OFFICE OF THE
City Auditor

Drainage Services Branch Audit

January 30, 2013

THE CITY OF Edmonton

The Office of the City Auditor conducted this project in accordance with the *International Standards for the Professional Practice of Internal Auditing*

Drainage Services Branch Audit
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Executive Summary

The Drainage Services Branch is one of the branches in the Financial Services and Utilities Department. The Branch is responsible for providing sanitary and stormwater drainage services to Edmonton residents by planning, building, operating, and maintaining the pipes, tunnels, pump stations, and stormwater management facilities that make up the City of Edmonton's drainage network.

Based on the results of our risk assessment we focused this audit on the Drainage Planning and Drainage Operations Sections of the Branch. Our objectives for this audit were to determine whether the Branch is performing drainage planning effectively and drainage operations effectively and efficiently, as well as to determine whether there is a system in place to address future staff requirements in the Drainage Operations Section.

Effectiveness of drainage planning

To assess the effectiveness of drainage planning, we focused on work performed by the Drainage Planning Section. We interviewed select staff from within the Section and other areas of the City, reviewed strategic plans, reviewed capital spending business cases, tested the reasonability of asset replacements, and compared future capital spending to what has been recommended.

Overall, we found that the Section is performing drainage planning effectively. However, we made one recommendation to improve the communication and integration between the Section and other areas of the Branch and the City.

We also found that over the past five years the Utilities have invested $227 million in sewer pipe renewal, which is close to what was recommended by a consultant. However, the Utilities have not systematically invested in the renewal of service connections, as recommended by the consultant. This is because they have been focusing on sewer pipe renewal, as it has a higher importance level to the drainage system as a whole. The Utilities plan to continue to invest in sewer pipe renewal as recommended by the consultant. They also plan to increase investment in service connection renewals based on a new long-term Service Connection Renewal Strategy that they are currently developing.

Effectiveness and efficiency of the drainage operations

To assess the effectiveness of drainage operations, we focused on work performed by the Drainage Operations Section. We reviewed performance measures relating to the Section's effectiveness and efficiency and determined that Drainage Operations has generally been improving its effectiveness over the past five years and that there is room to improve on efficiencies.

We also interviewed management, observed field staff working on the job, administered a survey to staff regarding their workplace environment, compared a sample of staff training records to training requirements, and evaluated field staff work records to determine if they agreed to actual routes driven and worksites visited. From this work we made five recommendations to improve the effectiveness and efficiency of drainage operations. The first four recommendations relate to: improving data collection and analysis, improving the use of technology, optimizing the use of staff time, and determining and tracking staff training requirements and updating the Drainage Operations Operational Handbook.

The fifth recommendation is from the results of our employee survey and our discussions with management regarding their approach to dealing with initial complaints and allegations of unacceptable or unethical behaviours from staff. We recommended that Drainage Operations management develop a formal process to deal with initial complaints and allegations of unacceptable or unethical behaviour from staff. We feel that a more consistent approach to dealing with initial complaints and allegations of unacceptable or unethical behaviour from staff will help management promote ethical behaviour and create a responsible workforce, as well as lead to improved staff morale.

Drainage Operations future staff requirements

Our assessment of the future staff requirements of Drainage Operations revealed that the Section has reliable workforce data which it can use to determine when staff members may retire. However, management does not currently have a formal process to address succession needs as a result of retirements. Based on these findings, we made a recommendation that management create a formal process to assess future workforce needs and develop strategies to address them.

Conclusion

As a result of our audit, we made one recommendation to improve the effectiveness of drainage planning, and five recommendations to improve the effectiveness and efficiency of the Drainage Operations Section.

Drainage Services Branch Audit

1. Introduction

As part of our commitment to audit all the branches of the City, the Office of the City Auditor (OCA) conducted an audit of the Drainage Services Branch (the Branch).

The Branch is part of the Financial Services and Utilities Department. It is divided into two areas:

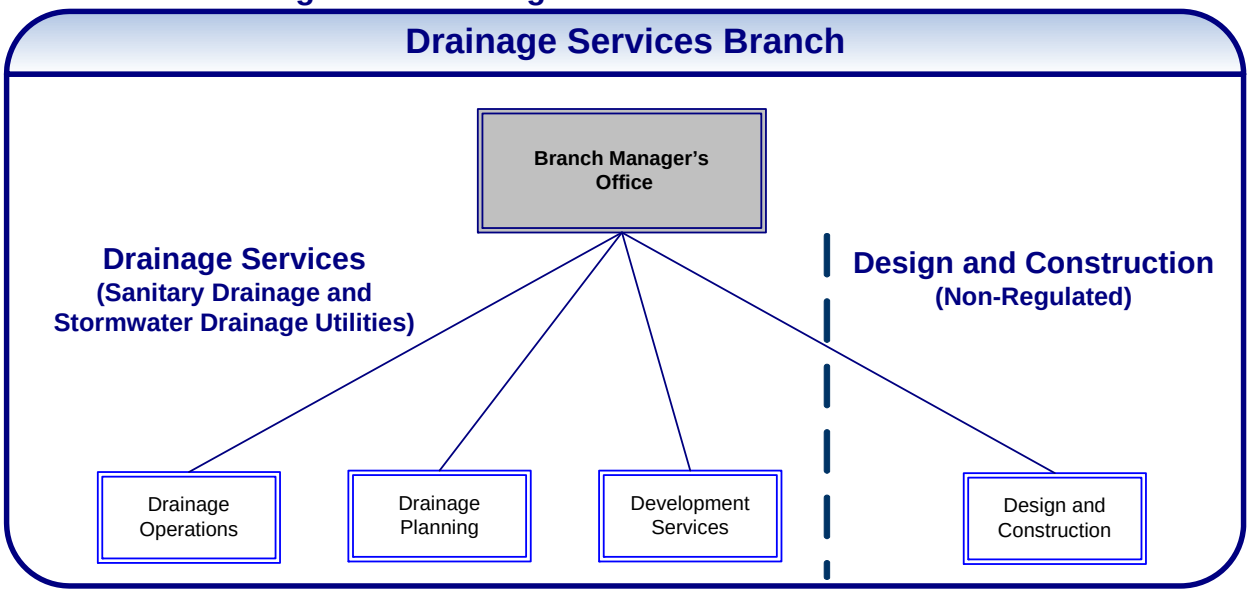
1. *Drainage Services* – This area operates the Sanitary Utility and the Stormwater (Land) Drainage Utility (the Utilities). The Utilities are self-funded operations that provide the collection and transmission of wastewater and stormwater for customers on a fee-for-service basis. To operate the Utilities, Drainage Services is divided into three sections:
   - *Drainage Planning* – This Section is responsible for the development of major strategies and programs to meet established objectives of the Utilities.
   - *Drainage Operations* – This Section maintains and operates the drainage systems.
   - *Development Services* – This Section ensures data collection, management system monitoring, regulatory compliance, land development, and public services functions are met.

   In 2011, the Utilities collected $102 million in revenue and spent $86 million on operations, for a net income of $16 million before capital contributions and transfers. A portion of the net income was paid to the City of Edmonton as a dividend. Per the approved Utility Fiscal Policy C340C, the Utilities will be exempt from paying a dividend after 2011. The remainder of the net income is retained by the Utilities for future needs.

2. *Design and Construction* – This area is non-regulated and financially separate from the Utilities. It provides drainage design and construction services to Drainage Services and other City branches. Design and Construction also submits tender calls or is invited to provide design and construction services to outside organizations. In 2011 Design and Construction made $116 million in revenue and spent $114 million, for a net income of $2 million.

Figure 1 shows a high-level overview of the Branch's structure.

Figure 1 – Drainage Services Branch Structure



2. Results of Risk Assessment and Audit Scope

During the planning phase of this audit, we performed a risk assessment of the entire Drainage Services Branch. This involved interviews with management teams from each section of the Drainage Services Area (Drainage Operations, Drainage Planning, and Development Services), the Design and Construction Area, and with the Branch Manager to gain an understanding of each of the section's business environments and the risks they face. We also had each section's management team and the Branch Manager assess each risk relating to their section or the Branch as a whole.

We decided to focus our review on the Drainage Planning and Drainage Operations sections because the results of the risk assessment indicated that they would benefit most from an audit.

We also identified risks in the Design and Construction Area that would benefit from an audit. We notified Branch management of these risks and issues. However, we did not audit that area at this time as it has only recently financially separated from the Utilities. We will include a review of the Design and Construction Area's risks as part of our annual planning process in future years to determine whether they are still relevant and significant enough to warrant an audit of the Area.

We also did not audit the utility rate-setting process because the Utilities recently hired a consultant to perform a cost of services study[1]. This study determined whether the existing rate structure is representative of the underlying costs of services for the Utilities customers. The consultant issued the results of this study in May 2011. Also, in

[1] Drainage Services – 2010 Cost of Services Study.

2010 City Council engaged a Utility Advisor to provide advice and assistance to the Utility Committee and Council on utilities matters.

As well, as part of the planning for this audit we assessed the relevance and sufficiency of the performance information reported by the Branch in its 2013-2015 Business Plan in relation to its strategic directions. We concluded that the Branch has performance measures that are relevant to its strategic objectives and that the performance measures are sufficient to assess the Branch's progress in achieving each of its strategic objectives.

Based on the results of the risk assessment, we developed the audit objectives discussed in Section 3 below.

3. Audit Objectives & Methodology

3.1. Audit Objectives

Our objectives for this audit were to determine if:

1. Drainage planning is performed effectively.
2. Drainage operations are performed in an effective and efficient manner.
3. The Drainage Operations Section has a system in place to address future staff requirements.

3.2. Audit Methodology

We focused this audit on the Drainage Planning and Drainage Operations sections of the Drainage Services Area.

We used the following methods to gather evidence to conclude on the above objective relating to the Drainage Planning Section:

- Discussions with management;
- Reviewing of strategic plans;
- Interviewing stakeholders from within the City;
- Reviewing business cases prepared for capital projects;
- Testing the reasonability of asset replacements; and,
- Comparing what the Utilities have spent and are planning on spending on sewer pipe renewal to what the recommended amount is to maintain the condition of the pipes.

We used the following methods to gather evidence to conclude on the above objectives relating to the Drainage Operations Section:

- Gathering and reviewing performance measure information;
- Discussions with management and supervisory staff;
- On-the-job observations and discussions with a variety of employees;
- Comparing required staff training to completed training;

- Comparing completed records of work performed to actual routes driven and worksite locations; and,
- Surveying staff regarding their workplace environment.

4. Drainage Services Area Background

4.1. Financial Resources

Table 1 shows the 2010 and 2011 actuals and 2012 budgeted financial operating details for the Drainage Services Area.

Table 1 – Drainage Services Area Financial Operating Details
(In thousands of dollars)

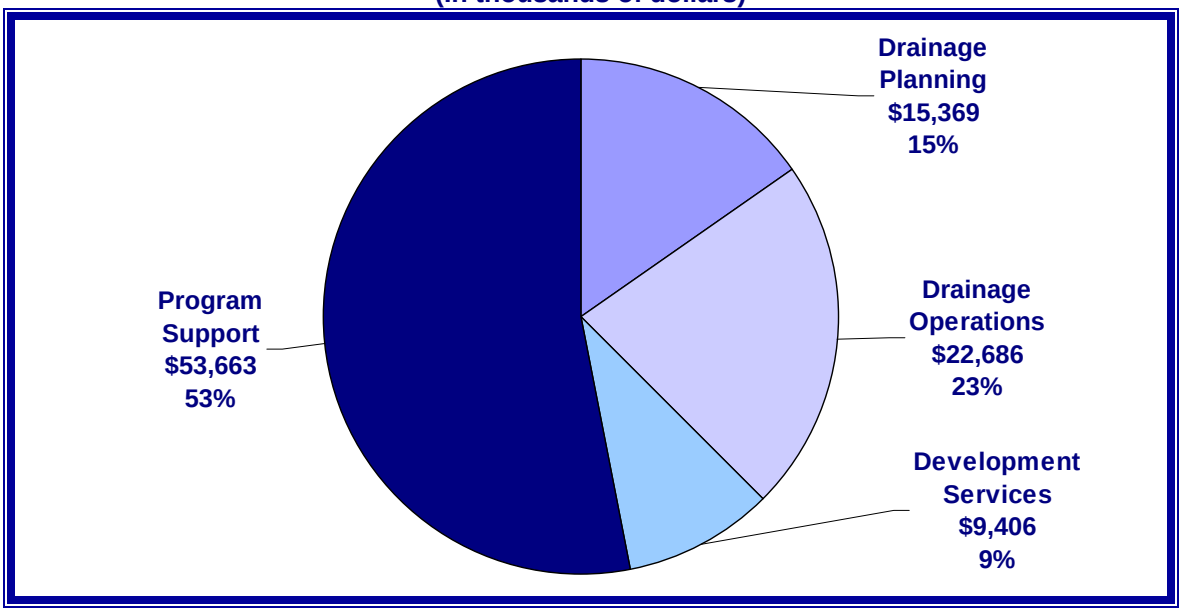
	2010 Actual	2011 Actual	2012 Budget
Total revenues	**$96,746**	**$101,893**	**$130,395**
Personnel	(23,881)	(24,942)	(28,358)
Materials, goods, supplies, and utilities	(3,609)	(3,852)	(4,664)
Contracted and general services	(22,840)	(24,331)	(27,417)
Interest expense	(12,551)	(13,916)	(18,064)
Net amortization	(11,430)	(12,683)	(14,199)
Local access fee[2]	(5,116)	(5,300)	(7,122)
Other	(1,654)	(1,300)	(1,300)
Total expenses	**(81,081)**	**(86,324)**	**(101,124)**
Net position	**$15,665**	**$15,569**	**$29,271**

The increase in revenue from 2011 to 2012 is primarily a result of the increased utility rates for all customer classes. For example, the average monthly residential charge by the Sanitary Utility increased from $15.38 in 2011 to $19.41 in 2012. The average monthly residential charge for the Stormwater Utility increased from $6.34 in 2011 to $7.68 in 2012.

Figure 2 shows the distribution of the Drainage Services Area's 2012 expense budget by section. Program support includes financial costs such as debt interest, amortization, and the local access fees which are not attributable to one particular section.

[2] The Utilities pay the City of Edmonton a local access fee for the use of public right of ways in lieu of property taxes.

Figure 2 – Drainage Services Area 2012 Operating Expense Budget by Section
(In thousands of dollars)



Each year, the Utilities invest in capital projects to rehabilitate, replace, and upgrade existing infrastructure as well as to build new assets. Table 2 shows the 2010 and 2011 actual capital spending and the 2012 capital spending budget for the Drainage Services Area.

Table 2 – Drainage Services Area Capital Projects Financial Information
(In thousands of dollars)

	2010 Actual	2011 Actual	2012 Budget
Utility financed	$79,155	$83,179	$93,735
Developer financed	20,770	18,866	46,221
Total	**$99,925**	**$102,045**	**$139,956**

The Utilities have budgeted approximately $94 million for capital projects in 2012. Of this, they will finance $78 million through long-term debt and the remainder through retained earnings. The Utilities are also expecting to build $46 million of infrastructure based on funding from developers (developer financed) in 2012. The actual amount of infrastructure built for developers is out of the control of the Utilities. This is the reason for the significant difference between the actual developer financed project amount in 2011 and the amount budgeted in 2012. In 2011, there were delays in starting developer financed projects and developer demand was significantly less than what was budgeted.

In addition, other City Departments and developers contribute completed drainage infrastructure to the Utilities to maintain. In 2011, this amounted to approximately $61 million dollars worth of new infrastructure.

4.2. Drainage Planning

Drainage Planning's primary purpose is to identify and address current and emerging issues and needs by developing long-range strategies, drainage plans, budgets, and public education programs. To do this, Drainage Planning is divided into the following four groups:

1. *Strategic Planning* – This Group develops and implements long-range strategic plans and programs to support the growth of the City. It also develops and implements long-range capital plans and programs to upgrade the drainage systems to support environmental goals and to meet regulatory requirements. As well, it supports corporate and regional initiatives, such as relationships with regional partners.

2. *Infrastructure Planning* – This Group develops drainage renewal priorities and co-ordinates with other departments on the Neighbourhood Renewal Program. It develops and implements asset management strategies and plans, as well as participates in the preparation of capital and operating budgets.

3. *Environmental Planning* – This Group develops and implements environmental strategies and engineering studies to reduce environmental impacts from drainage system discharges and to ensure compliance with Provincial and Federal regulations. It conducts research and reviews on emerging environmental opportunities and challenges including changes in standards and regulations. As well, it develops public education programs to raise awareness on critical drainage issues and influence customer behaviour.

4. *Technical Services* – This Group manages the beneficial use of biosolids generated from the Gold Bar Wastewater Treatment Plant, the Alberta Capital Region Wastewater Treatment Plant, and the gradual reduction of current biosolids inventory at the Clover Bar Lagoons. It also manages the business relationship and joint capital planning with EPCOR under the Gold Bar Master Agreement. As well, it provides mapping services to Drainage Services Branch and updates the Drainage Services Branch website content.

4.3. Drainage Operations

Drainage Operations is responsible for the operation and maintenance of the City's drainage systems. It is divided into the following four groups:

- Preventative Maintenance;
- Pumpwell Operations;
- Customer Services; and
- Environmental Services.

4.3.1. Preventative Maintenance

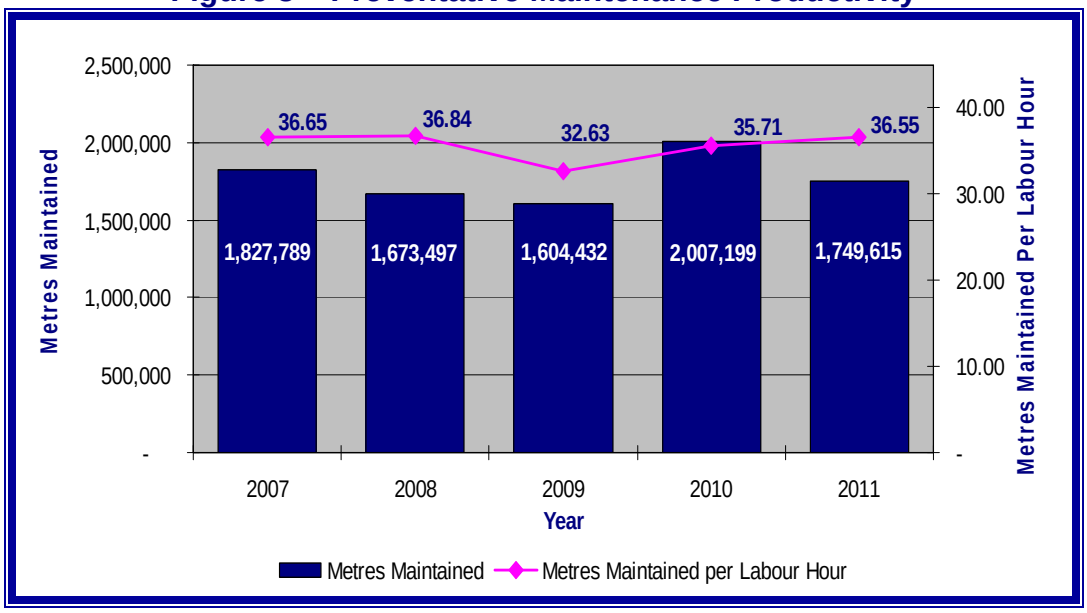
The Preventative Maintenance Group is responsible for the inspection, cleaning, and maintenance of over 5,500 kilometres of sewer pipes, as well as catch basins and manholes. Regular maintenance of sewer infrastructure optimizes the benefits of the pipes over their useful life. In 2011 there were 66.3 full time equivalents (FTEs) working in this Group. They perform the following work:

- Inspect mainlines and channels, either visually (by looking down the manhole) or using a video camera. In 2011, crews inspected 141 kilometres of pipe using the video cameras.
- Clean the main lines and catch basins using high-pressure flushing, low-pressure flushing, and hydromechanized cleaning (also known as chain flailing). In 2011, crews cleaned 1,609 kilometres of pipes using these techniques.
- Perform minor repairs on infrastructure such as replacing damaged catch basin covers, repairing manhole rings and covers, and changing the elevation of manhole covers relative to the level of roadway pavement.

The productivity of the Preventative Maintenance Group is impacted by the nature of the cleaning requirements encountered. For example, when the crews encounter construction debris it takes considerably longer to clean the pipes than when they encounter grease and tree roots. Per management this has been happening more frequently in the past year.

To show the productivity of the Group in each of the past 5 years, we chose to measure the metres of pipe maintained per labour hour used to maintain them. To represent pipe maintenance we chose videoing, high-pressure flushing, low-pressure flushing, and chain flailing. Figure 3 shows the results.

Figure 3 – Preventative Maintenance Productivity



To actively manage the productivity of this area and maintain service levels, management compares the monthly cost per metre to the year-to-date cost and the entire prior year cost per metre for scheduled work for each type of maintenance activity. The types of maintenance activities management monitors are:

- High-pressure flushing;
- Hydro-mechanical cleaning;
- Low-pressure flushing;
- Inspecting manhole channels;
- Catch basin cleaning; and
- Mainline televising.

4.3.2. Pumpwell Operations

The Pumpwell Operations Group is responsible for the inspection, repair, and preventative maintenance of 75 pumpstations. A pumpstation consists of underground pumps that lift sewage or stormwater from a subdivision in a low area and discharge it into a main sewer. In addition, Pumpwell Operations staff maintain other mechanical and control structures including 84 pond sensors and gates, 5 storm water tanks, and 4 odour control systems. This Group also provides welding and repair services for equipment used by other Drainage Operations groups. In 2011, there were 31 FTEs working in this Group.

It is difficult to show the productivity of this Group due to the diversity of the work that it does. As well, there are many factors that affect the productivity of the Pumpwell Operations Group including:

- The age of the pumpstations and control facilities – the pumpstations and control facilities are aging and therefore have increased maintenance needs.
- The complexity of repairs and maintenance required – more complex work takes more time. For example, rebuilding a pump takes more time to complete, as well damage to stations during high water flows can require a lot of time to repair, and take time away from regular maintenance activities.
- Addition of new pumpstations – this Group reviews and comments on plans and completes inspections of new pumpstations. This takes time away from regular scheduled maintenance.
- Growing fleet of vehicle equipment and crews in Drainage Operations – as this Group provides welding and repair services for equipment used by other Drainage Operations groups, a growing fleet of vehicle equipment and crews in those areas mean more repair work.

4.3.3. Customer Services

The Customer Services Group had 45.2 FTEs in 2011. The Group is responsible for the following services:

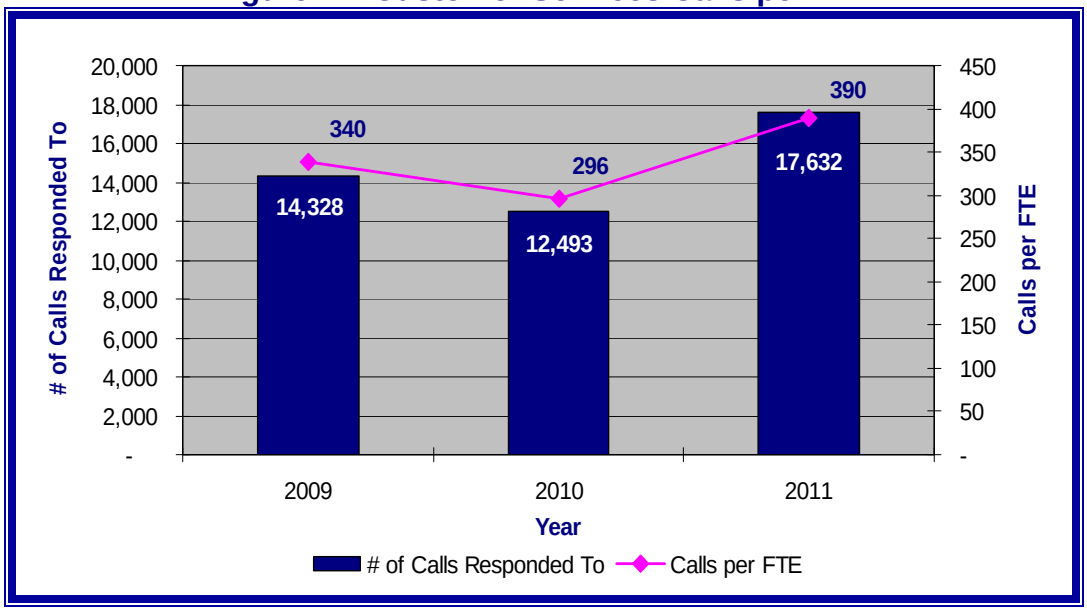
- Responding to customer concerns involving the drainage system. These relate to service-line blockages or collapses, plugged catch basins, etc.
- Inspecting and addressing sewer troubles at private residences. This could include performing service line rodding, locating severe issues for repair, identifying requirements for minor repairs, assisting with claims investigations, providing information on flood-proofing, and performing root control.

In 2011, Customer Services staff addressed 17,632 complaints or inquiries (390 calls per FTE working in the Group). The calls related to the following areas:

- Sewer troubles (6,803);
- Manhole and catch basin concerns (3,976);
- Flooding issues (2,841);
- General and other inquiries (2,741); and
- Sewer odours (1,271).

The number of calls the Group receives each year will vary depending on the weather and quality of infrastructure. Figure 4 shows the number of calls received in each of the past three years[3] as well as the number of calls per FTE for each year.

Figure 4 – Customer Services Calls per FTE



The length of time a crew spends once they have responded to a call will vary depending on the nature of the call. For instance, a manhole concern may be a brief stop to replace a cover, whereas a sewer trouble call may take many hours to resolve.

4.3.4. Environmental Services

The Environmental Services Group had 21.4 FTEs in 2011. The Group is responsible for the following services:

- Inspecting and maintaining 128 lakes and wetlands. These are artificial lakes with vegetation around the perimeter that help manage storm water runoff and prevent flooding.
- Inspecting and maintaining 64 dry ponds. These are areas that temporarily store water after a storm, but eventually empty out at a controlled rate.
- Inspecting and maintaining 241 sewer outfalls. These are locations where sanitary and stormwater sewer pipes empty into the North Saskatchewan River.

[3] The total number of calls addressed by Customer Services staff was obtained from the City's 311 Call Centre, which opened in December 2008. Therefore 2007 and 2008 data is not available.

- Inspecting the main trunklines. These are the large pipes that carry the stormwater and wastewater collected in smaller pipes, ponds, storage tanks, and pumpstations to either a natural water course or a wastewater treatment plant. In 2011, staff inspected nine kilometres of trunkline.
- Containment, clean-up, and disposal of hazardous waste spills.
- Maintaining the ISO 14001 certification[4] and providing the necessary reports to ensure compliance with the Approval to Operate issued by Alberta Environment.
- Investigating and eliminating sewer odour.

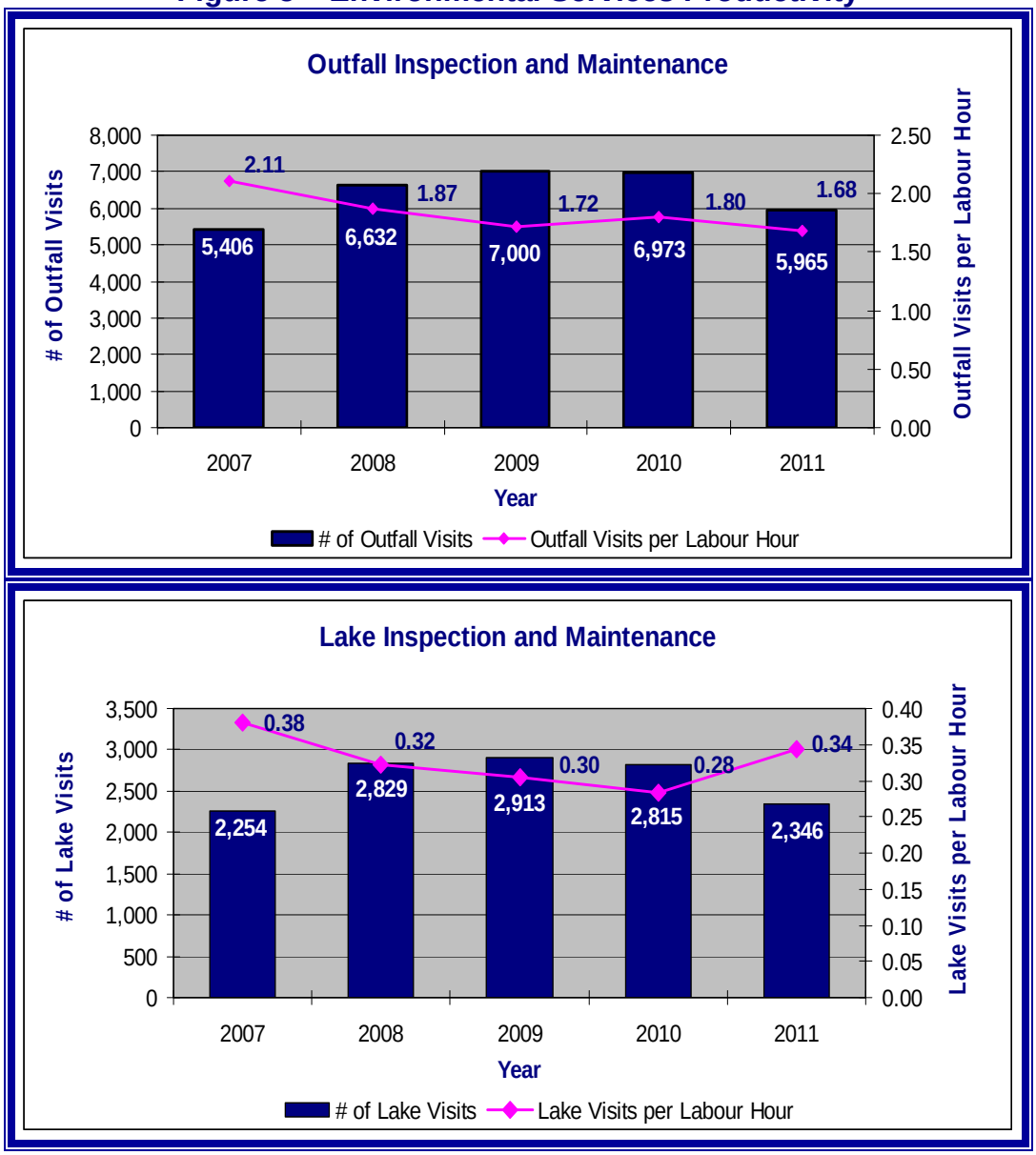
There are a number of factors that impact the productivity of the Environmental Services Group such as:

- Weather conditions – for example, when the river level is very high it can impact the accessibility of outfalls. Outfall inspectors have to hike to the locations of outfalls rather than ride in a boat to the outfalls on the river banks. This leads to additional time required for each inspection.
- Environmental requirements – environmental legislation and regulation dictate what the Environmental Services Group has to do during inspections. When there is an environmental requirement change, it may cause additional work that needs to be performed during inspections. Thus, more time is required for each inspection.
- Growth of the City – as the City is growing the number of lakes and outfalls on the outskirts of the City is increasing. This increases the travel distance between the maintenance yard and the lakes and outfalls, thus decreasing the productivity.
- Public expectations – the public is often focused on the appearance of the lakes rather than their functionality. This leads to high expectations of how the lake should look which causes additional time and effort to deal with public complaints.

To show the productivity of the Group we compared the number of visits to outfalls and lakes for inspections and maintenance to the actual labour hours spent performing the inspections and maintenance over the last five years. Figure 5 shows the results.

[4] ISO 14001 is a set of standards used by organizations for designing and implementing an effective environmental management system.

Figure 5 – Environmental Services Productivity



5. Observations and Analysis

5.1. Drainage Planning

To assess the effectiveness of drainage planning we focused on the work performed by the Drainage Planning Section. Overall, we found that the Section is performing effectively. We based this conclusion on the following:

- The strategic plans that the Drainage Planning Section has developed are aligned with the Drainage Services Branch strategic directions and the corporate strategic goals. Strategic plans are long-range plans that relate to what the Section wants to

accomplish in the next 10 to 30 years in the areas of: Fiscal Management, Environmental Management, Asset Management, Growth, and People Management. If these plans were not aligned with the strategic directions included in the Branch's Business Plan there would be a risk that the Section would spend money where it is not required or use resources in ways that are not effective.

- Internal stakeholders are satisfied with how the Drainage Planning Section integrates and communicates with their areas in regard to projects, plans, strategies, requirements, etc. However, some stakeholders responded that Drainage Planning could improve communication to enhance the effectiveness of integration between them (See Section 5.1.1). Having strong integration and communication with other parts of the City and the Drainage Services Branch helps Drainage Planning staff to be more effective.

- Drainage Planning is performing formal analysis and evaluation of capital projects through the development of business cases that meet industry best practices. It uses business cases to ensure the capital projects are relevant to current strategies, are built using the most cost-effective alternative, and that any assumptions used in the budget are reasonable. This helps ensure they are using capital dollars effectively.

- The pipes renewed in the last three years were done at appropriate times given their remaining useful life and condition (i.e., pipes have not been replaced too soon). This shows that Drainage Planning is using capital dollars effectively.

We also evaluated whether or not the Utilities have spent and are planning on spending the recommended amount of money each year to renew sewer pipes and service connections to maintain an acceptable level of performance. (See Section 5.1.2)

5.1.1. Integration and communication

We surveyed Drainage Planning's stakeholders from within the Drainage Services Branch and from the Transportation, Sustainable Development, and Community Services Departments to obtain feedback on the effectiveness of Drainage Planning's integration and communication with them. The majority of the stakeholders were satisfied with the level of integration they have with Drainage Planning. However, some stakeholders felt Drainage Planning could improve its communication with them to enhance the effectiveness of the integration between them.

Based on the responses to our questions we believe Drainage Planning's integration with other parts of the Branch and other City Departments could be enhanced by improving the quality and timing of communication with stakeholders. Some stakeholders mentioned that they want to be involved in the projects earlier and some want more information from Drainage Planning regarding projects, plans, current initiatives, etc.

If Drainage Planning does not have effective communication and integration with stakeholders, it could result in the loss of opportunities for collaboration, coordination,

and innovation. There is also the potential to lose credibility with Council and the public if projects are not coordinated effectively.

Recommendation 1 – Integration and Communication with Stakeholders

The OCA recommends that the Drainage Services Branch Manager ensures that Drainage Planning staff improve their communication and integration with other sections in the Drainage Services Branch and other City Departments by identifying the communication and integration needs of each area and developing and implementing a process to address those specific needs.

Management Response and Action Plan

Accepted

Action Plan: Improving internal communication is a city-wide challenge. Although Drainage Planning communicates effectively overall, the section will improve the quality and timing of planning and project requirement communications with internal stakeholders to enhance integration. Drainage Planning will accomplish this by working with internal stakeholders to identify the communication needs of each area; including the most effective timing and types of information required.

Planned Implementation Date: Second Quarter 2013

Responsible Party: Manager, Drainage Services

5.1.2. Drainage asset renewal

Drainage Planning hired a consultant in 2006 to estimate the dollar value of the Utilities annual infrastructure renewal needs for the next 20 years. The consultant estimated that the amount of investment to keep sewer pipes within the acceptable level of performance[5] is approximately $1.47 billion over the 20 year period from 2006 to 2026 ($73 million per year). This amount is divided between sewer pipes needs ($39 million per year) and sewer service connection needs ($34 million per year).

We evaluated whether or not the Utilities have spent and are planning on spending the recommended amount of money each year to renew sewer pipes and service connections to maintain an acceptable level of performance.

[5] The information used by the consultant in 2006 is based on the best available information at the time. There are factors that occur each year that can affect this estimate. For example, the renewal program is coordinated with the Transportation Services Department, so its decisions will affect the work that the Utilities undertake.

Sewer pipe renewal

The Utilities use three programs for drainage infrastructure renewals:

1. *Drainage Neighbourhood Renewal* – This is the systematic rehabilitation of deteriorated drainage infrastructure in neighbourhoods. Close co-ordination is maintained with Transportation Services to support their Roadway Neighbourhood Renewal Program to avoid disturbing newly reconstructed pavement and to minimize public inconvenience during construction.

2. *Sewer Infrastructure Rehabilitation* – This rehabilitation program, including local sewer rehabilitation and high priority repairs, minimizes sewerage system infrastructure failures preventing sewer backups for customers.

3. *Structures Rehabilitation* – This program includes rehabilitation works on structures like trunk sewers, pumpstations, and outfalls that will minimize drainage system infrastructure failures, preventing sewer backups for customers.

Table 3 compares the actual, budgeted, and forecasted spending on sewer pipe renewal between 2007 and 2021 to the recommended spending, which we adjusted to include inflation.

Table 3 – Historic and Future Sewer Pipe Renewal Spending Analysis
(in millions of dollars)

	Amount
2007 to 2011	
Actual Investment:	
Drainage Neighbourhood Renewal	$130
Sewer Infrastructure Rehabilitation	61
Structures Rehabilitation	36
Total Invested	**$227**
Recommended Renewal Need*	**239**
Gap	**$(12)**
2012 to 2021	
Budget/Forecasted Investment:	
Drainage Neighbourhood Renewal	$489
Sewer Infrastructure Rehabilitation	142
Structures Rehabilitation	74
Total Planned Investment	**$705**
Recommended Renewal Need*	**613**
Gap	**$92**
2007 to 2021	
Total Gap	**$80**

*Adjusted for inflation

Over the period of 2007 to 2011, the Utilities invested $227 million in the sewer pipe renewal compared to the recommended amount of $239 million. The investment was split between the Drainage Neighbourhood Renewal Program ($130 million), sewer infrastructure rehabilitation ($61 million), and structures rehabilitation ($36 million).

The Utilities approved budget and forecasts for sewer pipe renewal investments shows it plans on spending $705 million between 2012 and 2021. The recommended amount is $613 million. By 2021, the Utilities will spend $80 million more than the consultant recommended on sewer pipe renewal.

Service connection renewal

Service connections are the pipes and connection points that join the City's main pipes to a private drainage system. Table 4 compares the actual, budgeted, and forecasted spending on service connection renewal between 2007 and 2021 to the recommended spending, which we adjusted to include inflation.

Table 4 – Historic and Future Service Connection Renewal Spending Analysis
(in millions of dollars)

	Amount
2007 to 2011 Actual Investment	$0
2012 to 2021 Budget/Forecasted Investment	193
Total Actual and Planned Investments	**$193**
2007 to 2021 Recommended Renewal Need*	726
Gap	**$(533)**

*Adjusted for inflation

Over the period of 2007 to 2011, the Utilities' focus was on sewer pipe renewal as it has a higher importance level to the drainage system as a whole and; therefore, they did not invest in the renewal of service connections. Going forward they plan on investing $193 million between 2012 and 2021. Therefore, the gap between the estimated renewal needs recommended by the 2006 study and what they plan on spending will be approximately $533 million.

The risk of not investing appropriately in sewer service connections is not as high system-wide as not investing in the sewer pipes. However, if a service connection fails it will result in service disruption to the customers, potential flooding due to sanitary back up, and increased costs in emergency repairs. The Utilities have begun developing a new long-term Service Connection Renewal Strategy. They plan on implementing a proactive program following the completion of this strategy in 2013. Management expects that the Strategy will recommend a more robust investment plan which may lead to adjustments to the current budgeted and forecasted investment amounts.

The ability to reinvest in capital infrastructure is a function of the financial capacity of the Utilities. Assessing the financial capacity of the Utilities was outside the scope of this audit. However, during the audit we identified ways to improve the efficiency and effectiveness of Drainage Operations. These are described in Section 5.2 of this report. When operational efficiency and effectiveness are increased the life of the sewer pipes may be extended. This can lead to a reduced amount of emergency repairs, which tend to be more expensive than planned renewal.

5.2. Drainage Operations

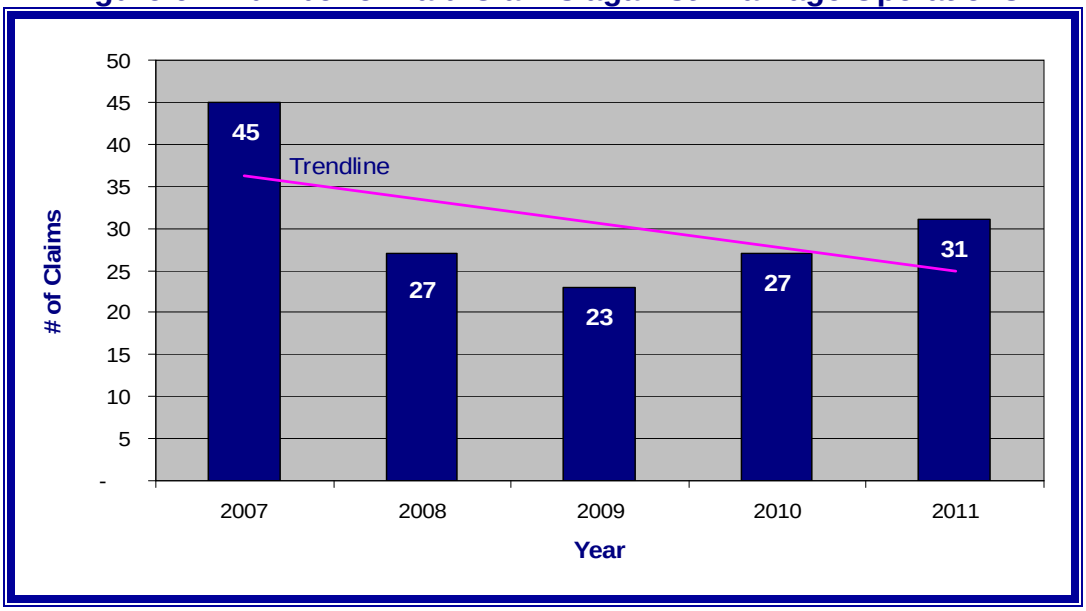
5.2.1. Effectiveness and efficiency of operations

Overall effectiveness

To assess the effectiveness of Drainage Operations we compared the results of the following performance measures over the past five years and against targets, if available. We could not compare the results to industry benchmarks as they are not available. We chose these measures because they represent how well Drainage Operations is achieving its intended purpose.

- **Number of paid claims against drainage operations**
  Claims against Drainage Operations occur when damage happens to third party property as a result of actions taken or not taken by Drainage Operations crews. For example, sewer backups in homes caused by mainline blockages, damage to vehicles caused by manhole covers, etc. Figure 6 shows the trend of this measure over the past five years.

Figure 6 – Number of Paid Claims against Drainage Operations

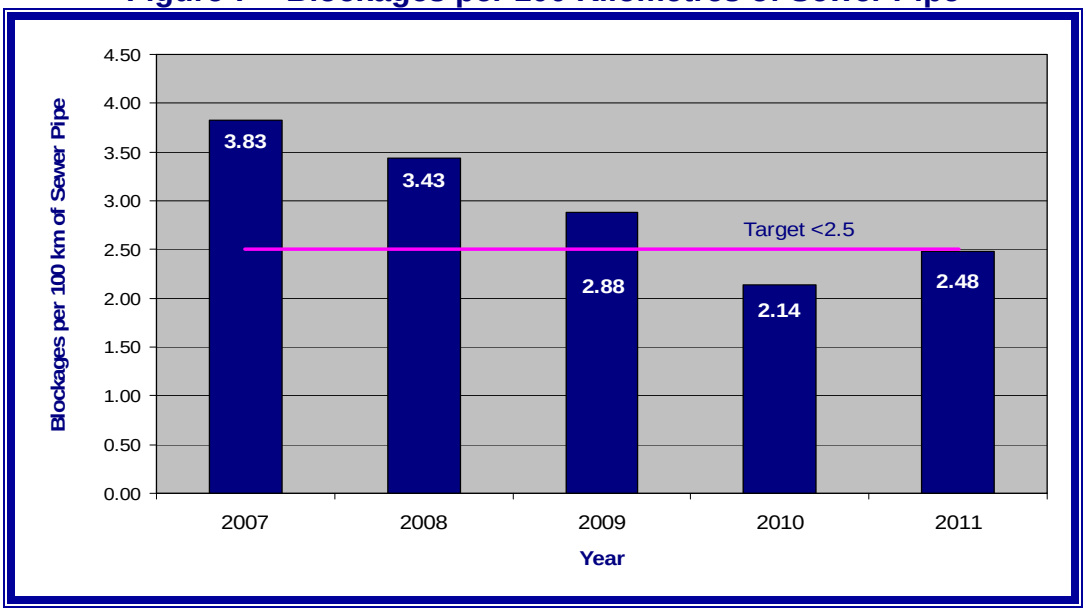


While the number of claims paid out has increased over each of the past three years, the number of claims paid out against Drainage Operations is decreasing over

time. Therefore, Drainage Operations seems to be improving effectiveness in maintaining and operating drainage infrastructure.

- **Blockages per 100 kilometres of sewer pipe**
  One of the purposes of Drainage Operations is to prevent blockages in the sewer pipes to reduce the risk of service disruption and related negative impacts to citizens. Drainage Operations targets keeping blockages under 2.5 per 100 kilometres of sewer pipe. Figure 7 shows the trend for this measure over the past five years.

Figure 7 – Blockages per 100 Kilometres of Sewer Pipe



Drainage Operations met its target to keep blockages under 2.5 per 100 kilometres of sewer pipe in 2010 and 2011. Therefore, Drainage Operations is improving its effectiveness at reducing the number of blockages that occur.

- **Customer satisfaction rate**
  Drainage Operations responds to numerous customer concerns and inquiries. An indicator of its effectiveness is how satisfied customers are with its response. In each of the past five years, over 99 percent of customers who responded to Drainage Operations Customer Satisfaction Survey Cards indicated they were satisfied with the service provided by Drainage Operations. Therefore, Drainage Operations is effectively addressing the needs of customers.

- **ISO 14001 certification**
  ISO 14001 is a set of standards used by organizations for designing and implementing an effective environmental management system. Its main aim is to assist companies in continually improving their environmental performance while complying with applicable legislation. As Drainage Operations is committed to protecting the environment, a measure of its effectiveness is that it maintains its ISO

14001 certification. Drainage Operations has maintained its ISO 14001 certification since 2005.

- **Number of pumpstation failures**
  Another one of the purposes of Drainage Operations is to ensure that the mechanical, electrical, and control systems within the pumpstations remain operational and functional. If these systems fail, it can result in basement flooding and unwanted releases to the environment. Data for this measure was only available starting in January of 2012. From January to July 2012 there was one pumpstation failure.

Based on the results of the above performance measures, we can conclude that Drainage Operations is generally improving its effectiveness. We have made five recommendations later in this report to help make Drainage Operations more effective.

Overall efficiency

To assess the efficiency of Drainage Operations we compared the results of the following performance measures over the past five years and against targets, if available. Similar to the effectiveness measures, we could not compare against industry standards as there are none available. We chose these measures because they represent how well Drainage Operations is using its resources to achieve its desired outputs.

- **Operating cost per metre of pipe**
  This measure shows how well Drainage Operations uses rate revenue to maintain and operate the City's pipes. It is the total annual operating cost of the Drainage Operations Group (in constant 2011 dollars) divided by the total length, in metres, of sewer pipe owned by the utilities each year. Figure 8 shows the trend of this measure over the past five years.

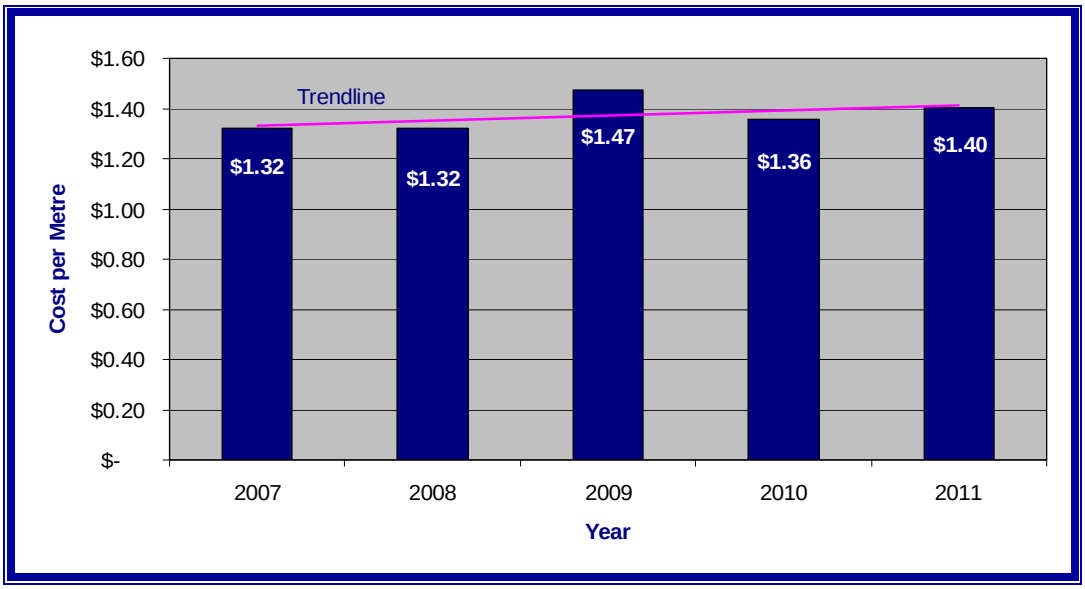
Figure 8 – 2011 Constant Dollar* Operating Cost per Metre of Pipe

* 2011 constant dollars determined using the City of Edmonton's municipal price inflation rate.

The operating cost per metre of pipe is increasing over time, even when taking inflation into account.

- **Maintenance cost per metre of pipe maintained**
  This measure shows how efficient Drainage Operations is at maintaining the wastewater mainline infrastructure. It is the annual cost associated with high-pressure flushing, low-pressure flushing, chain flailing, and mainline televising (in 2011 constant dollars), divided by the total length, in metres, of sewer pipe maintained each year. Figure 9 shows the trend of this measure over the past five years.

Figure 9 – 2011 Constant Dollar* Maintenance Cost per Metre of Pipe Maintained

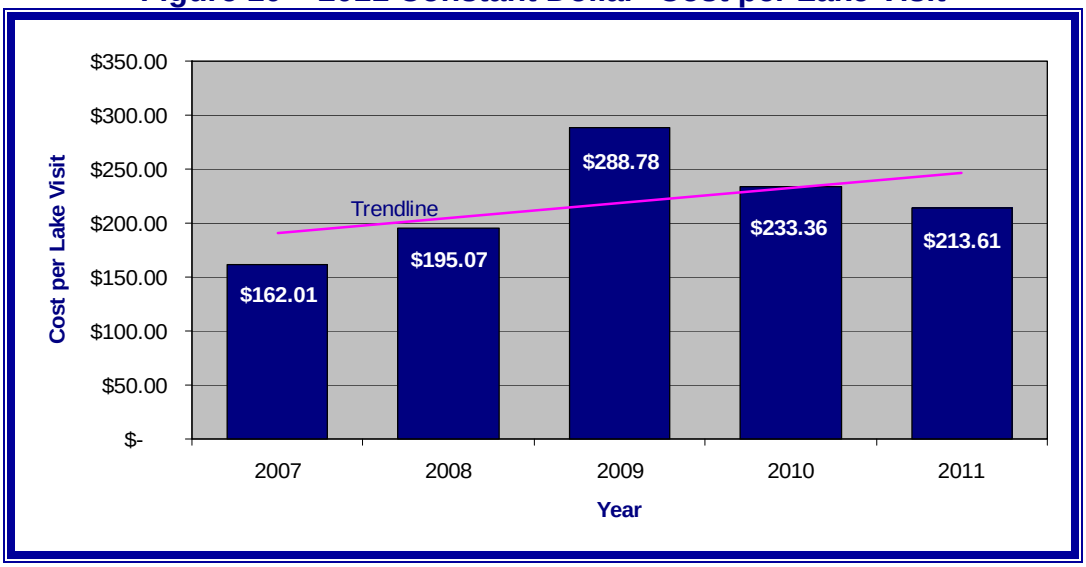


* 2011 constant dollars determined using the City of Edmonton's municipal price inflation rate.

The cost per metre to perform maintenance on the wastewater mainline infrastructure is increasing over time, even when taking inflation into account.

- **Cost per lake visit**
  One of the functions of Drainage Operations is to inspect and maintain lakes. This measure shows Drainage Operations' efficiency by assessing the cost to complete inspections and maintenance of lakes. It is the total annual costs associated with lake inspections and maintenance (in 2011 constant dollars) divided by the total number of visits to lakes to perform maintenance and inspections each year. Figure 10 shows the trend of this measure over the past five years in constant 2011 dollars.

Figure 10 – 2011 Constant Dollar* Cost per Lake Visit

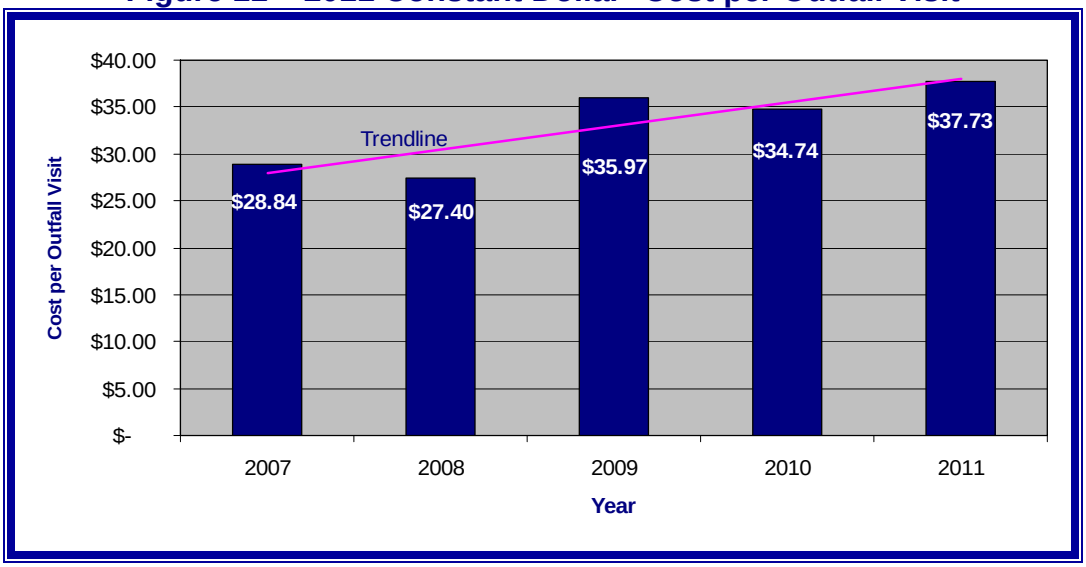


* 2011 constant dollars determined using the City of Edmonton's municipal price inflation rate.

Even though the cost per lake visit has been decreasing over the past three years, the cost per lake visit is increasing over time, even when taking inflation into account.

- **Cost per outfall visit**
  One of the functions of Drainage Operations is to inspect and maintain outfalls. This measure shows Drainage Operations' efficiency by assessing the cost to complete inspections and maintenance of outfalls. It is the total annual cost associated with outfall inspections and maintenance (in 2011 constant dollars) divided by the total number of visits to outfalls to perform inspections and maintenance each year. Figure 11 shows the trend of this measure over the past five years.

Figure 11 – 2011 Constant Dollar* Cost per Outfall Visit



* 2011 constant dollars determined using the City of Edmonton's municipal price inflation rate.

Drainage Operation's efficiency at inspecting and maintaining outfalls has been decreasing over time, even when taking inflation into account.

Based on the trends of the above performance measures, Drainage Operations has room to improve efficiencies. We have provided five recommendations to help improve efficiencies below.

Areas of Improvement

Drainage operations could enhance its efficiency and effectiveness in the following areas:

Data collection and analysis

Drainage Operations collects many types of data relating to its day-to-day activities. The collection and analysis of key data allows management to effectively manage and monitor their groups. We found the following areas where Drainage Operations could improve on the collection and use of data:

- **Accuracy of timesheets**
  Crews record the work they complete each day and the location of the work to specific job codes on an electronic timesheet. Management uses this data to track the work done and monitor operational effectiveness and efficiency. We found some crews were not recording work to the appropriate job code and some crews were not recording the work location visited on their timesheets. Also, Drainage Operations does not have codes for non-job-specific work such as time recording, equipment cleaning, morning meetings, etc.

  If staff are not accurately recording their work, management cannot properly analyze it for reasonableness and to find ways to improve effectiveness and efficiency. Management should ensure staff have codes available for non-job-specific work and that they are accurately completing their timesheets.

- **Equipment tracking**
  There are some groups in Drainage Operations that maintain critical equipment lists (such as a listing of all equipment valued at over $1,000) and others that do not. Without this listing, there is a risk that management may not know the extent of equipment that exists or its dollar value. Management should have accurate data on critical equipment they manage including the cost, serial numbers, and installation dates. They can use this data to ensure proper preventative maintenance scheduling, to track assets, and to detect losses.

- **Use of data**
  Some of the groups in Drainage Operations are collecting data but not using it to improve the efficiency and effectiveness of the group. For example:
  - Pumpwell Operations management collects data on when crews last visited pumpstations and lake control gates based on information from timesheets.

However, they do not use the data to determine the next locations requiring preventative maintenance and clean up. As a result, there is a risk that crews may not visit some stations in a timely manner to ensure things are in proper working order or they may be visiting others too frequently. This could lead to inadequate preventative maintenance and inefficient use of staff time.

We reviewed the data collected on pumpstation and control gate visits and found that crews had not visited 4 pumpstations and 69 control gates in over 100 days. Management should be using this data to determine which locations crews have not visited to ensure adequate preventative maintenance at each location.

- Environmental Services staff collect data on lake issues; however, they do not analyze the data on a regular basis. For example, staff collect data on algae issues for each lake. However, they only review a lake's algae data if an issue arises. By not analyzing the algae data regularly for all lakes there is a risk that management will overlook possible solutions to the root causes of algae issues. This could lead to increased use of chemicals or staff time to deal with algae problems. Management should perform regular analysis on important data to identify and implement potential improvements to increase operational effectiveness and efficiency.

- **Performance measures**
  Each of the Drainage Operation groups needs to develop indicators to assess the effectiveness and efficiency of operations. Pumpwell Operations and Environmental Services either have not determined which indicators to use or are not collecting the appropriate data to use.

Without ensuring that it is collecting the right data and using it appropriately, there is a risk that management cannot assess whether staff are completing work efficiently and effectively.

Recommendation 2 – Data Collection and Analysis

The OCA recommends that the Drainage Services Branch Manager ensures that Drainage Operations staff improve data collection and analysis and management monitoring by:

- Creating non-job-specific work codes and ensuring that staff accurately complete their timesheets;
- Collecting accurate data on critical equipment;
- Using the data they are collecting to improve efficiency and effectiveness; and
- Developing key performance indicators for each group.

Management Response and Action Plan

Accepted

Action Plan: Drainage Operations will improve its data collection, analysis and use by:

- Creating non job-specific work codes to capture start-up and maintenance activities and improving timesheet coding accuracy to better track work completed.
- Evaluating, identifying and implementing process and system improvements to more consistently manage the inventory and lifecycle maintenance data of critical equipment.
- Evaluating key performance indicators and other data collected by Drainage Operations in order to identify KPI's for each area, as well as opportunities to more effectively leverage information in the operation and maintenance of the City's drainage systems.

Planned Implementation Date: January 2014

Responsible Party: Manager, Drainage Services

Use of technology

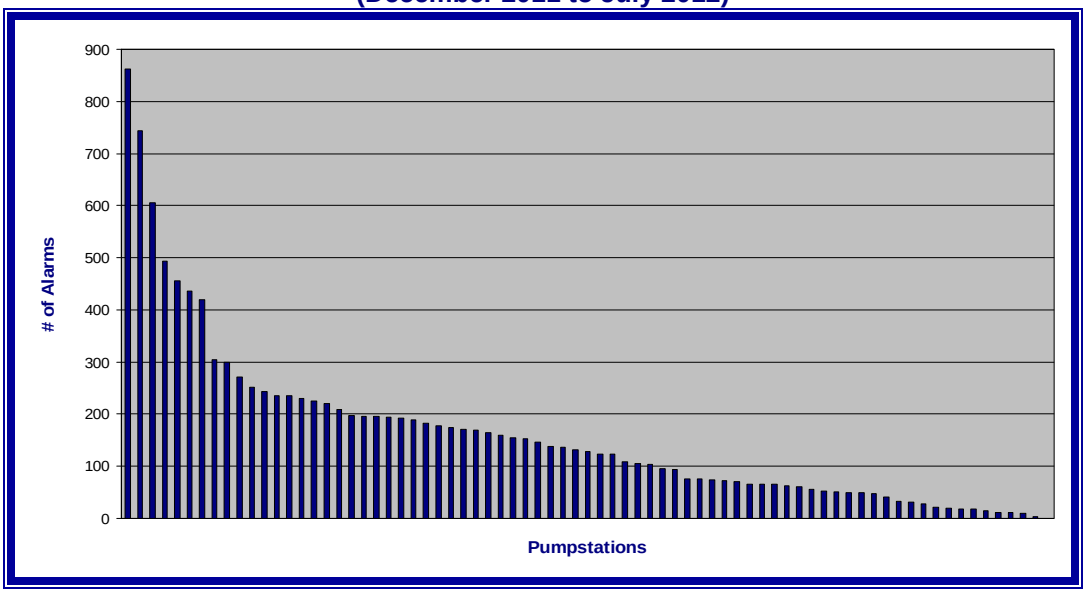
Drainage Operations uses technology for many of its processes. We found the following areas where Drainage Operations could enhance its use of technology to be more efficient and effective:

- **Timing of data entry**
  All staff are required to complete electronic timesheets to record the work they complete each day. Some staff use laptops to record their information immediately following the completion of work. However, other staff members write down the work they complete and then return early to the yard to enter the information electronically. Entering information twice (first on paper and then electronically) may lead to transcription errors and is time consuming. Drainage Operations should ensure all staff are entering electronic data in the most efficient and effective manner possible.

- **Data entry**
  We found that multiple people enter the same information into the time and work recording system. Staff enter information into an electronic timesheet. This information is then manually entered into the time tracking system by another staff member and entered again into the same system by the foreman to track the work completed. Three different people entering the same information three times increases the risk of errors and is time consuming. Drainage Operations should work with the IT Branch to identify a way to reduce the number of times the same information is entered into the system.

- **Pumpstation alarms**
  The Supervisory Control and Data Acquisition (SCADA) system monitors pumpstations electronically and sends an alarm to a control centre if it detects an issue. There are a variety of issues it detects including high or low water levels, pump run time discrepancies, door openings, etc. Depending on the complexity of the pumpstation, the reasons for alarms ranges from 1 to 84 per station. For the eight month period of December 2011 to July 2012 the SCADA system shows that there were 12,111 alarms triggered at the 75 pumpstations. Of these alarms, 1,118 (nine percent) required a crew to go to the pumpstation to address it. The number of alarms at each pumpstation varied from 0 to 862. Figure 12 shows the distribution of alarms at each pumpstation.

Figure 12 – Distribution of Pumpstation Alarms
(December 2011 to July 2012)



City staff monitor the alarms triggered in the SCADA system 24 hours a day. When an alarm is triggered, they assess the alarm and determine whether or not to notify a crew to address the issue. A lot of resources are being consumed assessing so many alarms when only nine percent required action by a crew. Management should review the reasons for the alarms and determine if they are all required, or rate the alarms (low-medium-high-critical) to decrease the amount of alarms that need to be assessed. Additionally, management should be reviewing the stations with the highest numbers of alarms and address the recurring problems.

Recommendation 3 – Improve the Use of Technology

The OCA recommends that the Drainage Services Branch Manager ensures that Drainage Operations staff improve the use of technology in the following areas:

- Staff enter electronic data in the most efficient manner possible;
- Work with the Information Technology Branch to try to determine a way to reduce

the number of times the same information is entered into a system; and
- Reduce the number of pumpstation alarms requiring assessment.

Management Response and Action Plan

Accepted

Action Plan: Drainage Services has been developing an Information Technology Strategy over 2012 in order to better leverage current technologies and identify new technologies to improve efficiency in the Branch. Under this Strategy, time sheet processing has been identified as an opportunity to improve efficiency and an improved process will be scoped out in 2013. Also, all SCADA pumpstation alarm systems are being reviewed to minimize the number of nuisance alarms and to reduce alarms requiring assessment. Only those alarms that need response will be sent to the Control Centre.

Planned Implementation Date:
- The initial phase of scoping improvements to time sheet reporting in the Information Technology Strategy will be completed in 2013. Until the needed technology enhancements have been identified, it is not possible to set an implementation date.
- The SCADA review will be complete by February 2013, and changes to alarms implemented throughout the course of 2013.

Responsible Party: Manager, Drainage Services

Optimizing use of staff time

Optimizing the use of staff time will help make Drainage Operations more productive by increasing the amount of work employees complete in the same amount of time. We found the following areas where Drainage Operations staff could be better utilized:

- **Preventative Maintenance route planning**
  The majority of Preventative Maintenance staff work in the field using vehicles owned by the Utilities. Crews are assigned work at the beginning of their shift and then determine the most efficient route to take to get to their assigned work location for the day. However, we found that not all crews were actually taking the most efficient routes. Some crews start each work day by visiting the same non-work-related location, even though the location was not close to being along the most efficient route to perform their work for the day. Not using efficient routes increases the amount of unproductive time for the crew and increases the use of fuel and wear and tear on the vehicle. Management should communicate to staff the importance of efficient route planning and monitor staff on a regular basis to ensure they are taking efficient routes.

- **Pumpwell Operations hours of work for crews**
  Pumpwell Operations crews work eight hours per day, five days a week. The crews start and end each day at the Drainage Operations yard to pick up and drop off their truck and to perform administrative tasks. Therefore, they spend a portion of their day (approximately one to two hours) driving from the yard to their work locations and back again. This is unproductive time. In order to reduce this time, management should assess the viability of increasing the number of hours the crews work each day, thereby decreasing the number of days they work each week. This could decrease the number of hours they spend driving to and from the yard each week.

- **Pumpwell Operations parts pick-up**
  Electricians and millwrights often purchase the equipment and parts they require to maintain and repair pumpstation equipment directly from the vendor. This requires them to drive to the vendor's location to pick up parts. However, we found that this often involves taking the entire crew of three people to the vendor, then going out to the job site. Having entire crews drive to vendors, wait to pick up parts, and then drive back to job sites is not an efficient use of staff time. Management needs to find a better process for obtaining the required parts to better utilize the time of all crew members.

- **Customer Service new job process**
  The process of assigning Customer Service crews to a new job location currently occurs after they have fully completed their first job, including the paper work. The crews call the Control Centre when they have completed their job and wait for the Control Centre to determine their next job. This process can often take some time as the Control Centre has to call each homeowner to determine whether they are home before they assign the job to the crew. Customer Services crews are therefore unproductive when they have to wait for the Control Centre to find them their next job. Management should change the process to better utilize Customer Services crew members' time.

Recommendation 4 – Optimizing Use of Staff Time

The OCA recommends that the Drainage Services Branch Manager ensures that Drainage Operations staff time is better utilized by:

- Communicating to Preventative Maintenance staff the importance of efficient route planning and monitoring on a regular basis to ensure they are taking efficient routes;
- Assessing the viability of changing Pumpwell Operations crews' hours of work;
- Finding a more effective way for Pumpwell Operations crews to obtain parts; and
- Changing the job assignment process for Customer Service crews.

Management Response and Action Plan

Accepted

Action Plan: Drainage Operations will ensure Supervisors are more proactive in optimizing and monitoring preventative maintenance routing using GPS tools. In addition, Drainage Operations is currently engaged in study with the University of Alberta to optimize preventative maintenance equipment routing.

Drainage Operations will evaluate alternative hours of work for Pumpwell Operations crews to assess if shift overlaps can improve efficiency.

Drainage Operations will optimize parts procurement for Pumpwell operations in order to create a more efficient process.

Drainage Operations has developed an improved job assignment process for Customer Services that is in the process of being implemented.

Planned Implementation Date: June 2013

Responsible Party: Manager, Drainage Services

Staff training and updating the Operational Handbook

Drainage Operations is not effectively determining and tracking the specific training requirements of each employee to ensure that all employees have taken required training. It also has not substantially reviewed or updated its Operational Handbook since the early 1990s. The Handbook outlines the work activities and position requirements for Drainage Operations staff.

We checked a sample of 20 employees to determine if they had all received their required training. As Drainage Operations did not have documentation relating to the specific training requirements for each employee, we met with their Supervisors, General Supervisors, and the Training Officer to determine their individual training requirements. We then compared those expected training requirements to the records of training kept by Drainage Operations and found the following:

- Three employees have not taken Respectful Workplace training, which is required for all City staff;
- Six employees have not taken required first aid or confined space entry updates or refresher training;
- One employee has not taken required Foreman training; and
- One employee has not taken Defensive Driving training, which is a requirement of holding a City driving permit. We expanded this sample to look at all Drainage Operations staff members who hold a City driving permit and found that 23 out of 148 had not taken Defensive Driving training.

There is a risk that without a complete listing of training requirements, management would not be able to ensure that all staff have received their required training. If staff are not receiving required training it could lead to them being unable to perform their jobs effectively or at all. Staff may also lose or forget the knowledge they acquired the last time they took the training with potential impacts on health and safety.

As well, we found that job expectations and details of the different work activities required of each position contained in the Operational Handbook are no longer relevant. Therefore, management cannot use it to help train staff or determine their training requirements. They also cannot use the procedures to support the City's position on reasonableness of work performed when claims by citizens or businesses arise.

Recommendation 5 – Staff Training

The OCA recommends that the Drainage Services Branch Manager ensures that Drainage Operations staff develop a process to effectively determine and track the specific training requirements of each employee and ensure all employees are receiving their required training. As well, they should update the Drainage Operations Operational Handbook to reflect current job expectations and details of different work activities.

Management Response and Action Plan

Accepted

Action Plan: Drainage Operations utilizes a software application (Intelex) to track training requirements and will improve its process to more proactively track training requirements to ensure all employees are receiving their required training at the appropriate time. The Drainage Operations Operational Handbook is currently being updated.

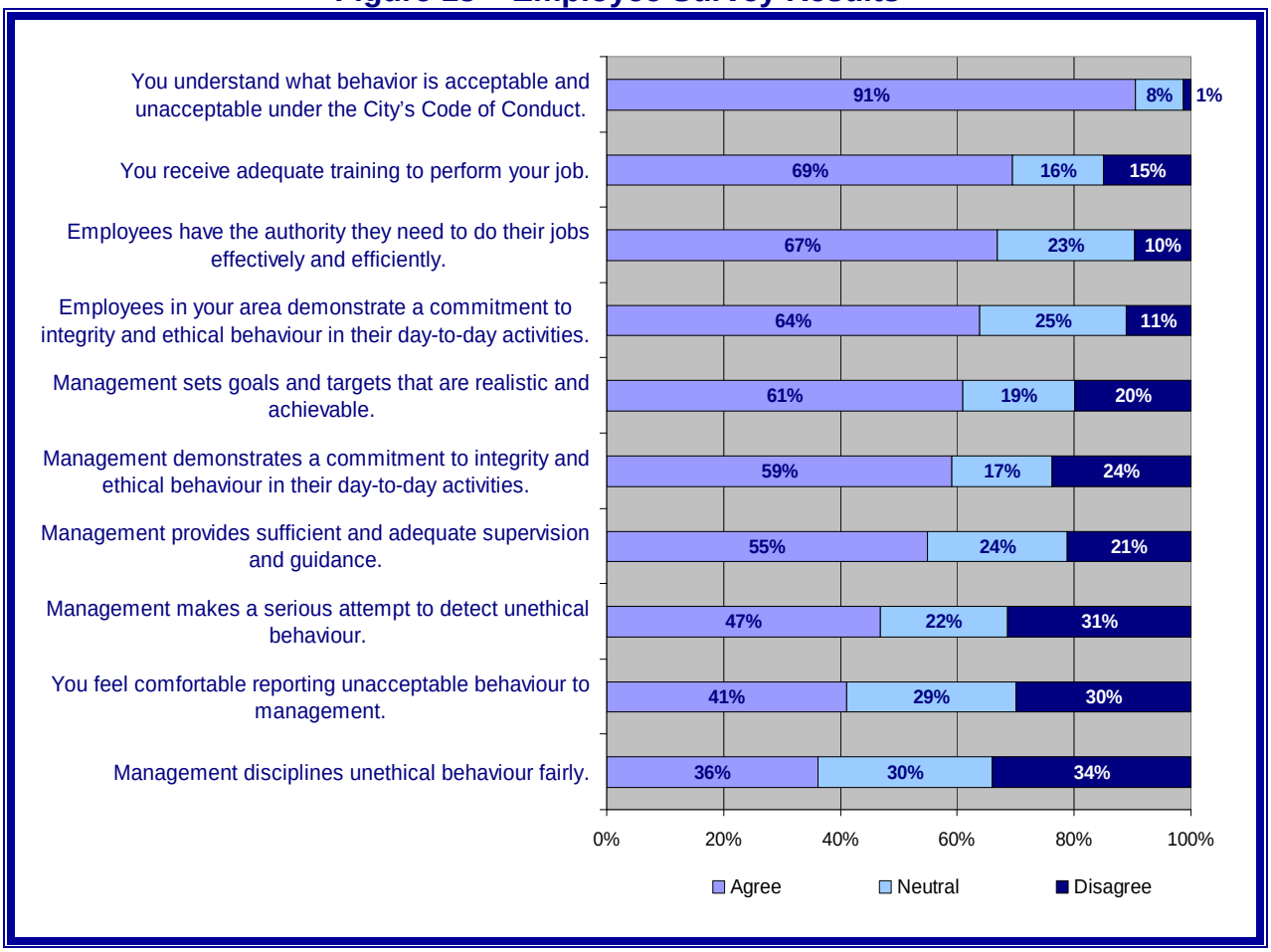
Planned Implementation Date: September 2013

Responsible Party: Manager, Drainage Services

5.2.2. Workplace environment

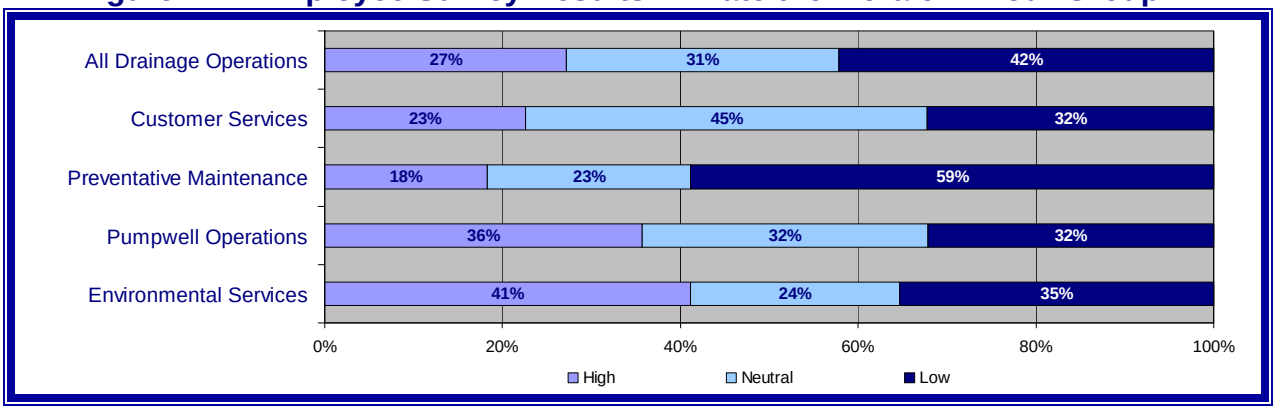
In May 2012 we surveyed Drainage Operations staff to determine if they believe Drainage Operations has a workplace environment that promotes ethical behaviour and a responsible workforce. Figure 13 shows the results of the employee survey.

Figure 13 – Employee Survey Results[6]



We also asked employees to rate the morale in their group. Figure 14 shows the responses to this question.

Figure 14 – Employee Survey Results – "Rate the Morale in Your Group"



[6] There were 152 people who completed the survey (88 percent of Drainage Operations employees). We did not ask the Drainage Operations Leadership Team (5 people) to respond to our survey.

There are three statements that less than 50 percent of staff agreed with:

- "Management disciplines unethical behaviour fairly";
- "You feel comfortable reporting unacceptable behaviour to management"; and
- "Management makes a serious attempt to detect unethical behaviour".

As well, only 27 percent of Drainage Operations staff rated employee morale in their group as high. There was also a large percent (31 percent) of staff who rated employee morale as neutral.

The results of the survey show that management of Drainage Operations needs to improve how they are promoting ethical behaviour, how they are creating a responsible workforce, and employee morale.

We interviewed Drainage Operations management to determine how they promote ethical behaviour in the workplace and how they deal with complaints or allegations of unethical or unacceptable behaviour. We found that management has recently reviewed the Code of Conduct with all employees. This is evident by the fact that 91 percent of staff agreed that they understand what behaviour is acceptable and unacceptable under the City's Code of Conduct. However, we also found that management is not using a consistent process to handle initial complaints, allegations, or suspicions of unethical and unacceptable behaviour (fraud and misconduct) coming from staff. This is because they have not developed an effective process for supervisors to follow. This may be contributing to the low ratings relating to the three statements listed above.

The City has the Fraud Directive that includes specific instruction on how to deal with allegations and suspicions of fraud. Any allegation or suspicion of fraud should be reported to the City Auditor immediately. The City also has the Employee Code of Conduct Administrative Directive that provides employees guidance on how to deal with initial allegations and suspicions of misconduct. It allows supervisors to exercise their own discretion in determining what issues they resolve and what issues they escalate to senior managers.

When management does not handle allegations and complaints of unethical or unacceptable behaviour consistently, staff may be reluctant to bring forward issues or feel management is not satisfactorily promoting an ethical workforce. This may also be having a negative impact on employee morale.

Recommendation 6 – Workplace Environment

The OCA recommends that the Drainage Services Branch Manager ensures that Drainage Operations management develop and implement a process for dealing with initial complaints and allegations of unacceptable or unethical behaviours from staff that complies with the City's Administrative Directives.

Management Response and Action Plan

Accepted
Action Plan: Drainage Operations is developing and implementing a process for dealing with complaints and allegations of unacceptable or unethical behaviour that is consistent with City policy.

Planned Implementation Date: June 2013

Responsible Party: Manager, Drainage Services

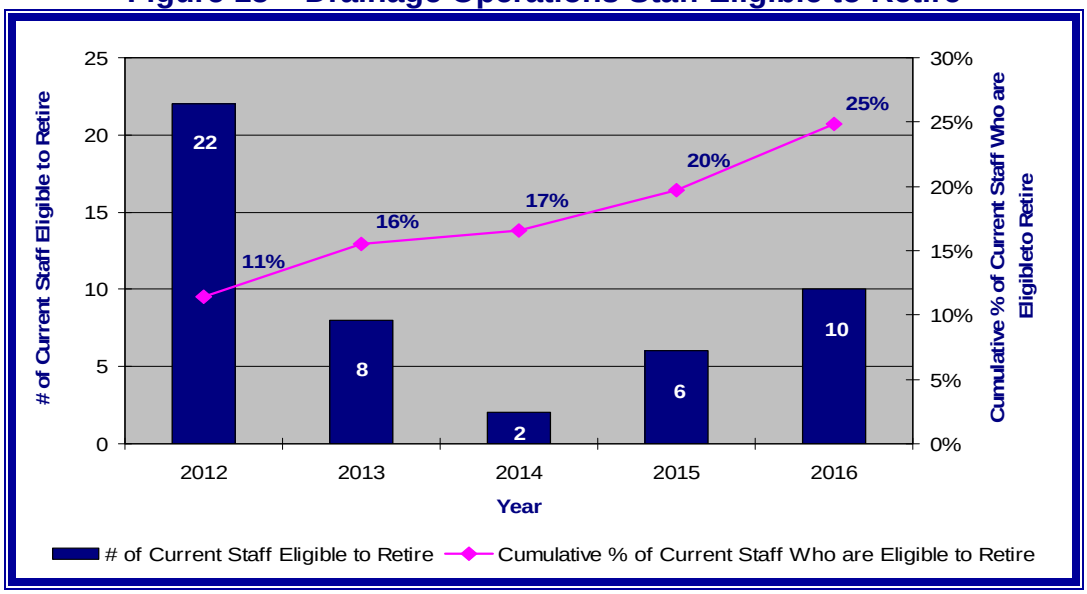
5.2.3. Succession planning

Drainage Operations has reliable data to predict future staff requirements due to potential retirements, but they do not have a formal process to address these requirements.

Drainage Operations management obtains its workforce data from the Human Resources Branch. The Human Resources Branch provides them with a list of staff who will be eligible to retire in the next five years. Management also gathers workforce data directly from their employees. This includes determining when employees nearing retirement eligibility are planning on retiring.

Figure 15 shows the number of people eligible for retirements and the cumulative percentage of current staff eligible to retire in each of the next five years.

Figure 15 – Drainage Operations Staff Eligible to Retire



Drainage Operations may lose a significant number of its current staff (approximately 25 percent) in the next five years due to retirements. The General Supervisors of each

group are using different methods to help address some of their specific future staffing needs. These include cross-training staff, increasing the number of apprentice positions, providing experience through acting positions, and identifying Branch staff who have the capacity and knowledge to move into a specific role. However, Drainage Operations management does not have a formal process in place to address their future staffing needs. Without a formal process, Drainage Operations may not be able to ensure it maintains its current level and quality of service to Edmontonians.

Recommendation 7 – Succession Planning

The OCA recommends that the Drainage Services Branch Manager ensures that Drainage Operations management develop a formal process to regularly identify and record all workforce needs and develop strategies to meet those needs.

Management Response and Action Plan

Accepted
Action Plan: Drainage Operations has identified succession planning needs across all positions and will record and track this information on a formal basis. Management is currently engaging all staff to identify specific career intentions, and is working with staff to aid in career development, including cross training opportunities. All staff nearing retirement age will continue to be regularly engaged to understand their future plans.

Planned Implementation Date: June 2013

Responsible Party: Manager, Drainage Services

6. Conclusion

The first objective of this audit was to determine whether drainage planning is performed effectively. We found that the Drainage Planning Section is performing effectively. However, we made one recommendation to improve its communication and integration with other City Departments and within the Drainage Services Branch.

The second objective of this audit was to determine whether drainage operations are performed in an effective and efficient manner. The results of the various performance measures we reviewed indicate that drainage operations are generally effective. However, there is room to improve on efficiencies. We also found specific areas for improvement through our fieldwork.

We made five recommendations to improve or enhance the effectiveness and efficiency of operations. The recommendations relate to: improving data collection and analysis, improving the use of technology, optimizing the use of staff time, determining and tracking staff training requirements and updating the Drainage Operations Operational

Handbook, and developing a formal process to deal with initial complaints and allegations of unacceptable or unethical behaviour from staff.

The third objective of this audit was to determine whether the Drainage Operations Section has a system in place to address future staff requirements. We found that Drainage Operations has reliable data to show future staff retirements but recommended that they develop a formal process to address these requirements.

We thank the Drainage Service Branch staff and management for their assistance and cooperation throughout this audit.

Drainage Services Audit

Management Response

Recommendation:
That the February 19, 2013, Financial Services and Utilities report 2012DS4205 be received for information.

Report Summary

This report provides a status update on Administration's implementation of the City Auditor's recommendations.

Report

Administration worked closely with the Office of the City Auditor in its efficiency and effectiveness audit of the Drainage Services Branch and supports the Auditor's recommendations. The Drainage Services Branch is on schedule to implement each of the recommendations as set out in management's response to the Audit report. The following summarizes management's response to the Audit recommendations.

1. Integration and Communication with Stakeholders
   - Communication is a city-wide challenge. Although Drainage Planning communicates effectively overall, the section will enhance integration with internal stakeholders by working to identify the needs of each area.

2. Data Collection and Analysis
   - Drainage Operations will improve its use of data by improving start-up and maintenance activity tracking; more consistently managing inventory and lifecycle maintenance of critical equipment; and expanding the use of key performance indicators in operations and maintenance decision making.

3. Improve the Use of Technology
   - Drainage Services has developed an Information Technology Strategy in 2012 to better leverage current technologies and identify new technologies to improve efficiency in the Branch. Implementation of the Branch wide Strategy is commencing in 2013 including enhancements identified within the Drainage Services audit.

4. Optimizing Use of Staff Time
   - Drainage Operations will ensure Supervisors are more proactive in optimizing and monitoring preventative maintenance routing using GPS tools. Concurrently, Drainage Services is completing a study to optimize crew routing and enhance operational efficiency.

5. Staff Training
   - Drainage Operations utilizes a software application to track training requirements, and will more proactively ensure all employees are receiving the minimum required training.

6. Improve Workplace Environment
   - Drainage Operations is developing and implementing a process for dealing with initial complaints and allegations of unacceptable or unethical

behaviour that is consistent with City policy.

7. Succession Planning
   - Drainage Operations has identified succession planning needs across all positions and will record and track this information on a formal basis. Management is currently engaging all staff to identify career plans and cross training opportunities.

Corporate Outcomes

- The Way Ahead: Edmonton's Strategic Plan 2009-2018
- Ensure Edmonton's Financial Sustainability

Others Reviewing This Report

D. Edey, General Manager, Corporate Services

Attachments

1. Drainage Services Audit Action Plan