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Audit Report

**AUDIT OF DEPARTMENT OF EQUIPMENT AND
BUILDING SERVICES FUEL MANAGEMENT**

(Report No. A12-004)

January 20, 2012

City Auditor

Craig D. Kinton

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Executive Summary

The controls over fuel procurement, distribution, and inventory management are not sufficient to accurately account for City of Dallas (City) fuel purchases and usage. As a result, the City cannot provide reasonable assurance that accounting errors and fuel losses due to theft, storage tank leaks, and equipment malfunctions, are detected and corrected or that the City fully complies with the Texas Commission on Environmental Quality (TCEQ) requirements.

Background Summary

The EBS manages eight fueling sites with total storage capacity of over 648,000 gallons. Other services provided by EBS include fuel procurement and delivery to 88 City locations plus the issuance of City fuel cards. Annual fuel use is approximately 6.8 million gallons of unleaded, Texas Low Emission Diesel (TXLED), biodiesel, dyed diesel and compressed natural gas (CNG) at an average cost of \$16.9 million.

Source: EBS

Specifically:

- The Department of Equipment and Building Services (EBS) does not maintain a perpetual fuel inventory, perform monthly physical inventories of fuel storage tanks' contents, or reconcile the physical fuel inventory to the FleetFocus M5 records monthly.
- The EBS does not have adequate fuel order and delivery controls. The EBS also does not ensure that delivery verification procedures that are in place are always followed. The EBS did not maintain documentation to support phone and e-mail fuel orders and did not confirm the actual gallons delivered. Instead, EBS relied upon the vendor to deliver the ordered amounts and accurately invoice the City.

The City can improve fuel inventory management controls and minimize fraud risks by:

- Implementing a perpetual inventory system to maintain inventory records for EBS' fuel storage tanks' contents and generate monthly reports needed for reconciliation purposes. These reports should include the beginning inventory, purchases, consumption, and ending inventory.
- Performing monthly physical inventories of fuel storage tanks' contents
- Reconciling the monthly physical fuel inventories to the FleetFocus M5 records
- Determining the cause of any variances noted between the physical inventories and the recorded amounts and taking appropriate corrective

actions

- Implementing a fuel order tracking system to maintain fuel order data so that fuel order information is accessible to responsible individuals within the EBS Fuel Division
- Verifying and signing external vendor fuel delivery manifests to acknowledge the receipt of fuel deliveries
- Retaining the delivery manifests, bills of lading, and Veeder-Root (an electronic fuel tank gauge device) readings at the time of the delivery and perform a fuel delivery reconciliation to verify the amounts received

The objective of the audit was to determine if there are adequate controls over fuel management. The scope of the audit primarily focused on fuel purchases, storage, and distribution activities of the two major fuel types, unleaded and diesel, controlled by EBS.

To achieve the audit objective, we interviewed EBS, Department of Sanitation Services (SAN), and Department of Dallas Fire-Rescue (DFR) personnel, observed fuel deliveries and fuel station operations, researched best practices, reviewed State regulation, City ordinances, and EBS policies and procedures. We also analyzed fuel purchases and consumption recorded in the FleetFocus M5 system.

The audit period covered October 1, 2009 to June 30, 2011; however, transactions and records before and after the audit period may have been reviewed to understand and verify information related to the audit period.

Management's response to this report is included as Appendix III.

Audit Results

Overall Conclusions

The controls over fuel procurement, distribution, and inventory management are not sufficient to accurately account for City of Dallas (City) fuel purchases and usage. As a result, the City cannot provide reasonable assurance that accounting errors and fuel losses due to theft, storage tank leaks, and equipment malfunctions may not be detected and corrected or that the City fully complies with the Texas Commission on Environmental Quality (TCEQ) requirements.

Fuel Inventory Management Controls Are Not Sufficient

The EBS does not maintain a perpetual fuel inventory, perform monthly physical inventories of fuel storage tanks' contents, or reconcile the physical fuel inventory to the perpetual inventory (FleetFocus M5 records) monthly. As a result, accounting errors, data entry errors, and fuel losses due to theft, storage tank leaks, and equipment malfunctions may not be detected and corrected.

Audit tests of FleetFocus M5 fuel inventory records and comparisons of Veeder-Root meter readings from July 1, 2010 to June 30, 2011 showed:

Primary Inventory Components

FleetFocus M5 – Web-based software application which tracks functions related to asset management, including operating expenses such as fuel, oil, and licensing.

FleetFocus M5 contains the following fuel reports:

- Fuel volume data
- Fuel Stick Reading report
- Product Receipt Reports of fuel

Veeder-Root – An electronic fuel tank gauge device which produces continuous tank readings which can be saved in FleetFocus M5.

Source: EBS

- **Unleaded fuel** had an overall unfavorable variance of four percent, or 98,173 gallons, in the ending fuel inventory (based upon a throughput or consumption calculation method) which is an estimated \$259,177 fuel loss.
- **Unleaded fuel** variances at individual fueling sites ranging from an unfavorable variance of 46 percent, or 57,756 gallons, which is an estimated fuel loss of \$152,476, to a favorable variance of 38,675 gallons, or 18 percent, which is an estimated fuel gain of \$102,102. (Note: From July 1, 2010 to June 30, 2011, EBS purchased 2,552,727 million gallons of unleaded gasoline and distributed 2,587,461 million gallons via deliveries to other City fuel tanks and fuel pump sales to individual City fleet vehicles (see Table I on page six).

- **Diesel fuel** ending inventory and recorded FleetFocus M5 balances for the same period did not show similar variances; however, the individual fueling sites that furnish diesel fuel showed consumption variances ranging from an unfavorable 11 percent to a favorable four percent. (The City purchased 2,371,092 and consumed 2,488,988 gallons of diesel fuel from July 1, 2010 to June 30, 2011 – see Table II on page 6.)

Several factors can cause variances between the calculated recorded inventory and the physical inventory amounts. For example, the amount of fuel purchased does not match the amount of fuel: (1) Received; (2) Recorded; (3) Classified (unleaded and diesel); and, (4) Transfers from one fuel tank to another may not be recorded correctly. In addition, there may be errors in the recorded amounts of fuel dispensed to individual City vehicles. Discrepancies can also arise due to theft and inaccurate physical counts; however, EBS currently does not have a reliable fuel inventory management control process to identify variances, investigate, and take appropriate corrective actions.

The EBS Fuel Division stated that they consider five percent of the total fuel volume an acceptable variance; however, EBS did not have the documentation to support how the five percent variance threshold was established. The TCEQ requires local governments to perform reconciliations that can detect variances of 130 gallons plus one percent of the monthly pumped volume to confirm the fuel tank is not leaking. A variance that exceeds this limit is significant enough to warrant investigation and possible TCEQ reporting.

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Table I

Unleaded Fuel Reconciliation (July 1, 2010 to June 30, 2011)

Inventory Calculation	Total Gallons	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Beginning Inventory	269,419	26,579	46,679	47,354	53,260	25,329	28,782	14,939	26,497
Purchases	2,552,727	768,402	291,084	344,235	152,254	339,419	215,528	165,706	276,099
Less:									
Consumption	2,587,461	816,492	323,045	375,757	125,121	292,341	166,053	211,587	277,065
Ending Inventory (Per calculation)	234,685	(21,511)	14,718	15,832	80,393	72,407	78,257	(30,942)	25,531
Ending Inventory (Per Veeder-Root)	136,512	19,248	12,422	15,793	22,637	23,241	14,298	7,733	21,140
Gallon Difference	(98,173)	40,759	(2,296)	(39)	(57,756)	(49,166)	(63,959)	38,675	(4,391)
Percent Difference (Consumption)	(4%)	5%	(1%)	0%	(46%)	(17%)	(39%)	18%	(2%)

Source: FleetFocus M5 (Unaudited)

Note: The Veeder-Root readings were not verified by a physical measurement (stick reading) of the tank and the Purchases and Consumption amounts from the FleetFocus M5 were not verified for accuracy.

Table II

Diesel Fuel Reconciliation (July 1, 2010 to June 30, 2011)

Inventory Calculations	Total Gallons	Site 1	Site 2	Site 3	Site 4	Site 5
Beginning Inventory	258,872	43,702	63,460	43,552	45,033	63,125
Purchases	2,371,092	341,743	138,031	848,326	786,642	256,350
Less:						
Consumption	2,488,988	353,924	138,796	893,454	793,644	309,170
Ending Inventory (Per calculation)	140,976	31,522	62,695	(1,576)	38,031	10,305
Ending Inventory (by Meter Reading)	141,204	25,050	47,610	19,480	25,648	23,416
Gallon Difference	228	(6,471)	(15,085)	21,056	(12,383)	13,111
Percent Difference (Consumption)	0%	(2%)	(11%)	2%	(2%)	4%

Source: FleetFocus M5 (Unaudited)

An adequate fuel inventory system requires periodic measurements of fuel storage tanks' contents (physical inventory) and reconciliations between the physical inventory (what is measured) to the inventory records (what continuous recordkeeping indicates should be on hand). A perpetual fuel inventory system updates the inventory after each fuel purchase and when fuel is consumed.

These continuous updates provide more accurate and timely information pertaining to fuel purchases, consumption, and inventory levels at any point in time. On a periodic basis, such as monthly, the perpetual or recorded inventory level is compared to the actual or physical inventory level to determine if there is an unacceptable variance between the expected amount (perpetual) and the actual amount (physical). If there is a difference, adjustments are made to the perpetual inventory for the gallons and for the dollar value.

Recommendation I

The Director of EBS should improve fuel inventory management controls as follows:

- Implement a perpetual inventory system to maintain inventory records for EBS' fuel storage tanks and generate monthly reports needed for reconciliation purposes. These reports should include the beginning inventory, purchases, consumption, and ending inventory.
- Perform monthly physical inventories of fuel storage tanks' contents
- Reconcile the monthly physical fuel inventories to the FleetFocus M5 records
- Determine the cause of any variances noted between the physical inventories and the recorded amounts and take appropriate corrective actions

Please see Appendix III for management's response to the recommendation.

Fuel Order and Delivery Controls Are Lacking or Are Not Enforced

The EBS does not have adequate fuel order and delivery controls. The EBS also does not ensure that delivery verification procedures that are in place are always followed. The EBS did not maintain documentation to support phone and e-mail fuel orders as required by records retention policies and did not confirm the actual gallons received. Instead, EBS relied upon the vendor to deliver the ordered amounts and to accurately invoice the City.

From July 2010 through June 2011, the City's fuel vendor delivered 676 loads of unleaded and diesel fuel to the eight EBS fueling sites. Of the 95 fuel orders selected for audit testing:

- The EBS had retained only five percent of the fuel orders. The EBS had purged the other fuel orders after the fuel deliveries were received.
- 23 percent of fuel orders could not be verified due to missing delivery manifests or delivery manifests that were not signed by the departments receiving the fuel
- 73 percent of fuel deliveries were not reconciled to verify the number of gallons delivered

According to EBS procedures, the City employees at the EBS fueling sites should verify the amount of fuel delivered by reviewing the Veeder-Root readings before and after the delivery to acknowledge the actual physical fuel delivery. In practice, City employees sign the manifest without actually verifying the amount of fuel delivered. After the fuel delivery, the City employees are required to complete a Fuel Reconciliation Sheet by comparing the amount of fuel on the delivery manifest to the bill of lading to the Veeder-Root readings to determine that the amount in the fuel tank is within the five percent threshold established by EBS.

Proper inventory control procedures require fuel deliveries to be tracked from the point of order (manifest) to actual receipt as documented on the bill of lading to invoice and final payment. Periodic reconciliations of physical inventory to inventory records are required to identify inventory loss or shrinkage and to ensure inventory records are accurate.

Recommendation II

The Director of EBS management should implement proper fuel order and delivery controls and enforce existing EBS delivery verification procedures as follows:

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- Implement a fuel order tracking system to maintain fuel order data in compliance with records retention policies so that fuel order information is accessible to responsible individuals within EBS Fuel Division
- Verify and sign vendor's fuel delivery manifests to acknowledge the deliveries. Retain the delivery manifests, bills of lading, and Veeder-Root readings at the time of the delivery, and perform a fuel delivery reconciliation to verify the amounts received.

Please see Appendix III for management's response to the recommendation.

Appendix I

Background, Objective, Scope and Methodology

Background

The Department of Equipment and Building Services (EBS) provides fuel for approximately 5,200 City of Dallas (City) vehicles. The average annual fuel usage is 6.8 million gallons of unleaded, diesel, and compressed natural gas (CNG). The CNG vehicles obtain fuel at two off-site CNG locations using the fuel card issued by a private contractor.

The EBS manages eight fueling sites with total storage capacity of over 648,000 gallons. Other services provided by EBS include fuel procurement and delivery to 88 City locations plus the issuance of City fuel cards. The fuel pumps at these eight sites are activated by a device called a Vehicle Data Module (VDM) installed on most City-owned vehicles. The VDM authorizes the sale and creates a record of each transaction which is subsequently used to bill City departments. The EBS applies charge-back rates to recover fuel costs.

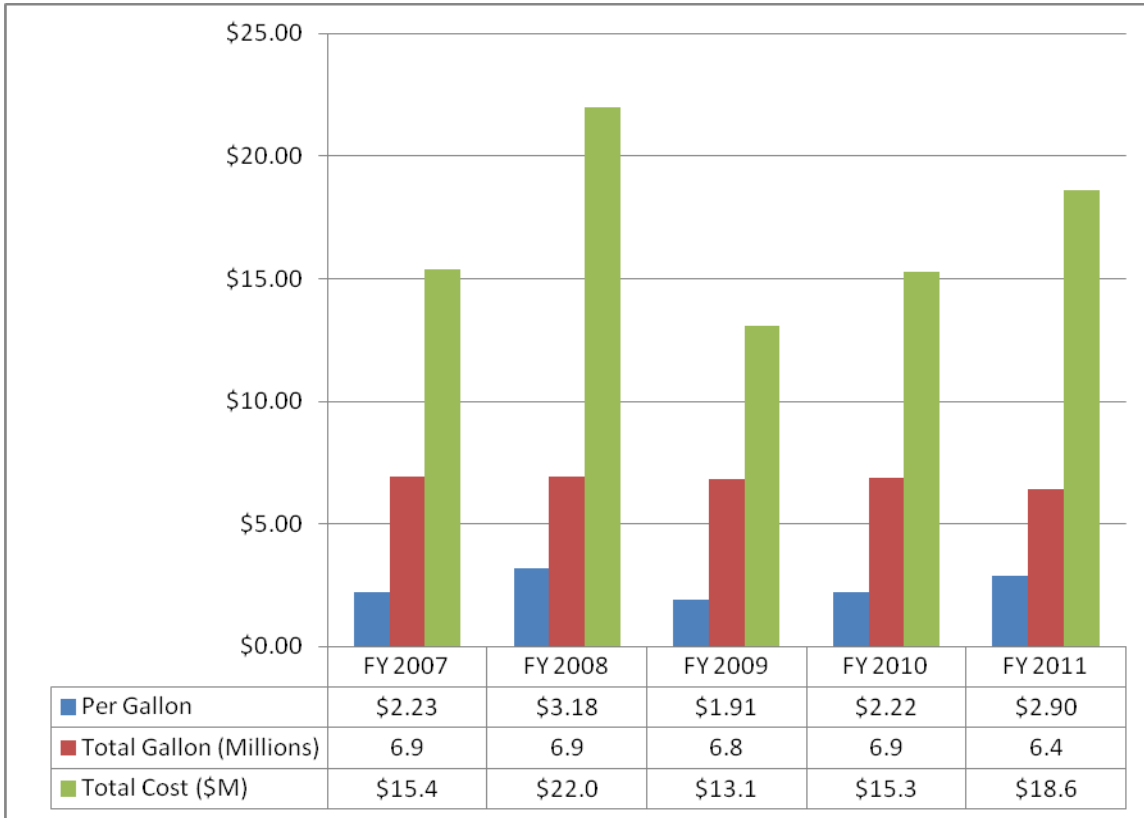
The EBS also provides fuel delivery to the City departments that dispense their own fuel. The departmental fueling sites include 56 fire stations, park maintenance, water treatment plants, golf courses, the Dallas Police Department (DPD) auto pound, and diesel generators. Two City-owned fuel tankers at the Southeast and Northwest Service Centers are dispatched daily to fill-up the in-ground and above-ground storage tanks that are managed by other City departments.

Purchased Fuel and Associated Costs for Fiscal Years 2007 to 2011

Based on records provided by EBS, the City purchased an average of 6.8 million gallons of fuel from fiscal year (FY) 2007 to FY 2011. The fuel prices the City paid ranged from \$1.91 to \$3.18 per gallon during the five year period. Although the City purchased approximately the same amount of fuel from FY 2007 to FY 2010, due to these price fluctuations, the overall fuel costs ranged from a low of \$13.1 million in FY 2009 to a high of \$22 million in FY 2008. In FY 2011, the City lowered the fuel inventory level on-hand so the purchased volume was less than the prior years, but the overall fuel costs of \$18.6 million were the second highest in the five years presented. (See Table III on the next page.)

Table III

Fuel Purchased and Associated Cost (FY 2007 – FY 2011)



Source: EBS Fuel Division (Unaudited)

The FleetFocus M5 database and Veeder-Root tank gauges are the two primary components of EBS’s fuel inventory system. FleetFocus M5 is an automated fleet management system that collects fuel transactions. Part of the FleetFocus M5 functions is tracking fuel receipts and issues by fueling sites and fuel types. The City has used FleetFocus M5 since September 2006. The FleetFocus M5 has the capability to interface with Veeder-Root tank reading devices to collect fuel volume data, create inventory records, and produce various fuel reports. The FleetFocus M5 does not interface with the City’s AMS Advantage accounting system.

The Veeder-Root’s main functions are automatic tank gauging, sensing, and monitoring equipment. The EBS uses Veeder-Root to monitor the fuel storage tank at the eight main fueling sites. Fuel delivery schedule is based on the daily Veeder-Root report. The Department of Dallas Fire-Rescue (DFR) uses the Internal Document System (IDS) fuel system for their internal fuel inventory. The IDS automatically produces a daily fuel report for EBS, and EBS reviews the report to determine the volume needed at each fire station. For other City departments, a fuel coordinator at each department submits fuel requests

through the fuel order e-mail system. The EBS summarizes the fuel requests from these City departments and delivers the fuel to each department internally. For larger departmental storage tanks, EBS places a fuel order with the City's fuel vendor and the vendor delivers the fuel to the requesting department directly.

Objective, Scope and Methodology

The objective of the audit was to determine if there are adequate controls over fuel management. The scope of the audit primarily focused on fuel purchases, storage, and distribution activities of the two major fuel types, unleaded and diesel, controlled by EBS.

The EBS does not control the following fueling activities:

- Fuel dispensed from the fire stations, golf courses, water treatment plants, and sanitation landfill
- The DFR fuel inventory; however, the fuel is distributed by EBS
- The CNG fuel card transactions managed by the private contractor

The audit period covered October 1, 2009 to June 30, 2011; however, transactions and records before and after the audit period may have been reviewed to understand and verify information related to the audit period.

We conducted this audit under the authority of the City Charter, Chapter IX, Section 3 and in accordance with the Fiscal Year 2011 Audit Plan approved by the City Council. This performance audit was conducted 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 objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

The audit includes criteria established in the EBS policies and procedures, contractual agreements, and fuel pricing based on the Oil Price Information Service (OPIS). We also relied on criteria from the Texas Administrative Code (TAC), specifically; Title 30 *Environmental Quality*, Part I *Texas Commission on Environmental Quality (TCEQ)*, Chapter 334, *Underground and Aboveground Storage Tanks*.

To achieve the audit objective, we performed the following procedures:

- Interviewed EBS, Department of Sanitation Services (SAN), and DFR personnel and reviewed EBS fueling policies and procedures

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- Reviewed TCEQ fuel storage tank regulations and EBS's storage tank and fuel tanker inspection documents
- Observed external vendor and internal EBS fuel deliveries at EBS fueling sites and verified whether EBS was confirming the amount delivered and reconciling delivery amounts from the manifest to tank level readings
- Toured eight fueling sites managed by EBS
- Extracted data from FleetFocus M5 system and compared it to Veeder-Root readings for ending physical inventory
- Sampled 95 fuel purchase orders from the City's external fuel vendor and traced the quantities and dates of the fuel deliveries recorded in the FleetFocus M5, compared vendor invoices with the daily OPIS prices based on the fuel agreement, and payments

Appendix II

Major Contributors to This Report

Carol Smith, CPA, CIA, CFE, Assistant City Auditor
Lee Chiang, Project Manager
Chris Kime, CIA, Auditor
Mamatha Sparks, CIA, CISA, Auditor
Theresa Hampden, CPA, Quality Control Manager

Management's Response

RECEIVED

JAN 12 2012

City Auditor's Office



Memorandum

DATE: January 12, 2012

TO: Craig D. Kinton, City Auditor

SUBJECT: Response to Audit Report:
Audit of Department of Equipment and Building Services Fuel Management

Our responses to the audit report recommendations are as follows:

Recommendation 1:

The Director of EBS should improve fuel inventory management controls as follows:

- Implement a perpetual inventory system to maintain inventory records for EBS' fuel storage tanks and generate monthly reports needed for reconciliation purposes. These reports should include the beginning inventory, purchases, consumption, and ending inventory.
- Perform monthly physical inventories of fuel storage tanks
- Reconcile the monthly physical fuel inventories to the FleetFocus M5 records
- Determine the cause of any variances noted between the physical inventories and the recorded amounts and take appropriate corrective actions

Management Response / Corrective Action Plan

Agree Disagree

EBS agrees that fuel inventory management controls should be strengthened. In fact, the department began the process of assessing and formulating system improvements in March 2011. As a result, a request for funding for the replacement and upgrade of the fuel management software system was made in the spring and ultimately approved by the Council as part of the FY2011 – 2012 budget. The Council approved the contract for the purchase and installation of the FuelFocus fuel management system on December 14, 2011. This project should result in a more robust system for maintaining a perpetual inventory, monitoring fuel inventory, maintaining book and physical inventories, and other data associated with managing this inventory. In addition, as a result of discussions with the Auditor's Office, a new procedure has been put in place to more consistently track physical inventory on a daily basis using the tank gauge readings, dispenser metered product issues, and metered product receipts.

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EBS is aware of inconsistencies in the current fuel system software data that have made reconciliations difficult in the past. An overall variance of 98,173 gallons out of a total of 2.6 million gallons of unleaded fuel warrants further study especially since required tank tightness test results have consistently indicated that the tanks are not leaking. For example, one area of further investigation will be assessing the feasibility of consistently collecting temperature or specific gravity measurements in order to convert "gross gallon" volume measurement units to "net gallon" units (volume at a standard temperature of 60° F). This would remove temperature as a source of discrepancy between the physical and book inventories. There were over 275,000 unleaded transactions and just under 100,000 diesel transactions during the one year period. While the overall variance for unleaded was approximately 4% (of the total volume distributed during the one year period reviewed), the overall diesel variance was 0%. This underscores the importance of having a consistent and technologically current system that accurately stores individual transactions at the eight fuel islands. The current software system is no longer supported by the manufacturer and has on numerous occasions shown rejected and "ghost" transactions of thousands of gallons of inventory that have proven difficult to resolve and contributed to discrepancies in inventory numbers. Aging hardware (also being replaced as part of the aforementioned fuel management system upgrade) is also thought to contribute to these inconsistencies.

EBS will determine reasonable variance thresholds based on industry best practices, investigate variances exceeding the thresholds and take corrective action where applicable.

These efforts should allow for more accurate inventory management and reporting.

Implementation Date

- Monthly physical inventories at each site will be implemented by March 2012
- At least quarterly reconciliation of physical and book inventories will begin by the third quarter of 2012 as fueling sites are upgraded to FuelFocus – staff will investigate variances exceeding a threshold to be determined
- FuelFocus system implementation is anticipated to be completed by November 2012

Responsible Manager

Batsheba Antebi, P.E., Assistant Director

Recommendation II:

The Director of EBS management should implement proper fuel order and delivery controls and enforce existing EBS delivery verification procedures as follows:

"Dallas: The City That Works: Diverse, Vibrant, and Progressive."

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- Implement a fuel order tracking system to maintain fuel order data in compliance with records retention policies so that fuel order information is accessible to responsible individuals within EBS Fuel Division
- Verify and sign vendor's fuel delivery manifests to acknowledge the delivery. Retain the delivery manifest, bill of lading, and Veeder-Root readings at the time of the delivery, and perform a fuel delivery reconciliation to verify the amounts delivered.

Management Response / Corrective Action Plan

Agree Disagree

EBS agrees that a tracking log of fuel orders would be an improvement to our current procedures. Upon recommendation by the audit team, a spreadsheet tracking system was put in place in December 2011. As part of the FuelFocus implementation, EBS will assess best practices and update procedures to align with order logging and tracking functions provided by FuelFocus.

Having vendor manifests acknowledged and signed is the current EBS procedure. Heretofore, staff may or may not have been present for deliveries based on staffing levels and the number of deliveries occurring in a given day. Invoices were compared to data from the automatic tank gauge system as a check as to whether invoices corresponded to actual deliveries, but this was not documented adequately nor did it occur consistently. EBS is working to increase the consistency of the established procedure being followed. For example, EBS worked with the fuel vendor to have them provide 30 minutes' notice prior to each delivery. This greatly increases the probability of having staff present for the delivery so that the appropriate paperwork can be processed and measurements taken and recorded.

Implementation Date

- Fuel order tracking log implemented December 2011
- Thirty minute delivery notification put in place December 2011

Responsible Manager

Batsheba Antebi, P.E., Assistant Director

Sincerely,



Errick Thompson, P.E., Director
Equipment and Building Services

c: Mary K. Suhm, City Manager
Forest Turner, Assistant City Manager
Batsheba Antebi, P.E., Assistant Director, Equipment and Building Services

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