

# Surface Water Management Review Presentation

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## Presenters

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# Purpose

- Introduce a common operating picture for the overall surface water issues the County faces.
- Develop an understanding of resident expectations and the current operational response for the Drainage Program.

# Presentation outcomes

- Council is aware of the diversity of issues we are responding to.
- Understand that the current prioritization is not clear and receive feedback on the proposed options.
- Understand gaps in the SER-001-002 Surface Water Management and Erosion Control Policy and the need to update.

# Outline

- Overview of drainage program
- Customer drainage inquiries, themes and expectations
- Review County response to drainage concerns
- Introduce current process to supporting drainage concerns
- Next steps for 2021

# Drainage program challenges

- Programs continue to focus on all things, to all issues.
- Historical precipitation cycles lead to repeat issues and first interactions with new residents not aware of historical issues.
- Drainage designs have progressed over the years as standards have increased and evolved.



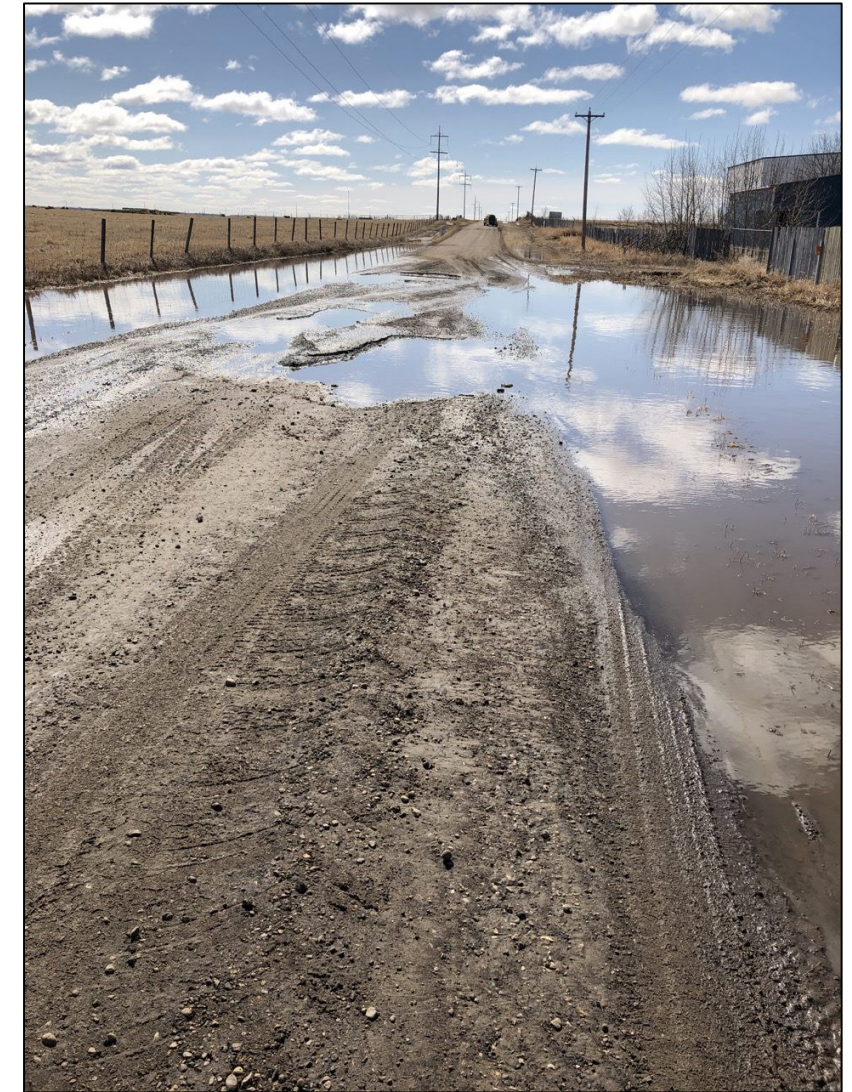
# TAS Drainage Program

- Surface water issues that pose a hazard to County and private infrastructure.
- Private property flooding, ponding water, neighbour inter-lot issues.
- Natural water body and creek issues.
- County and private infrastructure surface water issues.
- Emergency support with pumping, sandbags and other needs.



# Drainage Program across the County

- Planning and Development Services
  - Lot grading inspections
  - New development approval and inspections
  - Environmental watershed impacts
- Utilities
  - Storm system management including underground infrastructure and storm ponds
  - Storm ponds and dry ponds



# Governance

- Surface Drainage and Site Grading Bylaw
  - Provide overall bylaw guiding surface water grading and grading plan standards within the County.
- SER-001-002 Surface Water Management and Erosion Control Policy
  - The purpose of this policy is to provide guidelines on prioritizing projects pertaining to public water management, drainage issues, and opportunities for the benefit of the cooperating landowners, the environment, and the County.
  - Safety and protection of assets (i.e.: buildings and roads);
    1. Cost-benefit analysis based on improved agricultural capabilities of land and the enhancement of assets in relation to the cost of the proposed improvements;
    2. Environmental and wildlife impact;
    3. Recreational and aesthetic enhancement of a water body.



# Regulatory approvals

- A key component of many drainage projects is review and approvals with our provincial and federal agencies.
- Alberta Environment and Parks (including the Public Lands branch) are part of most reviews and permits required when working near or in bed and shore of a creek, wetland and other water bodies.
  - Timelines for approvals and permits vary
    - Two to six weeks for minor reviews
    - Six to 12 months for permit approvals

# TAS County Connect themes

Percentages of 900 total drainage cases in 2020

Theme	Percent of cases
Roadway drainage concern/condition	10%
Culvert infrastructure issue	39%
Ditching concern	12%
Catch basin issue	7%
Private property	27%
Another jurisdiction	5%

# Resident expectations

- Based on current inquiries and interactions, resident drainage program expectations include:
  - No standing water on useable private property.
  - Dry ditches so they can be manicured.
  - Natural drainage courses are only for private property use. No neighbor or County runoff should be using the natural course.
  - Beaver dams blocking drainage course. Expectation varies between “should be removed” or “should be managed”.
  - Inter-lot drainage is the County’s responsibility, and residents want to get water away from their property without review or consideration of impacts.

# Resident re-designs

- Residents continue to adjust and alter natural drainage courses, impacting their property and neighbouring drainage.
- Many changes have no approvals but were minor concerns in dry years.
- Expectations that County must fix or re-establish drainage across private property.



# Rural ditches

- Are in place to take storm water in the road right-of-way and adjacent parcels, to the natural water flow locations (i.e. creeks).
- Have locations of minimum grade and in some situations are designed to retain storm water.
- Have evolved with resident expectations from a County single cut road shoulder, to a manicured and fully maintained ditch by residents.
- Provide snow storage in the winter and are maintained to ensure storage in between storm events.



# Easement purpose

- A **drainage easement** is a legal right to use a parcel of land for a specific purpose.
  - A drainage easement through a parcel is used to convey stormwater through and parcel a land.
  - Typically, easement will restrict landowner's ability to block, alter or construct in the easement. This ensures the unhindered use for water flow.
  - Maintenance, ownership and responsibilities of easements can vary from location to location. Some easements require landowners to perform routine maintenance.
  - Easements vary with some being placed at natural water flow locations and some are engineered for surface water flow.

# Urban drainage systems

- Urban area storm system is largely underground, connecting surface runoff with storm pipes and connecting to engineered storm ponds.
- Urban areas have varying standards which have evolved and improved in the management of surface water and stormwater.
- Some areas have natural or concrete drainage swales to bring overland flow of water to a catch basin or large open channel ditch.
- Most areas have engineering stormwater plans for the management of stormwater. Systems for control include:
  - Storm system design elements
  - Curb gutter, catch basin standards
  - Swales
  - Natural creeks

# Prioritization

- **Priority 1 (Emergent)**
  - Imminent threat to County or private infrastructure
- **Priority 2 (Non-emergent)**
  - High water levels that have potential to impact infrastructure
- **Priority 3 (Non-emergent)**
  - Low Water levels impacting maintenance or hindering use

\*\*Within proposed thresholds



# Drainage thresholds

- **Rural ditch guidelines for maximum water ponding**
  - 100 mm or 4 inches, this is just a guideline and other factors may influence the decision on work approved such as culverts that need to be inspected for possible blockages or collapse, that may be affecting water ponding in the ditch upstream. Threshold may change if natural water body also changes.
  - **\*\*Issues with ponding below 100mm will not be actioned**
- **Free board (major storms)**
  - 0 to 0.3 m, measured from the top of the bank, and the maximum possible water elevation in the ditch.

# Drainage thresholds - continued

- **Ditch minimum grade**
  - 0.3%
  - Flatter slopes will result in ponding and, possibly sedimentation. Maximum flow velocity is variable.
- If the ditch was not designed properly or is not adequately carrying the stormwater runoff it receives, a redesign may be needed to reduce repeated maintenance issues.
- Redesign needs to take place within the prioritization framework of County guidelines that apply to each ditch.



# Continue to monitor

- Concerns that do not meet thresholds will be left in current state until conditions change.
  - Below 100m ponding
  - Grade greater than 0.3%
- Issues being monitored may hinder the use of the location or maintenance, but do not pose a safety concern.
- Focus will remain at the higher-level issues and proactive operational response.

# Concrete prioritization

- Concrete curb and gutter and sidewalks will be reviewed and replaced due to drainage issues only when:
  - Ponding water hinders the safe use of the roadway and impacts driving lanes
  - Water is hindering the safe use of sidewalk pararamps
  - Ponding water backs up into private property
- Ponding water in the gutters is expected. Many areas have minimal grade caused by minor debris and seasonal settling.

# Need for common drainage approach

- Clear approved level of service for acceptable standards for surface water drainage.
  - Clear standards for private property issues
  - Approved standards for ditch maintenance
- Opportunity and process for resident-to-resident mediation support.

# Operational improvements

- Increase in response times and completion of infrastructure drainage issues.
  - Additional crew established for ditching and small job response
  - Increase culvert replacements
- Increase focus on single point of contact for residents with investigations completed.
- Ensure oversight and quality assurance is completed for install conditions and culvert install elevations match design.

# Proposed next steps

- Approved prioritization matrix for rural and urban drainage concerns.
- Explore resident engagement opportunities on overland drainage.
- Develop detailed Surface Water Services policy (Q4 2021).
  - Clear level of service for surface water thresholds for operational response
  - Clear process for private property drainage concerns
  - Improved understanding of operational response and tolerances
  - Ensure clear link and connection to Surface Water and Lot Grading Bylaw
- Consider future initiatives for drainage plans in older subdivisions and overall regions of the County.



# Questions