I's.
-Willingness to assume responsibility for work performed and decisions made.
-Ability and willingness to meet and maintain physical health standards and guidelines for the work performed.
-Willingness to exercise established environmental safety precautions for the work performed.
-Possession of a valid Oklahoma State Driver License.

WORKING CONDITIONS

-Inside and outside, exposed to heat, cold, humidity, adverse weather conditions, etc.
-Subject to working in and around standing or flowing water, raw sewage or exposed to pressurized water and equipment.

FACILITIES AND PLANT MECHANIC II
PAGE 2

WORKING CONDITIONS (cont.)

-Subject to working on or around slippery surfaces.
-Subject to climbing portable ladders to heights up to 45 ft. and climbing fixed ladders to heights of 265 ft. above ground level to work on tanks, platforms, grating and equipment.
-Subject to climbing down portable ladders to depths of 45 ft. and climbing down fixed ladders to depths of 72 feet when working on equipment or in carbon pits below ground.
-Subject to working in confined spaces and cramped positions where limited or restricted means of entry or exit exist.
-Subject to working near moving objects such as motor vehicles and plant machinery or equipment.
-Frequently exposed to constant noise at low levels and occasional loud noise for extended periods.
-Possibility of burns when working near or around heated metals and equipment.
-Frequently exposed to chemical vapors or fumes, dust and natural respiratory hazards.
-Occasionally exposed to insects, plants and other natural agents that cause allergic reactions.
-Occasionally exposed to potentially hazardous wildlife, such as, muskrats, beavers, boars, raccoons, birds, snakes, etc.
-Occasionally exposed to toxins and irritants, such as, corrosive chemicals, acids and cleaners, fuel and other otherwise harmful substances.
-Possibility of electrocution, electrical shock, fire, or burn when working with electricity and electrical machinery.
-Possibility of chemical or thermal explosions.
-Subject to working irregular work hours, overtime, and on weekends and holidays.
-Local travel on a daily basis.
-Frequently exposed to large concentrations of noxious odors.
-Possibility of exposure to blood born pathogens, raw sewage and other infectious agents.

PHYSICAL REQUIREMENTS

-Strength enough to lift, carry, push, pull or move objects weighing up to 50 pounds frequently and/or up to 100 pounds occasionally.
-Stamina enough to exert oneself physically throughout the workday.
-Flexibility enough to bend, twist, and reach while loading and unloading materials and equipment.
-Mobility enough to continuously move oneself from place to place.
-Gross body coordination and balance enough to perform work while standing on ladders, scaffolding, catwalks, tanks, etc.
-Arm-hand steadiness enough to perform tasks such as repairing pumps, motors, valves, piping, chemical feeder, etc.
-Manual and finger dexterity enough to use hand tools and replace small equipment or components.
-Near vision enough to perform tasks such as inspect equipment and read gauges, schematics, blueprints, etc.
-Far vision enough to observe co-workers at ground level, while working on tanks, in pits, and to identify warning signs at a distance of 20 ft. etc.
-Visual color discrimination enough to identify red, green and yellow items.
-Speech and hearing enough to communicate clearly and distinctly in person and by two-way radio, understand conversation in a noisy environment, and locate malfunctions in machinery.
-Pulmonary function sufficient to use a self-contained breathing apparatus and cartridge respirator.
-Maximum body mass, including equipment weighing up to 30 lbs, not to exceed 310 lbs.

FACILITIES AND PLANT MECHANIC II
PAGE 3

EVALUATION CRITERIA

-Difficulty

This job consists of instructing Facilities & Plant Mechanic I's as well as performing tasks related to general facilities maintenance and mechanical repairs of plant machinery and components. Duties performed require knowledge of and skill in using mechanical repair tools and techniques, and a familiarity with symptoms of equipment malfunctions. Standard guides, procedures, and safety rules govern the field of work, but independent judgment is required in the performance of the assigned duties. Physical requirements and working conditions associated with certain tasks require the ability to meet and maintain specific physical standards and guidelines. Variables encountered are many and primarily concrete in nature with unusual situations referred to a Facilities & Plant Mechanic Supervisor.

-Interpersonal Relations

The work involves considerable contact with other City personnel and some contact with outside vendors to exchange information concerning plant equipment and maintenance.

-Supervision Given and Received

The work assignments or job tasks generally following routine work schedules and/or written instructions. Special instructions may be given verbally and in writing given by a Facilities & Plant Mechanic Supervisor. Work products are reviewed through periodic inspections.

Facilities & Plant Mechanic II's may provide verbal instructions and physical demonstrations of job tasks to Facilities & Plant Mechanic I's.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

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Approved

Specification Revision
1/06

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

FACILITIES & PLANT MECHANIC SUPERVISOR

JOB SUMMARY

This job is located in the Water and Wastewater Quality Divisions of the Water and Wastewater Utilities Department with the City of Oklahoma City and is under the general direction of an immediate supervisor. The Facilities and Plant Mechanic Supervisor is primarily responsible for providing front-line supervision and administrative support. The duties performed by employees in this classification require previously acquired supervisory skill. The employee must also possess knowledge of equipment mechanics and skill in performing maintenance and repair of the existing plant equipment, machinery and components. **Essential job functions include:** supervising the maintenance and repair of facilities and machinery, such as, pumps, motors, and generators; preparing and monitoring daily work schedules; overseeing emergency call-outs and repairs at various facilities; compiling data for work-activity reports; maintaining equipment and supply inventories; verifying daily vehicle and equipment inspections; purchasing and procuring goods and services; coordinating training activities; ensuring staff compliance with operations standards and safety policies and procedures; and performing other related duties as required. The employee has frequent contact with other City employees, contractors, etc. Assignments are received in verbal and written form with unusual situations referred to the immediate supervisor. Due to direct occupational health, safety and environmental concerns associated with performing both routine and non-routine water and/or wastewater operations, maintenance, and production tasks, the Facilities and Plant Mechanic Supervisor is a safety sensitive classification. Therefore, current and prospective employees are required to meet and maintain specific physical standards and guidelines.

JOB REQUIREMENTS

-Skill in verbal and written communication.
-Knowledge of and skill in applying effective supervisory techniques and work procedures.
-Knowledge of and skill in repairing pumps, engines, and other existing plant equipment.
-Skill in maintaining plant equipment, facilities, machinery, and components.
-Skill in giving verbal instructions to and providing physical demonstrations of tasks performed by subordinate employees.
-Knowledge of and skill in performing duties of employees supervised.
-Ability and willingness to assume responsibility for work performed and decisions made.
-Ability and willingness to meet and maintain physical health standards and guidelines for the work performed.
-Willingness to exercise established environmental safety precautions for the work performed.
-Skill in applying knowledge of State Health and EPA regulations pertaining to plant operations.
-Possession of a valid Oklahoma State Driver License.

WORKING CONDITIONS

-Inside and outside, exposed to heat, cold, humidity, adverse weather conditions, etc.
-Subject to working in and around standing or flowing water, raw sewage or exposed to pressurized water and equipment.

FACILITIES & PLANT MECHANIC SUPERVISOR
Page 2

WORKING CONDITIONS

-Subject to working on or around slippery surfaces.
-Subject to climbing portable ladders to heights up to 45 ft. and climbing fixed ladders to heights of 265 ft. above ground level to work on tanks, platforms, grating and equipment.
-Subject to climbing down portable ladders to depths of 45 ft. and climbing down fixed ladders to depths of 72 feet when working on equipment or in carbon pits below ground.
-Subject to working in confined spaces and cramped positions where limited or restricted means of entry or exit exist.
-Subject to working near moving objects such as motor vehicles and plant machinery or equipment.
-Frequently exposed to constant noise at low levels and occasional loud noise for extended periods.
-Possibility of burns when working near or around heated metals and equipment.
-Frequently exposed to chemical vapors or fumes, dust and natural respiratory hazards.
-Occasionally exposed to insects, plants and other natural agents that cause allergic reactions.
-Occasionally exposed to potentially hazardous wildlife.
-Occasionally exposed to toxins and irritants, such as, corrosive chemicals, acids and cleaners, fuel and other otherwise harmful substances.
-Possibility of electrocution, electrical shock, fire, or burn when working with electricity and electrical machinery.
-Possibility of chemical or thermal explosions.
-Subject to working irregular work hours, overtime, and on weekends and holidays.
-Local travel on a daily basis.
-Frequently exposed to large concentrations of noxious odors.
-Possibility of exposure to blood born pathogens, raw sewage and other infectious agents.

PHYSICAL REQUIREMENTS

-Strength enough to lift, carry, push, pull or move objects weighing up to 50 pounds frequently and/or up to 100 pounds occasionally.
-Stamina enough to exert oneself physically throughout the workday.
-Flexibility enough to bend, twist and reach while loading and unloading materials and equipment.
-Mobility enough to continuously move oneself from place to place.
-Gross body coordination and balance enough to perform work while standing on ladders, scaffolding, catwalks, tanks, etc.
-Arm-hand steadiness enough to perform tasks such as repairing pumps, motors, valves, piping, chemical feeder, etc.
-Manual and finger dexterity enough to use hand tools and replace small equipment or components. blueprints, etc.
-Far vision enough to observe co-workers at ground level, while working on tanks, in pits, and to identify warning signs at a distance of 20 ft. etc.
-Visual color discrimination enough to identify red, green and yellow items.
-Speech and hearing enough to communicate clearly and distinctly in person and by two-way radio, understand conversation in a noisy environment, and locate malfunctions in machinery.
-Pulmonary function sufficient to use a self-contained breathing apparatus and cartridge respirator.
-Maximum body mass, including equipment weighing up to 30 lbs, not to exceed 310 lbs.

FACILITIES & PLANT MECHANIC SUPERVISOR
Page 3

EVALUATION CRITERIA

-Difficulty

This job requires supervisory knowledge and knowledge of skills and techniques utilized to ensure proper maintenance and repair of water/wastewater plant machinery. Variables encountered are many and primarily concrete in nature. Physical requirements and working conditions associated with certain tasks require the ability to meet and maintain specific physical standards and guidelines. Decisions made are work related, with unusual situations referred to the Plant Manager.

-Interpersonal Relations

The work involves considerable contact with departmental personnel and outside vendors both face-to-face and via telephone to exchange information related to work activities. The employee has frequent communications with plant/operations staff to coordinate various work activities and job tasks.

-Supervision Given and Received

The employee provides functional supervision to Facilities and Plant Mechanic I's and II's, Building Service Workers, Crew Workers, Welders, and/or other subordinate staff primarily by verbal instruction and/or physical demonstration of tasks performed. The work assignments are frequently performed independently and subject to review at the discretion of the Plant Manager.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

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Approved

Specification Revision
1/06

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

SYSTEMS SUPPORT SPECIALIST I

JOB SUMMARY

This position is located in various departments throughout the City of Oklahoma City and is under the direction of an immediate supervisor. The Systems Support Specialist I is an entry level professional requiring previously acquired knowledge of technical information systems and various computer hardware and software environments. **Essential job functions include:** providing technical support for both stand alone and LAN hardware and software components; diagnosis and repair of failing system components; and implementation of new and replacement systems. Work assignments are given under the direction of a supervisor. Work efforts and final products are reviewed at the discretion of the supervisor.

JOB REQUIREMENTS

-Knowledge of various computer hardware and software systems.
-Knowledge of and skill in the use of network operating systems.
-Knowledge of and skill in configuring, diagnosis and repairing desktop and portable client configurations.
-Skill in communicating technical information to non-technical personnel.
-Skill in instructing/demonstrating system usage.
-Skill in organizing information pertaining to work assignments.
-Skill in communicating both verbally and in writing.
-Ability to apply logic to the diagnosis and repair of systems.
-Ability to and skill in working with others through coordinated efforts.
-Ability to research and develop feasibility studies for proposed system.
-Willingness to assure responsibility for decisions made.
-Willingness to maintain and skill in developing effective system documentation.

WORKING CONDITIONS

-Primarily indoors in a climate controlled environment.
-Occasionally required to work beyond normal work hours or to change work hours when conducting training or systems analyses.
-Occasionally local and out-of-town travel.

SYSTEMS SUPPORT SPECIALIST I
Page 2

PHYSICAL REQUIREMENTS

-Strength enough to lift, push, pull or carry computer equipment weighing up to 100 lbs (with or without mechanical assistance).
-Arm-hand steadiness enough to demonstrate and operate computing equipment such as personal computers, graphic work stations, digitizers, plotters, etc.
-Manual and finger dexterity enough to operate equipment such as personal computers, audio visual and other training aids.
-Near vision enough to read, write, and develop training materials, audio visuals and slides, and to read and input data on a computer screen.
-Hearing enough to understand and communicate by telephone and in person in quiet environments and in locations where there is office noise or distracting sounds.
-Speech enough to communicate by telephone and in person when conducting training or providing assistance.

EVALUATION CRITERIA

-Difficulty

The work is performed frequently under general supervision, requiring previously acquired knowledge of technical information systems and various computer hardware and software environments. The employee in this classification is responsible for providing technical support of both stand alone and LAN hardware and software components, diagnosis and repair of failing system components, and implementation of new and replacement systems. Variables encountered are primarily abstract in nature in the area of systems support.

-Interpersonal Relations

The duties require continual contact with other technical staff and City personnel at all levels, to exchange technical information. This involves the interpretation of technical data, and using tact and diplomacy to gain cooperation and acceptance to achieve the desired results.

-Supervision Given and Received

Work assignments received may be general or specific in nature and may be received both verbal and in writing from a Systems Support Specialist II, III, or IV. Unusual problems or questions concerning work are discussed with a supervisor.

SYSTEMS SUPPORT SPECIALIST I
Page 3

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all inclusive; thus, other related activities or tasks may be assigned.

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Approved

Concept Drafted
06/99

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

TRAINING AND SAFETY SPECIALIST

JOB SUMMARY

This position is primarily located in the Utilities Department with The City of Oklahoma City and is under the direction of an immediate supervisor. The Training and Safety Specialist is responsible for planning, coordinating and administering department-wide safety and training programs within a major department. The duties performed require the utilization of previously acquired technical knowledge and skills. **Essential job functions include:** identifying safety and technical training needs, developing and implementing training and safety programs; conducting safety meetings and training sessions; conducting work site safety inspections and composing and maintaining records, reports, and correspondence; identifying potential conditions for accidents and recommending alternative safety and operational procedures; and ensuring compliance with City, state and federal safety laws and regulations. Other duties and responsibilities include: insuring accident prevention and safety devices are in use; investigating and reporting job injuries and vehicle accidents involving departmental employees and/or equipment; compiling and assessing statistical data and reports; and conducting research and analysis of job injury, property damage and claims involving the department. The Training and Safety Specialist has frequent contact with departmental and City personnel at all levels and outside agency representatives to exchange information and provide assistance related to safety training programs and compliance. The job requires training of employees in various areas of safety through verbal instruction and physical demonstration. Work is normally performed with minimal supervision with general supervision given through conferences, report analysis, and observation of work by the immediate supervisor.

JOB REQUIREMENTS

-Knowledge of pertinent local, state and federal safety laws and regulations.
-Knowledge of safe work practices, procedures and techniques.
-Knowledge of employee training and development techniques.
-Knowledge of and skill in utilizing basic research principles and practices.
-Skill in the development and presentation of training programs.
-Skill in conducting training needs assessments.
-Skill in effective verbal and written communication using tact and diplomacy.
-Skill in implementing safety programs, policies and procedures.
-Skill in determining the cause and preventability of accidents and injuries.
-Skill in analyzing large amounts of data and apply principles of logical thinking.
-Ability to monitor and assess safety practices performed in field conditions.
-Ability to investigate accident claims and complaints concerning unsafe work performance.
-Ability to convey technical information in understandable format.
-Ability to supervise.
-Ability to relate to individuals from various socio-economic backgrounds.
-Valid Oklahoma State Class D Driver License.

TRAINING AND SAFETY SPECIALIST
Page 2

WORKING CONDITIONS

-Primarily inside; outside when conducting field inspections and/or accident investigations.
-May be required to work irregular hours.
-Frequent to occasional local and out-of-town travel.
-Frequently exposed to steady and loud noises when demonstrating procedures or conducting training in treatment plant facilities, around traffic, etc.
-Occasionally exposed to chemicals such as lime in some treatment plant facilities.
-Occasionally exposed to allergy causing agents such as bee/wasp stings, dust, or poisonous plants when training or conducting inspections outdoors.
-Exposed to moderate concentrations of noxious odors when working in treatment facilities and wastewater maintenance job sites.
-May be exposed to confined spaces, excavations, traffic, machinery, water/wastewater, and/or fall hazards.
-Subject to climbing portable ladders to heights up to 45 ft. and climbing fixed ladders to heights of 265 ft. above ground level.

PHYSICAL REQUIREMENTS

-Strength enough to lift, push, pull, or carry audio visual or other training equipment weighing up to 30 pounds.
-Arm-hand steadiness enough to demonstrate and operate training and/or safety equipment.
-Vision enough to read, write, and develop training materials, review films and slides, etc.
-Speech and hearing enough to communicate by telephone, in person, and when conducting oral presentations.
-Speech enough to communicate clearly and distinctly when making oral presentations.

EVALUATION CRITERIA

-Difficulty

This job involves applying knowledge of safety regulations and occupational safety practices and procedures in performing safety inspections and conducting safety classes. The employee works independently in applying training procedures and methods of instruction. Judgment must be used in the selection and interpretation of appropriate regulations. Variables encountered are many and primarily concrete in nature.

-Interpersonal Relations

The employee has regular contact with departmental and City personnel at all levels and outside agency representatives to exchange information related to safety training programs and compliance. Instructs groups or individuals of various socio-economic backgrounds by verbal communication and physical demonstration.

TRAINING AND SAFETY SPECIALIST
Page 3

-Supervision Given and Received

The Training and Safety Specialist may provide training and functional supervision to Training and Safety Officer, Safety Analyst and/or clerical staff by reviewing and monitoring both work in progress and final work products.

Assignments are received in verbal and written form from the immediate supervisor. Instructions received define overall objectives, but are non-specific regarding how to proceed. Work is reviewed by the immediate supervisor for soundness of judgment, compliance with pertinent rules, regulations, policies and procedures, and program accomplishments.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all inclusive; thus, other related activities or tasks may be assigned.

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Approved

Concept Development
11/08

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

PIPELINE MECHANIC

JOB SUMMARY

This job is located in the Water and Wastewater Line Maintenance Divisions of the Water and Wastewater Utilities Department with The City of Oklahoma City, and is under the direction of an immediate supervisor. Employees of this classification perform work of a specialized nature, involving skills and knowledge acquired prior to assuming the position. **Essential job functions include**: supervising a crew of Utility Workers responsible for the maintenance and repair of the City's water distribution system or sewer collection system. The incumbent has full responsibility for vehicles and equipment on the job, work performed by the crew, and the safety of the crew, including the enforcement of safety regulations and procedures regarding manpower and equipment usage. Equipment operation may consist of operating flatbed trucks, dump trucks, tandem trucks, backhoes and front-end loaders. The Pipeline Mechanic must use sound judgment regarding public safety when the crew is working in and around traffic. The work often includes contact with the public, outside utility agencies, and other departmental personnel. Upon receipt of written or oral instruction the Pipeline Mechanic transports workers and equipment to the job site. Work assignments are given in both oral and written form depending on the work situation. The employee will complete work orders, safety reports, and other work related activity reports on a daily basis. The work products are reviewed through customer satisfaction, daily reports and periodic inspection by a supervisor.

JOB REQUIREMENTS

-Knowledge of and ability to follow safe working procedures and practices.
-Knowledge of and skill in operating heavy equipment used in the construction industry.
-Knowledge of and skill in using tools used in the maintenance of a water distribution system or wastewater collection system.
-Knowledge of excavation standards and skill in applying such standards to the work performed.
-Knowledge of specifications and functions of water mains and fire hydrants. (Water Line Maintenance)
-Ability to follow both oral and written instructions.
-Ability to supervise a crew and to assume responsibility for the work product as well as equipment and materials used.
-Possession of a valid Class A Commercial Driver License.
-Possession of a Class D Water Certification. (Water Line Maintenance)
-Possession of a Class D Wastewater Certification. (Wastewater Line Maintenance)

PIPELINE MECHANIC
Page 2

WORKING CONDITIONS

-Outside, continually exposed to heat, cold, humidity, rain, etc.
-Constant contact with water at work site.
-Subject to working near or around slippery surfaces.
-Will work in and next to dig ups, trenches and manholes that are below ground level which are subject to cave in.
-Subject to working in enclosed confined or cramped spaces.
-Subject to working near or around traffic, moving equipment and machinery.
-Exposed to pronounced strain or vibrations, high concentrations of dust, and intermittent or continued loud noises when operating equipment such as concrete saws, jackhammers, backhoes, etc.
-Exposed to moderate amounts of silica dust from cement when using jackhammers or concrete saws.
-Exposed to allergy-causing agents such as bee or wasp stings, poison oak, ivy and sumac, etc.
-Occasional exposure to chemical irritants when flushing water lines with water and chlorine powder.
-Occasionally exposed to electrical hazards.
-Frequently required to work overtime, including weekends, holidays, etc.
-Local travel on a daily basis.

PHYSICAL REQUIREMENTS

-Strength enough to lift, push, and pull objects weighing up to 100 pounds (with or without mechanical assistance) and up to 240 pounds (with mechanical assistance) such as manhole covers, cement bags, jackhammers and sections of pipe.
-Stamina enough to exert oneself physically throughout the work day.
-Extent flexibility enough to bend, twist or reach out when performing duties in confined, cramped, awkward, or strained positions.
-Mobility enough to continuously move oneself from place to place.
-Balance enough to stand on water or sewer lines, etc.
-Manual dexterity enough to make coordinated movements with the hands and arms while using hand tools, power tools and when operating a backhoe.
-Finger dexterity enough to twist nuts on bolts, etc.
-Vision enough to observe and differentiate between other utilities.
-Vision enough to observe objects such as oncoming traffic.
-Hearing enough to locate equipment malfunction and to distinguish location of traffic.
-Speech enough to communicate in person or by two-way radio.

PIPELINE MECHANIC
Page 3

EVALUATION CRITERIA

-Difficulty

This job entails a variety of critically sequenced operations frequently performed under emergency conditions. Employees must follow established safety procedures, and be knowledgeable and skillful within their respective functional area (water or wastewater). Since emergencies result in the interruption of services to citizens, work must be performed with speed and accuracy. The incumbent must be able to work with minimal supervision while supervising a crew assigned to accomplish specific tasks. In addition, the employee has full responsibility for the operation of equipment and the maintenance of materials. Variables encountered are both concrete and abstract in nature. A supervisor is usually available in person or by radio to respond to unusual situations.

-Interpersonal Relations

The employee has continual contact with a crew to coordinate work assignments and to assist workers in carrying out the required tasks. Occasional contact is made with citizens, outside agencies, and other departmental personnel to arrange for completion of the job or to ask questions and explain job procedures concerning work performed.

-Supervision Given and Received

The incumbents supervise the work of a crew. Supervision consists of making decisions concerning work assignments and procedures and the safety of the crew members and equipment.

Work assignments are given in both oral and written form depending on the work situation. The employee will complete work orders, safety reports, and other work related activity reports on a daily basis. The work products are reviewed through regular inspections by the supervisor and/or review of daily activity reports completed by the employee.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all inclusive; thus, other related activities or tasks may be assigned.

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Approved

Concept Drafted
06/99

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

CONSTRUCTION EQUIPMENT OPERATOR II

JOB SUMMARY

This job is located in various departments with the City of Oklahoma City and is under the direction of an immediate supervisor. The skills, knowledge, and abilities required for full performance must be acquired prior to assuming the position. Incumbents must possess skill in operating at least one or more pieces of very heavy construction equipment specific to a particular work site and have the ability to learn to operate other equipment. The employee must possess all necessary licenses and certifications prior to operating the assigned equipment. **Essential job functions include:** driving and/or operating various pieces of light, heavy and/or very heavy construction or maintenance equipment used in activities, such as, construction excavation, asphalt stripping etc., and assuming responsibility for following all safety and maintenance procedures relating to the proper operation and condition of the assigned equipment. The primary equipment used may include: earth movers, large motor graders, large bulldozers, large asphalt rollers and pavers, large cranes, grade-alls; Hoptos; scrapers; cranes; tandem trucks; and tractor-trailer rigs. A Construction Equipment Operator II may also be expected to complete specific tasks including, but not limited to: operating front-end loaders for cutting slope; operating backhoes when digging around underground gas/electrical lines or large water mains; and interpreting construction plans or drawing and performing operations necessary to comply with plan or drawing specifications. Specialized attachments such as snow plows, trailers, winches, etc. may be used to complete less routine job assignments. The incumbent may work independently in delivering materials and equipment or in conjunction with other workers and equipment while on construction or maintenance projects. In the absence of a supervisor the worker may be expected to assume lead-worker responsibility for other employees and equipment and effective completion of projects. Due to equipment malfunctions, limited worker availability, or adverse weather conditions, this classification may be expected to perform crew or maintenance-type tasks. Work instructions are received verbally and in writing, with work reviewed by a supervisor through inspection and written reports or upon completion for compliance with blueprints and overall quality.

JOB REQUIREMENTS

-Knowledge of the assigned equipment types and functions. (Dependent on Department)
-Knowledge of and ability to operate gauges, controls, pedals, levers, and switches found on the equipment used.
-Knowledge of procedures used and skill in cutting or digging to grade.
-Knowledge of various construction materials and types of soils and surfaces.
-Skill in reading blueprints and grade stakes, and using instruments to check grade.
-Skill in operating/driving the assigned equipment.
-Ability to safely operate equipment used on the job.
-Ability to perform basic arithmetic computations.
-Ability to follow instructions.

CONSTRUCTION EQUIPMENT OPERATOR II
Page 2

JOB REQUIREMENTS (Continued)

-Ability to work both independently and with others.
-Ability to learn.
-Possession of a valid Oklahoma State Class A or B Driver License. (Dependent on Department)

WORKING CONDITIONS

-Outside; frequently exposed to heat, cold, humidity, rain, and snow.
-Possibility of falls from working around slippery surfaces caused by rain, snow, and ice during snow and ice removal projects.
-Possibility of suffering injuries when operating equipment, securing equipment and materials, or changing pieces on equipment such as blades.
-Subject to working from 4 to 12 feet above ground level when operating certain equipment or when loading, securing, and unloading materials and equipment.
-Subject to working near moving machinery and vehicles in motion.
-Subject to exposure to pronounced strain or vibration, high concentrations of dust, and intermittent or continued loud noises when operating construction equipment.
-Possible exposure to chemical irritants and noxious odors when cleaning dumped materials from the roadside, bar ditches, storm drains, etc.
-Subject to working near equipment and media which, under certain conditions, may explode, e.g., operating construction equipment near underground gas lines.
-Subject to working near equipment and media which, if contracted, may cause severe electrical shocks, e.g., operating construction equipment near underground high-voltage electric lines, overhead power lines, etc.
-Subject to physical fatigue due to prolonged sitting, standing or walking.
-May work 12-hour shifts during snow and ice removal, and subject to 24-hour call.
-Possibility of receiving second or third degree burns from hot liquid sealer (350 to 400 degrees) when operating joint sealing machine.
-Possible exposure to fairly high concentrations of toxic chemicals when operating chemical spraying equipment.
-Local travel daily.

PHYSICAL REQUIREMENTS

-Strength enough to lift, push, pull, or carry objects weighing up to 100 pounds such as pieces of equipment, rocks, bags of cement, bags of silica sand, hose, boom down chains, drag chains, etc.
-Stamina enough to exert one's self physically throughout the work day.
-Mobility enough to continuously move one's body from place to place.
-Flexibility enough to bend, twist, and reach out to operate the controls, pedals, levers, etc. on equipment used, move parts and equipment, tie down machinery, secure tarps, etc.
-Coordination enough to climb up to and down from equipment and to operate the controls, pedals, levers, etc., on equipment used.
-Arm-hand steadiness, and manual and finger dexterity enough to operate the controls, levers, and switches on equipment used.
-Far vision enough to tell how deep one is scraping or digging while seated on equipment, and to watch for vehicles.

CONSTRUCTION EQUIPMENT OPERATOR II
PAGE 3

PHYSICAL REQUIREMENTS (Continued)

-Hearing enough to determine the location and direction of vehicles and equipment when operating construction equipment; and determine when machinery and equipment are not functioning properly, i.e., overloaded, misfiring, etc.
-Eye-hand-foot coordination and alertness enough to drive and/or operate very heavy trucks and equipment.
-Speech and hearing enough to communicate in person or by two-way radio.

EVALUATION CRITERIA

-Difficulty

This job consists of the safe operation of complex automotive and construction equipment requiring prior knowledge and skill. The procedures governing these activities are well-defined, however, the many variables encountered may force the incumbent to modify procedures as necessary. The employee has full responsibility for the operation of equipment that can be potentially hazardous to self and other employees.

-Interpersonal Relations

This classification has frequent contact with supervisors, co-workers and trainees to exchange information relating to the completion of assigned tasks.

-Supervision Given and Received

This classification may oversee equipment use; demonstrate or explain proper job procedures to workers; observe and inspect their work activities; and/or assume other lead-worker responsibilities as directed by a supervisor. The employee works primarily independently and receives verbal and written assignments that are general in nature. Work products are subject to periodic review by a supervisor.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

_____

Title Change
10/2011

Title Change/Update
11/02

Modified
12/93

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

UTILITY WORKER I

JOB SUMMARY

This job is located in the Line Maintenance Division of the Water and Wastewater Utilities Department with The City of Oklahoma City and is under the direction of an immediate supervisor. Employees of this classification perform work of a specialized nature, involving skills and knowledge which can be acquired on the job. The worker is part of a crew, averaging two to three persons. Crew members work in close proximity to one another to complete a job which requires a cooperative effort. The employee must follow safety regulations and procedures specific to each crew's work situation. Work will include frequent contact with the public to answer questions concerning the crew's function with the supervisor present to respond to unusual situations. Upon receipt of oral and written instructions from the immediate supervisor, the worker completes assigned tasks. Essential job functions include:

A. Water Line Maintenance

Utility Worker I's for the Water Line Maintenance Section perform a variety of routine maintenance and servicing operations for the City's water distribution system which generally involves water lines, meters, valves, and fire hydrants.

B. Wastewater Line Maintenance

Utility Worker I's for the Wastewater Line Maintenance Section perform a variety of routine maintenance and servicing operations for the City's wastewater collection system which generally involves sewer lines, pumps, and manholes.

JOB REQUIREMENTS

-Knowledge of and ability to follow safe working procedures and practices.
-Knowledge of and ability to follow safe driving procedures and practices.
-Ability to use tools and equipment necessary to repair hydrants and water mains. (Water)
-Ability to use tools and equipment necessary to clean and repair sewer mains. (Wastewater)
-Ability to follow both oral and written instructions.
-Ability to make common sense decisions.
-Ability to work under close supervision.
-Possession of a valid Oklahoma State Class A Commercial Driver License.
-Possession of a valid Class D Water or Wastewater Certification (depending on assignment).

UTILITY WORKER I
Page 2

WORKING CONDITIONS

-Outside; continually exposed to heat, cold, humidity, rain, etc.
-Subject to working on or around slippery surfaces such as wet streets, manholes, and muddy trenches, etc.
-Subject to working in and next to dig ups, trenches and manholes below ground level.
-Intermittent to sustained working in confined, cramped and awkward positions when performing maintenance and repair tasks.
-Subject to working near moving objects such as traffic and equipment.
-Exposed to pronounced strains or vibrations, high concentrations of dust, and intermittent or continued loud and insistent noises when operating equipment such as concrete saws, jackhammers, etc.
-Exposed to moderate amounts of silica dust from cement when using jackhammer or concrete saw.
-Exposed to allergy-causing agents such as bee or wasp stings, poison oak, ivy and sumac.
-Subject to working near electrical hazards.
-Subject to being on-call and working irregular hours such as overtime, and night, weekend, and holiday work shifts.
-Local travel daily.

Water Line Maintenance

-Subject to constant contact with water at work site.
-Occasional exposure to chemical irritants when flushing water lines with water and chlorine powder.

Wastewater Line Maintenance

-Subject to constant contact with sewage at work site.
-Frequent exposure to toxic gases such as sewer gas, methane gas, carbon monoxide, combustible gas, etc.
-Frequent exposure to the chemical irritant such as acid and other chemicals.
-Subject to working near large concentration of noxious odors.

PHYSICAL REQUIREMENTS

-Strength enough to lift, push, and pull objects weighing up to 100 pounds such as manhole covers, cement bags, jackhammers and sections of pipe.
-Stamina enough to exert oneself physically throughout the day.

UTILITY WORKER I
Page 3

-Extent flexibility enough to bend, twist or reach out to perform work such as maintenance and repair tasks.
-Mobility enough to continuously move oneself from place to place.
-Balance enough to stay upright when working in and around areas such as dig ups.
-Manual dexterity enough to make coordinated movements with the hands and arms while using items such as hand tools and power tools.
-Finger dexterity enough to perform tasks such as twisting nuts and bolts.
-Near vision enough to distinguish items such as other utilities.
-Far vision enough to see places such as the bottom of a trench and to distinguish hazards such as oncoming traffic.
-Hearing enough to understand conversation in a noisy environment and to perform tasks such as locating leaks in lines.
-Speech and hearing enough to communicate clearly and distinctly in person, by two-way radio, and by telephone.

EVALUATION CRITERIA

-Difficulty

This job consists of the performance of a variety of routine, sequenced operations following established procedures. Variables encountered in the performance of work activities are many and nearly always concrete in nature. Overall work is of a standardized nature and work products are routinely reviewed by the supervisor. The incumbent must follow safety regulations and procedures which are specific to each crew's situation.

-Interpersonal Relations

The employee has continual contact with co-workers and supervisor as a member of a two to three person crew which works together to complete jobs requiring cooperative effort. Frequent contact with the public is required to notify citizens of service interruptions and answer simple questions concerning the crew's function, with the supervisor present to respond to any unusual situations.

-Supervision Received

Work assignments are received verbally and in writing with actual work performance subject to direct and continuous review by a working supervisor.

UTILITY WORKER I
Page 4

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all inclusive, thus, other related activities or tasks may be assigned.

Concept Development
8/96

The City of
OKLAHOMA CITY
PERSONNEL DEPARTMENT

VACUUM/FLUSHER TRUCK OPERATOR

JOB SUMMARY

This job is primarily located in the Utilities Line Maintenance Division of the Utilities Department with the City of Oklahoma City and is under the direction of an immediate supervisor. The skills, knowledge, and abilities required for full performance must be acquired prior to assuming the position. Incumbents must possess all necessary licenses and certifications prior to operating the assigned equipment and must successfully complete departmental training programs designed to enhance basic equipment operation, maintenance, and safety skills. **Essential job functions include:** driving and/or operating a vacuum or flusher truck and various pieces of light mechanical and/or hand operated maintenance equipment to maintain the municipal wastewater collection system; restoring sewer lines/mains to operational condition and to investigate and report conditions of each assigned task; removing debris and obstructions from the sewer line/main; responding to emergency situations which require a flush/vacuum combination vehicle; and performing daily maintenance to tools and equipment. The Vacuum/Flusher Truck Operator may also be expected to complete other specialized tasks associated using the assigned equipment and is responsible for following all safety and maintenance procedures relating to the proper operation and condition of the equipment. At the discretion of the department or division, the incumbent may operate other equipment utilized for snow removal or emergency clean-up situation. The incumbent may work independently or in conjunction with other workers and equipment while performing routine maintenance or special projects. In the absence of a supervisor the incumbent may be expected to assume lead-worker responsibility for other employees, equipment, and effective completion of projects. Due to equipment malfunctions, limited worker availability, or adverse weather conditions, this classification may be expected to perform crew or maintenance - type tasks. Work instructions are received verbally and in writing, with work reviewed by a supervisor through inspection and written reports.

JOB REQUIREMENTS

-Knowledge of the assigned equipment types and functions.
-Knowledge of and ability to operate gauges, controls, pedals, levers, and switches found on the equipment used.
-Knowledge of various utility services and structures.
-Knowledge of the assigned equipment and attachments.
-Skill in the safe operation of the equipment used on the job.
-Ability to follow verbal and written instructions.
-Ability to work both independently and with others.
-Ability to perform basic arithmetic computations.
-Possession of a valid Oklahoma State Class A Driver License.

VACUUM/FLUSHER TRUCK OPERATOR
PAGE 2

WORKING CONDITIONS

-Outside; frequently exposed to heat, cold, humidity, rain, snow, etc.
-Possibility of falls from working around slippery surfaces caused by rain, snow, and ice during snow and ice removal projects.
-Possibility of injuries when operating, securing or changing pieces on equipment.
-Subject to working from 4 to 12 feet above or below ground level when operating certain equipment or when attaching or securing equipment.
-Subject to working near moving machinery and vehicles in motion.
-Subject to exposure to pronounced strain or vibration, high concentrations of dust, and intermittent or continued loud noises when operating equipment.
-Possible exposure to chemical irritants and noxious odors when cleaning, dumping or clearing debris from storm drains, etc.
-Subject to working near equipment and media which, under certain conditions, may explode, e.g., operating equipment near underground gas lines.
-Subject to working near equipment and media which may cause electrical shocks.
-May work irregular shifts during snow and ice removal, and subject to 24-hour call.
-Possible exposure to fairly high concentrations of noxious odors.
-Local travel daily.

PHYSICAL REQUIREMENTS

-Strength enough to lift, push, pull, or carry objects weighing up to 100 pounds such as pieces of equipment, truck attachments, etc.
-Stamina enough to exert one's self physically throughout the workday.
-Mobility enough to continuously move one's body from place to place.
-Flexibility enough to bend, twist, and reach out to operate the controls, pedals, levers, etc. on equipment used, move parts and equipment, tie down machinery, etc.
-Coordination enough to climb up to and down from equipment and to operate the controls, pedals, levers, etc., on equipment used.
-Arm-hand steadiness, and manual and finger dexterity enough to operate the controls, levers, and switches on equipment used.
-Far vision enough to determine the location of equipment, completeness of work performed and to watch for other vehicles and equipment.
-Hearing enough to determine the location and direction of vehicles and equipment when operating equipment; and to tell when machinery and equipment are not functioning properly.
-Eye-hand-foot coordination enough to drive and/or operate the assigned equipment.
-Speech and hearing enough to communicate in person or by two-way radio.

EVALUATION CRITERIA

-Difficulty

This classification is responsible for the safe operation of equipment that requires a high degree of physical coordination, manual dexterity, mental concentration, and form and spatial perception. Work procedures are well-defined and variables encountered are both abstract and concrete. The incumbent must be able to assume responsibility for the operation of equipment that is potentially hazardous to self and others.

VACUUM/FLUSHER TRUCK OPERATOR
PAGE 3

-Interpersonal Relations

This classification has frequent contact with supervisors and co-workers to complete assigned tasks. The employee may have occasional contact with contractors or other City personnel concerning the assigned projects.

-Supervision Given and Received

Upon receiving instructions from a supervisor, this classification assumes responsibility for other workers, equipment, and the successful completion of projects. The employee primarily works independently, receiving verbal and written assignments that are general in nature. Work products are subject to periodic review by a supervisor.

-Other Duties and Responsibilities

This is a summary of the duties and responsibilities commonly found within this classification. It is not meant to be all-inclusive; thus, other related activities or tasks may be assigned.

_____

Approved by
9/13

	Month/Year	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18
	Federal Fiscal Year	Pre-Award					15-16	15-16	15-16	15-16	15-16	15-16	15-16	15-16	15-16	15-16	15-16	15-16	16-17	16-17	16-17	16-17	16-17	16-17	16-17	16-17	16-17	16-17	16-17	17-18	17-18	17-18	17-18	17-18	17-18	17-18	17-18	17-18
	Month	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Project #	PROJECT NAME																																						
	Award						Oct. 1																																
	Notice to Proceed						Nov. 1																																
	Operational Transition							6 months																															
	Engineering and Construction Community Engagement				9 Months																																		
	Pre-Qualification Program				Phase One Projects									Phase Two Projects																										
	LOI, technical douments and Concept Design preparation				2 months - 8 projects																																		
	LOI issue / evaluation / Selection						3 months																																
	Negotiation									2 months																													
	Award											2 months																											
	SYSTEM CHARACTERIZATION STUDIES - Phase I																																						
WST1	Water System Inventory and Valuation							6 months																															
WST5	Develop Intrumentation and Control (I&C) Master Plan							5 months					Review																										
WST8	Management Information Systems							5 months					Review																										
WST9	Regulatory Strategy Plan							5 months					Review																										
WST10	Parts and Supplies Analysis							5 months					Review																										
WST11	Health and Safety Plan							5 months					Review																										
	SYSTEM CHARACTERIZATION STUDIES - Phase II																																						
WST2	Condition Assessment of Water System																3 months			Review																			
WST3	Water System Hydraulic Model																6 months						Review															
WST4	Develop Water Distribution System Master Plan													3 months			Review				6 months						Review												
WST6	Environmental Study																							3 months			Review												
WST7	Water Vulnerability Assessments																3 months			Review																			
	Annual Plan																				6 months															4 months			
	Annual Plan due to Fed. Gov't (HARD DATE)																							31-Mar												31-Mar			
WDC1	Well Number 8 - The water line from Well Number 8 to the distribution system has failed and requires replacement.																		4 months				6 months						18 Months									
WDC2	Wellheads, System Wide - Wellheads do not comply with Oklahoma Administrative Code, Title 252:626.													4 months				3 months			15 months																	
WDC3	Elevated Storage Tanks, System Wide - Replace control valves at each of the five elevated water storage tanks.													4 months				3 months			15 months																	
WDC4	Well Heads, System Wide - Install in-line filters along the wellhead of each well.																							4 months				3 months			15 months							
WDC5	Well No. 24, 25, & 26 to Navy Tower - Construct a new main tying Well No. 24, 25, and 26 to the Navy Tower.																							4 months				3 months			15 months							
WDC6	Well No. 6 - Replace old Well Number 6 with a new well.																							4 months				3 months			15 months							
WDC7	Well No. 9 - Replace old Well Number 9 with a new well.																							4 months				3 months			15 months							
WDC8	Well No. 1 - Plug and Cap Well No. 1 and replace with new well on main base.																							4 months				3 months			15 months							
WDC9	Well No. 2 - Repair Well Number 2; raise the level of the well to above grade.																							4 months				3 months			15 months							
WDC10	TRUST Supply Points, East and West Side of Tinker AFB - Install new booster pump stations at both OKCWD water supply feeds on the east and west sides of the Base.													4 months				12 months												18 months								
WCU1	Well Upgrades, System Wide - Automate chlorine dosing to new well flow meter.													4 months				6 months						18 months														
WCU2	Well Upgrades, System Wide - Add automated measured fluoride dosing													4 months				6 months						18 months														
WCU3	Well Upgrades, System Wide - Add fluoride inventory control.													4 months				6 months						18 months														
WCU4	Well Upgrades, System Wide - Add chlorine gas scrubber.													4 months				6 months						18 months														
WCU5	Water Storgae Tanks, System Wide - Provide remote read capabilities and improve secure access.																			4 months				6 months						18 months								
WCU6	Upgrade Water Quality Monitoring for each Service Area – Online																		4 months				3 months			12 months												
WCU7	Booster Station Alteration - Add variable frequency drives (VFDs) to the new booster pumps described in WDC10.													Refer to WDC10. This work (WCU7) is included in the schedule for WDC10.																								
WCU8	SCADA improvements, System Wide													4 months				8 months								18 months												
WCU9	Raise Well #3 and #5													4 months				6 months						18 months														
WCU10	Water System Modifications to achieve UFC requirements - 1293 ft of 6 inch																												4 months				4 months			12 months		
WCU11	Water System Modifications to achieve UFC requirements - 3192 ft 8 inch																												4 months				4 months			12 months		
WCU12	Water System Modifications to achieve UFC requirements - 897 ft 10 inch																												4 months				4 months			12 months		
WCU13	Water System Modifications required to UFC requirements - 2220 ft 12 inch																												4 months				4 months			12 months		
WCU14	Water System Modifications to achieve UFC requirements - Replacement of exisitng pressure reducing valves																												4 months				4 months			12 months		
WCU15	Water Distribution System Modifications required to achieve UFC requirements - Additional Fire hydrants																												4 months				4 months			12 months		
WCU16	Water Distribution System Modifications required to achieve UFC requirements - Four Tank Additions - 500Kgal each																												4 months				6 months					30 months
WCU17	Raise Existing Backflow Preventers																			6 months						8 months							18 months					
WCU18	Well Pump #27 Replacement													4 months				4 months				12 months																
WCU19	TRUST Operations Building													4 months				6 months						18 months														
WRR1 - WRR15	Pipeline, valve and hydrant, Water storage tank and component, and Water well and component R&R													Staggered design and construction after WDC and WCU are done.																								

CONTRACT START DATE

Legend	
	Basis of Design Report
	Design
	Construction

	Month/Year	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
	Federal Fiscal Year	17-18	17-18	17-18	18-19	18-19	18-19	18-19	18-19	18-19	18-19	18-19	18-19	18-19	18-19	18-19	19-20	19-20	19-20	19-20	19-20	19-20	19-20	19-20	19-20	19-20	19-20	19-20	20-21	20-21
	Month	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
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Legend

- Basis of Design Report
- Design
- Construction

			Backlog	Projected Year of Replacement by Design Life																												
	Item	Design Life	***2014***	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Pipe - Cast Iron																																
	<2”	50	8,024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2”	50	18,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2.5”	50	9,680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3”	50	2,650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	50	1,020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	50	32,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,020	-
	8”	50	54,720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10”	50	18,030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,510	-
	12”	50	31,440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe - Asbestos Cement																																
	3”	40	5,030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	40	2,420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	40	42,860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	40	58,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10”	40	62,850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12”	40	64,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe - PVC																																
	<2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	630	-	-	-	-	-	-	-	-
	2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,396	-	-	-	-	748	-	-	-
	3”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,080	-	-	-	-	-	-	-	-
	4”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,550	-	-	-	-	-	-	-	-
	6”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,515	-	-	-	-	-	-	-	-
	10”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,180	-	-	-	-	-	-	-	-
Pipe - Ductile Iron																																
	<2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Service Connections and Valves																																
	Service Connections	50	286	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	14	-
Gate Valves (Mains)																																
	<2”	25	23	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-	-	-
	2”	25	56	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	-	-	-
	2 ½”	25	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-
	3”	25	20	-	-	-	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	2	-
	4”	25	25	-	-	-	1	-	4	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	1	-
	6”	25	218	-	-	-	6	-	20	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	218	-	6	-
	8”	25	272	-	-	-	16	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	272	-	16	-
	10”	25	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	-
	12”	25	139	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	139	-	-	-

			Backlog	Projected Year of Replacement by Design Life																													
	Item	Design Life	***2014***	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Post Indicator Valves																																	
	Post Indicator Valves	35	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fire Hydrants																																	
	Fire Hydrants	25	439	-	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	439	-	-	15	-
Water Storage Tanks																																	
	Elevated - #406 - 500,000 gal	75	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #407 - 500,000 gal	75	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #850 - 500,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #3304 - 500,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #3901 - 1,000,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cathodic Protection Components																																	
	Magnesium Anodes	15	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Cable	15	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rectifier	20	1	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-	-	-
	Reference Cell	20	2	1	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	5	-	-	-	-	-	-	-	-
	Test Station	20	4	4	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	12	-	-	-	-	-	-	-	-
Wells and Components																																	
1	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Below Ground Concrete Structure	60	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Below Ground Concrete Structure	60	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Below Ground Concrete Structure	60	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix C. 50-Year Renewal and Replacements by Design Life

			Backlog	Projected Year of Replacement by Design Life																												
	Item	Design Life	***2014***	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
	Below Ground Concrete Structure	60	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
8	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
12	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
13	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
20	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
21	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			Backlog	Projected Year of Replacement by Design Life																													
	Item	Design Life	***2014***	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
22	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
23	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
24	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
25	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
26	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
29	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Chlorination Equipment	20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-

Appendix C. 50-Year Renewal and Replacements by Design Life

			Backlog	Projected Year of Replacement by Design Life																													
	Item	Design Life	***2014***	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
30	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Chlorination Equipment	20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
31	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Chlorination Equipment	20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
32	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Chlorination Equipment	20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
33	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Chlorination Equipment	20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
34	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	Pump Controls	15	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	Well	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
	Water Connections	50	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-

			Backlog	Projected Year of Replacement by Design Life																												
	Item	Design Life	***2014***	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Booster Pump Stations (919 & 32101)																																	
	Pump, Piping, & Controls - 75 HP	30	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump, Piping, & Controls (VFD) - 20 HP	30	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional Inventory																																	
	Chlorination Station (Facilities 35 and 774)	20	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
	Fluoridation Station (Facility 8000)	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fluoridation Station (Facility 6611)	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BFP Devices - 4”	10	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
	BFP Devices - 10”	10	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Main Base elevated storage tank valve vaults																																	
	Piping and fittings, ductile iron																																
	Piping and fittings, ductile iron 10 in	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Piping and fittings, ductile iron 14 in	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Piping and fittings, ductile iron 8 in	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sump Pump and appurtenances																																
	Sump Pump and appurtenances 1/2 HP	30	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, altitude																																
	Valve, altitude 14 in	25	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Valve, altitude 8 in	25	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, check																																
	Valve, check 14 in	25	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Valve, gate																																
	Valve, gate 10 in	25	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, gate 14 in	25	-	4	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-
	Valve, gate 8 in	25	-	1	-	-	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Vault, concrete																																
	Vault, concrete 12 ft x 16 ft x 8 ft	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vault, concrete 10 ft x 16 ft x 8 ft	60	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pressure Regulating Valves																																	
	Pressure Regulating Valve 8 in	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bypass-Pressure Regulating Valve 2 ½ in	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-

				Projected Year of Replacement by Design Life																		
	Item	Design Life	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064
Pipe - Cast Iron																						
	<2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2.5”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe - Asbestos Cement																						
	3”	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10”	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12”	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe - PVC																						
	<2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	50	-	-	-	-	-	-	1,082	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	50	-	-	-	-	-	-	1,638	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10”	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipe - Ductile Iron																						
	<2”	50	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2”	50	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3”	50	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12”	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Service Connections and Valves																						
	Service Connections	50	31	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Gate Valves (Mains)																						
	<2”	25	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2”	25	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2 ½”	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3”	25	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4”	25	4	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
	6”	25	20	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
	8”	25	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10”	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12”	25	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				Projected Year of Replacement by Design Life																		
	Item	Design Life	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064
Post Indicator Valves																						
	Post Indicator Valves	35	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fire Hydrants																						
	Fire Hydrants	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Storage Tanks																						
	Elevated - #406 - 500,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #407 - 500,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #850 - 500,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #3304 - 500,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Elevated - #3901 - 1,000,000 gal	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cathodic Protection Components																						
	Magnesium Anodes	15	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-
	Cable	15	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	-	-	-	-
	Rectifier	20	-	-	-	-	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-	-
	Reference Cell	20	-	-	-	-	-	-	-	-	-	-	3	-	5	-	-	-	-	-	-	-
	Test Station	20	-	-	-	-	-	-	-	-	-	-	8	-	12	-	-	-	-	-	-	-
Wells and Components																						
1	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Below Ground Concrete Structure	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Below Ground Concrete Structure	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Below Ground Concrete Structure	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				Projected Year of Replacement by Design Life																		
	Item	Design Life	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064
	Below Ground Concrete Structure	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
8	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
12	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
13	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
20	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
21	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-

				Projected Year of Replacement by Design Life																		
	Item	Design Life	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
22	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
23	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
24	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
25	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
26	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
29	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-

				Projected Year of Replacement by Design Life																		
	Item	Design Life	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064
30	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
31	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
32	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
33	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
34	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	Well Pump, Motor & Column	15	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	Pump Controls	15	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	Well	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Well Pump, Motor & Column	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Pump Controls	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
	Electric Connections	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Water Connections	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Building	50	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
	Chlorination Equipment	20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-

				Projected Year of Replacement by Design Life																		
	Item	Design Life	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064
Booster Pump Stations (919 & 32101)																						
	Pump, Piping, & Controls - 75 HP	30	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pump, Piping, & Controls (VFD) - 20 HP	30	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional Inventory																						
	Chlorination Station (Facilities 35 and 774)	20	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
	Fluoridation Station (Facility 8000)	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Fluoridation Station (Facility 6611)	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	BFP Devices - 4”	10	2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
	BFP Devices - 10”	10	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Main Base elevated storage tank valve vaults																						
	Piping and fittings, ductile iron																					
	Piping and fittings, ductile iron 10 in	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Piping and fittings, ductile iron 14 in	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Piping and fittings, ductile iron 8 in	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sump Pump and appurtenances																					
	Sump Pump and appurtenances 1/2 HP	30	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-
	Valve, altitude																					
	Valve, altitude 14 in	25	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, altitude 8 in	25	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, check																					
	Valve, check 14 in	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, gate																					
	Valve, gate 10 in	25	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, gate 14 in	25	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Valve, gate 8 in	25	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Vault, concrete																					
	Vault, concrete 12 ft x 16 ft x 8 ft	60	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-
	Vault, concrete 10 ft x 16 ft x 8 ft	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pressure Regulating Valves																						
	Pressure Regulating Valve 8 in	25	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-
	Bypass-Pressure Regulating Valve 2 ½ in	25	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-

Appendix D. Water System Transition Plan Schedule

ID	TM	Task Name	Duration	Start	Finish
1		Project Award	1 day(s)	Thu 10/1/15	Thu 10/1/15
2		Government Paperwork	33 day(s)	Thu 10/1/15	Mon 11/2/15
3		Notice to Proceed	1 day(s)	Mon 11/2/15	Mon 11/2/15
4					
5		**On Site Familiarization & Joint Inventory**		**Tue 11/3/15**	**Wed 2/10/16**
6		First Partnering Meeting w/ Gov't and Contracting Office	1 day(s)	Mon 11/9/15	Mon 11/9/15
7		Internal Meetings and Transition/Operational Planning	45 day(s)	Tue 11/3/15	Thu 12/17/15
8		Office/On Site Base Location Determination	31 day(s)	Tue 11/10/15	Thu 12/10/15
9		Obtain GIS Database/Initiate Verification	93 day(s)	Tue 11/10/15	Wed 2/10/16
10		Joint Inventory of Facilities and Fixed Assets (WST1)	93 day(s)	Tue 11/10/15	Wed 2/10/16
11		Catalogue/Inventory Manuals and Records	49 day(s)	Tue 11/10/15	Mon 12/28/15
12					
13		**Human Resources Activities**		**Tue 11/3/15**	**Fri 4/15/16**
14		Obtain Access Clearances for Transition Team	15 day(s)	Tue 11/3/15	Tue 11/17/15
15		Site Manager/Asst. Site Manager Start Date	1 day(s)	Tue 11/3/15	Tue 11/3/15
16		Produce TAFB-specific Policy Manuals	72 day(s)	Tue 11/10/15	Wed 1/20/16
17		Conduct Initial Meetings with Employees	12 day(s)	Mon 11/30/15	Fri 12/11/15
18		Hold Interviews for On Site Staff	24 day(s)	Mon 12/21/15	Wed 1/13/16
19		Evaluate Interviewees	15 day(s)	Thu 1/14/16	Thu 1/28/16
20		Issue Employment Offers	7 day(s)	Fri 1/29/16	Thu 2/4/16
21		Employee Start Dates	1 day(s)	Fri 2/26/16	Fri 2/26/16
22		Employee Emergency Training and Operation	19 day(s)	Mon 2/29/16	Fri 3/18/16
23		Operations Shadowing	47 day(s)	Mon 2/29/16	Fri 4/15/16
24					
25		**Administrative Transition**		**Tue 11/10/15**	**Wed 4/13/16**
26		Establish Dedicated Phone Line to Site	21 day(s)	Wed 1/6/16	Tue 1/26/16
27		MIS Study (WST8)		Tue 11/10/15	Wed 3/2/16
28		Determine TAFB Service Needs	24 day(s)	Tue 11/10/15	Thu 12/3/15
29		Determine TAFB System Requirements	48 day(s)	Fri 12/4/15	Wed 1/20/16
30		Develop Customer Service Web Portal	42 day(s)	Thu 1/21/16	Wed 3/2/16
31		Establish Monthly Billing Accounts and Procedures	21 day(s)	Thu 3/3/16	Wed 3/23/16
32		Develop/Set-Up Reporting Procedures	21 day(s)	Thu 3/3/16	Wed 3/23/16
33		Establish Customer Feedback Procedures/Processes	42 day(s)	Thu 3/3/16	Wed 4/13/16
34					
35		**Purchasing**		**Thu 10/1/15**	**Wed 4/20/16**
36		Contracting Community Education/Engagement	203 day(s)	Thu 10/1/15	Wed 4/20/16
37		Parts & Supplies Analysis (WST10)		Tue 11/10/15	Wed 3/9/16
38		List Equipment Types/Manufacturers	49 day(s)	Tue 11/10/15	Mon 12/28/15
39		Compare Lists against Existing TRUST Types/Manufacturers	23 day(s)	Tue 12/29/15	Wed 1/20/16
40		Identify Materials Gaps	7 day(s)	Thu 1/21/16	Wed 1/27/16
41		Modify Existing Supplier Contracts to Include Gaps	42 day(s)	Thu 1/28/16	Wed 3/9/16
42		Purchase Materials to Fill Gaps	42 day(s)	Thu 3/10/16	Wed 4/20/16
43					
44		**Safety and Security**		**Mon 1/4/16**	**Mon 4/18/16**

Appendix D. Water System Transition Plan Schedule

ID	Task Name	Duration	Start	Finish
45	Update, Coordinate and Publish Emergency Response Plan	106 day(s)	Mon 1/4/16	Mon 4/18/16
46	Develop and Publish Health and Safety Plan (WST11)	61 day(s)	Mon 2/1/16	Fri 4/1/16
47	Prepare Employee Right-to-Know Plan	40 day(s)	Mon 2/22/16	Fri 4/1/16
48	Conduct HAZMAT Inventory	26 day(s)	Mon 3/7/16	Fri 4/1/16
49	Prepare Inventory of MSDS Sheets and Obtain Missing Documents	40 day(s)	Mon 3/7/16	Fri 4/15/16
50				
51	**Permit Transfer and Regulatory Needs**		**Tue 11/3/15**	**Tue 3/8/16**
52	Regulatory Strategy Plan Study (WST9)	22 day(s)	Tue 11/3/15	Tue 11/24/15
53	ODEQ Water Well Permit	120 day(s)	Tue 11/10/15	Tue 3/8/16
54	ODEQ Water Distribution Permit	120 day(s)	Tue 11/10/15	Tue 3/8/16
55				
56	**Transition of Operations**		**Tue 11/3/15**	**Mon 5/2/16**
57	Review MSDS's	49 day(s)	Tue 11/10/15	Mon 12/28/15
58	Review Existing O&M Manuals/Plans/Specifications	93 day(s)	Tue 11/10/15	Wed 2/10/16
59	Review/Develop QA/QC Procedures	49 day(s)	Tue 11/10/15	Mon 12/28/15
60	Contract Compliance Matrix/Operations Review	45 day(s)	Tue 11/3/15	Thu 12/17/15
61	Revise/Create SOPs	85 day(s)	Mon 1/4/16	Mon 3/28/16
62	Transfer all Files, Logs, Records and Property Records	49 day(s)	Tue 11/10/15	Mon 12/28/15
63	Develop Federal Contract Compliance Plan	90 day(s)	Fri 12/18/15	Wed 3/16/16
64	Assume Operational Responsibility	1 day(s)	Mon 5/2/16	Mon 5/2/16
65				
66	**Transition of Maintenance**		**Tue 11/3/15**	**Mon 5/2/16**
67	Implement SAP/EAM	176 day(s)	Tue 11/3/15	Tue 4/26/16
68	Develop PM Tasks and Activities	90 day(s)	Fri 12/4/15	Wed 3/2/16
69	Identify Equipment Repair and Replacement Procedures	65 day(s)	Tue 12/29/15	Wed 3/2/16
70	Establish Inventory Control System	42 day(s)	Thu 1/28/16	Wed 3/9/16
71	Assume Maintenance Responsibility	1 day(s)	Mon 5/2/16	Mon 5/2/16
72				
73	**Capital Planning**		**Tue 11/3/15**	**Tue 4/26/16**
74	Instrumentation and Control Master Plan (WST5)	176 day(s)	Tue 11/3/15	Tue 4/26/16
75	Initial ISDC and Capital Upgrade Plan	93 day(s)	Tue 11/3/15	Wed 2/3/16
76				
77	**Transfer Ownership**		**Mon 2/1/16**	**Mon 5/2/16**
78	Process Joint Inventory "True Up"	42 day(s)	Thu 2/11/16	Wed 3/23/16
79	MOU with Fire Department	61 day(s)	Mon 2/1/16	Fri 4/1/16
80	Bill of Sale Submission	31 day(s)	Tue 3/29/16	Thu 4/28/16
81	Execute Bill of Sale	1 day(s)	Fri 4/29/16	Fri 4/29/16
82	Contract Start Date	1 day(s)	Mon 5/2/16	Mon 5/2/16
83				
84	Begin O&M	1 day(s)	Mon 5/2/16	Mon 5/2/16

Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
Pipe - Cast Iron							
<2”	8,024	LF	50	1943	71		
2”	18,300	LF	50	1944	70		
2.5”	9,680	LF	50	1943	71		
3”	2,650	LF	50	1943	71		
4”	1,020	LF	50	1943	71		
6”	37,020	LF	50	1950	64		
8”	54,720	LF	50	1943	71		
10”	21,540	LF	50	1951	63		
12”	31,440	LF	50	1943	71		
Subtotal	184,394						
Pipe - Asbestos Cement							
3”	5,030	LF	40	1943	71		
4”	2,420	LF	40	1943	71		
6”	42,860	LF	40	1943	71		
8”	58,000	LF	40	1944	70		
10”	62,850	LF	40	1943	71		
12”	64,000	LF	40	1943	71		
Subtotal	235,160						
Pipe - PVC							
<2”	630	LF	50	1985	29		
2”	2,144	LF	50	1987	27		
3”	1,080	LF	50	1985	29		
4”	3,632	LF	50	1990	24		
6”	1,638	LF	50	2001	13		
8”	10,515	LF	50	1985	29		
10”	2,180	LF	50	1985	29		
Subtotal	21,819						
Pipe - Ductile Iron							
<2”	420	LF	50	1995	19		
2”	720	LF	50	1995	19		
3”	580	LF	50	1995	19		
4”	730	LF	75	1995	19		
6”	2,095	LF	75	1995	19		
8”	1,809	LF	75	1995	19		

Item		Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
12”		4,210	LF	75	1995	19		
	Subtotal	10,564						
Service Connections and Valves								
Service Connections		351	EA	50	1952	62		
	Subtotal	351						
Gate Valves (Mains)								
<2”		25	LF	25	1952	62		
2”		65	LF	25	1955	59		
2 ½”		14	LF	25	1943	71		
3”		25	LF	25	1963	51		
4”		31	LF	25	1971	43		
6”		248	LF	25	1958	56		
8”		295	LF	25	1955	59		
10”		120	LF	25	1954	60		
12”		151	LF	25	1955	59		
	Subtotal	974						
Post Indicator Valves								
Post Indicator Valves		3	EA	35	1943	71		
	Subtotal	3						
Fire Hydrants								
Fire Hydrants		454	EA	25	1947	67		
	Subtotal	454						
Water Storage Tanks								
Elevated - #406 - 500,000 gal		1	EA	75	1942	72		
Elevated - #407 - 500,000 gal		1	EA	75	1942	72		
Elevated - #850 - 500,000 gal		1	EA	75	1990	24		
Elevated - #3304 - 500,000 gal		1	EA	75	1955	59		
Elevated - #3901 - 1,000,000 gal		1	EA	75	1995	19		
	Subtotal	5						
Cathodic Protection Components								
Magnesium Anodes		60	EA	15	1995	19		
Cable		2,500	LF	15	1995	19		
Rectifier		5	EA	20	1995	19		

Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
Reference Cell	8	EA	20	1995	19		
Test Station	20	EA	20	1995	19		
Subtotal	2,593						
Wells and Components							
1 Well	1	EA	50	1943	71		
Well Pump, Motor & Column	1	EA	15	1997	17		
Pump Controls	1	EA	15	1997	17		
Electric Connections	1	EA	45	1997	17		
Water Connections	1	EA	50	1943	71		
Building	1	EA	50	1943	71		
Below Ground Concrete Structure	1	EA	60	1943	71		
2 Well	1	EA	50	1943	71		
Well Pump, Motor & Column	1	EA	15	1989	25		
Pump Controls	1	EA	15	1989	25		
Electric Connections	1	EA	45	1989	25		
Water Connections	1	EA	50	1943	71		
Building	1	EA	50	1943	71		
Below Ground Concrete Structure	1	EA	60	1943	71		
3 Well	1	EA	50	1943	71		
Well Pump, Motor & Column	1	EA	15	1989	25		
Pump Controls	1	EA	15	1989	25		
Electric Connections	1	EA	45	1989	25		
Water Connections	1	EA	50	1943	71		
Building	1	EA	50	1943	71		
Below Ground Concrete Structure	1	EA	60	1943	71		
5 Well	1	EA	50	1943	71		
Well Pump, Motor & Column	1	EA	15	1989	25		
Pump Controls	1	EA	15	1989	25		
Electric Connections	1	EA	45	1989	25		
Water Connections	1	EA	50	1943	71		
Building	1	EA	50	1943	71		
Below Ground Concrete Structure	1	EA	60	1943	71		
7 Well	1	EA	50	1943	71		
Well Pump, Motor & Column	1	EA	15	1989	25		

	Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
	Pump Controls	1	EA	15	1989	25		
	Electric Connections	1	EA	45	1989	25		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1989	25		
8	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1989	25		
	Pump Controls	1	EA	15	1989	25		
	Electric Connections	1	EA	45	1989	25		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
11	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
12	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
13	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
20	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		

	Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
21	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
22	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
23	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
24	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
25	Well	1	EA	50	1943	71		

	Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
26	Well	1	EA	50	1943	71		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1943	71		
	Building	1	EA	50	1943	71		
	Chlorination Equipment	1	EA	20	1997	17		
29	Well	1	EA	50	1994	20		
	Well Pump, Motor & Column	1	EA	15	1994	20		
	Pump Controls	1	EA	15	1994	20		
	Electric Connections	1	EA	45	1994	20		
	Water Connections	1	EA	50	1994	20		
	Building	1	EA	50	1994	20		
	Chlorination Equipment	1	EA	20	1994	20		
30	Well	1	EA	50	1994	20		
	Well Pump, Motor & Column	1	EA	15	1994	20		
	Pump Controls	1	EA	15	1994	20		
	Electric Connections	1	EA	45	1994	20		
	Water Connections	1	EA	50	1994	20		
	Building	1	EA	50	1994	20		
	Chlorination Equipment	1	EA	20	1994	20		
31	Well	1	EA	50	1994	20		
	Well Pump, Motor & Column	1	EA	15	1994	20		
	Pump Controls	1	EA	15	1994	20		
	Electric Connections	1	EA	45	1994	20		
	Water Connections	1	EA	50	1994	20		
	Building	1	EA	50	1994	20		
	Chlorination Equipment	1	EA	20	1994	20		

	Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
32	Well	1	EA	50	1990	24		
	Well Pump, Motor & Column	1	EA	15	1990	24		
	Pump Controls	1	EA	15	1990	24		
	Electric Connections	1	EA	45	1990	24		
	Water Connections	1	EA	50	1990	24		
	Building	1	EA	50	1990	24		
	Chlorination Equipment	1	EA	20	1990	24		
33	Well	1	EA	50	1994	20		
	Well Pump, Motor & Column	1	EA	15	1994	20		
	Pump Controls	1	EA	15	1994	20		
	Electric Connections	1	EA	45	1994	20		
	Water Connections	1	EA	50	1994	20		
	Building	1	EA	50	1994	20		
	Chlorination Equipment	1	EA	20	1994	20		
34	Well	1	EA	50	2008	6		
	Well Pump, Motor & Column	1	EA	15	2008	6		
	Pump Controls	1	EA	15	2008	6		
	Electric Connections	1	EA	45	2008	6		
	Water Connections	1	EA	50	2008	6		
	Building	1	EA	50	2008	6		
	Chlorination Equipment	1	EA	20	2008	6		
27	Well	1	EA	50	1958	56		
	Well Pump, Motor & Column	1	EA	15	1997	17		
	Pump Controls	1	EA	15	1997	17		
	Electric Connections	1	EA	45	1997	17		
	Water Connections	1	EA	50	1958	56		
	Building	1	EA	50	2006	8		
	Chlorination Equipment	1	EA	20	1997	17		
		160						
Booster Pump Stations (919 & 32101)								
	Pump, Piping, & Controls - 75 HP	2	EA	30	1969	45		
	Pump, Piping, & Controls (VFD) - 20 HP	2	EA	30	1969	45		
	Subtotal	4						

Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
Additional Inventory							
Chlorination Station (Facilities 35 and 774)	2	EA	20	1956	58		
Fluoridation Station (Facility 8000)	1	EA	35	1994	20		
Fluoridation Station (Facility 6611)	1	EA	35	1994	20		
BFP Devices - 4”	2	EA	10	2004	10		
BFP Devices - 10”	1	EA	10	2004	10		
Subtotal	7						
Main Base elevated storage tank valve vaults							
Piping and fittings, ductile iron							
Piping and fittings, ductile iron 10 in	1	EA	75	1996	18		
Piping and fittings, ductile iron 14 in	2	EA	75	1993	21		
Piping and fittings, ductile iron 8 in	3	EA	75	1994	20		
Subtotal	6						
Sump Pump and appurtenances							
Sump Pump and appurtenances 1/2 HP	3	EA	30	1994	20		
Subtotal	3						
Valve, altitude							
Valve, altitude 14 in	2	EA	25	1993	21		
Valve, altitude 8 in	1	EA	25	1996	18		
Subtotal	3						
Valve, check							
Valve, check 14 in	1	EA	25	1990	24		
Subtotal	1						
Valve, gate							
Valve, gate 10 in	1	EA	25	1996	18		
Valve, gate 14 in	7	EA	25	1992	22		
Valve, gate 8 in	6	EA	25	1995	19		
Subtotal	14						

Item	Quantity	Unit	Design Life	Avg.Year of Const:	Avg. Age	General Condition	Notes
Vault, concrete							
Vault, concrete 12 ft x 16 ft x 8 ft	2	EA	60	1993	21		
Vault, concrete 10 ft x 16 ft x 8 ft	1	EA	60	1955	59		
Subtotal	3						
Pressure Regulating Valves							
Pressure Regulating Valve 8 in	4	EA	25	2006	8		
Bypass-Pressure Regulating Valve 2 ½ in	4	EA	25	2006	8		
Subtotal	8						
Manuals and Records							
Utility Maps - G-Tabs and GIS	1	EA	n/a	n/a	n/a		
Report - Wellhead Protection Survey	1	EA	n/a	2000	n/a		
Utility Map - Cathodic Protection Systems	1	EA	n/a	n/a	n/a		
Report - Annual Cathodic Report	1	EA	n/a	2006	n/a		
Report - Water System Hydraulic Model	1	EA	n/a	2004	n/a		
General Plan	1	EA	n/a	n/a	n/a		One volume
Comprehensive Plan	1	EA	n/a	n/a	n/a		Multiple volumes