



Ditch Alteration Business Process Review

Technical Memo #3

March 23, 2022

FINAL

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1.0 INTRODUCTION

1.1 Project Overview

Roadside ditches are critical infrastructure of the City of Ottawa's overall engineered drainage network along municipal streets that have a rural cross-section. They exist throughout the city in various urban, village, and rural contexts. Ditches provide an important stormwater management function within the drainage network via quantity collection and conveyance controls. In addition to assisting in the collection and conveyance of run-off from adjacent lands, roadside ditches provide a roadway drainage role that assists in preserving the longevity and integrity of the adjacent roadways which are themselves vitally important municipal infrastructure. However, the purpose and multiple benefits derived from a well-maintained, functioning municipal roadside ditch network is not widely understood by residents.

The City of Ottawa, through staff across a wide variety of services including Roads, Right of Way, Development Review and Asset Management, receives regular requests from property owners requesting to alter or fill in the ditch within the municipal right-of-way adjacent to their property. The rationale for such requests is typically either to reduce maintenance or to improve aesthetics along the street lot line. In some cases, improper ditch filling or alteration activities are completed by property owners, without municipal review and authorization. Improper ditch filling or alteration may cause an array of detrimental effects to private property or to City infrastructure, both locally as well as to the extended drainage system, and at times requiring remedial action by the City.

The City has retained Parsons to provide a professional and objective third-party review of the matter of ditch filling and alterations. The work includes preparing a series of memorandums focused on ditch function and impacts of ditch alterations, a ditch alteration policy consistency review, and a City of Ottawa alterations business process review.

Following the completion of research and dialogue held with working group meetings of key City of Ottawa staff, it was recognized that the City's approach to Local Improvement and Ditch Alteration could be improved. There is an opportunity to increase consistency and transparency, as well as to better serve and educate property owners about the importance of ditches in protecting public and private property from damage and degradation.

1.2 Objective of this Technical Memorandum

The objective of this technical memorandum is to use the information gathered within Technical Memo #2 – Ditch Alteration Policy Consistency Review to provide an informed solution for ditch alteration in the City of Ottawa. The AECOM report and the City of Markham documentation, as well as other municipality information presented in Technical Memo #2 will be used as background information to recommend and support the solution. Recommendations to revise and streamline the current Ditch Alteration Policy and associated business processes will be presented via the analysis of strengths, weaknesses, opportunities and threats associated with implementing a ditch infill program, completed within Technical Memo #2. This memo also provides recommendations to the City for the transition from current practices to future recommended practices, including a recommendation for monitoring the policy. In conclusion this memorandum provides the principles for a full cost recovery model to cover the cost of the strategies and recommendations identified within this memorandum.

2.0 DITCH ALTERATION POLICY REVISIONS

The AECOM report Annex #3: Level of Service Framework – Roadside Ditches (Feb. 2019), referenced within Technical Memo #2, provides a very detailed review of the current City Ditch Alteration Policy (Policy). The report also identifies the strengths, gaps, additions, risks, proposed approach, conclusion, and recommendations. This information was used to guide the information provided within this section of the memorandum.

2.1 Strength, Weaknesses, Opportunities, and Threats (SWOT) Analysis Matrix

2.1.1 Strengths

The AECOM report highlights the City’s Ditch Alteration Policy strengths. Parsons is in general agreement with the report findings.

First and foremost, the City has a Policy that a vast majority of Ontario municipalities do not have. The City of Markham has, since the AECOM memorandum, created a Ditch Alteration Policy, and uses the same City of Ottawa Policy wording.

The City of Ottawa Policy’s strength is that it provides a guidance for approvals, scope, technical requirements, contraventions, enforcement, for ditch alterations. The requirement of an engineering assessment within the Policy clearly uses stormwater management best practices and states how the Policy will support them.

The City recognizes that the Policy does not fully address the current ditch alteration challenges being encountered within the City and is looking to focus on making the necessary amendments. Included in this Policy review is the review of best practices used in other Canadian municipalities or jurisdictions to update and improve the current Ditch Alteration Policy.

Lastly the City’s Policy is in alignment with Provincial Regulations, Municipal Plans and Strategies, By-laws, and specifically the Ontario Water Resources Act (1990), Local Improvement Charges – Priority Lien Status, Ontario Regulation 586/06 (2012), and Ontario Municipal Act (2001).

2.1.2 Weaknesses

Although there are strengths to the City’s Policy there are areas of weakness that can be improved upon.

As per the AECOM report one of the weaknesses or gaps within the current Policy is the fact that it is missing a Strategic Goal and there is some contradicting information between the Policy and the City’s overall stormwater management goals and subwatershed plans. See **Table 1** from the AECOM memorandum detailing this weakness.

Gaps	Notes
Strategic Goal	<p>The City’s background paper states the strategic goal of the policy as:</p> <p><i>“allow ditching filling where technically feasible based on catchment wide analysis and without detrimental impacts to public or private property, or to the quantity and quality of drainage”.</i></p> <p>This is a strong statement that clearly states the City’s desire to approve ditch alteration requests wherever possible. This statement does not match the purpose stated in the Policy, which is:</p> <p><i>“create an established process in order for the City to be better able to meet its obligations and expectations of property owners with respect to managing potential storm drainage conveyance issues associated with ditch alteration. Respecting an established process will allow ditch alteration in a controlled and consistent manner”.</i></p> <p>If the City wishes to establish a strategic goal of the Policy as well as a purpose, a Strategic Goal should be stated within the Policy. At present, there is no Strategic Goal. If the City views these as two separate items, this would be considered a gap in the current policy. As well, the City should ensure these two statements are aligned with one another.</p> <p>It is also important to note how these strategic goals are aligned with the City’s overall stormwater goals and subwatershed plans. Some of the City’s subwatershed plans call for lot-level green infrastructure such as swales and rain gardens. The infilling of ditches could be seen as contradicting these objectives.</p>

Source: AECOM Technical Memorandum #1, Stormwater Maintenance Reviews, Feb 2019

Table 1: Ditch Alteration Policy Strategic Goal

In both the City of Ottawa Policy and the Markham Policy the words “ditch” and “swales” are not clearly defined, and they are used interchangeably. The Markham Policy does not have a separate definition for “swale” although they do define “ditch” and “roadside ditch”. Parsons agrees with the AECOM recommendation that the Policy

should differentiate between ditches along the roadside (property frontage) located in the public road allowance, and swales typically located at the side and rear yards located within City easements. The Policy does state that both ditches are covered by the Policy although each of these systems will be addressed quite differently. It is recommended that a clear differentiation between the two will be needed to ensure that the public and City staff understand the process requirements for alteration of either.

A weakness that was noticed when reviewing the Markham Policy is that their Policy directly addresses existing ditch infill. See **Table 2** taken from the Markham Policy. The City of Ottawa’s approach to existing ditch alteration is divided to before and after the adoption of the policy. Alterations completed before are to be addressed through a progressive approach of the City identifying and providing written notice to the property owner of the removal to be completed by the City. Alterations completed after the Policy adoption are enforced through the Site Alteration By-law.

<p>C. EXISTING DITCH INFILL</p> <ol style="list-style-type: none"> 1. Any existing ditch infill within the Municipal Road Allowance deemed to be negatively impacting municipal assets or the collection and/or conveyance of stormwater along its length or within the surrounding area shall be removed and replaced by an appropriately sized open ditch. 2. Any existing ditch infill culvert identified as collapsed or having experienced a structural failure be permanently removed and replaced with the appropriately sized open ditch. 3. In the event of removal and ditch channel reinstatement, there will be no compensation to Owners who may have financed the original installation of a ditch infill adjacent their property. 4. In the event that a situation or condition arises which requires the City to remove, either in whole or in part, the piping and/or fill materials, the drainage system will be reinstated to an open ditch condition. No compensation for the previously installed works will be provided.

Source: Markham Roadside Ditch Alteration within the Public Road Allowance Feb 2020.

Table 2: Markham Policy Existing Ditch Fill

An additional gap that was noted within the AECOM memorandum and which should be noted here is regarding the key principles of the Ditch Alteration Policy. **Table 3**, taken from the AECOM report, details this gap and how to address it.

Key Principles	Key Principles (Section 7.1) of the Policy lists the principles of stormwater management that define the Policy and the ditch alteration permitting process, but does not state principles that guide the City’s approach from a customer service standpoint. Customer and City values should also be provided in the Key Principles (Section 7.1) if they guide the approach to the Policy. For example, in Section 7.2 (General Process Requirements), it is stated that the “approach will capitalize on economies of scale, minimize disruption, and provide consistent levels of service to adjacent properties”. This should be stated within the Key Principles. Key Principles should be matched to the City’s approach to approvals and enforcement (for example, if a no tolerance approach is taken, explain why this ensures fairness to all home owners from a standpoint of customer values).
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Source: AECOM Technical Memorandum #1, Stormwater Maintenance Reviews, Feb 2019

Table 3: Ditch Alteration Key Principles Gap

2.1.3 Opportunities

The City of Ottawa has the opportunity to become the leading Canadian municipality in ditch alteration policies with implementation and cost recovery. Information detailed in Technical Memorandum No. 2 demonstrated that the City of Ottawa is already more advanced than other municipalities when it comes to ditch alteration, and with additional implementation the City can continue to be a leader.

There is an opportunity to integrate the findings of this ditch alteration study with the City’s overall Infrastructure Master Plan (IMP) which is currently under development. A policy statement within the IMP may strengthen the

City’s position in terms of implementing the ditch alteration policy. There is also an opportunity to coordinate stakeholder engagement activities.

2.1.4 Threats

Parsons agrees with the AECOM memorandum, Annex 3, 6.2.7.4 Risks, which identifies the risks associated with the current approach and their potential negative impact associated with the current Ditch Alteration Policy (Table 4).

The Ontario Ministry of the Environment, Conservation and Parks has recently published the Low Impact Development Stormwater Management Guidance Manual, *Draft for Consultation January 2022*. This new manual establishes runoff control targets, and while these are not currently a regulatory requirement the City should be aware of these continuing efforts, and potential implications such as amended stormwater management design criteria, increased monitoring, and data collection to ensure compliance.

Risk	Details
<p>Upcoming Environmental Legislation</p>	<p>As explored during 3.2-Regulatory Requirements, the Ontario Ministry of the Environment is currently evaluating the regulation of stormwater management with the potential of establishing requirements for infiltration and volume reduction. When updating the Policy, the City should understand how increased volume reduction targets could impact the current approach to alteration approvals (for example, would there be more instances where alterations could not be approved if the City needs to meet a newly regulated infiltration target in the future).</p>

Source: AECOM Technical Memorandum #1, Stormwater Maintenance Reviews, Feb 2019

Table 4: Ditch Alteration Risks

3.0 TRANSITION RECOMMENDATIONS

Before creating a planned approach for streamlining the ditch alteration approval process it is recommended that the current process and approach be outlined and detailed. The questions that should be asked and answered are: 1. What is the current City process for a request for a ditch alteration; 2. What is the process to address a City complaint received for an existing or ongoing ditch alteration; and 3. What is the process for the discovery and response to an existing unapproved ditch alteration? The answers can then be documented and used for the following transition recommendation plan.

3.1 Stakeholder Matrix and Communication Plan

The City has prepared a Public Engagement Strategy (work in progress) to ensure that all residents can take part in the development of a city-wide Ditch Alteration Policy and that the Policy is understood by residents and protects the city’s stormwater infrastructure. The City of Ottawa’s Engagement Guidelines have been adopted in this Engagement Strategy and the strategy objectives are as follows:

1. Ensure the engagement outreach is far reaching and includes all City of Ottawa residents.
2. Inform, educate, and consult the public in the development of the Ditch Alteration Policy options.
3. Apply equity, inclusion, accessibility, and diversity lenses throughout the engagement process.
4. Provide regular and frequent updates on project milestones and include a loop-back mechanism on all engagement activities.
5. Seek a diversity of input from different demographics and communities as they experience the impacts of the project in different ways.

This document includes a list of existing and future internal and external stakeholder involvement. This list is further detailed within the City Project Charter: Policy and Business Review of Local Improvement and Ditch Alteration (May 2019). This will help to manage and communicate with stakeholders in an effective manner when determining the implementation process. Additional discussions should take place with each stakeholder and a stakeholder matrix can be created, such as shown in **Figure 1**.



Source: Adapted from Mendelow, A.L. (1981). 'Environmental Scanning - The Impact of the Stakeholder Concept,' ICIS 1981 Proceedings, 20.

Figure 1: Stakeholder Matrix Prioritization

The stakeholder matrix may lead to an amendment to the communication strategy and determine the levels of communication for each stakeholder including the mode of communication, the level of communication, as needed, daily, weekly, monthly, etc.

3.2 Background and Existing Information Assessment

The City has completed a study, Technical Memorandum # 1 - Stormwater Maintenance Reviews, Levels of Service Framework prepared by AECOM February 2019, determining the current Level of Service Framework for the City's existing storm water collection, facility, and roadside ditch systems. The memorandum summarizes the City's current desired level of service, and options for the future.

In April 2020, the City completed a second study, Low Impact Development Screening Tool for Municipal Right-of-Ways. The report includes a background review of previous right-of-way (ROW) retrofit projects, processes, and screening tools to aid in the creation of a retrofit screening tool for the City. This report evaluates individual watersheds within the City of Ottawa and provides a quality control rating and evaluation score.

Both the technical memorandum and the report can provide background information for ditch alteration assessments. This information will aid in determining the need for the level of additional engineering assessment for allowable ditch alteration.

3.3 Recommended Options for Change

The review of the existing process and documentation of the existing City of Ottawa ditch systems will provide a base for preparing recommended options for updating the existing Policy including the implementation of the process.

The options should include items from the SWOT listed in the earlier sections of this memorandum, and the following at minimum, on an as needed basis.

- An update and enhancement to the communication of the Policy to the public
- Determination of a Strategic Goal
- How a linkage can be established between the Site Alteration By-Law and the Ditch Alteration Policy to provide a clearer understanding for the public
- Establishing the responsibility of the customer
 - Establish clear instruction and a path forward for the customer on how to proceed with a ditch alteration
 - The customer needs to be left with clear expectations

- The requirements for additional technical assessments
- Set clear rules and boundaries for the implementation of the Policy
- Highlight the City goals for the sub-watershed plans and future provincial requirements
- Create and implement a site alteration permit screening application that can be complete by the public that are looking to have ditch alteration completed (e.g., the Burlington Site Alteration Permit Screening Information application as authorized by By-law 64-2014).
- Ditch alteration options such as low impact development (LID), should be considered as a Tool when looking at a systemwide approach to ditch alterations. The design and implementation of LIDs should be undertaken with reference to the Ontario Ministry of the Environment, Conservation and Parks Low Impact Development Stormwater Management Guidance Manual, *Draft for Consultation January 2022*.

3.4 Project Management Plan for Implementation

Once the selection of the preferred options is agreed upon, a Project Management Plan should be created to lay out the path forward for implementation. The Plan should include a detailed scope of work that is required. This should also include a work breakdown structure, and what is in scope and out of scope.

The Plan should include the existing stakeholder and communication plan, a breakdown of the different action items, a schedule for completion of these items and any cost associated with them. Once the Plan is prepared the implementation may begin.

4.0 MONITORING RECOMMENDATIONS

The information gathered within the Stakeholder and Communication Plan, as well as the background information assessment, will aid in guiding the monitoring and policy reinforcement plan. Based on the information reviewed within Technical Memo #2, the method for implementation within other municipalities is not publicly shared. Additional research into how other municipalities monitor their policy adherence would provide beneficial information.

It is recommended that a Monitoring Plan be developed that will include regular monitoring of the existing ditch systems as well as any existing altered or new altered systems. The Plan should include at minimum a set of items that should be monitored to ensure that the stormwater management system is still working as designed and any unknown changes to the system.

5.0 NON-COMPLIANCE AND ENFORCEMENT

The City of Ottawa currently does enforcement through the Use and Care of Roads By-law and states the By-law shall be administered and enforced by the Chief of Police or designated municipal by-law enforcement officers of the City. Any person who contravenes any provision of this part of the By-law is guilty of an offence and on conviction is liable to a fine to the maximum allowable under the provincial Offences Act. The City may recover all expenses, including administration fees, from the property owner or it may collect them in like manner as municipal tax.

The City of Ottawa Site Alteration By-law provides another mechanism for establishing non-conformance and enforcement. This By-law assigns enforcement to the General Manager (defined as either the General Manager of the Public Works Department or the General Manager of the Planning, Real Estate and Economic Development Department of the City of Ottawa, or both, as specified in the By-law, or his or her designate). The Site Alteration By-law provides the mechanism for notice of violation, corrective work order, service of orders, default and remedial action and offences and penalties (Sections 15 through 23). Under Section 21 of this By-law *Every person who is convicted of an offence is liable to a minimum fine not exceeding \$500 and to a maximum fine not exceeding \$100,000, pursuant to subsections 429(1) and (3) of the Ontario Municipal Act.*

Additional information on the cost recovery procedure (Ontario Regulation 586/06 Section 36) can be found in **Appendix A**.

Section 19 of the *Site Alteration By-law* details Default and Remedial Action. The current process involves a Notice of Violation pursuant to Sections 15(1) and 17(1). This involves a determination that a violation has occurred and a Corrective Work Order outlining the necessary works to correct the contravention and a date by which the work must be done. Should the corrective works not be undertaken by the Property Owner, the City may enter upon the Property and complete these works and recover all costs (including soft costs) by adding to the tax roll and collecting them in the same manner as property taxes. These Costs (including an interest set at 15%) constitute a lien on the property and will only be discharged when all costs (including interest accrued) have been received.

While the Use and Care of Roads By-law relates to activities within the municipal road allowance, the Site Alteration By-law is meant to protect agricultural resources and natural heritage features from the negative impacts by site alteration, and to prevent drainage issues and public nuisances resulting from site alteration activities. Both By-laws consider ditching (for the conveyance of storm water runoff from public and private properties) and provide the interpretation of non-compliance and enforcement.

Section 10.1 – Ditch Alteration (Before Adoption of the Policy) of current Ditch Alteration Policy (July 2008) states that *Non-compliant or unauthorized ditch filling that was installed before adoption of the Ditch Alteration Policy will be managed through a progressive approach starting with written notice to the property owner that the installation will need to be removed upon the City identifying at its discretion; i) a potential detrimental effect to City owned infrastructure, ii) unsafe or failed conditions, or iii) the installation as a contributing cause to drainage issues, followed by removal by the City at that time without recourse.* Section 10.2 – Ditch Alteration (After Adoption of the Policy) states *Non-compliant or unauthorized ditch filling that is installed after adoption of the Ditch Alteration Policy will be enforced in accordance with the Drainage By-law (now replaced by the Site Alteration By-law).*

A variation to the above used by other Canadian municipalities considers non-compliant or unauthorized ditch filling that was installed before adoption of their Policy will be removed as part of a systematic approach to roadside ditching projects undertaken by the municipality. Non-compliant or unauthorized ditch alterations that have occurred after adoption of their Policy will be enforced in accordance with their Policy, which in turn refers to the Ontario Municipal Act.

Another variation for unauthorized ditch filling that was installed before adoption of the Roadside Ditch Alteration Policy states that non-compliance or unauthorized ditch alterations that are not contributing to a drainage or road maintenance issue shall not be considered for removal.

With reference to the City of Saskatoon’s Montgomery Place Construction Project (as detailed in Section 6.2), and in relation to cost-sharing, comments from the public consultation process noted that the City had a responsibility which was not consistently exercised and as such, the City was perceived as responsible for bearing some costs associated with unauthorized ditch alterations that were undertaken prior to introduction of their City Standards for Ditch Crossing Culvert.

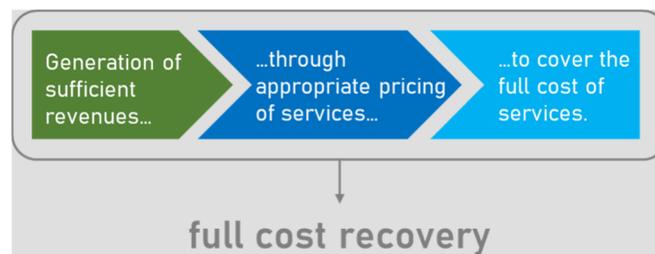
The City of Ottawa is currently formalizing an internal Enforcement Strategy. This will be a stepped enforcement strategy where the City notifies the property owner of the non-compliance, gives them an opportunity to reinstate the ditch to City standards within a set timeframe and if they don’t then the City would complete the work and bill the resident the cost of the work. The enforcement strategy will be a general guidance document for staff to navigate a variety of issues they encounter within the City’s right-of-way. Current City By-laws provides the necessary tools for enforcement to deal with illegal ditch infills.

6.0 COST RECOVERY

6.1 Cost Recovery Overview

The cost of stormwater management has historically been financed at the municipal level via general revenues from property taxes, or from implicit inclusion in the wastewater rate. But against the backdrop of increased costs brought on by legislative and regulatory framework changes, municipalities are increasingly moving toward cost recovery for their water, wastewater, and stormwater systems. Cost recovery exists on a continuum which includes both partial cost recovery as well as full cost recovery.

The benefits of a full cost recovery approach include providing sufficient funding to sustain systems in perpetuity and maintaining acceptable levels of service. Full cost recovery models can also promote more efficient use of resources. However, implementing full cost recovery for stormwater management can be more challenging than for water and wastewater systems since the usage of drainage services cannot be metered directly in the same way that water consumption can. The concept of full cost recovery entails three components:



Source: Adapted from FCM and NCR, 2006, "Water and Sewer Rates: Full Cost Recovery"

While several Canadian municipalities currently use a full cost recovery approach for their overall stormwater management systems via utility models, there is a scarcity of detailed information available regarding full cost recovery for ditch infilling projects in particular. One example of a recent project involving ditch reinstatement which entailed cost sharing between a municipality and property owners is the Montgomery Place Construction Project in the City of Saskatoon, Saskatchewan. The City of Saskatoon does not approve requests from individual residents to fill ditches in front of their properties; rather, this project involved ditch reinstatement and driveway restoration aimed at improving drainage in the neighbourhood. Nonetheless, the case yields some interesting insights which could be of interest to the City of Ottawa. The following section provides an overview of this project, including the Council-approved cost sharing model, after which some implications for Ottawa are discussed.

6.2 Saskatoon's Montgomery Place Construction Project – A Case Study in Cost Sharing for Drainage Improvement Involving Ditch Reinstatement

Impetus for Project

The Montgomery Place neighbourhood within the City of Saskatoon has a network of ditches and culverts for storm water management. The effectiveness of the neighbourhood drainage has been compromised over time as new driveways, landscaping, and erosion altered the existing ditches within the City right-of-way. The City of Saskatoon has Standard Ditch Crossing Culvert Requirements (2021), however in the past compliance has not been strictly enforced. Some driveways were constructed prior to standards being in place or were constructed without a Right-of-Way Crossing permit which involves a final inspection. Some property owners may not have fully considered the impact of their driveways on their neighbours downstream.

These modifications have contributed to flooding during the spring snowmelt and intense rainfalls, with residents calling on the City to take steps to reduce the risk of basement flooding, property damage and nuisance ponding. A 2018 assessment of the neighbourhood found that approximately 75% of the 766 properties had non-

compliant driveway crossings due to driveways wider than the maximum size of 6.1 meters, and/or driveways with no culverts.

Project Description

The City of Saskatoon is undertaking the Montgomery Place Construction Project to improve storm water drainage on portions of streets within the neighbourhood. The scope of work includes restoring ditches and culvert reconstruction to provide a flow path for storm water, and driveways on City-owned rights-of-way are impacted by the project. To reduce construction impacts in the neighbourhood, the project also includes water main replacement, lead-line connection removal and replacement, and road reconstruction at the same time. Based on correspondence with staff from the Saskatoon Water utility, ditch drainage improvement projects are very new to the City of Saskatoon, with the Montgomery neighbourhood receiving the first formal capital project.

Public Engagement

Formal public engagement was conducted by Saskatoon Water in June 2019 and February 2020. Engagement tactics included an open house and an online survey. Three options for drainage improvement were presented for consideration:

- Option 1: Status Quo (no drainage improvements)
- Option 2: Cost-Shared Drainage Improvements (costs of culvert installation and driveway restoration to be split between the City and property owners)
- Option 3: City-Funded Drainage Improvements (City to pay all costs for driveway reconstruction)

It was noted in the June 2020 report to City Council that neighbourhood residents had “mixed reactions” to the proposed drainage improvements. New underground storm water pipes were previously included in the infrastructure proposed for Montgomery Place, to be cost-shared by citizens through a neighbourhood improvement levy. However, neighbourhood residents rejected this proposal, and so consequently there was a decision to retain the ditch and culvert system.

Costs

Construction activity for this project was previously scheduled for 2020 but was delayed, to finalize cost-sharing options. Based on the results of the public consultation and internal analysis, City Administration recommended to the Standing Policy Committee on Environment, Utilities and Corporate Services as well as City Council to proceed with Option 2: Montgomery Place drainage improvements would be coordinated with other planned construction, and the proposed cost sharing program would be implemented for property owners with non-compliant driveways to install culverts and restore driveways across rights-of-way to existing conditions.

It was noted that the estimated cost to install culverts and restore driveways in the City right-of-way ranged from \$2,900 to \$34,000 per property, depending on the type of surface material (e.g., gravel, asphalt, concrete, or paving stone) and length. The cost-sharing approach approved by City Council for driveway restoration for individual properties was dependent on whether the driveway was compliant with the maximum width, and whether it currently had a culvert (**Table 5**). Property owners required to cost share were presented with the opportunity to decrease their culvert crossing width and/or alter restoration material to reduce their costs.

Table 5: Cost sharing approach for drainage improvements and driveway restoration, Montgomery Place Storm Water Management Project

Existing Condition	Cost Allocation
Compliant driveway (i.e., equal or less than 6.1 m width) crossing with culvert	→ City to pay all culvert installation and driveway restoration costs.
Non-compliant driveway crossing (driveway is greater than 6.1 m width) with culvert	→ City will pay costs equivalent to a standard asphalt driveway crossing, which includes a new culvert. Restoration costs exceeding the standard amount

Existing Condition	Cost Allocation
	of \$6,800 will be cost-shared (60% City / 40% property owner).
Non-compliant driveway crossing with no culvert	→ Property owner to pay 100% of culvert installation costs. Driveway resurfacing costs exceeding the standard amount will be cost-shared (60% City / 40% property owner).

Property owners also had the option to spread the costs out via a property tax deferral program, like that which exists for the lead pipe replacement program. *The Private Crossings Over Ditches By-law (2020)* was passed in 2020 to establish the authority for a tax deferral program to allow property owners to pay the costs of drainage improvements over time. Section 7 of the Bylaw states that “an owner of a property that has a non-compliant private crossing may be required to pay for the costs, or a portion of the costs, of installing drainage improvements.” The property owner can enter into an agreement with the City to pay the amount due over time, with deferral durations ranging from one year to ten years. The amount due includes administrative fees, which range from 0\$ to \$365 according to the length of time of the deferral.

The Montgomery Place drainage project was also funded in part by the Investing in Canada Infrastructure Program (ICIP) through the federal and provincial governments. Total ICIP eligible costs on the project are \$8,000,000 which includes a Federal contribution of \$3.2 million, and a Provincial contribution of \$2,666,400. The City contribution of \$2,133,600 was funded by the Storm Water Management Capital Reserve within Capital Project 1619 Storm Sewer Trunk and Collection.

6.3 Considerations for Cost Recovery for Ditch Alterations in Ottawa

The example of the Montgomery Place Drainage Improvement Project in Saskatoon, described above, involves a cost sharing approach for drainage improvements including driveway reinstatements in an area which relies on a system of ditches and culverts. The selected approach was not a full cost recovery model, as the City still covered a portion of the driveway reinstatement costs for non-compliant driveways – however this example highlights that there are tradeoffs associated with fully City-funded vs. cost shared vs. full cost recovery approaches for ditch alterations. The following recommendations could be considered by the City of Ottawa to enhance its approach to cost recovery for ditch alterations:

- Systematize enforcement before moving from cost sharing to full cost recovery:** Based upon our limited research we did not come across a Canadian municipality that uses a full cost recovery model to recover all costs associated with ditch alterations. A full cost recovery approach would be strongly aligned with the user-pay principle; however, this approach may be more difficult to implement than a cost-sharing approach and could face opposition from residents. During the public consultations for the Montgomery Place project, some residents raised concerns about being responsible for costs when they had not undertaken the illegal ditch and driveway alterations themselves, but rather had purchased properties where previous owners had done work. In some cases, driveway alterations were undertaken prior to the introduction of the City Standard. Comments from the public engagement noted that the City had a responsibility for enforcement which was not consistently exercised, and as such, the City was perceived as responsible for bearing some costs. To ensure a sound basis for a future full cost recovery model, the City of Ottawa could first work to make the enforcement process for illegal ditch alterations more systematic.
- Begin by establishing goals and objectives for cost recovery program:** Best Practices for the development of a full cost recovery plan for municipal water and sewage services have been identified under the auspices of the *National Guide to Sustainable Municipal Infrastructure*. While the Guide pertains to municipal water and sewage services in general rather than ditch alterations and

reinstatements, it is valuable in that it clearly lays out nine steps for establishing a full cost recovery plan, the first of which is to “Set goals and objectives”. The City of Ottawa should underpin a cost recovery program for ditch alterations with a clearly articulated set of goals and objectives.

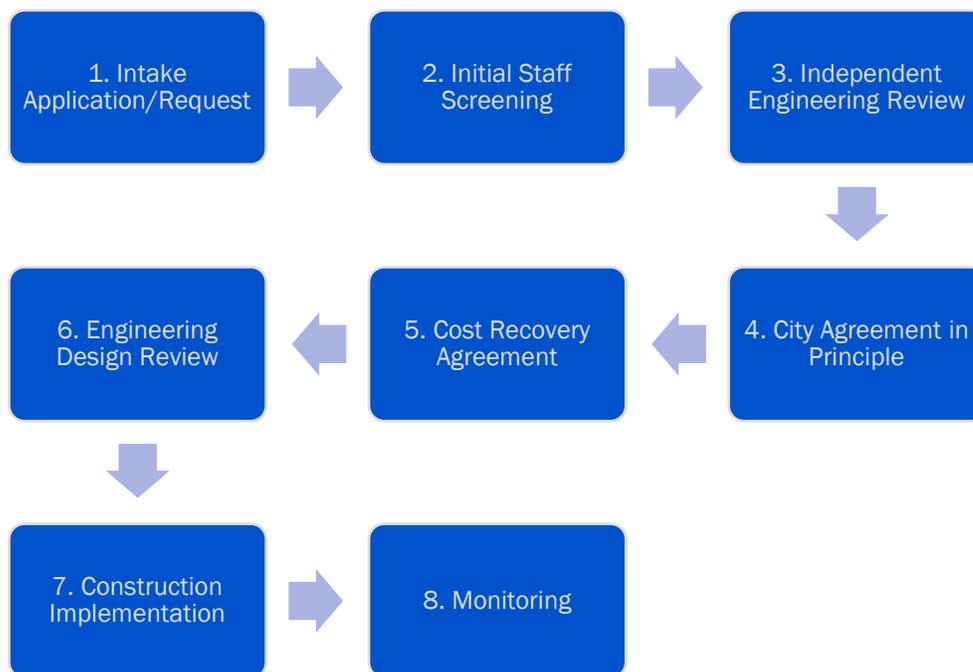
- **Entrench the user-pay principle:** The City of Saskatoon selected a cost sharing approach because it is aligned with the user-pay principle, meaning it reduces subsidization by those not benefitting from the improvements. A cost sharing approach recognizes that residents have a responsibility for ensuring that drainage is not impeded by private driveways or unauthorized ditch alterations, and that the drainage improvements would directly benefit these properties. When the City of Ottawa receives requests from property owners to alter ditches for reasons of beautification and reduced maintenance, these are benefits that will accrue to specific property owners. As such, it may not be perceived as fair to subsidize these costs from general storm water or other revenues. The City of Ottawa could entrench the user-pay principle explicitly within the Ditch Alteration Policy, either in Section 7.1 “Key Principles” or in Section 8.0 “Financing Principles”.
- **Explicitly identify the components of “all costs”:** Saskatoon’s Private Crossings Over Ditches Bylaw (2020) includes in its definitions section that administrative fees are included in the costs that property owners may be required to pay. In the current City of Ottawa Policy, Section 7.4 states that for a project to proceed in the rural area, the City have received written confirmation from the proponent agreeing to pay “all costs” associated with the ditch filling project. However, the definitions section (16.0) does not specify what the components of “all costs” are. To increase transparency in the administration of the Policy and establish a basis for full cost recovery, the revised Policy could explicitly list what is considered to form part of “all costs”. The components of full costs for ditch alteration projects can include hard costs (such as materials to construct and backfill the pipe), soft costs (such as the engineering assessment), and administrative fees including the cost of City staff effort to implement the program. The engineering assessment could alternately be a cost that applicants are expected to cover directly, rather than the City incurring a cost and subsequently seeking to recover it. Explicitly itemizing and including the list of “all costs” within the Policy could provide greater transparency and firmer justification to recover full costs from individuals requesting a ditch alteration for their property.
- **Identify roles and responsibilities for calculating full cost projects:** Section 9.0 of the current City of Ottawa Policy identifies roles and responsibilities of various City branches for administering the Policy. Financial Services is identified as having responsibilities for recovering costs incurred by the City to remove a non-compliant ditch alteration, however responsibility for establishing and calculating the full costs is not identified. To increase transparency and consistency, responsibility for this task could be identified as the purview of a particular Branch in the revised Policy.
- **Consider a tax deferral mechanism for a cost sharing program and recover administrative fees:** The City of Saskatoon provided the option for property owners to spread out the costs of drainage improvements via a property tax deferral program. This mechanism was similar to the cost sharing mechanism the City already had in place for the Lead Pipe Replacement Program. The City of Ottawa also has a Lead Pipe Replacement Program which could be used as a basis for establishing cost-sharing provisions for ditch alterations.
- **Combine multiple revenue sources:** The selection of a revenue source (or multiple revenue sources) for a cost recovery plan depends on several factors, including enabling provincial legislation; the scope for revenue generation relative to the costs that are seeking to be recovered; fairness and equity; legality of the charge; simplicity and customer comprehension; and ease of implementation. The Montgomery Place project was funded with a combination of revenue sources including property owner contributions, capital reserves from the Storm Water Utility, and provincial and federal funding. While stacking of multiple revenue sources deviates somewhat from the user pay principle, it could enable projects to advance more quickly and with a more robust scope than if user fees alone are relied upon. The City of Ottawa could investigate possible funding programs through the federal and provincial governments (such as the Investing in Canada Infrastructure Program). With current climate change initiatives, both

levels of government continue to invest in infrastructure renewals that will increase resiliency to the impact of climate change. Funding may also be available through the Federation of Canadian Municipalities (FCM).

7.0 SUMMARY OF RECOMMENDATIONS

In conclusion, while the City of Ottawa’s current approach to ditch alteration undoubtedly has several strengths, there are changes to policy and practice which could be adopted to streamline business processes and increase consistency and transparency.

The Local Improvement Process can continue to apply to cases involving ditch alteration requests from multiple property owners. In the event of future requests from individual property owners, it is recommended that a new business process be established to assist the City in responding to requests for proposed ditch alterations. The process involves these eight (8) steps:



1. Intake Application/Request

The first step in the business process would be for the requestor of a ditch infilling project to make contact with the appropriate City staff. The initiation could either be a formalized permit application form, or by means of an email to an identified staff. In either case, the City should provide a guideline document that specifies the information required by the City to intake the request, including a site map, photographs, and reason for the request.

2. Initial Staff Screening

Once the application/request is deemed complete by the City, staff will proceed to screen the application to determine if it is a candidate to undergo an engineering review. The requestor will be required to source and retain a qualified engineering to complete the assessment at the requestor’s cost. If staff determines that the request is merely for landscaping or aesthetic reasons, the processing of the request can be terminated at this time, and the requestor notified accordingly.

3. Independent Engineering Assessment

If the application/request is deemed complete, and the file has passed staff's initial screening, the case will be recommended to advance to an independent engineering assessment (see below). Should the assessment make favourable recommendations, the application/request and the recommendations will be reviewed by City staff. If the engineering assessment is not favourable, the request can be terminated at this time, and the requestor notified accordingly.

4. City Agreement in Principle

If the City reviews the engineering assessment, determines that the findings are keeping with the Official Plan, Infrastructure Master Plan, and associated by-laws and recommendations, and is in general agreement with the request/application, the City will notify the requestor that the municipality agrees in principle and will move towards a cost recovery agreement. If staff is not in agreement, the request can be terminated at this time, and the requestor notified accordingly.

5. Cost Recovery Agreement

If the City agrees in principle with the ditch infilling request, staff will propose a cost recovery solution that is appropriate to the context and will engage in dialogue with the requestor. The requestor will be required to sign a cost recovery agreement that addresses the City's costs in administering the process. A performance deposit to be held until the City's inspection and monitoring of the works is completed may also be appropriate. If the requestor does not sign the agreement, the request can be terminated at this time, and the requestor notified accordingly.

6. Engineering Design Review

Once the cost recovery agreement is executed, the requestor will be required to retain professional engineers to prepare engineering design drawings that meet the City's guideline. Alternatively, the City can retain qualified Engineering firms through the current Request for Standing Offer Process. Draft drawings will be reviewed by City staff and recommendations made. Once final drawings are agreed to by the City, a permit/approval will be granted by the City.

7. Construction Implementation

Once a permit/approval has been granted by the City, either the City will complete the works, or the requestor may proceed to retain a contractor to construct the works within the City's right-of-way. The choice will be ratified as a condition of the permit/approval.

8. Inspection and Monitoring

City staff will be required to inspect the construction of the ditch infilling project to determine compliance with the engineering drawings. The City shall also complete a one-year monitoring review, after which the performance deposit would be returned as appropriate, and the file closed.

Within the context of this business process above, the following policy considerations are identified.

Parsons's emphasizes our recommendation that ditch alteration either on a lot-by-lot basis or multiple property alterations only be approved following a detailed engineering assessment of how the alteration will affect the stormwater management for the catchment area that the alteration is located within. The City's decision to approve or reject any proposed ditch alteration will informed by the engineering assessment recommendations. This assessment shall be undertaken by a qualified and experienced professional engineer, licensed in the Province of Ontario, and at the expense of the proponent.

The City should not consider any alteration to a roadside ditch if the basis of this request is solely for aesthetic purposes only (e.g., to enhance current or proposed landscaping or for the ease of lawn mowing), which is

consistent with the benefits of Green Infrastructure from the Ministry of the Environment, Conservation and Parks new Low Impact Development Stormwater Management Guidance Manual (January 2022).

As a clarification to the current Policy, the City should determine if an Environmental Compliance Approval (ECA) is required from the Ministry of the Environment, Conservation and Parks (MECP) for the ditch alteration works. As these proposed works fall within the municipal road allowance, the City would be required to sign the ECA application form. However, the Fee associated with this application should be borne for the property owner(s).

The requirements for this detailed engineering assessment are currently outlined under *Section 7.3 Engineering Assessment of the Ditch Alteration Policy*. Since the current Policy was approved by City Council in 2008 the advancement of Low Impact Development (LID) Design Guidelines was not established until several years later. Therefore section 7.3 should be amended accordingly to recognize LID as a tool to implement sustainable stormwater practices that will help to ensure the continued health of our watersheds.

Additionally, the impacts of Climate Change need to be emphasized in recognition of the City of Ottawa's April 24, 2019 declaration of a Climate Change Emergency. The City's current Sewer Design Guidelines, Section 8.3.12 - Climate Change, provides the necessary criteria for this evaluation.

Streamlining Recommendations

- **Strategic Goal:** Establish and explicitly state a Strategic Goal for the Ditch Alteration Policy, in alignment with the City's overall stormwater goals and subwatershed plans. As noted in section 2.1.2 some of the City's subwatershed plans call for lot-level green infrastructure, such as swales and rain gardens, the infilling of ditches could be seen as contradicting this objective.
- **Education:** Better educate property owners about the importance of ditches in protecting public and private property from damage and degradation. Methodology and Engagement Techniques have been proposed within the City's Public Engagement Strategy.
- **Maintain strengths of existing Policy:** Continue to require an engineering assessment within the Policy based on best practices for stormwater management.
- **Customer service principles:** Articulate guiding principles for Customer Service within the Policy.
- **Policy coherence:** Reconcile conflicting information between the Policy and the City's overall stormwater management goals and subwatershed plans.
- **Define and differentiate ditches and swales:** Establish clear definitions within the Policy to differentiate between the terms "ditch" and "swale" and differentiate the process requirements for the alteration of each.
- **Provincial policy implications:** Consideration of evolving Provincial requirements. The Ontario Ministry of the Environment, Conservation & Parks (MECP) has initiated the preparation of a Consolidated Linear Infrastructure ECA program. The province is also currently undertaking a comprehensive review of Ontario municipal stormwater management systems, including establishing requirements for infiltration and volume reduction. Until such time as these reviews have been completed and a new policy, act or legislation is established the existing legislation shall govern. The City should be aware of these continuing efforts, and potential implications such as amended stormwater management design criteria, increased monitoring, and data collection to ensure compliance.

Transition Recommendations

- **Process mapping:** Outline and detail the current process for ditch alteration approval.
- **Stakeholder Matrix:** Create a stakeholder matrix using the principles established within the Public Engagement Strategy: Ditch Alteration Policy Review, including a flow chart illustrating stakeholders' current roles in the process.
- **Review of existing information:** Review existing design information to determine the need for additional engineering assessments.
- **Project Management Plan:** Create a Project Management Plan including a detailed scope of work.

- **Monitoring Plan:** Develop a plan for regular monitoring of existing ditch systems and any altered systems.

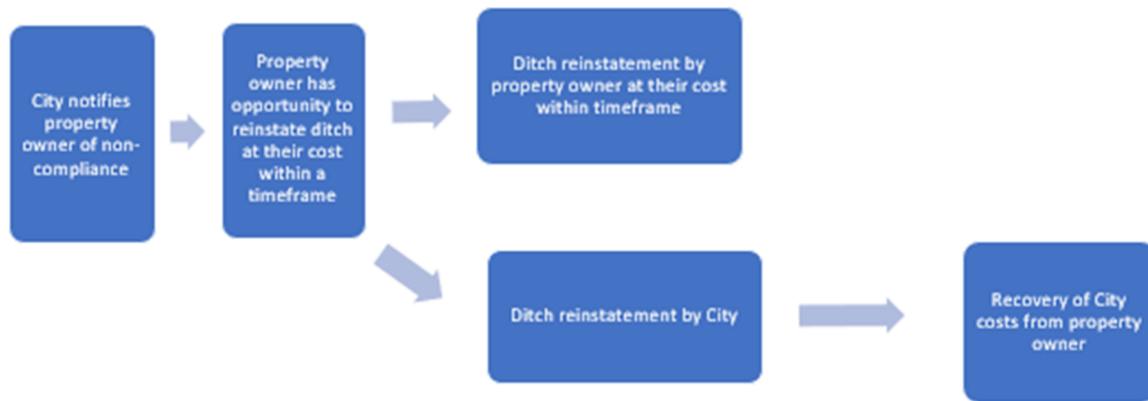
Non-compliance and Enforcement

- The current Ditch Alteration Policy deals with ditch alterations that have occurred before adoption of the Policy and after adoption of the Policy. However, the mechanism for establishing non-conformance and enforcement is dealt with under the Use and Care of Roads By-law and Site Alteration By-law. Both these By-laws have been developed pursuant to the Ontario Municipal Act.
- The Ditch Alteration Policy should be a comprehensive document detailing not only Default and Remedial Action but, also Offences and Penalties or, at the very least reference the Use and Care of Roads By-law and Site Alteration By-law.
- Section 10 Contraventions of the current Policy includes a statement, that it is not the intention of the City to retroactively enforce non-compliant ditch alterations. However, it's our recommendation that the City should not preclude future enforcement or cost recovery possibilities based on whether a ditch was illegally infilled and/or reported before or after the introduction of the Policy.
- The City of Ottawa is currently formalizing an internal Enforcement Strategy. This will be a stepped enforcement strategy where the City notifies the property owner of the non-compliance, gives them an opportunity to reinstate the ditch to City standards within a set timeframe and if they don't then the City would complete the work and bill the resident the cost of the work. The enforcement strategy will be a general guidance document for staff to navigate a variety of issues they encounter within the City's right-of-way. Current City By-laws provides the necessary tools for enforcement to deal with illegal ditch infills.

The current approach process involving *Unauthorized Ditch Alteration installed Before Adoption of the Ditch Alteration Policy* involves the following steps.

- Identification of a non-compliant ditch alteration (although permitted installations that occurred prior to amalgamation will need to be examined according to the next step).
- City determination of detrimental effects or contribution to drainage issues (this provides an opportunity to take corrective actions based upon current drainage issues despite some alterations that may have been historically permitted).
- Written notice to property owner.
- Reinstatement of ditch by the City.
- Recovery of City costs from property owner to reinstate ditch.
- Recovery of non-payment of fines.

We are proposing a slight clarification to the current process, permitting the Property Owner to undertake the recommended remedial works, as identified by the City, which is outlined below.



Cost Recovery Recommendations

- **Systematize enforcement before moving from cost sharing to full cost recovery:** This can be a precursor to establishing a future cost recovery approach.
- **Begin by establishing goals and objectives for cost recovery program:** Adhere to the National Guide to Sustainable Municipal Infrastructure's nine step best practice process for establishing a full cost recovery plan including establishing goals and objectives tailored to local conditions.
- **Entrench the user-pay principle in the Ditch Alteration Policy:** Reduce subsidization by those not benefitting from the improvements.
- **Explicitly identify the components of "all costs":** To increase transparency in the administration of the Policy and establish a basis for full cost recovery, the revised Policy could explicitly list what is considered to form part of "all costs".
- **Identify roles and responsibilities for calculating full cost projects:** This could be identified as the purview of a particular Branch in the revised Policy.
- **Consider a tax deferral mechanism for a cost sharing program and recover administrative fees.**
- **Combine multiple revenue sources:** Such as the Investing in Canada Infrastructure Program and funding opportunities with the Federation of Canadian Municipalities (FCM).

8.0 CONCLUSION

In the City's own words (Local Improvement Policy Review and update of Ditch Alteration Policy Report to Standing Committee on Environmental Protection, Water and Waste Management on November 16th 2021 and Council on November 24th, 2021), "By delivering a simultaneous policy and business process review of Local Improvement and Ditch Alteration, staff can propose a robust program that aligns with the City's long-term infrastructure and environmental objectives while providing the ability to control future unapproved alteration activity."

The business process recommendations contained within this Technical Memorandum, as summarized above, along with the supporting policy directions should provide the City with the necessary clarity to satisfy Council's direction to update the current Policy.

9.0 REFERENCES

1. AECOM Technical Memorandum #1 – Stormwater Maintenance Reviews and Levels of Service Framework, February 2019
2. City of Ottawa Use and Care of Roads By-law No. 2003-498
3. City of Ottawa Site Alteration By-law No. 2018-164
4. City of Ottawa Public Engagement Strategy, Ditch Alteration Policy Review, December 2021
5. City of Ottawa Project Charter, Policy and Business Process Review of Local Improvement and Ditch Alteration, May 2019
6. Ontario Ministry of the Environment, Conservation and Parks, Draft Low Impact Development Stormwater Management Guidance Manual, January 2022
7. Federation of Canadian Municipalities (FCM), Dedicated Funding (A Best Practice by the National Guide to Sustainable Municipal Infrastructure), August 2004
8. Federation of Canadian Municipalities (FCM) and National Research Council. Water and Sewer Rates: Full Cost Recovery, 2006
9. Federation of Canadian Municipalities (FCM) and National Research Council. Stormwater Management Planning (A Best Practice by the National Guide to Sustainable Municipal Infrastructure), 2005
10. City of Saskatoon. Montgomery Place Drainage Improvements
[https://www.saskatoon.ca/engage/montgomery-place-drainage-improvements \](https://www.saskatoon.ca/engage/montgomery-place-drainage-improvements)
11. City of Saskatoon. Standard Ditch Crossing Culvert Requirements
<https://www.saskatoon.ca/sites/default/files/documents/transportation-utilities/construction-design/construction-services/drawings/images/1020018009.pdf>
12. City of Saskatoon. The Private Crossings Over Ditches Bylaw No. 2020

Appendix A:
Revenue Services Local Improvement Cost Recovery Procedure

Revenue Services Local Improvement Cost Recovery Procedure

The cost recovery process begins once the project is closed. Planning in conjunction with the FSU determined through the by-law the total amounts for each benefiting property owner and supplies Revenue with this information.

*O. Reg. 586/06 section 36

Description

1. Payment Options
 - a. Revenue Collections prepares information and 'Notice of Special Assessment' with a list of payment options. (Straight payout vs payment plan)
 - b. The 'Notice of Special Assessment' with payment options is sent to the Benefiting Property Owners
 - i. Revenue Collections will handle all incoming inquires from property owners.
 - c. Benefiting Property Owners select a chosen payment option and return the 'Notice of Special Assessment' to the City's Revenue Services Department contact as identified on the Notice. (note partial payments are not allowed)
 - i. If the Property Owners select a payment plan. Revenue Collections sends the payment terms to Revenue Accounting, including the total requirement, interest rate, and the number of years amortized (including in the Special Assessment Notice).
 - ii. If the Property Owner fails to return their payment option preference, it will be assumed the annual repayment schedule is preferred.
 - d. Revenue Collections will track all letters sent and letter received.
2. Annual Billing
 - a. Revenue Accounting creates the amortization schedule for the local based on information included in the Special Assessment.
 - b. Revenue accounting notifies Tax Billing of the new local to be included on the final tax bills.
 - c. The City bills local charges annually on the final tax bills
 - d. Locals reports are generated by the Tax Billing consultant, and amounts are reviewed and confirmed by revenue accounting before final billing
3. Annual SAP entry
 - a. Entry is uploaded to SAP in June to transfer local improvement billings from local improvement revenue account to a long term receivables and interest account
4. Ownership changes
 - a. Review ownership changes for local improvements with interest-free periods
 - i. Some locals have an interest-free period which becomes void in the event of a change of ownership
5. Payouts
 - a. Owners with local improvement charges on their properties have the option to pay out the remaining balance of their loan at any time
 - b. When a payout request is received, revenue accounting calculates the payout amount based on the proposed payment date

- c. Once payment is received;
 - i. A payout statement is issued to the property owner
 - ii. Payment is moved from the tax account to the local improvement revenue G/L and the local improvement code is removed from the tax account
 - d. Amortization Recalculation
 - i. SAP entry is required to transfer local improvement payout from local improvement revenue account to a long term receivables and interest account
 - ii. A payout will also affect the following year's entry, and the payout must be accounted for
6. Tax Certificates
- a. When a tax certificate is requested, the following information regarding the local improvement is included;
 - i. Local description
 - ii. Year of expiry
 - iii. Annual charge
7. Sale of Land for Tax Arrears
- a. When an account is more than 2 years in arrears, the City may choose to start the sale of land for tax arrears process.
 - b. The sale of land for tax arrears process, among other things, will recover any Local Improvement amounts that have been billed on the tax bill but not paid.
 - c. Any Local improvement balance that has not yet been billed would be transferred to the new owner and continue to be billed annually until paid off.