



# COUNCIL REPORT

## Cochrane Lake Improvement Plan Review

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Electoral Division: 3

File: 1011-600 / 5050-595

Date:	January 7, 2025
Presenter:	Brenda Mulrooney, Supervisor
Department:	Capital & Engineering Services

### REPORT SUMMARY

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The purpose of this report is to provide Council with the result and recommendations of the work completed to date related to the Cochrane Lake Improvement Plan and review of studies to support the Sub-Catchment Master Drainage Plan. In January 2024, the Terms of Reference (“TOR”) for completing the Cochrane Lake Improvement Plan was approved by Council along with a \$90,000 budget adjustment to complete the work and shared by contributing landowners (“CLOs”) - Macdonald Communities Limited, Canopy Lands and Schickedanz West. The County issued a Request for Proposal and awarded ISL Engineering (“ISL”) the work in April 2024. By November 2024, ISL had completed the required field testing and analysis of the findings to formulate the Cochrane Lake Improvement Plan Review.

The purpose of the Cochrane Lake Improvement Plan Review was to provide a comprehensive overview of the Cochrane Lake area and background documents to produce a plan that complies with the Cochrane Lake Sub-Catchment Master Drainage Plan and supports future development. ISL also developed an opinion of probable cost for the options to facilitate funding efforts. The following stormwater management solutions were explored in detail based on feasibility, benefits and impacts:

**Option 1: A dedicated pipeline to the Bow River**

**Option 2: Dredging of Cochrane Lake**

**Option 3: Construction of a berm with continued discharge to Horse Creek**

Administration and the CLOs support Option 3 as the most feasible solution for mitigating stormwater issues and improving the water quality of Cochrane Lake. This option includes constructing a berm along a portion of the lakeshore, to raise the water level and create a deeper, algae-resistant lake with enhanced stormwater storage capacity. Option 3 is presented as an alternative to the long-term outfall solution proposed in the Cochrane Lake Sub-Catchment Master Drainage Plan (Stormwater Solutions Inc., 2016), which recommended directing 500 L/s to the Bow River (Option 1). The preliminary cost for Option 3 is approximately \$5.1M, covering the berm construction, infrastructure upgrades, wetland plantings and a mechanical treatment system to address water quality prior to discharge into Horse Creek. Administration recognizes that these recommendations will benefit both the existing community and future growth in the area. The preliminary berm design is included as Attachment B.

### ADMINISTRATION’S RECOMMENDATION

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THAT Council directs Administration to proceed with implementing Option 3 for the construction of a berm with continued discharge to Horse Creek as part of the Cochrane Lake Improvement Plan Review.

THAT Council directs Administration to proceed with negotiations with CLOs to formalize a cost-sharing agreement, inclusive of grant opportunity to be brought back to Council for consideration at the end of Q2 2025.



## Cochrane Lake Improvement Plan

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### BACKGROUND

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Cochrane Lake has no natural outlet and water quality is an issue as minerals and nutrients entering the lake from stormwater runoff are not adequately flushed out and continue to accumulate in the Lake causing undesirable conditions. In 2013, severe rain events resulted in a portion of the south hamlet homes to experience flooding. Albeit flooding has not been an issue since, the lake water quality has been an ongoing public concern with concerns raised annually by local residents regarding significant odor.

In 2016 a pump station and outlet pipeline were constructed by the County to release water from the lake to Horse Creek. This discharge has served two purposes of lowering lake levels and allowing for the removal of nutrients negatively impacting water quality. To further address water quality concerns, Alberta Environment and Protected Areas (AEPA) approved an increased discharge rate in 2022. Currently, Cochrane Lake is under the jurisdiction of the AEPA while the County manages the lake in accordance with the current management strategy.

Macdonald Communities Limited (MCL) engaged the County in 2022 to explore the vision presented in the 1995 Conceptual Scheme to berm the lake and address hydrological and biological results from past studies of the lake. On Feb 21, 2023, MCL presented the Cochrane Lake Revitalization Plan to Council, which proposed water quality improvements, a recreational pathway system and flood mitigation solutions for Cochrane Lake. Council directed Administration to work with Macdonald Communities to investigate all funding models that would financially contribute to the improvement and revitalization of Cochrane Lake. Following, MCL submitted a proposal for partnership to the County and a strategy to construct a berm around Cochrane Lake, associated budget and implementation plan. Administration has considered this option but recognizes there may be alternative strategies to explore. On October 10, 2023, the Governance Committee directed Administration to prepare a Terms of Reference ("TOR") and cost-sharing agreement with the CLOs and present it no later than January 2024. The TOR was presented and accepted by Council in January 2024. ISL were awarded the work in April 2024, completed the field work and detailed analysis and review by November 2024.

As per the Cochrane Lake Sub-Catchment Master Drainage Plan, as prepared by Stormwater Solutions Inc, dated September 2017, the total lands that would divert drainage to Cochrane Lake, either directly or indirectly, equates to 1268 ha (not including the Wetlands or Cochrane Lake). Regardless of the Sub-Catchment Area, there is limited servicing for water and wastewater for the Cochrane Lake area. The existing Capacity Allocation Agreement between the County and developers has reserved capacity for Macdonald lands, Neighborhood C and Cochrane North developments. In addition, Calgary will only allow 48 L/s of sanitary discharge from the area, so servicing is again limited in this capacity. A Staged Servicing and Utility Master Plan is currently being developed but it is fair to say that MCL Lands, Neighborhood C and the Cochrane North lands are the only developments that will be approved for servicing in the near term. The total area for these three developments plus the existing communities of Monterra and the southern hamlet equate to approximately 477.74 ha (1180.01 ac). The existing communities of Monterra and the southern hamlet, occupy roughly half of the lake shore of Cochrane Lake and approximately 102.95 ha (254.27 ac) in area, which equates to 22% of the total benefiting area surrounding Cochrane Lake. Please see Attachment A for a map illustrating the above.

### ANALYSIS

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ISL has provided the County with a Cochrane Lake Improvement Plan Review that has evaluated stormwater management solutions proposed to improve the quality of Cochrane Lake and to offer a stormwater solution for future and existing development. ISL has evaluated the financial and physical implications of each option and has provided the County and the CLOs with a comprehensive and robust foundation for future decision-making regarding improvements proposed to the Cochrane Lake area. Once approved, the plan will allow for an update to the area's Master Drainage Plan and the completion of detailed designs for the improvements.

## Cochrane Lake Improvement Plan

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**Option 1: Dedicated pipeline to the Bow River:** This option involves a 7km pipeline requiring right-of-way (ROW) and AEPA approvals, with many stakeholders involved. The advantages include a higher discharge rate and easier water quality targets, but challenges involve land procurement, higher capital costs, and regulatory approvals. The estimated cost for this option is **\$11,110,731**.

**Option 2: Dredging:** The dredging concept with sediment removal aims to increase lake volume, but sediment tests show heavy metals and hydrocarbons leading potentially to larger capital costs, disposal costs, environmental risks and recurring maintenance. The estimated cost for this option is **\$66,082,751**.

**Option 3: Berm and continued discharge to Horse Creek:** This option involves revised AEPA approvals and treatment requirements, utilizing existing infrastructure to sustainably increase lake volume and address flooding concerns. However, it faces regulatory scrutiny, additional treatment costs, and seasonal water quality variations. In addition to the berm and the discharge to Horse Creek at 150 L/s, the preferred water quality treatment is the purchase of mechanical treatment system that can be installed at Cochrane Lake to disrupt the growth of Cyanobacteria. Wetland plantings also present a realistic mitigation measure, but due to the time it takes to establish growth, the plantings are considered a supplementary element to the berm and mechanical system. Currently the County has approval from the province to use a portion of the water licensed to the Cochrane Lake area for stabilization of the Lake. An estimate of the electricity cost to raise the lake 0.1m has been included. In total, this solution is estimated to cost **\$5,087,051, or approximately \$5.1M**.

Administration and the CLOs support **Option 3** as the most feasible solution for mitigating stormwater issues and improving the water quality of Cochrane Lake. The cost as discussed above capture the initial capital investments, there will be additional ongoing operating costs as required to manage the overall system. These recommendations will benefit both the existing community and future development in the area by meeting the requirements set out in the Sub-Catchment Master Drainage Plan.

## COMMUNICATIONS / ENGAGEMENT

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AEPA was favorable to approving the increased discharge to Horse Creek, provided the County can demonstrate the quality of water discharged to Horse Creek will be maintained.

## IMPLICATIONS

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### Financial

The total estimated cost for Option 3 is approximately \$5.09 million. This figure covers all currently identified activities required to implement the proposed improvements. However, it is important to note that these estimates do not include extending the berm onto the Northern Lands (northeast of MCL lands), which are owned by the Colvin Family Trust. While modifications to the lake may affect portions of those lands closest to the shore, their higher elevation makes it unlikely that increased water levels will extend beyond the AEPA-owned bed and shore. Should future development of these Northern Lands require an extension of the berm, an additional \$1.6 million in costs is anticipated. In that scenario, the financial responsibility for the berm extension would lie with the developer.

Overall, the current \$5.09 million estimate provides the financial framework for Option 3 as it stands, while acknowledging the potential for further costs—borne by a future developer—if the need arises to protect or develop the Northern Lands. This approach helps ensure that the immediate project is sufficiently funded and that any extra costs due to landowner-driven developments are assigned appropriately.

## Cochrane Lake Improvement Plan

### Environmental

Improvements to Cochrane Lake will increase the quality of the water and stormwater management to facilitate future development and mitigate against flooding. Completion of the work presented in the Cochrane Lake Improvement Plan will lead to upgrading the Master Drainage plan for the area.

### STRATEGIC ALIGNMENT

Key Performance Indicators		Strategic Alignment
Effective Service Delivery	SD2: Services are resourced and delivered to specific groups as intended, and citizens are satisfied with the outcomes	SD2.1: Percent of citizens satisfied with the range of County services available/delivered
Thoughtful Growth	TG2: Defined land use policies and objectives are being met and communicated	TG2.2: Percent of growth/approvals within the approved growth areas within the Regional Growth Plan
		Moving forward with the improvement plan will result in a higher level of service for the people in the community and increased residential development opportunities.
		This investment is contrary to the strategic KPI being outside the Preferred Growth Area; however, it is recognized that improvements would provide a safer, more thoughtfully managed development area for future growth, leading to increased County cost recovery on regional servicing systems.

### ALTERNATE DIRECTION

Administration does not have an alternate direction for Council's consideration.

### ATTACHMENTS

Attachment A: Benefitting Area Map

Attachment B: Preliminary Berm Design

Attachment C: Cochrane Lake Improvement Plan Review Presentation

### APPROVALS

Manager:	Jeannette Lee, Manager
Chief Operating Officer:	Byron Riemann, Chief Operating Officer
Chief Administrative Officer:	Byron Riemann, Acting Chief Administrative Officer