CITY OF SAN ANTONIO

OFFICE OF THE CITY AUDITOR

Audit of Solid Waste Management Department

Heavy Equipment Fleet Operations

Project No. AU22-041

June 1, 2023

Kevin W. Barthold, CPA, CIA, CISA
City Auditor

Executive Summary

As part of our annual Audit Plan approved by City Council, we conducted an audit of the Solid Waste Management Department (SWMD), specifically the Heavy Equipment Fleet Operations. The audit objectives, conclusions, and recommendations follow:

Determine if the Heavy-Duty Equipment Centers are operating and managed effectively and efficiently and that performance measures are supported and appropriate.

The Heavy-Duty Equipment Centers are operating and managed effectively and efficiently. We found that their physical security is adequate, financial operations are conducted accurately and according to policy, employees are receiving training, and assets are assigned preventive maintenance schedules. However, while its performance measures are appropriate, SWMD has been unable to utilize the FASTER Web system to calculate its performance measures. We also noted that preventive maintenance cycles are not always consistent among similar vehicles/equipment operated under similar conditions.

Additionally, we identified several issues with FASTER Web. Faster Web is a system used by all city fleet units to track vehicles and related equipment; maintenance records; inventory; fuel usage; related accounting functions; and vendors.

In some cases, the cause was manual data entry errors, in others it was the FASTER Web standard report being incorrectly programmed or the lack of such a report. We found invalid due dates, miles due, and hours due in preventive maintenance records and negative unit prices in an inventory report. We were also unable to test the appropriateness of user access and privileges because the system has no existing standard report or exporting mechanism for this information. Finally, SWMD personnel identified preventive maintenance records that failed to update appropriately once maintenance was performed, due to errors in user privileges, but that have resulted in inaccurate records.

We recommend that the SWMD Director:

- Work with the Information Technology Services Department (ITSD) and the developer of FASTER Web to:
    - Ensure that report W-222 calculates and reports average costs per part correctly.
    - Provide sufficient reporting capabilities to properly manage and review user access, roles, and privileges.
    - Develop a viable method to calculate performance measures.

  - Obtain handheld inventory scanning devices that integrate with FASTER Web.
- Ensure preventive maintenance records are updated to reflect actual work done but not recorded properly in FASTER Web.
- Enhance management oversight of manual data entry errors and perform periodic reviews of manually entered data to ensure it remains accurate.
- Work with the Building and Equipment Services Department (BESD) to:
  - Create and implement a policy and procedure detailing how PM cycles are chosen for assets, including how to take operating conditions into account and how to decide on a cycle when the manufacturer does not specify a cycle.
  - Ensure there is an audit trail showing what level of usage the owner department of the asset expects and how that impacts the PM cycles of the asset as well as the reasons for any changes to the PM cycles (such as moved to a lower/higher usage work assignment).
- Perform periodic reviews of the PM-cycles of all vehicles to ensure consistency and correct data entry.

SWMD management agreed with the audit findings and has developed positive action plans to address them. Management's verbatim responses are in Appendix B on page 10.

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Background

The Solid Waste Management Department (SWMD) Heavy Equipment Fleet Operations (Fleet) is responsible for providing repair and maintenance services to the majority of heavy equipment fleet assets for the City, regardless of owning department. Heavy equipment assets include items such as garbage trucks, tractors, paving-related vehicles and equipment, concrete mixer trucks, trailers, and many more. While Fleet mainly services heavy-duty equipment, it also services a smaller number of light-duty and medium-duty vehicles (such as sedans, pick-up trucks, etc.).

SWMD manages five vehicle and equipment maintenance facilities (Service Centers) whose primary responsibility is to service, maintain, and repair the City's vehicles and equipment. Maintaining the City's fleet in peak operating condition allows City departments to provide residents with essential public services. Day-to-day parts inventory is managed by stock clerks, who are located at each of the Service Centers. Each Service Center maintains an inventory of frequently used parts, while the remaining parts are ordered as needed through contracted and non-contracted vendors.

All Service Centers use FASTER Web, a software system for recording repairs and maintenance, as well as managing and monitoring fleet vehicles/equipment, customer invoices, and parts inventory. FASTER Web is a web-based version of the software previously used by the Service Centers, which was not web-based and was customized to the City's needs (FASTER Win). FASTER Web was implemented in April 2022.

SWMD Fleet is funded through interdepartmental billings which charge City departments for services performed. Billings include parts, labor, and outsourced repairs, if applicable. Outsourced repairs are utilized when workloads exceed our capacity and when specialized repairs are required. Billings for the year ended September 30, 2022, were approximately $25.7 million.

Audit Scope and Methodology

The audit scope was heavy equipment fleet operations from July 1, 2021 through June 30, 2022. We also considered inventory counts and valuations from October 1, 2020 through September 30, 2021, as it was the only complete fiscal year falling into our scope period. Where necessary we used current data during fieldwork for testing purposes.

We interviewed staff, reviewed documentation of inventories, performed data analysis of preventive maintenance, and performed tests of preventive maintenance, physical security, training, inventory, and information systems. Testing criteria included City Administrative Directives, SWMD and ITSD policies and procedures, National Institute of Standards and Technology (NIST) standards, and prudent business practices.

We assessed internal controls relevant to the audit objective. This included a review of supervisory approvals, annual inventory counts, physical security of service centers, monitoring of training requirements, and policies and procedures.

We relied on computer-processed data in the City's accounting system (SAP) for the positions and hire dates of employees. We also utilized computer-processed data in the City's FASTER Web system, which contains the data related to fleet maintenance. However, we have concerns that the data in this system is not accurate or reliable and the reporting of the data in this system is not accurate or reliable, at least for some modules and types of data. These concerns are based on our data analysis and testing results. We question the validity of information reported for the inventory module and for preventive maintenance records. These concerns are addressed in the section "Audit Results and Recommendations." We also noted that the privileges assigned to various user roles are significantly difficult to review within the current capabilities of FASTER Web, and so we were unable to perform a thorough review of user access and privileges for this system.

Given the number of issues we identified with FASTER Web and the limited purposes for which we used SAP, we do not believe that the absence of testing general and application controls had an effect on the results of our audit.

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.

Audit Results and Recommendations

SWMD's Fleet is operating and managed effectively and efficiently. SWMD Fleet has five vehicle and equipment maintenance and repair facilities (Service Centers) throughout the City. We found that their physical security is adequate, financial operations are conducted accurately and according to policy, performance measures are appropriate, employees are receiving required training, employees who are required have commercial driver's licenses (CDLs), and assets (vehicles and equipment) are appropriately assigned preventive maintenance schedules.

However, FASTER Web is a relatively new system that personnel are still learning. During fieldwork, we encountered a number of issues that prevented us from performing basic audit steps, such as reviewing user access, verifying inventory, and verifying preventive maintenance. These issues highlight needs for additional managerial oversight, policies and procedures or training documents, and continued support from the manufacturer of FASTER Web.

Additionally, SWMD has been unable to calculate its performance measures since the City's older fleet management system (FASTER Win) was replaced with FASTER Web in April 2022.

A. Average Unit Prices of Inventory in FASTER Web

During audit fieldwork, we identified anomalies in FASTER Web related to the inventory costs of stock parts.

We identified inventory with negative costs. If true, this could affect the valuation of fleet inventories for other City departments with fleets, but due to the limited number of parts affected, should not cause a material error in the City's annual financial statements. It did prevent us from performing audit steps intended to verify the inventory balances in FASTER Web and the City's financial system (SAP).

FASTER Web has several standard reports that enable users to track the movement of inventory, the valuation of inventory, the current items in inventory, and other related inventory queries. We looked at report *W222 – Inventory Movement* to determine how much inventory had been purchased, issued, returned, etc. during our scope period. We noticed that several items had negative beginning unit average costs, negative ending unit average costs, or both.

Inventory values are calculated based on average costs because the same part can be purchased at different prices over time. Average cost better reflects the actual value of the total inventory at any given time.

Management stated that the negative average prices were the result of an error in the FASTER Web report software.

Recommendation

The SWMD Director should work with ITSD and the developer of FASTER Web to ensure that report W-222 calculates and reports average costs per part correctly.

B. Preventive Maintenance (PM) Records in FASTER Web

FASTER Web is not correctly reporting preventive maintenance (PM) performed and due via standard reports because of data entry errors and a user privilege issue that has since been remedied.

One of the functions of FASTER Web is tracking when preventive maintenance has been performed and when it is next due. Assets may require one or more types of preventive maintenance, with each type of preventive maintenance having its own schedule. These schedules are generally based on time and/or hours or miles elapsed and are specified by the manufacturer or may be modified based on the usage of the vehicle depending on the severity of the work environment.

We found issues in the *W-103 Scheduled Maintenance Due Report*. Specifically, the meter-based records of preventive maintenance due were often inconsistent. For example, the report showed a current meter reading of 200,219 hours for Asset Number 120718, with the PM-A service due at 2,461 hours, and thus overdue by 197,758 hours. However, the detailed asset record showed a current meter reading of 2,375 hours.

The inconsistent reporting is the result of data entry errors. We found numerous instances of mileage being input incorrectly, likely because of simple human error. In some cases, it was clear that an extra digit or two was added to the mileage, as if two keys were hit at the same time by accident. In other cases, we could not determine the cause of the inconsistent entry, but it was clear that the mileage had not been entered correctly as it varied so much.

Additionally, SWMD personnel also discovered that FASTER Web was not updating PM records for preventive maintenance performed if the cycle was based on a due date (versus a mileage or hour due) and the person updating the record was a mechanic. This was due to the mechanic's being assigned insufficient privileges via their user roles. This was not a data entry error – the mechanic's

roles erroneously excluded these privileges, which were determined prior to the FASTER Web implementation. After discovering the problem in November 2022, management stated that they fixed the roles and privileges for all mechanics. This fixes the problem going forward, however there are still approximately six months of preventive maintenance records that were not updated. Consequently, the number of assets with overdue PMs is currently overstated.

Recommendations

The SWMD Director should:

- Have Service Center management review manually entered data for reasonableness prior to signing off on work orders.
- Perform periodic reviews of manually entered data to catch and fix errors that are not otherwise noticed and corrected.
- Ensure that preventive maintenance records are updated to reflect actual due dates/hours/miles as vehicles come in for other services.

C. User Access in FASTER Web

We were unable to test FASTER Web user access.

City *Administrative Directive 7.8d Access Control* requires: "Access authorization should be formal, well-defined, documented and an auditable process. Once access controls are implemented, they must be audited at least on an annual basis."

In FASTER Web, users that have access to the system are assigned various privileges via the creation and assignment of user roles. Users are assigned roles, and roles are assigned privileges.

We were unable to test user access because FASTER Web has no system report to export the list of users and their associated roles and privileges, of which there are many. We were provided with planning spreadsheets containing 36 roles with 352 total possible privileges. Without being able to tell which privileges are assigned to which roles, we cannot determine if the roles themselves are designed appropriately or whether the roles are assigned to users appropriately.

Without the ability to export the list of users and their roles and privileges, no fleet department (including, but not limited to SWMD) will be able to periodically review this information as required by City administrative directives.

During the reporting phase of the audit, we were informed by another City department that there is a workaround that enables the extraction of this data. All

departments using or supporting FASTER Web will need to know this information for their periodic reviews of users and privileges.

Recommendations

The SWMD Director should:

- Work with ITSD and the developer of FASTER Web to develop a report or other functionality that would better enable the periodic review of users, roles, and privileges.
- Work with other departments using and supporting FASTER Web to create policies and procedures or other helpful training and reference documents for the use of FASTER Web.

D. Performance Measures

SWMD has been unable to calculate its performance measures for fleet operations since April 2022.

Prior to April 2022, when FASTER Win was the software system being used, Fleet used a non-production database that mirrored the contents of FASTER Win and used staff generated queries that would calculate performance measures automatically. With the implementation of FASTER Web, the non-production database and the related query capability became obsolete.

To rectify this situation, Fleet started working with ITSD to find a method to efficiently calculate its performance measures but has not yet identified a solution.

Recommendation

The SWMD Director should continue to work with ITSD, FASTER Web experts within other fleet departments, and the manufacturer (if necessary) to identify an appropriate solution to calculating its performance measures.

E. Preventive Maintenance Cycles

Preventive maintenance cycles are not always entered consistently for assets with the same make, model, and conditions of use. We also identified a small number of assets with preventive maintenance cycles that were too infrequent or too frequent.

Preventive maintenance cycles are entered into FASTER Web by the Building and Equipment Services Department (BESD) when it initially acquires assets.

Generally, BESD staff enter the cycle according to the asset manufacturer's recommendations, but BESD may reduce those parameters (perform the services more frequently) if the vehicle is to be operated under severe conditions.[1] Changes to preventive maintenance cycles are also made by SWMD to modify cycles due to operational uses for vehicles and equipment. However, there is no documentation relating to under what severe operating conditions specific assets are used.

We selected a sample of assets with PM-A cycles (generally the equivalent of an oil change service) in FASTER Web and attempted to compare them to manufacturer recommendations. In several cases, we were unable to locate the manufacturer recommendations, or were unable to identify what engine was in the asset being tested. Heavy duty equipment may use engines from multiple manufacturers in multiple configurations. For example, Freightliner trucks may be equipped with engines manufactured by Detroit Diesel or Cummins, depending on the model and year purchased. And while information is entered into FASTER Web, information on the size of the engine and its model number as well as the manufacturer of the engine is not always entered.

In other instances, we noted that assets of the same make and model, purchased in the same year, and having similar duties had different PM-A cycles.

We also noted one vehicle with a PM-A cycle of only 500 miles and three with PM-A cycles of 15,000 miles despite being in work conditions that are likely severe, such as Parks and Recreation "Clean & Green," Parks and Recreation "Channel Restoration," and SWMD's "Bulky Waste" operations.

These issues are most likely due to data entry errors and are small in number.

If assets are assigned incorrect PM cycles for the conditions under which they operate, it can increase repair costs or shorten the life of the asset.

Recommendations

The SWMD Director should work with BESD to:

- Create and implement a policy and procedure detailing how PM cycles are chosen for assets, including how to take operating conditions into account and how to decide on a cycle when the manufacturer does not specify a cycle.
- Ensure there is an audit trail showing what level of usage the owner department of the asset expects and how that impacts the PM cycles of the

[1] Severe conditions include frequent or long-term idling, dusty conditions, off-road conditions, extended travel at low speeds, and others.

asset as well as the reasons for any changes to the PM cycles (such as moved to a lower/higher usage work assignment).

The SWMD Director should perform periodic reviews of the PM-cycles of all vehicles to ensure consistency and correct data entry.

F. Inventory Processes

SWMD does not have handheld scanning devices for receiving and issuing inventory.

Handheld scanning devices have become a standard solution for inventory management. They are inexpensive devices that read barcodes and can facilitate inventory management including receiving, tracking, picking, and issuances. These devices can integrate with FASTER Web and would streamline inventory pricing and reduce manual data entry errors.

Recommendation

The SWMD Director should obtain handheld inventory scanning devices that integrate with FASTER Web.

Appendix A – Staff Acknowledgement

Mark Bigler, CPA-Utah, CISA, CFE, Audit Manager
Susan C. Van Hoozer, CIA, CISA, Auditor in Charge
Javier Castillo, IT Auditor
Megan Dodd, Auditor

Appendix B – Management Responses

CITY OF SAN ANTONIO
SAN ANTONIO TEXAS 78283-3966

May 19, 2023

Kevin W. Barthold, CPA, CIA, CISA
City Auditor
San Antonio, Texas

RE: Management's Corrective Action Plan for Audit of Solid Waste Management Department Heavy Equipment Fleet Operations

The Solid Waste Management Department (SWMD) has reviewed the audit report and has developed the Corrective Action Plan below corresponding to the report recommendation.

Recommendation					
#	**Description**	**Audit Report Page**	**Accept, Decline**	**Responsible Person's Name/Title**	**Completion Date**
A	**Average Unit Prices of Inventory in FASTER Web** The SWMD Director should work with ITSD and the developer of FASTER Web to ensure that report W-222 calculates and reports average costs per part correctly.	**4**	Accept	Heavy Equipment Fleet Administrator	12/01/2023
	Action plan: In January 2023 SWMD (Fleet) staff ran reports and found the discrepancies occurred during the Faster Win to Web migration and verified average unit prices of inventory are accurate regarding post migration records. SWMD (Fleet) team will continue to audit this report quarterly.				

Appendix B – Management Responses (cont.)

Recommendation					
#	Description	Audit Report Page	Accept, Decline	Responsible Person's Name/Title	Completion Date
B	**Preventive Maintenance (PM) Records in FASTER Web** The SWMD Director should: • Have Service Center management review manually entered data for reasonableness prior to signing off on work orders. • Perform periodic reviews of manually entered data to catch and fix errors that are not otherwise noticed and corrected. • Ensure that preventive maintenance records are updated to reflect actual due dates/hours/miles as vehicles come in for other services.	5	Accept	Heavy Equipment Fleet Administrator	06/01/2024
	Action plan: SWMD (Fleet) team has implemented direction to all mechanics to record mileage and hours on every work order in the notes section. Management will review and update mileage and hours, if needed, before closing the work order. Maintenance records will be reviewed and updated as vehicles come in for repairs and through findings on PM reports and mileage discrepancy reports.				
C	**User Access in FASTER Web** The SWMD Director should: • Work with ITSD and the developer of FASTER Web to develop a report or other functionality that would better enable the periodic review of users, roles, and privileges. • Work with other departments using and supporting FASTER Web to create policies and procedures or other helpful training and reference documents for the use of FASTER Web.	6	Accept	Heavy Equipment Fleet Administrator	12/01/2023

Appendix B – Management Responses (cont.)

Recommendation					
#	Description	Audit Report Page	Accept, Decline	Responsible Person's Name/Title	Completion Date
	Action plan: SWMD (Fleet) team along with Building Equipment Services Department (BESD) is developing a custom report that all Departments may utilize to review roles in Faster. SWMD (Fleet) will continue working with BESD to implement policies regarding Faster Web to be shared with all other users. **Once the custom report is complete, roles shall be reviewed annually.**				
D	**Performance Measures** The SWMD Director should continue to work with ITSD, FASTER Web experts within other fleet departments, and the manufacturer (if necessary) to identify an appropriate solution to calculating its performance measures.	6	Accept	Heavy Equipment Fleet Administrator	06/01/2024
	Action plan: SWMD (Fleet) team is developing several custom reports to assess and measure performance. Performance measures encompass several aspects, such as equipment availability, parts inventory, completion of work orders, preventative maintenance due/past due, labor hours expended, and departmental billing.				

Appendix B – Management Responses (cont.)

Recommendation					
#	Description	Audit Report Page	Accept, Decline	Responsible Person's Name/Title	Completion Date
E	**Preventive Maintenance Cycles** The SWMD Director should work with BESD to: • Create and implement a policy and procedure detailing how PM cycles are chosen for assets, including how to take operating conditions into account and how to decide on a cycle when the manufacturer does not specify a cycle. • Ensure there is an audit trail showing what level of usage the owner department of the asset expects and how that impacts the PM cycles of the asset as well as the reasons for any changes to the PM cycles (such as moved to a lower/higher usage work assignment). The SWMD Director should perform periodic reviews of the PM-cycles of all vehicles to ensure consistency and correct data entry.	7	Accept	Heavy Equipment Fleet Administrator	06/01/2024
	Action plan: BESD Acquisitions initially inputs vehicle data into Faster, which includes PM intervals. SWMD Fleet team shall review all new equipment added into Faster to ensure PM schedules are input correctly based on SWMD (Fleet) team review of manufacturer's recommendations and/or industry standards. PM schedules assigned to each unit shall be recorded in Faster Web, along with the information used to determine the schedule. SWMD (Fleet) shall dedicate a section in Faster to notate justification of PM cycles and any changes that may be made during the life of the unit and the justification for those changes.				
F	**Inventory Processes** The SWMD Director should obtain handheld inventory scanning devices that integrate with FASTER Web.	8	Accept	Heavy Equipment Fleet Administrator	06/01/2025

Appendix B – Management Responses (cont.)

Recommendation					
#	Description	Audit Report Page	Accept, Decline	Responsible Person's Name/Title	Completion Date
	Action plan: **SWMD (Fleet) will request funding and authorization to purchase and sync handheld scanners to utilize in parts rooms.**				

We are committed to addressing the recommendation in the audit report and the plan of action presented above.

Sincerely,

David Newman
Director
Solid Waste Management Department

May 18, 2023
Date

David McCary
Assistant City Manager
City Manager's Office

5/19/23
Date