

DRUMHELLER FLOOD MITIGATION and CLIMATE ADAPTATION SYSTEM

Changing the channel on flood readiness



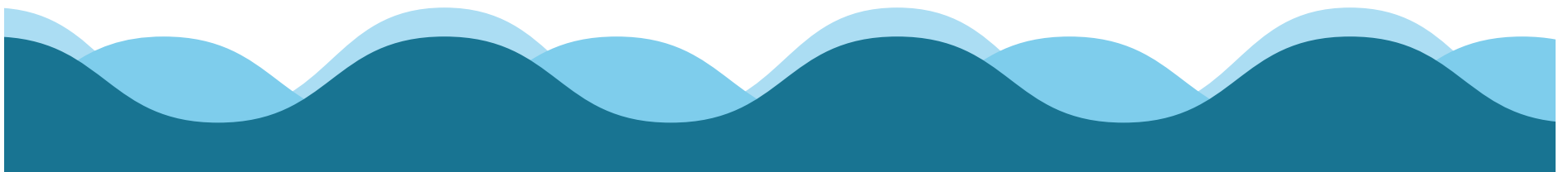
Flood Mitigation and
Climate Adaptation
System
2020
SEMI-ANNUAL
REPORT

Système d'atténuation
des inondations et
d'adaptation au
changement climatique
RAPPORT
SEMI-ANNUEL
2020



January - June 2020

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Drumheller Flood Mitigation and Climate Adaptation System: Changing the channel on flood readiness

WHO: Town of Drumheller
WHAT: Flood Mitigation and Climate Adaptation System
WHERE: 100 kilometers of riverbank in the community of Drumheller
WHEN: 2019-2024
HOW: Drumheller Chief Resiliency and Flood Mitigation Office
HOW MUCH: Funding total: \$55M

Leverage. Integrate. Legacy.

We are committed to leveraging opportunities, integrating approaches to flood mitigation and building a legacy in a proactive and sustainable way. This will form the basis of a 3-word community 'Pledge' for the program.

Overview

In March 2019, the Government of Canada committed funding in the amount of \$22M to Drumheller's Flood Mitigation and Climate Adaptation System through the Government of Canada's Disaster Mitigation and Adaptation Fund (DMAF). The Government of Alberta also committed \$28M in funding to this project through the Alberta Community Resiliency Program (ACRP). With the additional municipal investment of \$5M, a total of \$55M has been dedicated to the Drumheller Flood Mitigation and Climate Adaptation System to change the channel on flood readiness in the community.



Honourable François-Philippe Champagne, Minister of Infrastructure and Communities, Mayor Colberg and Councilor Jay Garbutt announce DMAF funding to Town of Drumheller



Drumheller Resiliency and Flood Mitigation Office

The purpose of this office is to protect the people and property in Drumheller from loss due to flooding through a sensible model for a small community to adapt to the perils of changing climate. The Resiliency and Flood Mitigation Office will manage the Flood Mitigation and Climate Adaptation Plan through to its completion in 2024.

Mission: Protect residents and property from loss or injury related to the perils of flood and changes in climate.

Goal: Preserve the value of property and ensure risk is reduced to levels which allows financial and insurance products to remain available.

Aim: Implement a comprehensive mitigation program for flooding and adaptation to changes in climate by 2025 with the following objectives:

1. Communication and public engagement
2. Regulatory/approvals
3. Conveyance capacity
4. Structural measures
5. Municipal Emergency Plan (MEP)

Council took a bold step in hiring an expert team of seasoned practitioners that have been through flood, fires and major community disasters to help manage the project and address the concerns of the community. For the first time in our community, a Chief Resiliency and Flood Mitigation Officer was hired to lead this team and ensure that Drumheller is flood ready and that resident concerns are addressed pre-flood, during a flood and post-flood.

The creation of the Resiliency and Flood Mitigation Office will follow the principles of the internationally recognized Incident command System (ICS).

January - June 2020

This report is intended to provide governing bodies and key stakeholders an overview of the current and planned objectives for the Drumheller Resiliency and Flood Mitigation Office. Forward progress has been achieved on many of the initiatives in face of the COVID-19 global pandemic. It has been a struggle to communicate with new electronic means and conduct field inspections and orientations with various consultants and stakeholders. We thank all who have participated and their patience during this time.



Planning day February 2020

Communications and engagement

- Creating and implementing a communication plan and an inclusive public engagement and stakeholder strategy is a critical part of this initiative. The need to work with the community, businesses and residents, to take on ownership and responsibility in helping change the channel on flood readiness in Drumheller is very important. The following communications activities and stakeholder engagement occurred from January – June 2020:
- Indigenous consultation and engagement:
 - Stoney Nation – correspondence with no return answer (January 30)
 - Siksika First Nation meeting to confirm project details and desire to meet in spring to conduct ceremony prior to traditional use study (February 3) – postponed due to COVID-19
 - Blood Tribe – meeting at Grey Eagles Resort to provide overview of program. Interest in historical resource and archaeological findings in prescribed area. Will schedule site visit in mid spring (February 10) – postponed due to COVID-19
 - Tsuut'ina First Nation – meeting at tribal office. Provided overview of program interested in ceremony in advance of work commencing. Will schedule meeting in mid Spring (February 10) – postponed due to COVID-19
 - Siksika Nation Council meeting with Mayor Colberg – interest in joint council meeting and exploring opportunities to develop long term relationship (March 5)
- Received positive feedback from Infrastructure Canada that they are satisfied and pleased with approach to consultation and engagement town has adopted in regards to Indigenous Consultation process to date (March 10)
- Crisis Communications training held for Town staff and council
- Video produced showing highlights from winter river inspection
- Launched dedicated Flood Readiness Website (February 5)
- Implementing public education campaign based on themes: Be Informed. Plan Ahead. Take Action – over 40 social media posts
- Video update with Mayor Colberg on flood maintenance at Newcastle Beach
- Developed educational opportunities to be delivered to Grade 4 students canceled due to COVID-19 school closures
- Nine project updates highlighted on dedicated Flood Readiness website:
 - Land Acquisition Policy (January 20)
 - Website Launch (February 5)
 - Family Day Activities (February 18)
 - Flood Mitigation Maintenance Updates (March 4)
 - Flood Season Reminder (May 15)
 - River Updates (May 25, June 1)
 - Flood Mitigation Surveying (June 9)
 - Urban Forest Surveying (June 10)



- Adopting Land Acquisition Policy and Process
- Engaging with affected homeowners impacted by Land Acquisition Stage 1
- Flood Forum with other DMAF recipients and academia planned for April 19-22 to show leadership and provide an opportunity for municipalities and experts to share best practices in mitigating flooding disasters – postponed due to COVID-19
- Held two mitigation system inspections/orientations
- Held meeting with local contractors to review flood mitigation project opportunities
- Held meeting with local realtors to discuss land acquisition policy and process
- Developed phone scripts for town staff to assist in answering frequently asked questions
- Five flood advisory committee meetings were held to provide status updates
- Twenty-five weekly team meetings conducted to coordinate activities and consolidate communications
- Meeting with Palliser Regional Municipal Services in Hanna
- Five planning technical meetings with O2 Design as it relates to Master Engineering Design and Assessment of Planning Impacts
- Coordination of communication strategies with O2 Design



*Mayor Colberg attends Siksika Nation Council meeting
March 2020*



River inspection

Regulatory/approvals

Work continues on the complex regulatory and approval process that is integral to this program. This includes:

- Meeting with Alberta Environment and Parks (AEP) operations branch to identify transfer methods (moved to Q3 as a result of COVID-19)
- Continuing discussions on transfer methods
- Meetings with AEP and Public Lands to discuss the transfer of lands and dikes
- Meetings with AEP Flood Hazard Mapping Section (February)
- Held routine meetings with Palliser Regional Municipal Services, our regional planning provider
- Actively participating in monthly Municipal Planning Commission Meetings to provide strategic advice relating to flood mitigation matters



Chief Resiliency and Flood Mitigation
Officer - Darwin Durnie



River inspection



River inspection

Conveyance capacity

An important part of this initiative is making room for the river which includes planning and outreach. The following was achieved from January – June 2020:

- Cross drain preparation and exploration for improvements
- Drainage ditch flow improvements
- Newcastle Beach brush grubbing preparation for improvements with Drumheller Institution work release program
- Excavated 6200 m3 of material from Newcastle beach to improve river flow
- Improvements to high water emergency boat access
- Way Find sign for passive warning system – delayed due to COVID-19



Gordon Taylor Bridge February 2020

Structural measures

In the first half of 2020, we continue to work on the structural foundation for the Flood Mitigation and Climate Adaptation System:

- Winter river inspection to address stability and erosion issues
- Sourced material for berm construction for both flood mitigation project work scopes and emergency berm work
- Legal surveying of existing berms that will allow for licensing and registration of the land as part of the existing flood system
- Geography and Information Technology students from Southern Alberta Institute Technology (SAIT) commenced inventory of trees throughout the valley. This will assist in determining how much green house gas is being captured and the cooling measures. This asset inventory will also determine the life expectancy of the trees and how many replacement trees need to be maintained at the tree farm at the Drumheller Institution
- Met with the Drumheller Institution to discuss collaboration with Drumheller's inmate Work Release Program to include:
 - Tactical emergency response planning
 - Tree farm maintenance
 - Manufacturing warning signs
 - Work release programs
- Held Workshop and scoping exercise with land-use landscape architecture focused on translating mandates, story and vision for the Drumheller Valley into better defined project scopes
- Completed a review of existing MDP and LUB, and identified areas for improvement in both content and process to meet flood mitigation requirements

- Engaged in workshops and conversations with our steering and technical committees that have helped us understand the new set of intents and priorities that will shape the next decades of planning and development
- Used DRFM targets to review flood impacts, existing infrastructure, and mitigation as key variables that are giving shape to planning strategy, both for implementing flood protection, connecting the valley, and for shaping future growth
- Built a rich library of layered stories about the valley that will guide the experience and curation of the valley as a world-class destination
- Prepared a preliminary land use framework that incorporates all the considerations above
- Structural measures update and barrier alignment
- Municipal Development Plan and Land Use Bylaw – conceptual Planning framework, initial policy direction and proposed LUB approach
- Two meetings with the MDP/LUB impact study steering committee to review work and align direction for committee
- Developing maintenance and operations manuals for the dikes and the maintenance of dikes – moved to Q3 as a result of COVID-19
- Preparing land assembly packages including crossing agreements and right-of-way agreements – moved to Q3 as a result of COVID-19
- Engaged Palliser Regional Planning to ensure coordination of the current and future development procedures and protocols for the Town of Drumheller

Municipal Emergency Plan

While the COVID-19 global pandemic has created unprecedented challenges to municipalities, one main benefit of the Town of Drumheller's response has been increased staff training and awareness to Incident Command System processes. Additional improvements include:

- Increased awareness ICS to all Town employees
- Email availability to all Town employees
- Council increased awareness to ICS processes and EOC operations
- Improved EOC technology

As we continue to update the MEP, we are also working on developing and expanding it beyond planned success and focusing on recovery by awfulizing potential event scenarios.



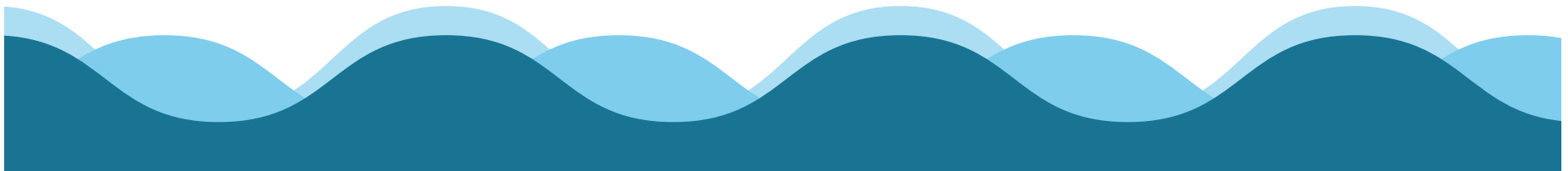
*Drumheller Emergency Management Agency activation
March 2020*

Finance

Finance and Administration activities are a key contributing factor to the success of the Flood Mitigation and Climate Adaptation System.

From January – June 2020 the following have been completed:

- Alberta Community Resiliency Program (ACRP) contract terms were agreed to with amendments
- Negotiations are ongoing for the contribution agreement with Government of Canada
- Grant investment \$20,000,000 with local Credit Union
- Completed Climate Lens GHG Mitigation Assessment Draft Report
- Set up office to function as DFRM program operations center
 - Renovations of offices including: finish walls, ceiling, floors and electrical on operations room, framing, electrical, drywall, painting operations and briefing Rooms, electrical, sprinkler relocation in operations room, flooring in operations room and install electronic equipment Hired local business to run computer cables install backbone for technology set up
 - Installation of computer cables and monitors
- Developed and implemented record management system
- Developed and implemented organizational systems and controls
- Reviewed and established purchasing policy that acts as checks and balances for purchases within the program
- Purchased notebooks and recycled computers from local organization
- Set up accounting software and protocols
- Established backbone for information systems and flow of data and information for the DFRM Program
- Purchased and set up ARCVIEW software for utilization
- Developed and awarded following service contracts:
 - Centennial Park Flood Barrier Site Concept Plan – O2 Planning and Design
 - Master Engineering Design and Assessment of Planning Impact – O2 Planning and Design
 - Finance and Management Audit – Ascend Financial
 - Hydraulic Analysis, Flood Mitigation Measures Overview, Conceptual Design and Cost – Northwest Hydraulics
 - Cathodic Protection – ASM Controls
 - Geotechnical Services – Parkland Geo Tech
 - Surveyor of Record – Hunter Surveys
 - Surveying Services – Vector Surveying & Hunter Wallace
 - Inspect Flood Mitigation Berms and coordinate Flood Zone Geotech – Sweet Tech Engineering
 - South Drumheller Storm pond Design



- Purchased goods and services from 22 local companies including:

- 1477834 Alberta Ltd
- Ascend LLP
- Big Country Graphics
- Big Country Victim Services
- Bright Valley Electrical
- Chad Carrunther – Outlawns
- Drumheller Equipment and Sales
- Drumheller Mail
- Gary's Welding
- Grants Oilfield
- Herman Kloot and Company
- Hunter Survey Systems Ltd.
- Hunter Wallace Surveys
- James Martin
- KC Hydrovac
- Lee Boreneim
- Out Lawns Tree service
- Palm Engineering
- Reality Bytes
- Reg Gallagher Trucking
- Vector Surveys
- Zucatto Landscaping



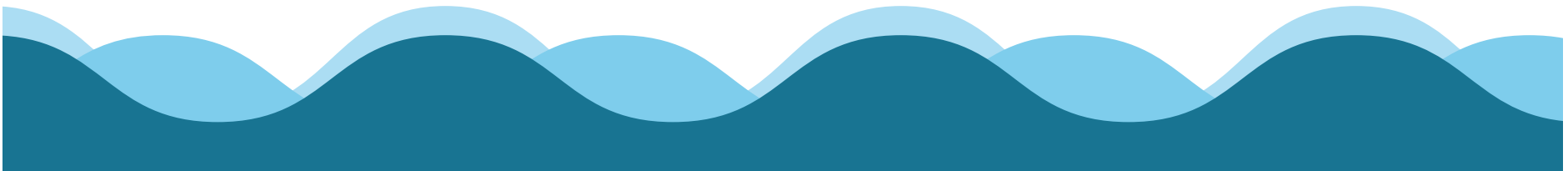
Drainage ditch clearing of fallen tree debris to facilitate inspection



Way Find Sign manufacturing for passive water earnings. Manufactured locally. Garry's Welding.

Town of Drumheller
Drumheller Resiliency and Flood Mitigation Program (DRFM Program)
Program Financial Model
Overall Project Summary
June 15, 2020

Total			2019	2020			2021	2022	2023	2024
Estimate		To Date		Actual	Budget	Estimate				
Initial	Revised									
\$22,000,000	\$22,000,000			\$8,000,000	\$8,195,026	\$0	\$5,804,974	\$3,520,000	\$4,480,000	
\$20,000,000	\$20,000,000	\$20,000,000		\$20,000,000	\$20,000,000	\$20,000,000				
\$3,211,000	\$3,211,000	\$3,211,000	\$3,211,000							
\$3,202,600	\$3,202,600	\$3,202,600	\$3,202,600							
\$6,413,600	\$6,413,600	\$6,413,600	\$6,413,600							
	\$337,745	\$315,460	\$262,114		\$74,971	\$53,346	\$31,073	\$12,640	-\$26,688	-\$16,364
	\$323,407	\$29,934			\$208,228	\$29,934	\$101,602	\$12,605	\$972	
\$30,000	\$30,000	\$30,000	\$30,000							
	\$81,018	\$81,018	\$81,018							
\$5,000,000	\$5,000,000	\$0		\$0			\$1,500,000	\$2,500,000	\$1,000,000	
\$53,443,600	\$54,185,770	\$26,870,012	\$6,786,732	\$28,000,000	\$28,478,224	\$20,083,280	\$7,437,650	\$6,045,244	\$5,454,284	-\$16,364
\$2,349,058	\$2,240,914	\$432,714	\$235,665	\$617,736	\$612,889	\$197,049	\$443,665	\$434,945	\$248,869	\$264,881
\$201,210	\$184,461	\$26,106	\$9,461	\$175,000	\$175,000	\$16,645				
\$20,000,000	\$20,323,383	\$145,584	\$10,927	\$12,172,538	\$12,805,056	\$134,657	\$6,446,093	\$987,307	\$74,000	\$0
\$30,893,332	\$30,726,997	\$614,370	\$74,052	\$6,220,620	\$6,275,620	\$540,318	\$9,684,363	\$8,198,549	\$6,361,538	\$132,875
	\$140,018	\$131,248	\$81,018		\$54,000	\$50,230	\$5,000			
	\$405,000	\$25,560	\$0		\$405,000	\$25,560				
	\$165,000	\$35,554			\$160,000	\$35,554	\$5,000			
\$53,443,600	\$54,185,772	\$1,411,136	\$411,123	\$19,185,894	\$20,487,565	\$1,000,014	\$16,584,121	\$9,620,801	\$6,684,407	\$397,756
\$2,420,000	\$2,304,600	\$463,390	\$144,125	\$610,000	\$704,000	\$319,265	\$454,000	\$384,000	\$384,000	\$232,875
\$2,420,000	\$2,302,389	\$462,778	\$143,514	\$610,000	\$704,000	\$319,265	\$454,000	\$384,000	\$384,000	\$232,875



Governance

Steps have been undertaken to ensure a strong governance model is in place including the following:

- Land Acquisition Policy adopted by Council – January 20
- Council approved a Purchasing Policy for the DRFM Program which closely follows the existing Town Policy but broadens the circumstances in which sole source purchasing may be used – January 20
- Council approved the DRFM Program Budget for 2020 for inclusion in the 2020 Capital Budget with a decision deferred on the years 2021 -2024. The DRFM Program overall budget will be reviewed as part of the Program report and financial review with Council on June 22 – January 27



Team meeting March 2020



Mayor Colberg video explaining conveyance capacity at Newcastle Beach

**We're changing the channel
on Drumheller flood readiness!**



Moving forward

For the remainder of 2020 we will continue to deliver on our overall mission to protect residents and property from injury and loss related to floods and the perils of changing climate. The implementation of the months of planning will start to become evident in the coming months.

Third quarter

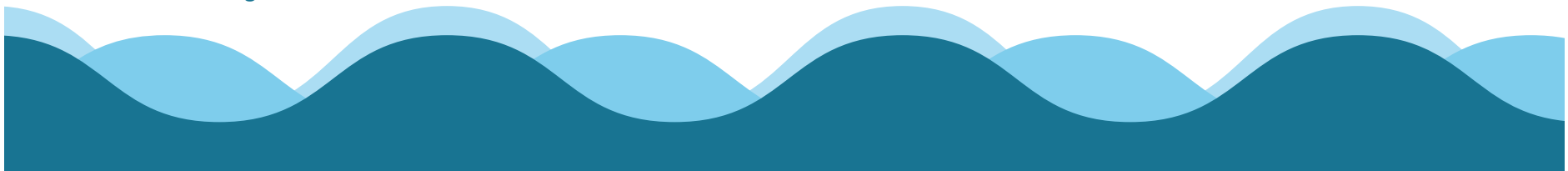
- Land Acquisition – Stage 1
- Engagement with affected homeowners
- Indigenous Consultation – site visits
- Implementation communication tactics
- Installing passive warning signage
- Newcastle Beach – conclude conveyance improvement work
- Nacmine routing and geotech studies
- Plan virtual flood forum
- Community consultation
- Master Engineering Design and Assessment of Planning Impact – MDP/LUB
- Master Plan Centennial Park and dike augmentation
- Inspecting the Alberta Environment and Parks dike, Town dikes, AT dike regulators
- Meeting regulators and regional offices
- Developing maintenance and operations manuals for the dikes and maintaining dikes
- Preparing land assembly packages including crossing agreements and right-of-way agreements – moved to Q3 as a result of COVID-19
- Commencing the 2100 Development Plan
- Erosion control AHS site, Newcastle
- Storm Water Management – future state assessment

Fourth quarter

- Land Acquisition – Stage 2 (up to 25 properties)
- Host a virtual flood Forum
- Master Engineering Design and Assessment of Planning Impact project completed
- Making decisions on reinforcement and maintenance of dikes
- Develop asset management plan for dikes
- Continuing Indigenous consultations
- Preparing land assembly packages including crossing agreements and right-of-way agreements
- Preparing educational messaging for schools
- Mitigation strategies lift stations
- Detailed designs structural measures
- Storm ponds – cleaning and increase capacity
- MEP – Flood operational annex

Our commitment

As a community dedicated to a safe and prosperous future, both on the housing, economic and cultural front, we are writing the next chapter of our story and ensuring a resilient and flood ready future. It takes a whole community approach, and together with our partners in the provincial and federal governments, we will preserve the Dinosaur Capital of Canada and share our story of adapting to a changing climate with the world.







DRUMHELLER IS A FLOOD COMMUNITY



8,000

POPULATION



12

NEIGHBOURHOODS



100

KILOMETRES OF RIVERBANK



HISTORIC FLOOD YEARS

1902 1915 1932 1954 1991 2005 2013 2018

ROI

Exceeds 2:1

- ✓ Making room for the river
- ✓ Reinforcing existing measures

GOALS

- ✓ Building an adaptive system to protect the community into the 22nd century
- ✓ Changing the channel on flood-readiness

Green House Gases

3200 cars per year equivalent
land preservation area dedicated



2019

COMMENCE
DATE

2024

COMPLETION
DATE

20,000

STAFFING
HOURS



The next historic flood is not a matter of “**IF**” but “**WHEN**”

