MEMORANDUM

To: Jennifer Vega-Brown, City Attorney

From: Viola M. Perea, CIA, CFE

Date: February 12, 2019

Subject: Solid Waste Collection Activities

The enclosed report presents the results of our limited scope consulting engagement for Solid Waste Collection Activities.

Please let us know when these documents can be posted to our transparency page.

Encl: Report for Solid Waste Collection Activities

cc: Joe Anzivino, Acting City Auditor, CIA
cc: Stuart Ed, City Manager

☑ Approved by City Manager for release and to post on the transparency page.
Solid Waste Collection Activities

DECEMBER 2018

Internal Audit Office
Audrey Evins, City Auditor, CPA, CFE, CGPM
Viola M. Perea, Internal Auditor, CIA, CFE
Solid Waste Collection Activities

EXECUTIVE SUMMARY

In accordance with the FY18 Las Cruces Utilities (Utilities) annual audit plan, the Internal Audit Office completed the following special project: Solid Waste Collection Activities. Recommendations in 3 major categories have been identified that may help to improve Solid Waste economy and efficiency.

- Collection Process Governance
- GPS – Route Monitoring
- Fuel Management

The results reported do not require Management responses. For details of conditions and recommendations, please see attached listing.

BACKGROUND

The Las Cruces Utilities mission is to provide reliable, safe, and cost-effective utility service to customers in the Las Cruces area.

Solid Waste management is comprised of one Administrator and two Supervisors who oversee 26 Commercial and Residential refuse collection truck drivers. Route completion times average 3 to 6 hours and drivers work an 8-hour schedule.

During the FY18 Risk Assessment process, the Solid Waste Administrator requested an economy and efficiency audit. Because there were minimal criteria available to conduct a compliance audit, Internal Audit conducted a limited scope consulting engagement focusing on commercial and residential solid waste collection activities.

AUDIT OBJECTIVES

Complete a limited scope consulting engagement that will provide management with relevant and useful information related to current solid waste collection activities that will assist in the development of improved processes and oversight.

SCOPE AND METHODOLOGY

The limited scope engagement consisted of collection activities for commercial and residential routes completed from March 4th to March 17th, 2018.

Procedures performed include:

- Discussions with Utilities Management and the completion of an Internal Control Questionnaire to obtain information related to collection processes.
- Review of policies, procedures, and regulations.
- Analysis of GPS Solid Waste vehicle activity and idling reports, fuel reports, and Driver Vehicle Inspection Reports (DVIR).
- Review of vehicle and route assignments and skipped or missed collections.
- Analysis of daily mileage and hours associated with each route, to include driving time, stops, landfill activities, and potential downtime.
- Calculation of an estimated cost per route.

CONCLUSION

Overall, we found lax oversight in the activities reviewed. Economy and efficiency would greatly benefit from a collection process evaluation of route development, staffing needs, costs-per-route, and the creation of policies, procedures, and performance measures. Improved monitoring, reporting, and training will be required to achieve economy and efficiency in the collection process.

Audrey Evins, CPA, CFE, CGPM
City Auditor

Joe Anzivino, CIA
Internal Audit Manager

Viola M. Pérea, CIA, CFE
Internal Auditor

Dr. Jorge Garcia
Utilities Director

Robin Lawrence
Solid Waste Administrator

Cc: City Attorney
City Manager
<table>
<thead>
<tr>
<th>CONDITION #</th>
<th>CONDITION TITLE</th>
<th>PAGE #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition #1</td>
<td>Insufficient Guidance</td>
<td>4</td>
</tr>
<tr>
<td>Condition #2</td>
<td>Incomplete At-Fault Records</td>
<td>5</td>
</tr>
<tr>
<td>Condition #3</td>
<td>Inefficient Assistance</td>
<td>6</td>
</tr>
<tr>
<td>Condition #4</td>
<td>Incomplete Route Maps</td>
<td>7</td>
</tr>
<tr>
<td>Condition #5</td>
<td>Insufficient Controls</td>
<td>8</td>
</tr>
<tr>
<td>Condition #6</td>
<td>Incomplete GPS Data</td>
<td>9</td>
</tr>
<tr>
<td>Condition #7</td>
<td>Excessive Down Time</td>
<td>10</td>
</tr>
<tr>
<td>Condition #8</td>
<td>Excessive Stop Times</td>
<td>11</td>
</tr>
<tr>
<td>Condition #9</td>
<td>Excessive Idling</td>
<td>12</td>
</tr>
<tr>
<td>Condition #10</td>
<td>Unnecessary Overtime</td>
<td>13</td>
</tr>
<tr>
<td>Condition #11</td>
<td>Unnecessary Saturday Overtime</td>
<td>14</td>
</tr>
<tr>
<td>Condition #12</td>
<td>Unscheduled Route Collections</td>
<td>15</td>
</tr>
<tr>
<td>Condition #13</td>
<td>Excessive Fuel Purchases</td>
<td>16</td>
</tr>
<tr>
<td>Condition #14</td>
<td>Improper Fuel Charges</td>
<td>17</td>
</tr>
<tr>
<td>Condition #15</td>
<td>Non-Compliant DVIRs</td>
<td>18</td>
</tr>
<tr>
<td>KUDOS</td>
<td>Monthly Call-Backs</td>
<td>19</td>
</tr>
<tr>
<td>Summary</td>
<td>Daily Route Averages and Costs</td>
<td>20</td>
</tr>
</tbody>
</table>
INSUFFICIENT GUIDANCE

CONDITION #1:

Guidance for collection activities is not sufficient.

Currently, there are no specific Solid Waste goals, performance measures, policies, or procedures to identify management's expectations for collection activities or to evaluate the economy and efficiency of the collection process.

There are internal policies, procedures, and regulatory requirements for Commercial Driver's License (CDL) drivers and safety, but nothing specific to the collection process that would assist in the evaluation or the accomplishment of economy and efficiency.

Without specific and measurable goals, or clear and consistent processes for collecting, assessing, and reporting activities, management cannot provide assurances on the effectiveness or efficiency of Solid Waste operations.

RECOMMENDATION #1:

Management should document and implement policies and procedures to guide staff toward the accomplishment of established goals. Staff should be provided with ongoing training, feedback, and corrective measures to support achievement.
INCOMPLETE AT-FAULT RECORDS

CONDITION #2:

At-fault accident records for Solid Waste may not be complete or accurate.

Utilities SOP # SW-B8 outlines progressive disciplinary actions related to at-fault accidents for Solid Waste personnel. Corrective actions are dependent on damages and the number of incidents per person within a particular time period.

We cannot determine with certainty the total number of at-fault accidents, the number of at-faults per driver, or if at-fault accidents are on the rise or decline.

At-fault accident information obtained from Solid Waste and Risk Management does not consistently agree. Some accidents reported by one were not reported by the other, and vice versa. The at-fault status did not agree for a few of the accidents reported by both groups.

Management cannot effectively comply with progressive disciplinary actions using the information from their current database.

RECOMMENDATION #2:

Solid Waste should consult with Risk Management and each should make necessary corrections to their accident databases so both are complete and accurate. Disciplinary actions should be reviewed and initiated in accordance with the policy.
INEFFICIENT ASSISTANCE

CONDITION #3:

Back-up assistance for Residential drivers does not consistently result in a more economical or efficient route completion process.

Excessive vehicle activity increases mileage, fuel costs, wear and tear on the vehicle, and is an inefficient use of labor hours that could otherwise be used for more productive purposes.

Each Residential route is assigned to one driver. Management indicated that staff are informed of the need for assistance on a particular route and are empowered to assist each other without having to be assigned as back-up.

On multiple Residential routes, an excessive number of vehicles were identified in the same areas, as many as 6 vehicles, resulting in an overall increase in route times and mileage.

For the two-week test period, a route-by-route comparison of the number of vehicles, time spent, and miles driven on each route was performed to determine if additional assistance resulted in shorter routes times and fewer miles driven on the route.

- 70 additional vehicles were found in 43 of 110 Residential routes reviewed
- 6 additional hours were spent on routes with more assistance, and
- 53 additional miles were driven

If annualized, this activity could result in an inefficient use of the following resources:

- 156 Labor Hours
- 1,378 Vehicle Miles
- 599 Gallons of Fuel (2.3 miles / gallon)
- $1,498 (at $2.5 / gallon)

RECOMMENDATION #3:

Require supervisors to assess the need for assistance and assign appropriate back-up to avoid excessive and ineffective use of resources.
INCOMPLETE ROUTE MAPS

CONDITION #4:

Commercial Route Maps may not be complete or accurate.

Inconsistencies in customer data were identified on commercial route maps.

Commercial customer data, such as the account name, address, and number of containers to be serviced are recorded on a spreadsheet called the route map. Drivers use the route map to guide the collection process.

Incomplete or inaccurate route map data may contribute to missed collections and/or collections for non-paying customers.

RECOMMENDATION #4:

Review commercial route maps and determine if all accounts and services listed agree to account data in MUNIS. Update maps so all customer data is reflected accurately.
INSUFFICIENT CONTROLS

CONDITION #5:

Controls to identify drivers of collection activities are not sufficient.

Solid Waste drivers can be identified by the GPS system, Driver’s Vehicle Inspection Report (DVIR), or the vehicle assignment sheet. Issues were noted in all three areas.

Most Solid Waste staff are assigned to a specific vehicle. The assigned person’s name is manually entered into the GPS system as the driver of the vehicle, instead of using an individual key fob to identify the driver. As such, GPS activity will reflect the assigned person as the driver regardless of who is actually driving the vehicle.

DVIRs were not sufficient to identify all drivers during the test period.

The vehicle assignment list was compared to the GPS system. Inconsistencies were found for one commercial driver and four residential spare vehicles.

NOTE: Spares are not assigned to a driver, but they are entered in the GPS system with a description instead of a driver name. Descriptions on the assignment sheet for four spare vehicles did not agree to the descriptions entered into GPS.

Using GPS, DVIRs and assignment sheets to identify vehicle drivers are controls that can help secure access to City vehicles and improve driver accountability. However, these controls are ineffective if the data is not accurate.

RECOMMENDATION #5:

Tighten controls related to vehicle and driver identification. Consider upgrading to a GPS system that uses individual key fobs to identify vehicle drivers. Ensure complete DVIRs are submitted and keep vehicle assignments current and accurate.
INCOMPLETE GPS DATA

CONDITION #6:

GPS system data does not reflect all Solid Waste collection activities.

Utilities SOP # UD-A13 indicates supervisors are to utilize GPS reports to monitor idling and stops for efficiency and productivity.

During the test period, GPS records were not available for 3 Solid Waste vehicles that had both DVIRs and Fuel Master fuel file records supporting vehicle activity.

- Residential Side Loader #31871 – GPS reported as inoperable - no repairs initiated
- Commercial Roll Off #30879 – GPS inoperable during test period – now repaired
- Commercial Roll Off #31537 – GPS status will need to be determined with vendor

NOTE: Although commercial roll offs are not assigned to a specific route, they were included to demonstrate the gap in GPS data.

The completion of 5 residential routes could not be tied to GPS records:

- March 05, 2018 – Route 4
- March 06, 2018 – Route 2
- March 08, 2018 – Route 6
- March 09, 2018 – Route 7
- March 14, 2018 – Route 6

Management indicated all refuse vehicles have GPS, but review of GPS data has been limited to customer complaints and monitoring idling and speeding. If GPS systems are not in place or are not operating properly, supervisors cannot effectively monitor efficiency or productivity.

RECOMMENDATION #6:

Review GPS reports for all Solid Waste vehicles and work with the vendor to repair or replace GPS units that are not in good working condition.

Outline supervisory review and reporting requirements so all vehicle activity and routes are monitored and GPS issues are corrected in a timely manner.
EXCESSIVE DOWN TIME

CONDITION #7

Excessive down time may indicate a need for route / staffing adjustments.

Utilities SOP # SW-A1 outlines work day requirements. Staff are to work eight (8) hours per day. If routes are completed early, staff are expected to check with their supervisors for additional duties.

During the two-week test period, Solid Waste driver down time hours averaged 105 hours per week. If annualized, down time could be as high as 5,460 hours per year.

Using GPS data, down time (non-route activity) was calculated as:

\[
\begin{align*}
\text{Start:} & \quad 8 \text{ hours per day} \\
\text{Less:} & \quad \text{Time in the field / outside the Utilities Complex} \\
\text{Totals:} & \quad \text{Time inside the Utilities Complex} \\
\text{Less:} & \quad 1.5 \text{ hours per day (pre/post inspections and breaks)} \\
\text{Plus:} & \quad \text{Stops in the field (over 5 minutes)} \\
\text{Totals:} & \quad \text{Downtime}
\end{align*}
\]

Commercial Weekly Down Time Averages (7 routes / 7 assigned drivers):
- 9 Hours on Stops over 5 minutes
- 8 Hours inside the Utilities Complex
- 2.5 Hours per Driver
- Routes 1 and 2 were significantly higher than the other routes

Residential Weekly Down Time Averages (11 routes / 12 assigned drivers):
- 49 Hours inside the Utilities Complex
- 39 Hours on Stops over 5 minutes
- 7.5 Hours per Driver
- Routes 1, 8 and both Grapplers were above average, but the Green Grappler was significantly higher than the other routes

Management indicated other duties such as cleaning or training may be assigned when routes are completed early. However, at the start of this project, the training program had not been established and management was struggling with assigning duties outside of employee job descriptions. Other duties completed are not tracked to account for time spent outside of routes.

RECOMMENDATION #7:

Perform a more in-depth route analysis. Identify opportunities to improve route efficiency and reassess staffing needs accordingly. Establish and document a training schedule and confirm with HR the types of additional duties that can be assigned.
EXCESSIVE STOP TIMES

CONDITION #8:

Stop times frequently exceeded 30 minutes per day.

Utilities SOP # UD-A13 indicates supervisors are to use GPS reports to monitor stops for efficiency and productivity.

During the two-week test period, GPS recorded daily stops that exceeded 30 minutes per day a total of 59 times (approx. 80 hours). If annualized, stop times could be as high as 2,080 hours.

- 49 of the 110 Residential routes recorded:
  - Stops (over 30 minutes) totaling approximately 69 Hours
    - Over 30 min: 19 Routes
    - Over 1 hour: 22 Routes
    - Over 2 hours: 5 Routes
    - Over 3 hours: 2 Routes
    - Over 4 hours: 1 Route

- 10 of the 72 Commercial routes recorded:
  - Stops (over 30 minutes) totaling approximately 11 Hours
    - Over 30 min: 6 Routes
    - Over 1 hour: 3 Routes
    - Over 2 hours: 1 Route

NOTE: Route completion times averaged 3 to 6 hours and drivers work an 8-hour schedule.

RECOMMENDATION #8:

Improve supervisory review of GPS reports to identify frequent and/or excessive stops. Evaluate validity and purpose and address excessive activity with staff.

NOTE: Utilities SOP # SW-A1 outlines work day requirements, to include either two 15-minute breaks or one 30-minute break per day.

CMP #3.2 allows incidental use of City vehicles during the performance of assigned duties, to include breaks, lunch, and short-term stops (less than 5 minutes).
EXCESSIVE IDLING

CONDITION #9:

Excessive idling may result in a loss of thousands of gallons of fuel annually.

CMP # 3.9 Idling Policy provides direction for efficient fuel consumption. City vehicles should not be left idling unless exempted by policy.

For the two-week test period, the GPS report for Solid Waste vehicle idle times greater than or equal to 20 minutes was analyzed to determine potential fuel loss and costs associated with excessive idling.

- Occurrences: 118
- Total Idle Time: 117 Hours
- Gallons of Fuel Used: 136
- Cost (Loss): $340.00 (136 @ $2.50/gallon*)
- Annualized Loss: $8,840 and 3,536 Gallons of fuel

Management indicated GPS data has been used to monitor idling, and abnormal activity has been identified and addressed. However, we found excessive idling occurring during the test period. The reason for each occurrence was not determined.

*Cost per gallon was obtained from the March 2018 Fuel Master Fuel File.

RECOMMENDATION #9:

Continue ongoing monitoring of GPS data to identify and address excessive idling. Re-train staff as needed to ensure compliance with the idling policy.

NOTE: Utilities SOP # SW-A3 outlines safety precautions and the need to remain idle when a dumpster falls into a vehicle (reported as a very rare occurrence).

Daily pre/post inspections are limited to 20 minutes of idling. The regeneration process (burn off of carbon buildup) on average may take 20 to 40 minutes. The frequency of regeneration was not tracked by management, so the occurrence rate during the test period could not be determined.
UNNECESSARY OVERTIME

CONDITION #10:

Early start times may contribute to driver overtime.

City of Las Cruces Personnel Manual, Section 604 - Unauthorized Work Time, indicates, per FLSA regulation, non-exempt employees are not to commence work prior to the scheduled start time without prior approval of their immediate supervisor.

During the two-week test period, route driver overtime totaled 22.5 hours. This does not include scheduled overtime to complete Saturday routes or overtime incurred by commercial Roll-Off drivers, or Laborers.

Fifty-six (56) occasions where vehicle ignitions were started prior to scheduled work hours were identified on the GPS Idle report, ranging from a few minutes to over 30 minutes prior to the scheduled start time. This report was limited to idling over 20 minutes. However, it demonstrates a potential cause for driver overtime.

Management indicated in colder months, staff are allowed to start trucks earlier to allow sufficient time to warm up due to the hydraulics involved. Supervisors may also require staff to start vehicles early so they can perform random checks. Other exceptions may be made on occasion to accommodate staff. The purpose for each early start time was not determined.

RECOMMENDATION #10:

Route completion times averaged 3 to 6 hours and drivers work an 8-hour schedule. If necessary, revise work schedules to begin earlier to allow for sufficient idle time prior to starting a route.

Requiring staff to flex time at the end of the day, when possible, will help eliminate unnecessary overtime.

NOTE: Utilities SOP # SW-A3 outlines safety precautions and the need to remain idle when a dumpster falls into a vehicle (reported as a very rare occurrence).

Daily pre/post inspections are limited to 20 minutes of idling. The regeneration process (burn off of carbon buildup) on average may take 20 to 40 minutes. The frequency of regeneration was not tracked by management, so the occurrence rate during the test period could not be determined.
UNNECESSARY SATURDAY OVERTIME

OBSERVATION #11:

Recurring Saturday overtime may not be necessary.

Utilities SOP # SW-A1 outlines work day requirements to include flex time and overtime. Flex time is allowed on Fridays for hours worked over 40.

Saturday routes are rotated between Commercial and Residential drivers. The two Saturday routes reviewed were each completed in less than 5 hours. Multiple drivers had sufficient down time during the work week to flex their time on Friday to cover the Saturday route without incurring overtime.

- Saturday, 03/10/18 – 9 drivers had more than 5 hours of down time
- Saturday, 03/17/18 – 12 drivers had more than 5 hours of down time

RECOMMENDATION #11:

Rotate Saturday routes among those drivers that consistently complete their weekday routes early. Schedule Saturday route coverage in advance and have the employee flex available down time on Friday to cover the Saturday route.
UNSCHEDULED ROUTE COLLECTIONS

CONDITION #12:

Residential collections are not completed with scheduled routes.

On six occasions, GPS recorded Thursday driving activity in Residential routes scheduled for Fridays.

On two occasions, GPS recorded Friday driving activity in Residential routes scheduled for Thursdays.

NOTE: It was not determined why these vehicles were driving in unscheduled areas.

RECOMMENDATION #12:

Require driver activity only in schedule areas. Determine if customers scheduled for other routes would benefit from a different schedule and make changes accordingly.
EXCESSIVE FUEL PURCHASES

CONDITION #13:

Excess fuel may have been purchased for Commercial route vehicles.

During the two-week test period, Commercial vehicles pumped an excess of 365 gallons of fuel over their fuel needs (25% more) at a cost of $903. If annualized, the above activity would be 9,486 gallons of fuel at a cost of $23,480.

The Fuel Master fuel file reported Solid Waste Commercial Route vehicles were charged $4,624 for 1,853 gallons of fuel between March 4 and March 17, 2018. GPS records for this same time period indicated Commercial route vehicles drove a total of 4,316 miles. At 2.9 miles per gallon (on average), Commercial vehicles would have needed 1,488 gallons of fuel.

Management stated they review monthly fuel reports to ensure fuel usage is in-line, but have not performed analysis on fuel consumption or costs per route. Without additional analysis, the full extent of the above condition cannot be determined.

RECOMMENDATION #13:

Conduct periodic fuel consumption analysis by monitoring vehicle activity and fuel purchases to determine whether or not purchases are in agreement with vehicle usage rather than only reviewing the expenditures. Address cause for discrepancies immediately.
IMPROPER FUEL CHARGES

CONDITION #14:

Incorrect Fuel File charges were not identified or corrected timely.

The March 2018 Fuel Master report for Commercial and Residential fuel activity contained errors that were not identified or corrected in a timely manner.

- Commercial was charged for fuel pumped by a Residential vehicle
  - Additional vehicle was identified by Commercial supervisor
  - Missing vehicle was not identified by Residential supervisor
  - Organization code was not corrected until June 2018

- Commercial was charged for fuel pumped by a Solid Waste Fleet vehicle
  - Additional vehicle was not identified by Commercial supervisor
  - Organization code was not corrected until July 2018

- Residential was charged for fuel pumped by 2 Commercial vehicles
  - Additional vehicles were not identified by Residential supervisor
  - Missing vehicles were not identified by Commercial supervisor
  - As of September’s fuel report, the organization codes had not been corrected.

Management indicated supervisors review monthly fuel reports to ensure appropriate vehicles are charged to their accounts, but only 1 of the 4 mischarges were identified on the March reports. Additionally, management reported the Residential fuel report was correct, despite the above errors.

RECOMMENDATION #14:

A thorough review of the monthly fuel file should be required to timely identify and correct errors. Supervisors should confirm they have an up-to-date list of vehicles they are responsible for to assist them with the review process. If errors are found, they should immediately inform Utilities Accounting staff and Fleet Services so corrections can be made. Follow-up should be required if errors are not corrected by the following month’s report.
NON-COMPLIANT DVIRs

CONDITION #15:

Incomplete DVIRs or a lack of documentation were noted for 55% of the activity reviewed.

Federal Motor Carrier Safety Regulation (e-CFR), Title 49, §396.11 and Utilities SOP #SW-B6 require daily inspection of commercial motor vehicles and completion of a DVIR to report defects or deficiencies that would affect the safe operation of a vehicle. Non-compliance with the Federal regulation could result in a civil penalty up to $5,000.

GPS recorded use of Solid Waste vehicles 188 times from March 4 to March 17, 2018. 103 DVIRs for this time period were incomplete or were not provided.

- 91 DVIRs were missing one or more data elements
- 12 DVIRs were not found

Three DVIRs that noted a defect or deficiency were not signed by the driver who inspected the vehicle, which is in violation of the Federal regulation.

Although most missing data elements were not specific to the condition of a vehicle, some DVIRs did not mark all parts and accessories as being inspected. Failure to fully inspect, report, and repair defects or deficiencies that affect the safe operation of City vehicles may put the City, employees, and the public at risk.

RECOMMENDATION 15:

Supervisors must conduct a daily review of DVIRs and vehicle usage to ensure all inspections are accounted for and documentation is complete.
KUDOS

Monthly callbacks for skips and misses have been consistently less than 1% of customer base.

A callback is when a driver returns to the collection site to provide a courtesy service or to service a container that was previously skipped or missed.

Monthly call-backs reported from January 2017 to March 2018 were consistently less than 1% of the total customer base.
SUMMARY OF DAILY ROUTE AVERAGES AND COSTS

Information obtained from Solid Waste and Fleet staff, Fuel Master Fuel Files, and Nextraq GPS reports was used to determine collection route averages and costs.

COMMERCIAL COLLECTION ROUTES: March 4 - March 17, 2018

Commercial services are divided into 36 routes: 7 routes per week day, Monday through Friday, and 1 Saturday route. Commercial routes span across the City and are not limited to a specific area. As such, route data below reflects all Commercial vehicle activity outside the Utility complex and SCSWA landfill.

<table>
<thead>
<tr>
<th>Commercial Routes</th>
<th>Containers</th>
<th>Route Miles</th>
<th>Route Fuel Cost</th>
<th>Route Hours</th>
<th>Route Labor Cost</th>
<th>Weekly Route Cost</th>
<th>Minutes per Container</th>
<th>Approx. Cost per Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>844</td>
<td>428.75</td>
<td>$369.61</td>
<td>42.38</td>
<td>$809.65</td>
<td>$1,179.26</td>
<td>3.01</td>
<td>$1.40</td>
</tr>
<tr>
<td>Tuesday</td>
<td>811</td>
<td>363.95</td>
<td>$313.75</td>
<td>37.95</td>
<td>$725.03</td>
<td>$1,038.78</td>
<td>2.81</td>
<td>$1.28</td>
</tr>
<tr>
<td>Wednesday</td>
<td>738</td>
<td>414.60</td>
<td>$357.41</td>
<td>37.34</td>
<td>$717.42</td>
<td>$1,074.83</td>
<td>3.04</td>
<td>$1.46</td>
</tr>
<tr>
<td>Thursday</td>
<td>702</td>
<td>403.00</td>
<td>$347.41</td>
<td>37.18</td>
<td>$699.40</td>
<td>$1,046.82</td>
<td>3.18</td>
<td>$1.49</td>
</tr>
<tr>
<td>Friday</td>
<td>729</td>
<td>410.55</td>
<td>$353.92</td>
<td>38.83</td>
<td>$706.08</td>
<td>$1,060.00</td>
<td>3.20</td>
<td>$1.45</td>
</tr>
<tr>
<td>Saturday</td>
<td>61</td>
<td>49.65</td>
<td>$42.80</td>
<td>4.4</td>
<td>$79.46</td>
<td>$122.27</td>
<td>4.33</td>
<td>$2.00</td>
</tr>
<tr>
<td></td>
<td>3,885</td>
<td>2,070.50</td>
<td>$1,784.91</td>
<td>198.08</td>
<td>$3,737.05</td>
<td>$5,521.96</td>
<td>3.06</td>
<td>$1.42</td>
</tr>
</tbody>
</table>

RESIDENTIAL COLLECTION ROUTES: March 4 - March 17, 2018

Residential services are divided into 45 routes: 9 routes per week day, Monday through Friday. These routes are restricted to specific areas of the City, so route data reflects only vehicle activity within the boundaries of the routes.

Separate Grappler and Green Grappler services are provided for Residential customers one time per month. During the test period, Residential routes numbered 1 - 5 were serviced. These activities were also included in the analysis below.

<table>
<thead>
<tr>
<th>Residential Routes</th>
<th>Containers</th>
<th>Route Miles</th>
<th>Route Fuel Cost</th>
<th>Route Hours</th>
<th>Route Labor Cost</th>
<th>Weekly Route Cost</th>
<th>Seconds per Container</th>
<th>Approx. Cost per Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>9054</td>
<td>266.15</td>
<td>$289.29</td>
<td>42.39</td>
<td>$813.77</td>
<td>$1,103.06</td>
<td>16.85</td>
<td>$0.12</td>
</tr>
<tr>
<td>Tuesday</td>
<td>8337</td>
<td>257.85</td>
<td>$280.27</td>
<td>42.34</td>
<td>$847.44</td>
<td>$1,127.71</td>
<td>18.28</td>
<td>$0.14</td>
</tr>
<tr>
<td>Wednesday</td>
<td>7579</td>
<td>216.75</td>
<td>$235.60</td>
<td>38.50</td>
<td>$708.70</td>
<td>$936.30</td>
<td>18.29</td>
<td>$0.12</td>
</tr>
<tr>
<td>Thursday</td>
<td>6228</td>
<td>181.30</td>
<td>$197.07</td>
<td>30.47</td>
<td>$543.32</td>
<td>$740.38</td>
<td>17.61</td>
<td>$0.12</td>
</tr>
<tr>
<td>Friday</td>
<td>7558</td>
<td>231.50</td>
<td>$251.63</td>
<td>36.77</td>
<td>$653.18</td>
<td>$904.81</td>
<td>17.51</td>
<td>$0.12</td>
</tr>
<tr>
<td></td>
<td>38,756</td>
<td>1153.55</td>
<td>$1,258.86</td>
<td>190.47</td>
<td>$3,558.40</td>
<td>$4,812.26</td>
<td>17.69</td>
<td>$0.12</td>
</tr>
</tbody>
</table>

Average