Office of Internal Audit

Performance Audit 21-06: Moccasin Bend Inventory

March 2022

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OFFICE OF INTERNAL AUDIT
Stan Sewell, City Auditor

March 24, 2022

To: Mayor Kelly
       City Council Members

Subject: Moccasin Bend Inventory (Report #21-06)

Dear Mayor Kelly and City Council Members:

The attached report contains the results of our audit of Moccasin Bend Inventory. Based on our audit objectives, we found

1. Purchases of inventory were made in accordance with laws, regulations and city policies.
2. Several key inventory management best practices are not in place.
3. Overall, the inventory is safeguarded. However, the current process does not ensure an accurate perpetual inventory.

In order to address the noted areas for improvement, we recommended actions to develop comprehensive policies and procedures; implement real-time data entry and barcoding to improve overall efficiency of operations; utilize Storeroom capabilities to reduce duplicative procedures; and develop performance goals to evaluate operations.

We thank the management and staff of the Public Works Department for their cooperation and assistance during this audit. When we initiated this audit, management had already identified this area as being in need of revised and more efficient processes. We are happy to have provided assistance to the department.

Sincerely,

Stan Sewell, CPA, CGFM, CFE
City Auditor

Attachment

cc: Audit Committee Members
        Joda Thongnopnua, Chief of Staff
        Brent Goldberg, Chief Financial Officer
        Ryan Ewalt, Chief Operating Officer
        Julia Bursch, Deputy Chief Operating Officer
        Thomas Hutka, Public Works Administrator
        Jim Arnette, Tennessee Local Government Audit jim.arnette@cot.tn.gov

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AUDIT PURPOSE

This audit was conducted in accordance with the Office of Internal Audit's 2021 Audit Agenda. The objectives of this audit were to determine if:

- Purchases of inventory items were made in accordance with laws, regulations and city policies;

- Inventory management best practices are in place at the Moccasin Bend warehouse; and,

- Processes are in place to ensure inventory is accurately recorded and safeguarded.

BACKGROUND

The Public Works Department warehouses parts, supplies and equipment to support the repairs and maintenance of the interceptor sewer system and regional wastewater treatment plant of Chattanooga. The majority of stocked inventory items are maintained in the main warehouse located at 455 Moccasin Bend Road. Some inventory items are stored in the Chlorine Building and Sewer Maintenance Building.

Per Resolution number 30773 adopted May 25, 2021, the City approved a $7.7 million construction contract for warehouse improvements. Once the new warehouse is completed, all inventory items will be housed in one location.

Our office previously conducted an audit in 2010. Since the previous audit, inventory records transitioned from Oracle to City Works Storeroom module. We found the majority of recommendations were implemented. Recommendations previously not implemented are reiterated in our report.

Inventory Management Process

As depicted in Appendix B, parts are issued to City personnel or contractors to perform repairs and maintenance. The inventory monitoring process includes both a manual and computerized component for tracking issues and receives. Stock cards are maintained and updated when parts are received, issued or adjusted for counts. A manual Inventory Issue Log is used to document when stock parts are picked up for work orders. An excel spreadsheet is used to track stock orders.

Parts and supplies are received by warehouse staff and compared to the packing slip for completeness. Once verified as a stocked item, the

Inventory Coordinator enters the parts received into the City Works Storeroom module. When parts (not considered stock) are purchased for specific work orders, warehouse staff track the part using a paper *Request for Parts* form. In addition to stocked inventory, the warehouse issues supplies and tools that are not charged directly to a specific job. These items, such as small tools, gloves, raincoats, etc. are expensed when purchased as consumables.

As part of the inventory monitoring process, cycle counts and year-end inventory counts are performed by warehouse staff. Adjustments are made in the City Works Storeroom module by the Inventory Coordinator.

Financial Information

As shown below, inventory values have risen 103 % since the implementation of the Storeroom system in late July 2016.

Exhibit 1: Value of Inventory

Fiscal Year 2016	1,492,507
Fiscal Year 2017	2,206,300
Fiscal Year 2018	2,975,051
Fiscal Year 2019	3,126,581
Fiscal Year 2020	3,005,888
Fiscal Year 2021	3,043,882

Source: Chattanooga Financial Statements

FINDINGS AND RECOMMENDATIONS

Implement best practices for achieving consistent, accurate inventory counts.

Our analysis of inventory transactions identified numerous audit adjustments made between July 1, 2020 and September 30, 2021. Explanation for adjustments included cycle counts, returns from contractors and surplus property. Support documentation for cycle counts and parts returned by contractors are not maintained.

As illustrated in Exhibit 2, warehouse staff recorded 391 audit adjustments resulting in **net decreases** in quantities of 7,369[1] and inventory value of $33,887.

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[1] Quantity description in Storeroom varies by part (e.g. each or feet).

Exhibit 2 – Summary of Audit Adjustments

	Number of Transactions	Change in Quantity	Change in Value
Increase Quantity and Value	107	1,910	52,395
Increase Quantity Only	69	1,811	0
Decrease Quantity and Value	173	(8,817)	(86,282)
Decrease Quantity Only	42	(2,273)	0
Net Adjustments	391	(7,369)	(33,887)

Source: CityWorks StoreRoom

Moccasin Bend's inventory management lacks several of the twelve best practices in achieving consistent, accurate physical inventory counts.[2] Management has not established the following key factors:

Performance goals. Management has not developed and implemented key performance indicators (KPI). KPIs are management tools used to determine if the warehouse is achieving the department's goals and objectives. For instance, the results of physical counts can be measured using the industry standard of 95% inventory record accuracy. Other informative KPIs include dollar value of adjustments, quantity of adjustments and/or number of accurate counts performed.

Written policies and procedures. Management has not documented comprehensive policies and procedures. Together, policies and procedures provide uniformity to operations and guidance for decision-making.

Establish desired frequency of cycle counts. Management has not considered how best to focus cycle counts and the frequency of counts. Management should consider the dollar amount, criticality to operations and susceptibility to theft or fraud when considering the best approach to cycle counts.

Maintain segregation of duties. The inventory coordinator controls all key aspects of the inventory process including audit adjustments. We noted adjustments to inventory are not reviewed or approved by management as recommended in our previous audit report.[3] Adequate segregation of duties includes not overlapping responsibilities in (1) custody or access, (2) recording transactions, and (3) authority for approving. If not practical, other controls should be employed to mitigate risk (e.g. blind counts, increased supervision).

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[2] Government Accountability Office's Executive Guide – Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property
[3] Audit 10-03 Moccasin Bend Inventory, December 1, 2010

Perform research. Our review found audit adjustments are not researched to determine the cause for discrepancies. To reduce future errors in the inventory records, it is imperative to identify and correct the causes of variances between the physical count and the on-hand balance. Management has not implemented procedures to require research as recommended in our previous audit report[4].

Recommendation 1:

We recommend Public Works develop and implement performance goals.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 2:

We recommend Public Works develop comprehensive policies and procedures for the warehouse inventory process. We recommend the procedures define which variances (if not all) require research and explanation. We also recommend the policies document the type and frequency of cycle counts required.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 3:

We recommend management segregate warehouse staff duties, if practical, or implement mitigating controls.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 4:

We recommend management perform research to identify discrepancies in cycle counts.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 5:

We recommend a supervisor review and approve inventory adjustments.

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[4] Audit 10-03 Moccasin Bend Inventory, December 1, 2010

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 6:

We recommend warehouse staff maintain the support documentation (including research notes) as an attachment to the audit adjustment in Storeroom.

Auditee Response: We concur with the audit finding and recommendation.

Improvements needed to ensure an accurate perpetual inventory is maintained.

Our review of the inventory process noted transactions are not recorded in real time and the process includes duplicative steps. The Storeroom program has additional capabilities that are not currently used. In addition, our review and sampling of Storeroom transactions found deficiencies in recording timely, accurate transactions.

Improve the effectiveness of Storeroom by fully utilizing the program capabilities.

The wastewater treatment plant division is currently exploring and implementing an electronic work order process. With the use of iPad tablets, crew workers will document labor hours and search Storeroom for parts. Our review of the program capabilities found using available data fields in the Material ID would improve system functionality.

Material ID field options - Warehouse staff are not consistently adding detailed descriptions and/or manufacturer part numbers when setting up Material ID numbers. For instance, a crew worker needing electrical wire has 52 options all containing the same description "wire, electrical". Further searching the Material ID's part number field provides no additional identifying information. In addition, attaching photos to the material code increases crew worker efficiencies by not requiring multiple trips to the warehouse to determine parts needed and if currently available.

Storeroom Requisition function – To facilitate receiving, Storeroom includes a requisition function to track supplier purchases, quantities ordered, and cost of material. Warehouse staff currently track stock purchases using an excel spreadsheet. When parts are received, the excel file is updated to document the receipt. In addition, warehouse staff add a receive transaction in Storeroom.

Other useful Storeroom features available but currently not used:

- ABC Classifications - Used to manage inventory by dividing materials into categories to designate importance. Provides a

running total of costs for issue transactions within a specified date range and assists with setting re-order points.

- Audit Interval – Defines the frequency that the material is audited (included in cycle counts).
- Economic Order Quantity panel – Enables the system to calculate the reorder points based on annual demand, unit cost and carrying cost.
- Signatures – The system allows for capturing signatures of the person picking up the parts (issue transaction) as well as the person receiving parts into the warehouse (receive transaction).

Recommendation 7:

We recommend warehouse staff include detailed descriptions, a photo of the part, and the manufacturer part numbers in the Material ID.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 8:

We recommend management implement the available tools including the requisition function, ABC Classifications, audit intervals and economic order quantity.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 9:

We recommend warehouse staff obtain signatures from the person picking up parts at the warehouse.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 10:

We recommend warehouse staff include responses to all available data fields (supplier, purchase order, signatures) when receiving product in Storeroom.

Auditee Response: We concur with the audit finding and recommendation.

Improve inventory tracking efficiency and decrease errors by implementing real-time data entry.

As previously shown in Exhibit 2[5], warehouse staff created 391 audit adjustments between July 1, 2020 and September 30, 2021. These adjustments both increased and decreased inventory counts and values. In addition, our sampling of issue and receive transactions found the following discrepancies:

- 21% of receive transactions recorded an incorrect unit cost resulting in an estimated $32,344 overstatement of cost;

- 12% of receive transactions were not timely recorded (more than 2 days from receipt in warehouse);

- 2% of issue transactions were not recorded in Storeroom; and,

- 4% of issue transactions were not timely recorded (more than 2 days from issuance).

As illustrated in Appendix B, Moccasin Bend's inventory tracking process includes manual and duplicate procedures. Manual processes include using excel to track orders, paper logs to track issues and stock cards to track part movements. All manual records are recorded in Storeroom with no reconciliation step to ensure completeness.

City Code Chapter 2 Section 2-5 requires each department of the city to "keep a perpetual inventory of the city property under its control". Under the perpetual inventory system, the entity continually updates the inventory record to account for additions and removals from inventory. The system works best when coupled with a computer database and barcode system. With the transition to electronic work orders, accurate, up-to-date inventory records are important.

To improve accuracy, warehouse staff should immediately perform data entry when parts are received as well as issued. Recording transactions in real-time and using barcodes improves efficiency by reducing duplicate work, data entry errors, and missing transactions.

Recommendation 11:

We recommend management implement barcoding for warehouse parts.

Auditee Response: We concur with the audit finding and recommendation. We plan to update warehouse racking systems and technology in parallel with our warehouse capital project.

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[5] See page 5 – Exhibit 2 – Summary of Audit Adjustments

Recommendation 12:

We recommend warehouse staff eliminate duplicate work by implementing real-time data entry.

Auditee Response: We concur with the audit finding and recommendation.

Improve completeness of records through reconciliation and periodic review of transactions.

The large volume of inventory adjustments indicates both issue and receive transactions were not recorded. Warehouse staff have no procedures in place to reconcile Storeroom inventory cost to invoice cost or to verify completeness of issue transactions.

In accordance with GAO Green Book[6], management should design control activities to ensure all transactions are completely and accurately recorded. The lack of review and reconciling procedures resulted in missing transactions, incomplete transactions and costing errors.

Recommendation 13:

We recommend Public Works implement procedures to ensure transactions recorded in Storeroom are accurate and complete.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 14:

We recommend Public Works implement review procedures to verify the receive cost in Storeroom matches the invoice quantity and cost.

Auditee Response: We concur with the audit finding and recommendation.

Implement inventory controls to identify and surplus obsolete inventory.

Analysis of inventory found 79% of warehouse parts valued at $1.2 million had no movement (receipts or issues) in 3+ years. Best practices for identifying obsolete MRO[7] inventory includes two

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[6] U.S. Government Accountability Office, September 2014, <u>Standards for Internal Control in the Federal Government</u>

[7] MRO refers to consumable materials, equipment and supplies needed for maintenance, repair and operations activities.

factors: No movement (receipts or issues) in 3+ years and not identified as a critical spare part.[8] We also noted no parts were removed as obsolete between July 1, 2018 and June 30, 2021.

Procedures are not in place to analyze slow moving inventory. In addition, Storeroom is not used to categorize critical parts, a component needed to determine which slow moving parts are obsolete.

Recommendation 15:

We recommend Public Works implement inventory controls to identify and surplus obsolete inventory.

Auditee Response: We concur with the audit finding and recommendation.

Process changes are needed to ensure all costs are allocated to work orders.

Our review noted instances where costs were not properly allocated to work orders. We found issue transactions did not consistently record the work order number. We also noted numerous zero cost parts were issued to work orders during the audit scope.

Parts for repairs and maintenance are not always tracked through Storeroom. Parts purchased for specific work orders are tracked by a *Request for Parts* form. The parts are received by the warehouse but not tracked in Storeroom; therefore, costs are not allocated to work orders when the part is issued. The current process relies on staff to identify which paid invoices need to be manually added to the work order in City Works.

We reviewed a statistical sample of purchase invoices not flagged as stock inventory. The sample size included 31 invoices for contracted services and 20 invoices for parts and supplies. Since the majority of the 51 selected invoices were for contracted services, we cannot extrapolate the noted deviations to the population. However, our review of the 20 parts and supply invoices noted the following exceptions:

- Three invoices included parts purchased for specific work orders at a cost of $24,472. None of the parts were charged to the work

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[8] *Is Your MRO Inventory Obsolete?* By Roger Corley, Life Cycle Engineering, https://www.lce.com/Is-Your-MRO-Inventory-Obsolete-2084.html

order in Cityworks. We notified staff and the work orders were corrected.

- Two invoices included stock inventory that was coded in Oracle as an expense.

Parts tracked through Storeroom were not properly issued to work orders. We performed data analysis of all Storeroom issue transactions between July 1, 2020 and September 30, 2021. Our review found work order numbers were missing from eleven transactions. In addition, we identified 76 transactions issuing 166 parts to work orders without a cost value.

In accordance with GAO Green Book[9], management should design control activities so that all transactions are completely and accurately recorded. Because management uses cost reported on work orders for planning purposes, accurate inventory cost and inventory movement are important. Manual procedures, materials added in Storeroom without cost, and the lack of review contributed to underreporting cost to work orders.

Recommendation 16:

We recommend Public Works implement procedures to ensure cost of repairs and maintenance are accurately allocated to work orders.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 17:

We recommend warehouse staff periodically generate exception reports to identify issues without work order numbers as well as issues including zero cost parts.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 18:

We recommend warehouse staff determine and update the cost of material id's with zero cost values.

Auditee Response: We concur with the audit finding and recommendation.

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[9] U.S. Government Accountability Office, September 2014, Standards for Internal Control in the Federal Government

Recommendation 19:

We recommend warehouse staff correct issue transactions missing work order numbers.

Auditee Response: We concur with the audit finding and recommendation.

City policies and procedures not consistently followed.

Our review of invoices found procedures were not always followed by staff. We noted the following issues:

- Support documentation (packing slips) were missing in Oracle for 22% of records sampled.
- Material markup calculation errors by the vendor.
- One instance where the markup rate charged by the vendor was higher than the contract rate.

To determine if purchasing policies and procedures were followed, we reviewed a statistical sample of purchase invoices, support documentation and blanket contract terms.

Finance Policies & Procedures – Payments (Revised July 2017) requires the accounting technician to confirm the accuracy of invoice unit price using i-Procurement or purchasing inquiry. In addition, the policies require the department to ensure proper documentation is electronically attached in Oracle. Per the policy, required documentation includes packing slips or delivery documents that indicate the person receiving the order by signature and date.

Based on discussions with the supervisor, the accounting technicians did not obtain the packing slips from the shared drive. In addition, they did not verify the accuracy of markup calculations or markup rates resulting in overpayments. Upon notifying the department of the discrepancies, the supervisor counseled staff on the importance of the control procedures.

Recommendation 20:

We recommend Public Works implement procedure(s) to ensure invoices are accurate and in accordance with contract terms.

Auditee Response: We concur with the audit finding and recommendation.

Recommendation 21:

We recommend Public Works update written policies to include the new procedure(s).

Auditee Response: *We concur with the audit finding and recommendation.*

Recommendation 22:

We recommend the Public Works Accounting Technicians follow the payment policies and procedures.

Auditee Response: *We concur with the audit finding and recommendation.*

APPENDIX A: SCOPE, METHODOLOGY AND STANDARDS

Based on the work performed during the preliminary survey and the assessment of risk, the audit covers the Moccasin Bend inventory management process from July 1, 2020 to September 30, 2021. When appropriate, the scope was expanded to meet the audit objectives. Source documentation was obtained from Public Works and Finance departments. Original records as well as copies were used as evidence and verified through physical examination.

To accomplish our audit objectives, we documented and evaluated the internal control process and sampled Storeroom receive and issue transactions. We verified inventory purchases were made in accordance with policies, procedures and laws. We also verified parts were accurately charged to work orders. To evaluate the efficiency of the process, we interviewed staff to gain an understanding of the process, researched inventory best practices and reviewed policies and procedures.

The sample size and selection were statistically generated using a desired confidence level of 95 percent, expected error rate of 5 percent, and a desired precision of 5 percent. Statistical sampling was used in order to infer the conclusions of test work performed on a sample to the population from which it was drawn and to obtain estimates of sampling error involved. When appropriate, judgmental sampling was used to improve the overall efficiency of the audit.

To achieve the audit's objectives, reliance was placed on data maintained by the Public Works department. We assessed the reliability of the data and conducted sufficient tests of the data. Based on these assessments and tests, we concluded the data was sufficiently reliable to be used in meeting the audit's objectives.

We conducted this performance audit from June 2021 to January 2022 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.

APPENDIX B: INVENTORY PROCESS FLOWCHART
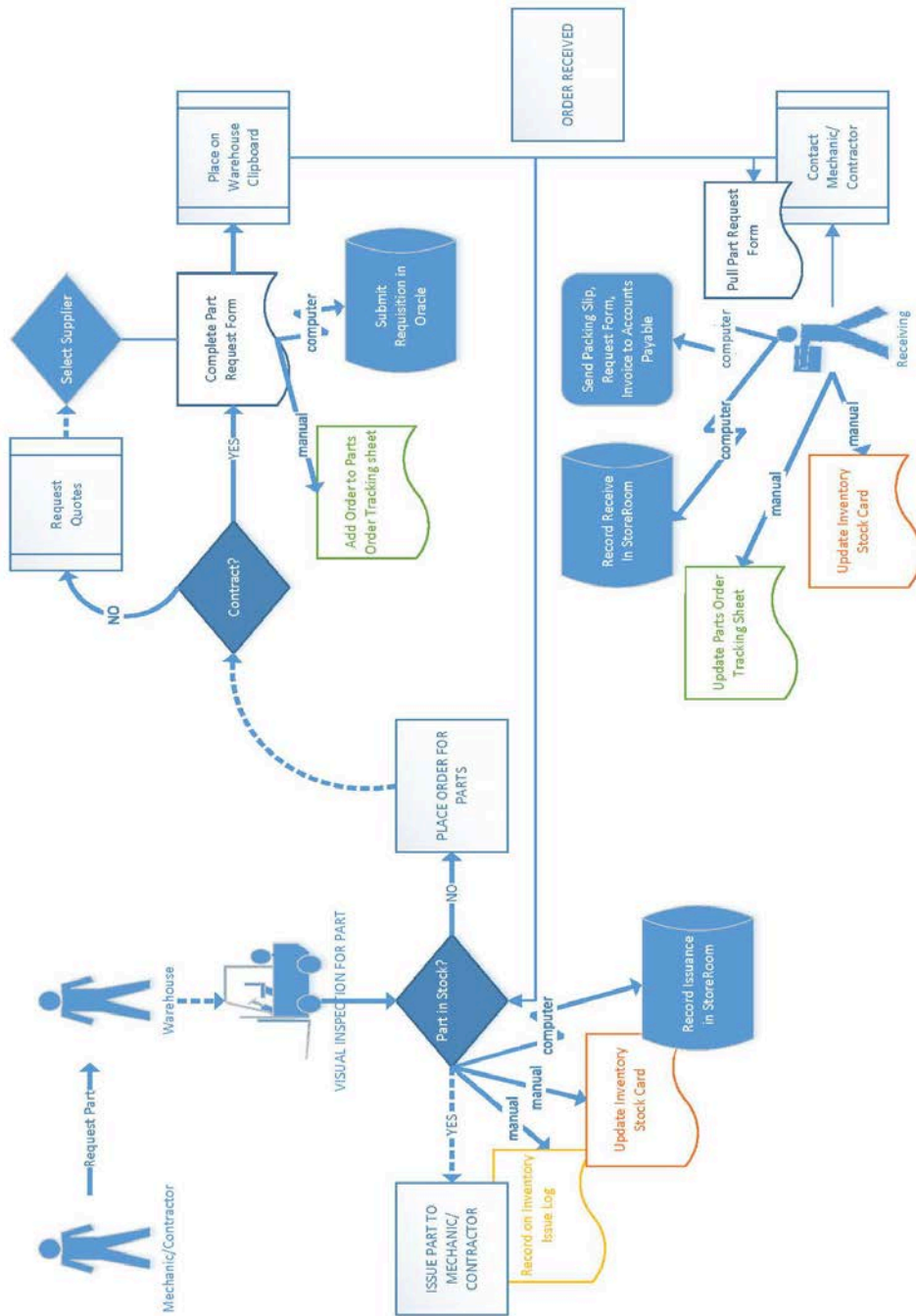
Moccasin Bend Inventory Process – Ordering, Receiving and Part Issuances

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