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May 16, 2014

## **Internal Auditor's Report**

The County Council and County Executive of Wicomico County, Maryland:

Pursuant to Section 305(D) of the Wicomico County Code and required follow-up of the Wicomico County Fuel System Inventory Audit (report dated June 14, 2011) and Landfill Usage Trend Analysis (report dated March 5, 2012), the Office of the Internal Auditor (IA) has conducted an Audit of the Wicomico Landfill Fuel usage for calendar years 2012 and 2013. A report is submitted herewith. The purpose of the audit was to analyze the trends and variances, within defined parameters, for the audit period (incorporating the data from the prior audit period).

IA conducted the audit with due professional care, and IA planned and performed the audit to create a report on trends and variances for the landfill fuel use and develop findings for management concerning those trends and variances.

Respectfully submitted,

J. Stephen Roser, CPA  
Internal Auditor

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## Audit Report

### Background

#### Landfill Fuel Usage

Wicomico County Landfill purchases regular unleaded gasoline and diesel fuel from DPW Roads Division to use in its operations including the Newland Park Landfill, numerous substations, and the county collector road project. Roads Division terminal is equipped with Fuelmaster pumps<sup>1</sup>. All gasoline is pumped at the Roads Division terminal. Diesel fuel is pumped at the Roads Division terminal and a fuel truck equipped with a similar Fuelmaster pump is used by the landfill. The landfill uses the fuel truck primarily to service field equipment.

#### Data

The data used for this project was gathered from the Fuelmaster database. It should be noted that due to personnel and time constraints, a complete review and recomputation of the extensive data used for this project did not take place. IA feels that, although the data may be subject to some minor adjustments due to timing or transfer from Fuelmaster to Excel, the data is sufficiently accurate for this analysis.

#### Audit Objective

The objectives of the audit were to:

1. Analyze landfill fuel usage for calendar year 2012 with calendar year 2013
2. Compare with fuel usage for calendar years 2010 and 2011
3. Develop trends for analysis

#### Scope of the Audit

The Scope of the Audit was open-ended. The audit period examined, on a test basis, was from January 1, 2012 to February 28, 2014. All Fuelmaster transactions for vehicles designated to Solid Waste (WCSW) for the period were reviewed. Methodology included:

- Gather fuel usage data from Fuelmaster for the test periods and compare
- Analyze fuel usage for vehicles and equipment by source
- Develop trend analysis

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<sup>1</sup> Please refer to the Fuel System Audit (report dated June 14, 2011) for a complete report on the Fuelmaster System

## Overview

For the purposes of this exercise, we divided the data into four categories:

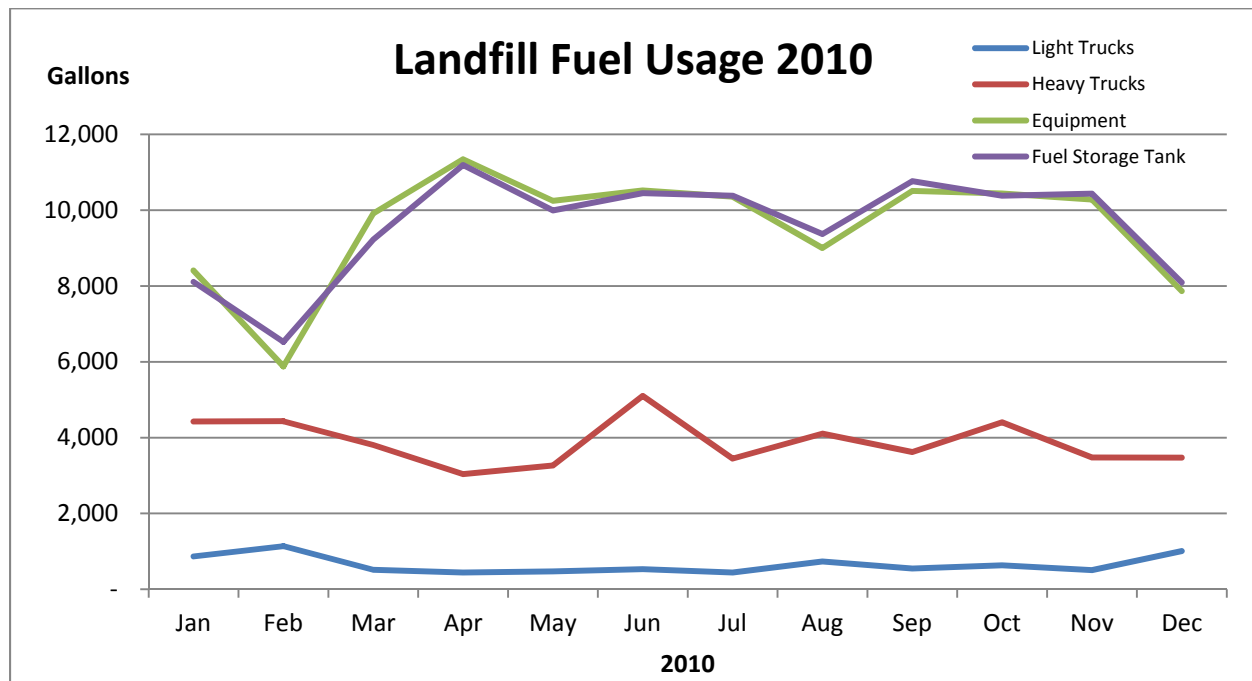
1. Light trucks
2. Heavy trucks
3. Equipment
4. Fuel storage tank

The fuel storage tank is mounted on a truck to service field equipment. It has a Fuelmaster pump that reads the AIM2<sup>2</sup> unit on the equipment and adds it to the database. The fuel pumped into the storage tank is not billed to the landfill until it is used.

## Calendar Year 2010 (as reported previously)

### Graphical Representation

Graphical representation of Landfill usage for calendar year 2010 is as follows:



### Observations

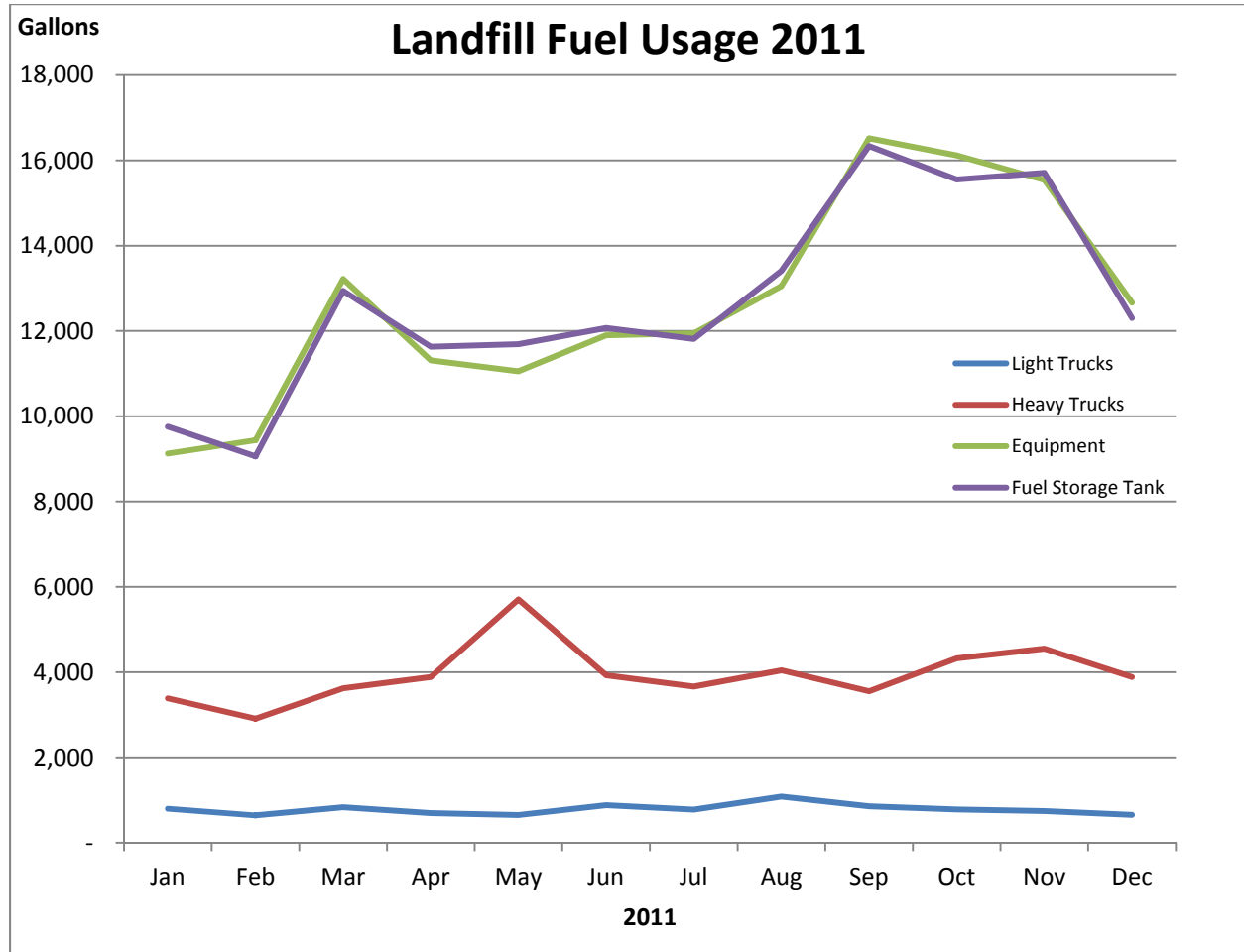
- Fuel storage tank roughly mirrors equipment usage. Slight differences appear because the fuel truck occasionally provides fuel for the Airport, the Civic Center, and some others
- There is a spike in equipment usage in March with a significant dip in February

<sup>2</sup> AIM2 refers to a device installed in a vehicle or piece of equipment that activates the pump and reads the volume of fuel dispensed, assigns it to the specific unit (vehicle/equipment), and reads other vehicle metrics (mileage, etc). The information is then added to the Fuelmaster database. For more information, please see the Fuel System Audit Report (dated June 14, 2011).

## Calendar Year 2011 (as reported previously)

### Graphical Representation

Graphical representation of Landfill usage for calendar year 2011 is as follows:



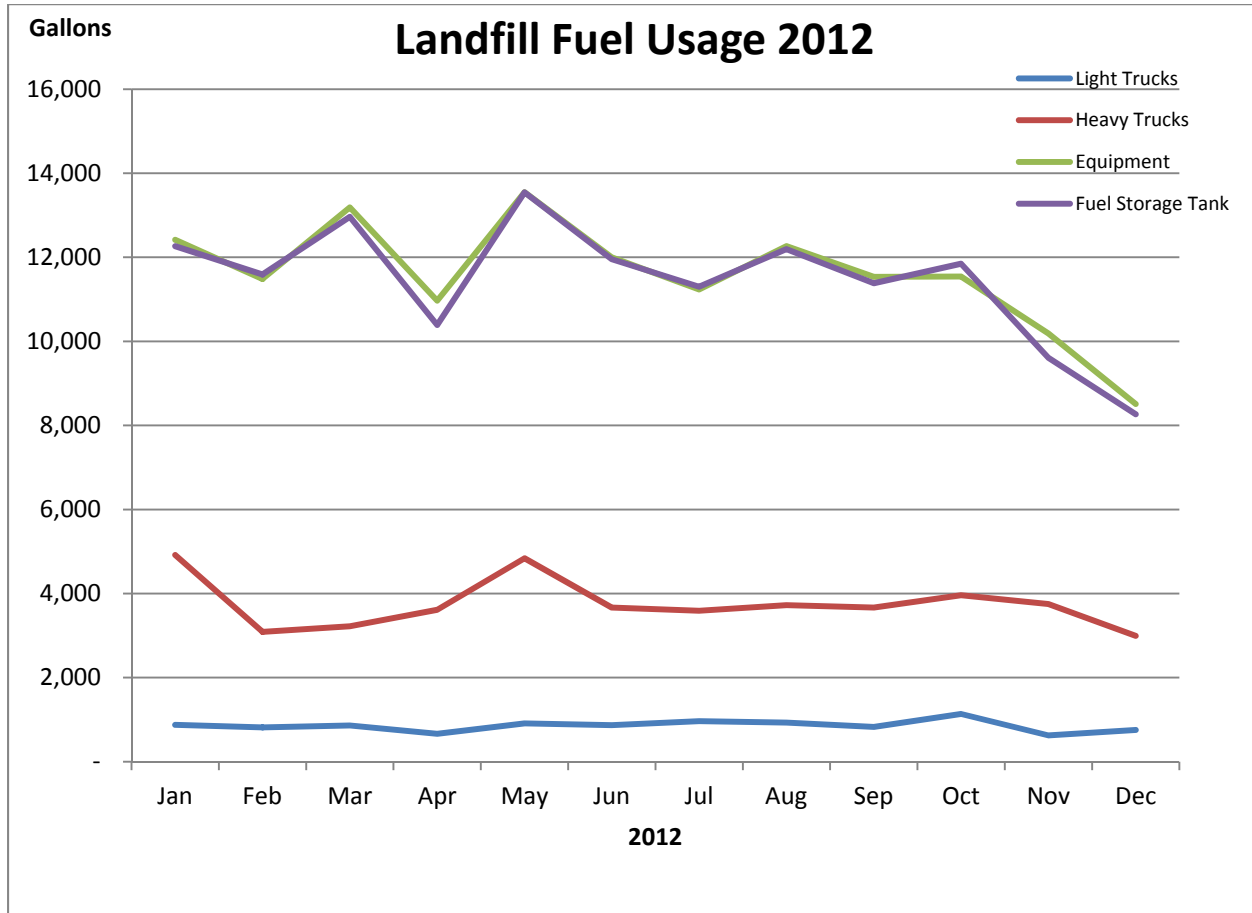
### Observations

- Fuel storage tank roughly mirrors equipment usage. Slight differences appear because the fuel truck occasionally provides fuel for the Airport, the Civic Center, and some others
- The fuel truck data reveals extensive use of an emergency prokey
- The trend repeats 2010 with significant additional equipment use from September to November corresponding with dredge site activity
- There is a spike in equipment usage in March with a significant dip in February (similar to 2010)

## Calendar Year 2012

### Graphical Representation

Graphical representation of Landfill usage for calendar year 2012 is as follows:



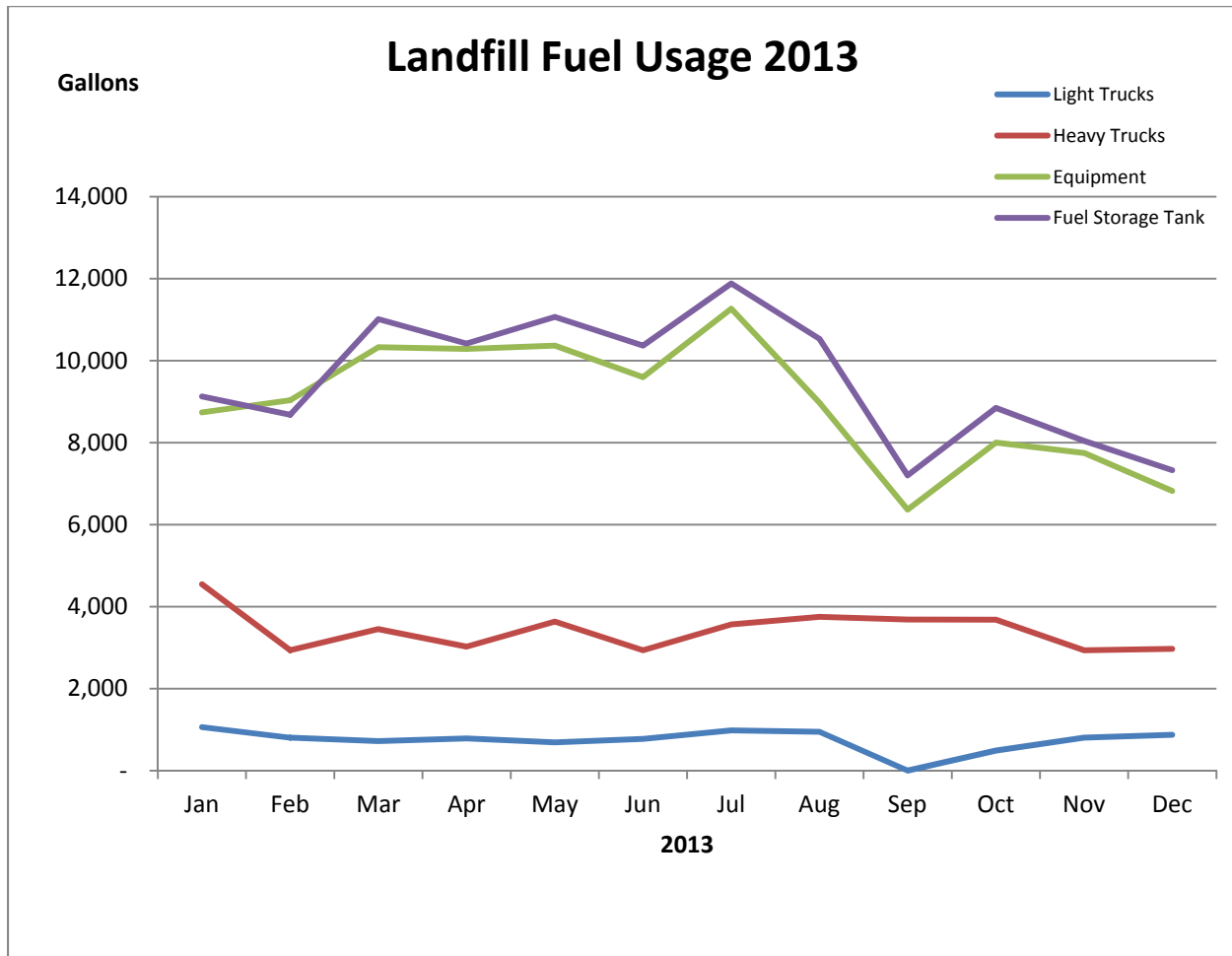
### Observations

- Fuel storage tank roughly mirrors equipment usage. Slight differences appear because the fuel truck occasionally provides fuel for the Airport, the Civic Center, and some others
- The fuel truck data reveals extensive use of an emergency prokey
- The overall usage trend seems to be in decline
- There is a spike in equipment usage in May with a significant dip in April representing a shift to later in the year

## Calendar Year 2013

### Graphical Representation

Graphical representation of Landfill usage for calendar year 2013 is as follows:

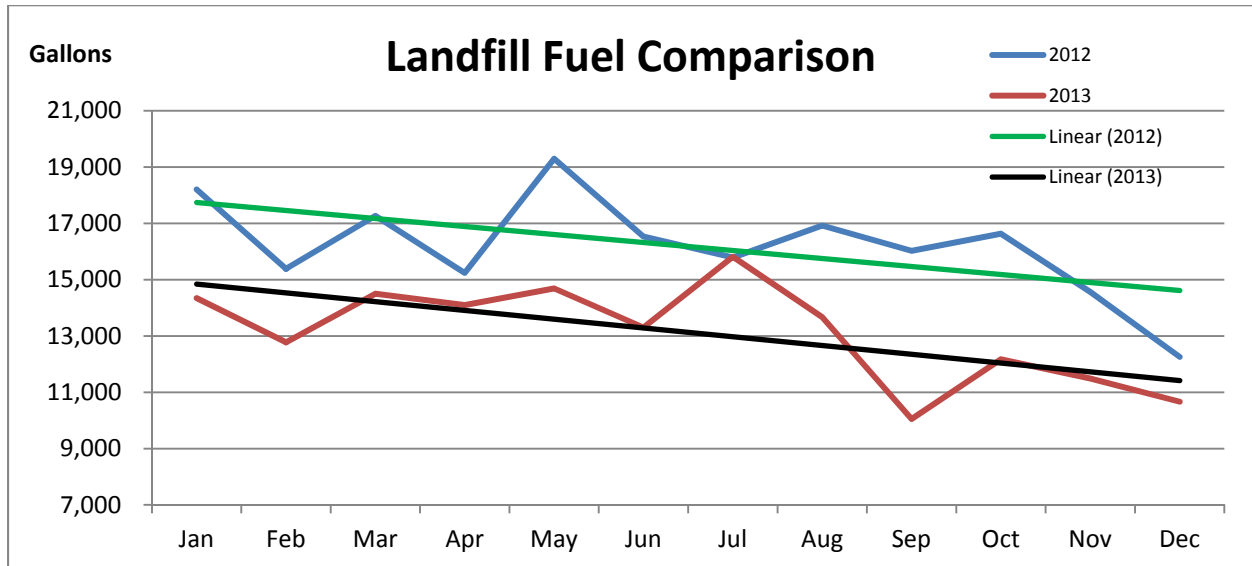


### Observations

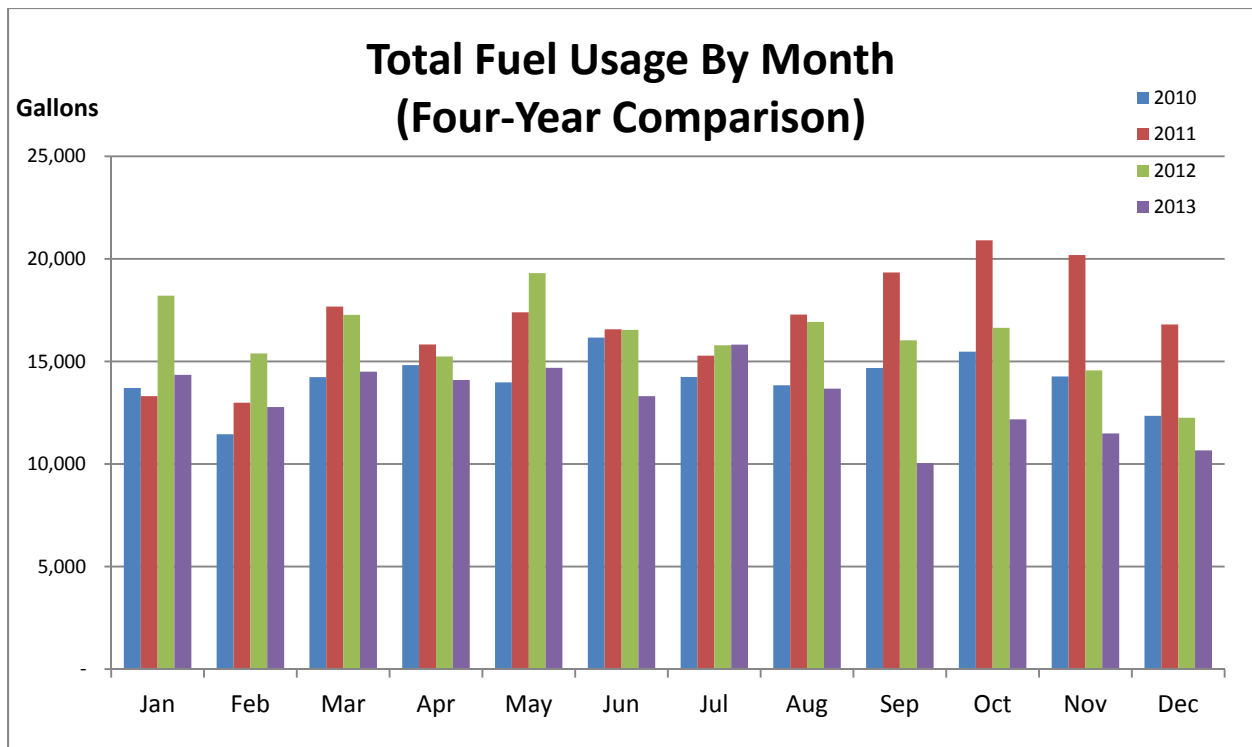
- Fuel storage tank consumption is at significant variance with landfill equipment usage caused by increased fueling of the airport storage tank
- The fuel truck data reveals very extensive use of an emergency prokey from January through August
- The overall usage trend remains in decline
- We see a significant dip in equipment usage in September
- The dip in light trucks (gasoline) usage in September relates to the pump repairs at Roads Division

### Year-Over-Year Comparison Analysis

Graphical representation of 2012-2013 year-over-year landfill fuel usage (in total<sup>3</sup>) with trend lines is as follows:



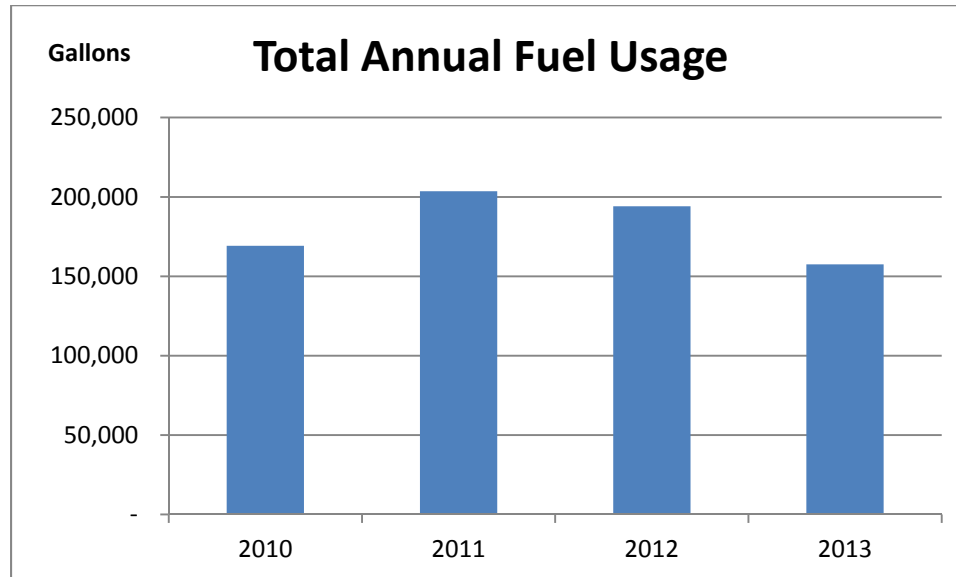
Four-year bar chart monthly comparison follows:



<sup>3</sup> Includes all diesel fuel and gasoline data for Solid Waste



A four-year bar chart annual comparison follows:



### Observations

- There is a significant decrease overall for 2013 with a continuing downward trend
- Fuel consumption appears to have returned to pre-dredge site levels
- Emergency prokey is still in use for 2013

### Auditor Comments and Recommendations

#### Fuelmaster

The most frequent complaint from field personnel and management concerns the Fuelmaster system itself. Specifically:

- The systems do not function properly in bad weather
- Some of the county field assets do not lend themselves to fuel ring and associated equipment installation

The lack of internal control and associated risks related to the dysfunctionality of Fuelmaster should be cause for concern. The use of prokeys as a substitute for AIM2 units installed in vehicles and equipment allows great potential for circumventing the system. IA recommends a complete evaluation of the Fuelmaster system involving the manufacturer to determine if solutions to the problems exist. Additionally, it may be prudent to analyze the costs and benefits of an alternative or ancillary system.

#### “Emergency Use” Prokey

Public Works uses a single prokey to fuel vehicles and equipment with non-functioning or non-existent AIM2 units. Tanker truck drivers must keep longhand records to designate the equipment receiving the fuel. The possibility of error or misappropriation increases greatly because of this practice. Assigning individual prokeys as an alternative provides limited relief to the lack of control. Additionally, the

situation that gave rise to the use of prokeys is directly related to the prior comment regarding Fuelmaster dysfunctionality.

### **Auditor's Closing Remark**

As always, the Office of the Internal Auditor remains grateful to all county associates for their candid assessment and prompt response to inquiry. Special thanks go to management and those responsible for inventory in the Department of Public Works.