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**Water Field Operations
Inventory Audit**

November 6, 2020



**City of Fort Worth
Department of Internal Audit**

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The Water Field Operations Inventory Audit was conducted as part of the Department of Internal Audit's Fiscal Year 2020 Annual Audit Plan.

Audit Objectives

The objectives of this audit were to:

- verify the existence of Water Field Operations inventory; and,
- evaluate the effectiveness and efficiency of existing controls.

Audit Scope

Our audit included a review for the period October 1, 2018 through September 30, 2019. Activity beyond this period was reviewed as deemed necessary.

Opportunities for Improvement

Documented process to identify and dispose of obsolete inventory

Compensating controls over inventory adjustments

Executive Summary

As part of the FY2020 Annual Audit Plan, the Department of Internal Audit conducted an audit of Water Field Operations Inventory. We concluded that the Water Field Operations Division of the Water Department effectively managed internal controls over inventory. For example, physical safeguards restrict access into the warehouse and pipe yard; systematic controls limit inventory software function access; and Water Field Operations Division staff conduct and record routine physical inventory counts within the inventory software.

We concluded that the Water Department did not have an established process for identifying and disposing of obsolete inventory. While it is not uncommon for inventory to be slow-moving, Internal Audit was unable to determine whether some of the inventory on hand was obsolete. Based on data captured within the inventory software, there were 190 different types of warehouse inventory, and 172 different types of pipe yard inventory that had not been issued or transferred after September 2016.

Audit results indicated that nine of 10 Water Field Operations Division staff had access to adjust inventory within Maximo, the software used by the Water Department for inventory tracking. Although operations within the Water Field Operations Division would require such access, we concluded that necessary compensating controls were not in place to detect erroneous and/or improper adjustments. It should be noted that we did not detect any erroneous and/or improper adjustments during our audit.

These findings are discussed in further detail within the [Detailed Audit Findings](#) section of this report.

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Background

The Water Department's Field Operations Division manages a warehouse and pipe yard of inventory that includes supplies (e.g., brass fittings and meters), tools (e.g., shovels and hammers) and consumables (e.g., batteries and safety equipment). Inventory items that are too large to be stored in the warehouse are stored in the pipe yard. As of September 30, 2019, the "Water & Sewer Wh" general ledger inventory account reflected a balance of \$2,358,601.78. The Water Department's inventory documentation indicated that at September 30, 2019, there were 1,876 different types of inventory items at the warehouse and pipe yard.

Field Operations Division staff receive inventory that has been purchased from City vendors. Field Operations Division staff also issue water and sewer inventory to work crews for the maintenance and repair of the City's water and wastewater infrastructure.

The Water Department uses Maximo software to help manage and track inventory. Maximo is used to record inventory purchases, the receipt of inventory, and physical inventory count results. Maximo is also used to record and execute work orders that document and account for inventory issuances.

Water Field Operations Division staff routinely conduct physical inventory counts, and record those counts within Maximo. Cycle counts are conducted for inventory items issued on a specific day, resulting in daily counts of some items. Whereas wall-to-wall physical counts (of the entire inventory) are conducted at year-end.

The Water Department has several controls in place to help ensure the security of water inventory items. A perimeter fence surrounds the facility, with facility entry being further restricted by an entry gate through which only authorized access is permitted. Also, surveillance cameras are installed inside and outside of the warehouse, and in the pipe yard.



Objectives

The objectives of this audit were to verify the existence of Water Field Operations inventory, and evaluate the effectiveness and efficiency of existing controls.

Scope

Our audit included the period October 1, 2018 through September 30, 2019. Activity beyond this period was reviewed as deemed necessary.

Internal Audit's verification of inventory was limited to inventory stored at the Water Field Operations warehouse and in the pipe yard. Our verifications did not include inventory that had been transferred from the warehouse and/or pipe yard onto trucks used by Water field staff.

Methodology

To achieve the audit objectives, the Department of Internal Audit performed the following:

- reviewed written policies and procedures relating to water inventory management;
- interviewed Water Field Operations staff;
- performed physical and virtual (WebEx) inventory counts;
- analyzed documentation supporting annual inventory cycle counts;
- recalculated average inventory costs noted within Maximo; and,
- evaluated internal controls related to water field operations inventory.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

As established by Chapter XXVIII of the Fort Worth City Charter, the City of Fort Worth's Department of Internal Audit is independent of City management and the Department reports directly to the Fort Worth City Council. We utilized the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework when evaluating internal controls. The following internal control components and corresponding principles were considered significant to the audit objectives. COSO is dedicated to providing thought leadership through the development of frameworks and guidance on enterprise risk management, internal control and fraud deterrence.



Internal Control Component	Principles
Control Environment	Managerial oversight, integrity, ethics and responsibility; staff recruitment, development, retention, performance and accountability
Risk Assessment	Clearly-defined objectives to identify risks, define risk tolerances, and implement necessary controls (e.g., written policies and procedures)
Control Activities	Control activities through policies and procedures
Information and Communication	Communication of necessary quality information
Monitoring	Monitoring and evaluating the effectiveness of internal controls

Audit Results

Based on our audit results, we concluded that the City of Fort Worth's Water Field Operations Division effectively managed inventory. Multiple controls existed to safeguard and secure inventory. Examples included physical barriers (e.g., perimeter fence, guarded entrance, and surveillance cameras) and systematic controls (e.g., divisional segregation for inventory adjustments). During our audit, facility check point access was adequate. Facility ingress and egress lanes were designated based on type of customer (e.g., vendors and City employees) and badge access restrictions were considered effective. We concluded that the Water Department manages over 1,800 types of inventory, and conducts routine inventory counts to help establish necessary accountability. Since the Water Department performs an annual count and cycle counts on a daily basis, Internal Audit did not consider the Water Department noncompliant with the minimal bi-annual physical inventory observation requirement noted within Financial Directive 12.

During Internal Audit's virtual inventory observation of 54 randomly-selected warehouse inventory items, discrepancies were noted with four of the 54 warehouse items. During our review of 25 (23 randomly- and two judgmentally-selected items) pipe yard inventory items, discrepancies were noted with two of the 25 pipe yard items. As noted below, explanations for each variance were provided by management, and were not considered an audit report finding.

Warehouse

- For one inventory item (AAA batteries), Internal Audit's count exceeded what was captured in Maximo by 65 units. Upon inquiry, Internal Audit was informed that the variance was due to a unit of measure conversion error, which was reportedly corrected after Internal Audit's count.
- For two items (gasket and a fire hydrant part), Internal Audit's count exceeded what was captured in Maximo by one unit each. For a fourth item (PPE item), the inventory count captured in Maximo exceeded Internal Audit's count by one unit. Upon inquiry, Internal Audit was informed that the variance was due to incorrect counts which were reportedly corrected after Internal Audit's count.

Pipe Yard

- For one inventory item (copper tubing), the inventory count captured in Maximo exceeded Internal Audit's count by 20 units. Upon inquiry, Internal Audit was informed that the variance was due to an inadvertent error that was reportedly corrected after Internal Audit's count.
- For another inventory item (meter lid), Internal Audit's count exceeded what was captured in Maximo by seven units. Upon inquiry, Internal Audit was informed that the count within Maximo was verified with a physical count. The dollar value for this inventory discrepancy was approximately \$350.00 and was considered immaterial.

Based on Maximo inventory records, there were 190 different types of warehouse inventory items (costing approximately \$85,748.00) and 172 different types of pipe yard inventory (costing approximately \$217,009.00) that had not been issued or transferred (e.g., to a Water Field Operations truck) after September 30, 2016. There were also 36 types of warehouse items (costing approximately \$30,343.00) and 47 types of pipe yard items (costing approximately \$177,812.00) that had no issuance or transfer record within Maximo through September 30, 2019. The Water Department did not have a process by which inventory was reviewed for obsolescence. While it is not uncommon for some inventory to be used rarely, a determination as to whether inventory was actually obsolete could not be made.

Based on our audit results, only Water Field Operations Division employees had access (staff and management level) to make inventory adjustments within Maximo. Although Water Field Operations Division staff had the ability to make inventory adjustments, we did not identify any inventory adjustments



that appeared to be improper. Water staff have the ability to run Maximo reports that summarize inventory counts, and supervisory staff can identify and follow-up on item count discrepancies. It should be noted that Internal Audit was informed that Maximo adjustment reports were not routinely reviewed.

In FY2019, 1,292 quantity adjustment transactions were captured within Maximo. Reasons for inventory adjustments varied. Internal Audit observed an interdepartmental memo (dated January 23, 2020, effective January 1, 2020) that required a supervisory review and approval of inventory adjustments and corrections. However, the memo was subsequent to our audit period.



Overall Risk Evaluation

High	Medium	Low
<u>No policy regarding routine reviews for obsolete inventory</u>		
	<u>Lack of supervisory review of inventory adjustments</u>	

Detailed Audit Findings

1. Over 360 inventory items appeared to be potentially obsolete.

Based on Internal Audit’s review of Maximo records, as of July 2020, there were 190 items (quantity 1,891) of warehouse inventory, and 172 items (quantity 592) of pipe yard inventory that had not been issued or transferred (i.e., transferred to a Water Field Operations work truck) after September 2016.

There were also 36 warehouse items (costing approximately \$30,343.00) and 47 pipe yard items (costing approximately \$177,812.00) that had no record of having been issued or transferred, from June 2005 (Maximo implementation) through September 30, 2019.

Internal Audit was informed that for operational purposes, there is a need to store inventory items that are rarely used. For example, Water Field Operations staff stated that they may store items purchased from a company that is no longer in business, when those items are needed to replace what is in the ground or at one of the pumping stations. Internal Audit agreed that the need to store rarely used inventory may be required, as noted in the following table.



Source: Internal Audit February 14, 2020

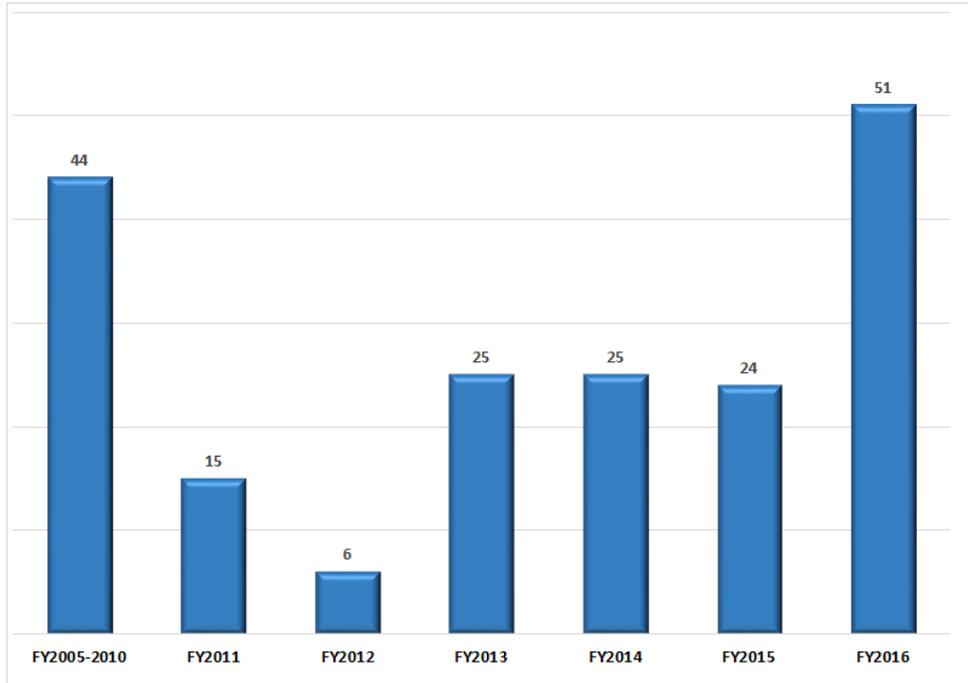
Fiscal Year	Quantity Transferred from Warehouse	Transferred To Location
2010	1	Water Field Ops Truck
2011	1	
2012	3	
2014	2	Water Field Ops Water Taps and Services
2018	2	
2020	2	
Total	11	

Source: Maximo

The following charts note warehouse and pipe yard inventory that had not been issued or transferred from the warehouse or pipe yard in four or more years.

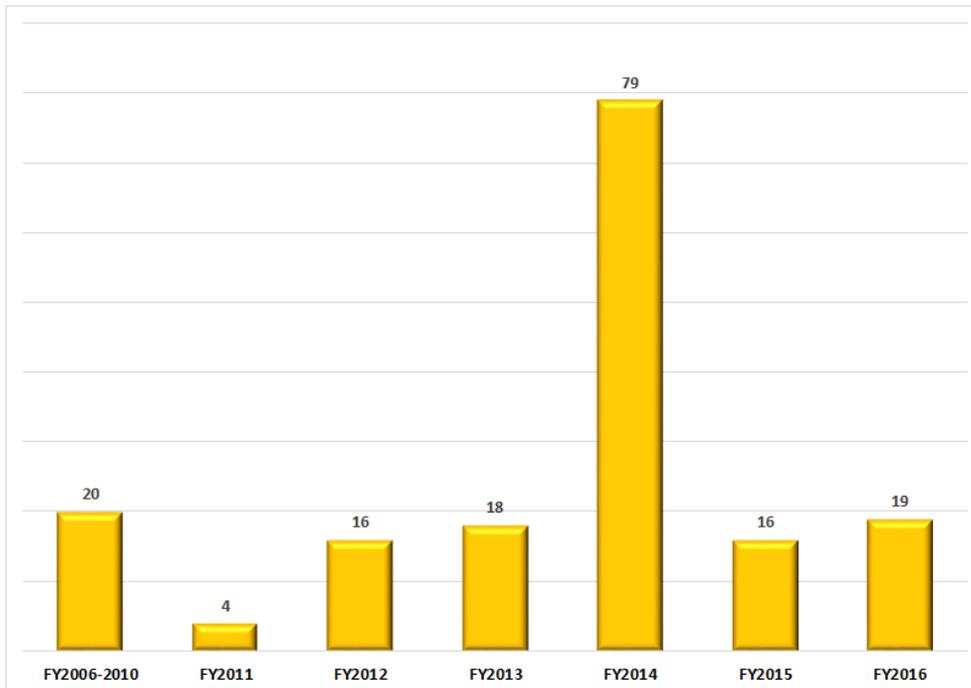


A total of 190 warehouse inventory items were not issued or transferred after September 30, 2016



Source: Maximo

A total of 172 pipe yard inventory items were not issued or transferred after September 30, 2016



Source: Maximo



Water Field Operations staff indicated that they did not have a process or schedule to review inventory for obsolescence, nor were there written policies and procedures that included inventory criteria (e.g., obsolete, etc.). Not disposing of obsolete inventory in a timely manner results in unnecessary warehouse/pipe yard space usage, staff time required to perform physical inventory counts, increased risk of damaged and/or stolen inventory, etc.

The United States Government Accountability Office (GAO) Best Practices indicate that organizations should reduce the possibility of inventory spoilage or obsolescence.

Recommendation 1A: *The Water Department Director should require written policies and procedures that address inventory obsolescence, and should require that those written policies and procedures be communicated to staff.*

Auditee's Response: Partially Concur. We agree that we need policies and procedures to formally address inventory obsolescence, and are glad to add that best practice to our warehousing operations. However, there are over 7,200 miles of water and sewer piping and appurtenances, such as valves and manholes, in Fort Worth's water distribution and wastewater collection systems, and much of it is decades old. Field Operations must keep rarely used items in stock that may not be issued for several years, in order to ensure that they are available to repair (by using parts from them) or replace antiquated system equipment in emergency situations.

Although they are still needed to maintain our distribution and collection systems, many of these items are either no longer available, or have an extensive lead time to procure. The warehouse currently has 6,757 items in stock, and most of the 360 items that appear to be potentially stagnant or obsolete will need to be retained. A Standard Operating Procedure will be put into place to regularly check for obsolescence, and it is attached. Upon initial review of the items, currently none can be removed from inventory, as they could be needed in an emergency situation.

Target Implementation Date: Completed

Responsibility: Warehouse Supervisor, Water Systems Superintendents

Applicable Department Head: Chris Harder, Water Department Director

Responsible Assistant City Manager: Dana Burghdoff, Assistant City Manager

Recommendation 1B: *The Water Department Director should require that current inventory be reviewed for obsolescence, and that obsolete inventory be disposed of in a timely manner.*

Auditee's Response: Concur. The new Standard Operating Procedure is attached. Warehouse supervision will run a report twice per year of items that have not been issued in the previous 2 years. Field Operations Management will review the list for items that may be obsolete.

Target Implementation Date: Completed

Responsibility: Kimberly Pool, Administrative Services Coordinator

Applicable Department Head: Chris Harder, Water Department Director

Responsible Assistant City Manager: Dana Burghdoff, Assistant City Manager



2. Inventory system reports were not used to review and monitor adjustments.

During our audit period, nine of 10 warehouse and pipe yard employees had the ability to process adjustments within the Maximo inventory system. Although inventory adjustments (recorded within Maximo) included the user's name, and date and time of each adjustment, Water staff indicated that there was no explanation recorded for the adjustments. Additionally, although the Maximo inventory system produced inventory adjustment reports (which would serve as a compensating control), warehouse management indicated that they did not routinely receive nor review those reports unless an issue/error was identified by warehouse or Water IT staff. Based on Maximo records, there were 1,292 adjustments in item quantities made by Water Field Operations employees.

It is a best practice to have computerized systems that have reporting capabilities sufficient to provide accurate and consistent information that can be analyzed by management and stakeholders. Also, the Control Objectives for Information and Related Technologies (COBIT) standard states that business process exceptions and errors should be managed to facilitate escalation, so that corrective actions can be executed. Without systematic controls, invalid, erroneous or unauthorized data entry could go undetected.

Recommendation 2: *The Water Department Director should require routine reviews of Maximo adjustment reports, and that warehouse management take corrective action, as deemed necessary.*

Auditee's Response: Concur. Non-supervisory warehouse staff no longer have the ability to adjust inventory in Maximo. After each cycle count, the Warehouse Supervisor will query all items that have a count that differs from the posted balance, and investigate the reasons for the difference. If an adjustment is truly warranted after investigation, the adjustment will be made by the Supervisor or Assistant, and a notation of the reason for adjustment will be included on the query spreadsheet for future reference.

Target Implementation Date: November 2, 2020

Responsibility: Warehouse Supervisor and Assistant Supervisor

Applicable Department Head: Chris Harder, Water Department Director

Responsible Assistant City Manager: Dana Burghdoff, Assistant City Manager



Acknowledgements

The Department of Internal Audit would like to thank Water Department for their cooperation and assistance during this audit.



Exhibit – Obsolete Inventory Process
(Water Department Field Operations Procedures)

OBSOLETE INVENTORY
PROCESS

EFFECTIVE: NOVEMBER 2, 2020



WATER DEPARTMENT FIELD OPERATIONS PROCEDURES

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WATER DEPARTMENT FIELD OPERATIONS PROCEDURES

OBSOLETE INVENTORY

1. INTRODUCTION

A. Intent of Procedure

The intent of this procedure is to document the correct sequence of actions used to determine if an inventory item is obsolete and can be removed from inventory.

B. Responsibilities

This procedure will be filed in the SOP folder of the network, and will also be available as hard copies. The Warehouse Management Staff will review these procedures annually in December of each calendar year and make the necessary adjustments or recommendations to the procedures. Field Operations Management will review the program during the same time period and determine whether any changes or updates are needed. Supervisors will ensure that their staff understands and follow these procedures.

2. INVENTORY OBSOLESCENCE

A. Query

In January and June of each year, Warehouse supervision will run a query in Maximo of all items that have had no movement in the last 24 months. The query will include a part number, area stored, item description, and last movement. The report will be emailed to the Water and Wastewater Superintendents.

B. Management Review

Field Operations Management will review the Obsolescence Query, and respond to Warehouse Supervision in writing within 30 days as to any items that can be deemed obsolete and removed from inventory. Warehouse staff will remove any obsolete items using best practices and City of Fort Worth procedures.

C. Documentation

All reports and management response will be in writing, and be stored in the “Obsolete” folder on the Warehouse server for 5 years, at a minimum.

Items that are removed from inventory will be documented in the “Obsolete” folder, with the means of destruction or removal, date, item number, description, and reason for obsolescence.