

# WELCOME

## Celebrating 25 Years of the Nose Creek Watershed Partnership

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October 12, 2023



## Land Acknowledgement

The NCWP acknowledges this land as the traditional home of the Blackfoot Confederacy, including the Siksika, Piikani, and Kainai, the Tsuut'ina Nation and Stoney-Nakoda Nations, including the Goodstoney, Chiniki, and Bearspaw, and the People of Métis Nation of Alberta, Region 3.



## Welcome from Co-Chairs

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Clint Goodman, City of Airdrie

Matt Chilakos, Rocky View County



## Opening Remarks

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Mayor Kim Harris

Mark Bennett, Past Executive Director for the BRBC and  
NCWP Alumni



# 25-Years of the Nose Creek Watershed Partnership

## Highlights Through History



## NCWP Formation

- Municipal leaders expressed concern for water quality and riparian condition
- Calgary, Airdrie and Rocky View formed a Partnership
- Mission: to protect riparian areas and improve water quality in Nose and West Nose creeks



## 1998-2002

- In 2001, the NCWP broadened membership to include Town of Crossfield, Ducks Unlimited Canada, the Calgary Airport Authority and the Bow River Basin Council

### 2002 Activities

- Need for a Nose Creek Water Management Plan was identified
- Madawaska Consulting completed a three-year water quality study
- City of Calgary completed the West Nose Creek Stream Corridor Assessment



## 2003-2007

Planning initiated with the focus to develop the Nose Creek Water Management Plan

- 2003 - Terms of Reference established and supported
- Focus on water quality and riparian condition
- Recommended Water Conservation Objective
- Stakeholder Engagement
- 2005 Nose Creek Basin Instream Flow Needs Study
- 2006 Evaluation of Source Control Runoff Volume Criteria (Tech. Memo.)





the committee that the matter has become an enforcement of the closure when Cochrane residents complained after Boothby recently fenced the access.

Haberfield said town residents should not be trespassing the fences put up by Boothby.

### Rocky View Committee recommends support for Nose Creek guidelines

**Enrique Massot**

The Municipal District of Rocky View Public Services Committee has lent more than formal recognition to a plan recommending stricter guidelines to keep Nose Creek healthy.

On a motion by Deputy Reeve Lois Haberfield, the committee, made up of councillors, agreed to recommend support in principle for recommendations contained on a draft plan for the Nose Creek watershed presented January 17.

"This is a reasonable plan that allows development to go," said Haberfield, adding that the proposed guidelines are reasonable and will keep a healthier creek while not placing too many restrictions.

"There is nothing scary in this," she said.

In opposition was committee members Gerry Neustaedter and Brenda (Young) Goode.

Goode said her opposition was only based on the princi-

explored options for municipal enforcement of the closure and the possibility of penalties for trespassers.

"Letting the road allowance open right now impedes on the rancher's right," he said.

"I do not think the burden falls on the landowner."

ple because she had not had time to read the draft proposed guidelines.

The committee's recommendation must be endorsed by the council.

Sandi Riemersma, of Palliser Environmental Services, presented the draft, which took two years to be completed and was the result of a partnership of the City of Airdrie, the City of Calgary, and the M.D. of Rocky View, as well as agencies such as Alberta Environment, the Calgary Airport Authority, Fisheries and Oceans Canada, Ducks Unlimited and the Bow River Basin Council.

Riemersma said a key point to keep the health of Nose Creek, which originates near the north boundary of Rocky View, north of the Town of Crossfield, is to control storm water release rates from its 989 square kilometre watershed. This would avoid sudden discharges that could increase channel width.

*Cont'd on page 3*

6 - ROCKY VIEW WEEKLY Tuesday, December 06, 2005

## Partnership releases recommendations for Nose Creek

**Enrique Massot**

A **h**ased by development and road building, polluted by sewage and pesticides, a humble prairie creek could become again a healthy watercourse if recommendations contained in a report recently released are made into law and effectively enforced.

John Schmal, who as a City of Calgary alderman was among the first jumping to work for the protection of Nose Creek and West Nose Creek several years ago, says the joint work of all the jurisdictions bisected by the creek is a good news story.

"It was the most co-operative project I have ever seen," he said.

"The City of Airdrie, the City of Calgary, the M.D. of Rocky View, the Town of Crossfield-all working together to improve the water quality on those creeks."

Infiltration trenches, ponds and cisterns are some other low-impact development practices that allow water to slowly return to its original source through infiltration or evapotranspiration.

Developments such as Harpington in northwest Calgary share storm

water and use it for irrigation of a golf course, allowing the subdivision to keep its levels of storm water runoff at pre-development rates and becoming a zero-discharge community.

Retaining storm water in ponds and wetlands allows for retention and pre-treatment before it reaches the creek.

"Because of the way storm water will be managed, there will be more flood protection in times of high rainfall," said Rocky View's Agricultural Fieldman Tim Dietzler.

"When the flood comes, we will also have less potential damage to infrastructure such as storm water outfalls, bridges, storm water ponds, pathways that are along those creeks.

Minimizing damages will result in saving taxpayer cost in keeping the facilities in the future," Dietzler added.

Costs of repairing damages to roads, bridges and culverts in Rocky View damaged by last summer's flood have been estimated to \$1.5 million, with the addition of half a million in damages to private properties along the Elbow River in the M.D.

Originating near Crossfield, Nose Creek meanders through Rocky View and Airdrie before joining the Bow River in Calgary. West Nose Creek's course begins four miles southeast of Madden and joins Nose Creek in the city.

With a total length of 45 miles, Nose Creek descends 110 vertical metres from headwaters to mouth. The two creeks drain an area of 275 square miles.

"Bow River trout population has better chances of thriving if Nose Creek's water quality improves, and could even swim up the creek one day," said Brian Moughar, provincial biologist with Trout Unlimited.

"Due to characterization, industry and development, the water temperature and regime are changing, and the environment is not very friendly to rainbow trout," said Moughar.

"But Nose Creek is still a decent carrier for certain species. Now, if you increase the quality of water, you increase the quality of fish in the river."

The report recommends that the entire length of the creeks be classified as Class C, which would introduce time restrictions for such works as pipelines, culverts, bridges, or

storm water outfalls. Those measures would increase water quality without preventing activity.

"We think it is important that Nose Creek is recognized as an important creek that has potential for fish habitat, beyond the two-kilometre point," said Dietzler.

A second presentation of the Nose Creek Water Management Plan will take place December 15, at 6:30 p.m., at the Crossroads Mayland Heights Community Association.

Dietzler said citizens wanting to provide feedback on the report should fill up a questionnaire and reply no later than January 31.

"Based on the input we will revise things and take it for approval to the municipal councils of Crossfield, Airdrie, Calgary and Rocky View. Then, we'll take it to Alberta Environment as well," he said.

If approved by the jurisdictions, and incorporated by regulations, "then it becomes the standard for this area," said Dietzler.

For more information, call Tim Dietzler, M.D. of Rocky View, at 520-1271.

## Report recommends tightening of authorizations to alter channels

The M.D. of Rocky View's deputy reeve was taken aback by the approval of realignment of Wet Creek, a tributary of Nose Creek, in order to accommodate the needs of a developer, before a report advised against such changes.

City of Airdrie, whose division encompasses a large part of the course of Nose Creek and West Nose Creek, said avoiding channel diversion of the creek or its tributaries is one of the key elements of the draft Water Management Plan for the Nose Creek Watershed, presented November 22 at the Goldbarrow Hall.

Haberfield said consideration of an application to subdivide 40 acres into nine four-acre lots, located just north of highway 566 and west of highway 782, should have included further consultation.

City of Airdrie voted against approval of the application

by Norman Kerr in representation of owners Jeff Lowe, president of an Alberta numbered company, and Ryan Stucka.

Everett deplored the lack of action on the water of an proposal to alter a watercourse.

"We have the ability to take a municipal reserve (land) for protection, and we did not," he said.

"We are watching watercourses being changed just to accommodate a reeve."

Municipal planner Richard Bares said realignment of Wet Creek drainage had been approved in the Caltarra Estates Conceptual Scheme in 2000.

"A lot of those things were not considered important at that time," he said.

Alberta Environment issued an authorization for the diversion, which has been almost completed, added Bares.

A draft Water Management Plan for the Nose Creek Watershed, if approved by the municipalities bisected by the creeks and authorized by Alberta Environment, may be incorporated into municipal plans, policies and bylaws. It may increase setback distances, and restrict allocations of water withdrawals or channel diversion.

The plan recommends that no further loosening of channel length be authorized. If demonstration is made of absolute necessity, then compensation and mitigation measures will be imposed.

County residential communities are beginning to develop in rural parts of the Nose Creek watershed, representing the beginning of future urban growth and alteration of natural drainage ways, the report states.

## 2008-2012

2008 Nose Creek Water Management Plan complete



- Focus on riparian policy development
- Stormwater management tools
- Stakeholder Engagement



## 2008-2012

Nose Creek Water Management Plan implementation



## 2013-2017

2013 Nose Creek Internal Drainage Areas Study

2014-2016 - Stormwater Quality Monitoring Program

2015 - Internal Drainage Areas Policy Statement

2016 - Review of the Nose Creek Plan implementation challenges and successes

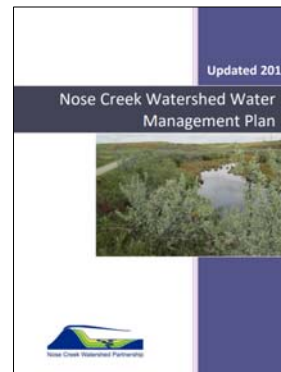
Stakeholder Engagement

Terms of Reference for Nose Creek Plan Update



## 2018-2022

- The Updated Nose Creek Watershed Water Management Plan complete and supported by all Partners
- Efforts focused on priority recommendations to alleviate implementation challenges





## Nose Creek Watershed Partnership Revised Goal

*Protect riparian areas and manage streamflows in the Nose Creek watershed to mitigate impacts of flood and drought, and improve water quality for water users and aquatic life.*



## 2018-2022



2020 Wetland Inventory and Valuation Project (Dr. Irena Creed, University of Saskatchewan)

2020 Nose Creek Model Project Initiated

2022 Riparian Intactness Assessment

2022 Updated the NCWP Website – Logo refreshed

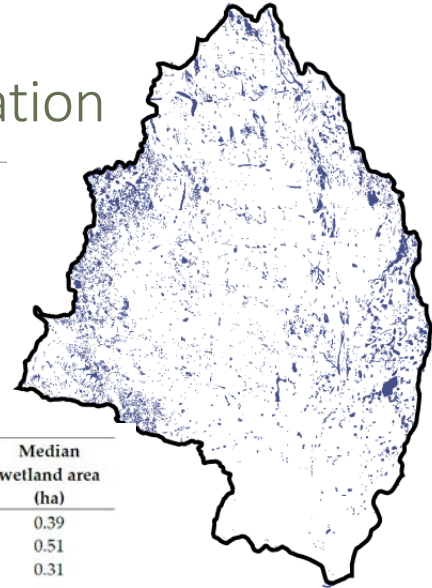
Ongoing effort to improve engagement





## Wetland Inventory and Valuation

- Create an up-to-date high-resolution inventory of existing wetlands, and estimate the values of these wetlands to inform retention and restoration
- Wetlands comprise 6.6% of the watershed



Source: Creed 2021

	Number of wetlands	Total wetland area (ha)	Average wetland area (ha)	Median wetland area (ha)
Calgary (within watershed only)	584	631.03	1.08	0.39
Airdrie	276	617.37	2.24	0.51
Crossfield (within watershed only)	64	98.21	1.53	0.31
Rocky View (excluding Calgary, Airdrie, Crossfield)	5,525	4,984.72	0.90	0.27

## 2023 – NCWP Current Activities

Continue effort to complete the Nose Creek Model Project – Advancing into Phase III – Model Calibration

Ongoing effort to seek funding to support the project



1998

2003

2008

2013

2018

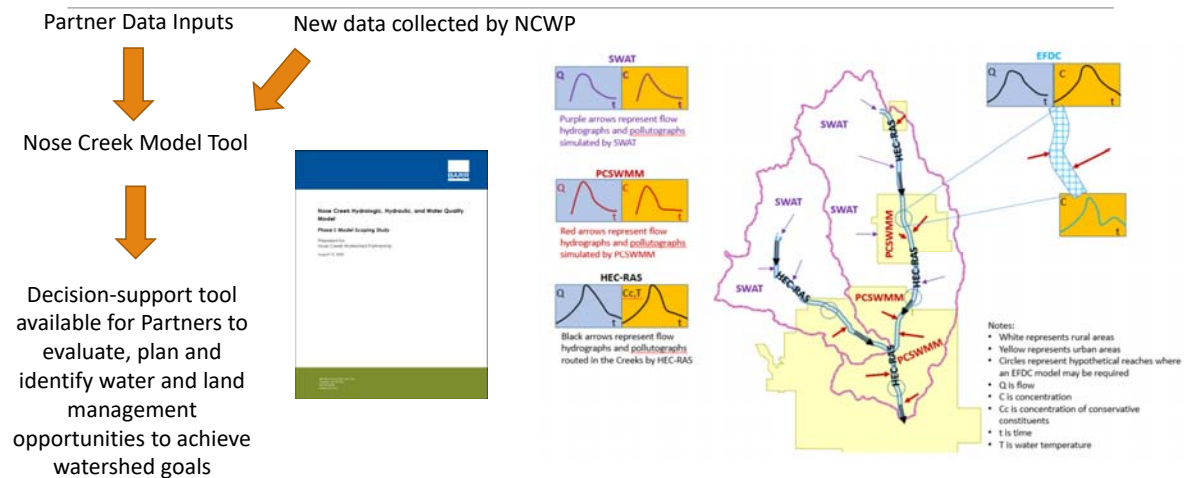
2023

## Nose Creek Hydrologic, Hydraulic and Water Quality Model Project Objectives

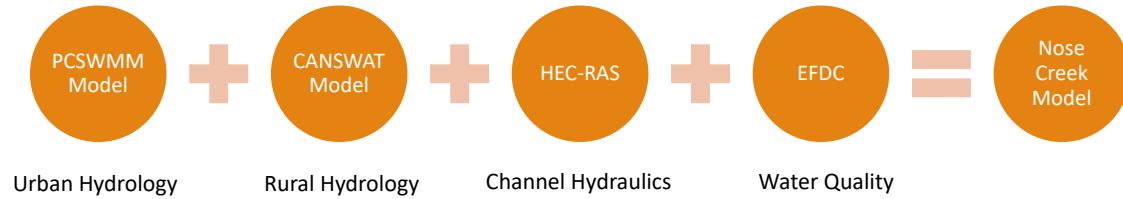
1. A watershed-scale model
2. Better understand current conditions:
  - a) climate change
  - b) importance of wetlands and aquifers
  - c) importance of ephemeral and intermittent watercourses
  - d) impact of water allocation and use
3. Evaluate watershed management strategies
4. Build and maintain a data inventory and identify gaps
5. Monitor and evaluate implementation success



## Nose Creek Model Project Approach

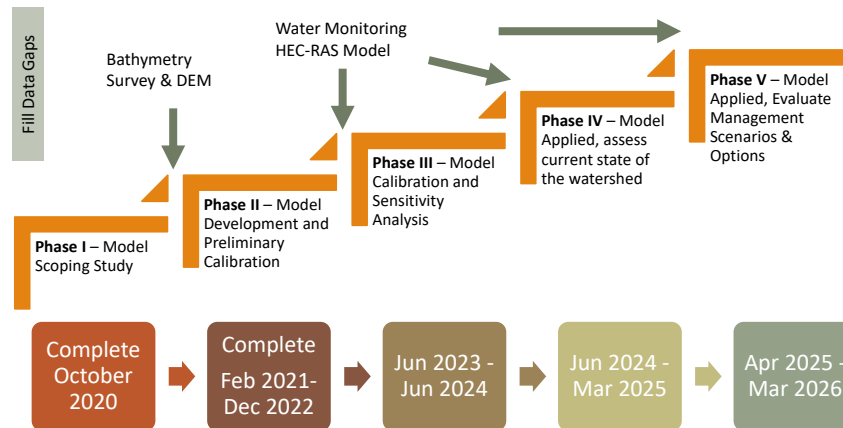


# Nose Creek Model Project



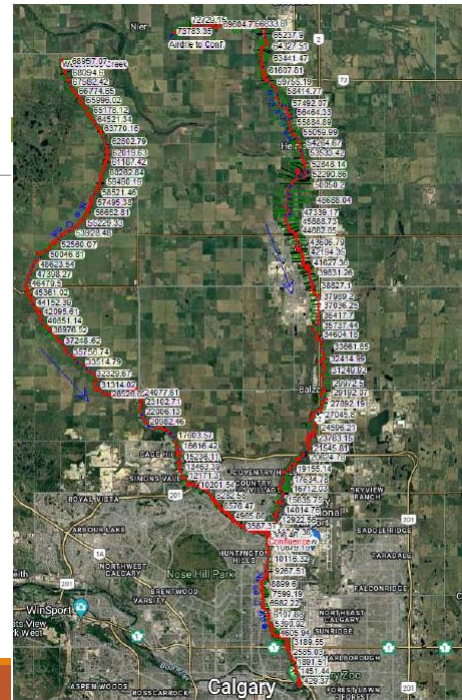
- Bathymetry Study
- Increased water monitoring
- Weather station and soil moisture monitoring network

# Nose Creek Model Project Approach



## Nose Creek Model Project – Bathymetry Survey Gap

- Surveyed Nose and West Nose creeks
- Used to support the hydraulic aspect of the model

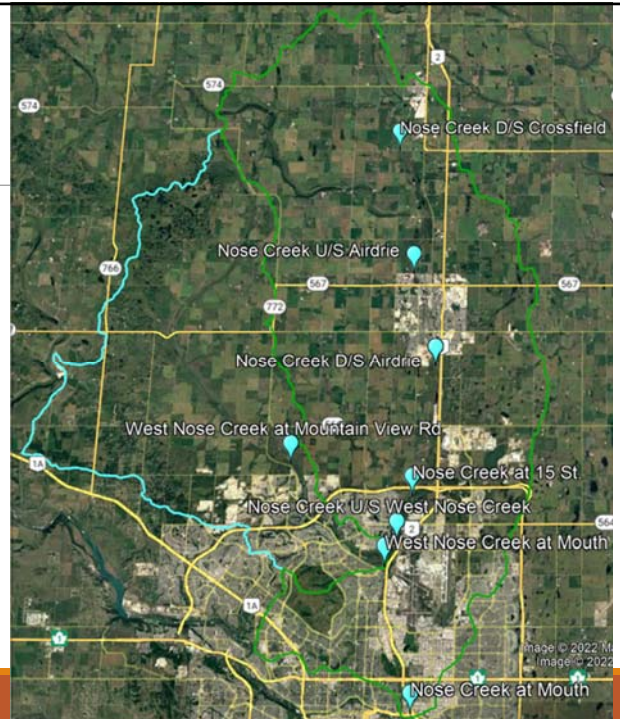


## Increased Water Quality Monitoring to Support the EFDC Water Quality Model

- Improved Anchor Site (Long-Term) Monitoring
- Longitudinal Water Quality Survey
- Town of Crossfield Treated Effluent Release

## Anchor Site Monitoring

- Long-term monitoring in collaboration with Partners
- Six sites were being monitored consistently by Calgary and Airdrie
- Identified two data gaps
  - NC downstream of Crossfield
  - NC Upstream of Confluence with West Nose Creek



## Anchor Site Monitoring



Continuous data sondes purchased and deployed at two new sites

Additional parameters added to routine monitoring to better understand the constituents contributing to total suspended solids:

- Volatile suspended solids
- Carbonaceous biochemical oxygen demand (CBOD)
- Chlorophyll *a*

# Longitudinal Water Quality Survey



## Objectives

- Understand low flow dissolved oxygen dynamics
- Determine the constituents that are contributing to total suspended solids
- Understand nutrients dynamics as water flows downstream
- Water quality data is available for Nose Creek Model (EFDC) calibration

## Longitudinal WQ Survey Sites

34 Sites on Nose Creek

### NC Upstream of Airdrie

- Sites LS\_NC1 to LS\_NC14

### NC at Airdrie

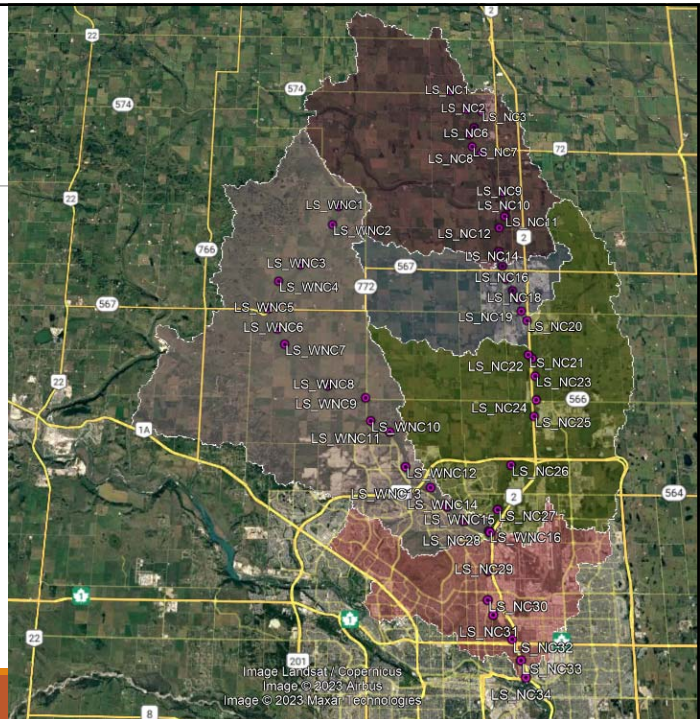
- Sites LS\_NC15 to LS\_NC21

### NC at RVC

- Sites LS\_NC22 to LS\_NC26

### NC at Calgary

- Sites LS\_NC27 to LS\_NC34



## Longitudinal WQ Survey Sites

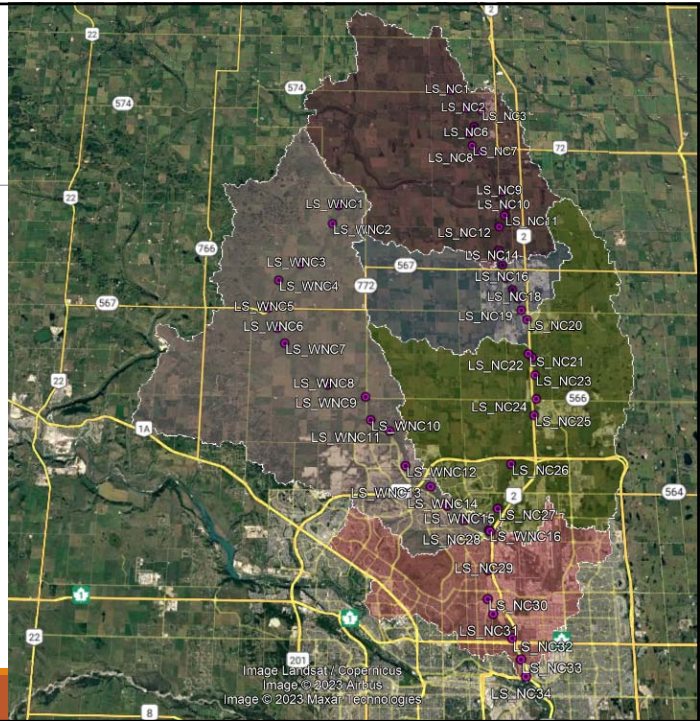
16 Sites on West Nose Creek

WNC at Rocky View County

- Sites LS\_WNC1 to LS\_WNC10

WNC at Calgary

- Sites LS\_WNC11 to LS\_WNC16



## Plan to Monitor the Town of Crossfield Treated Effluent Release

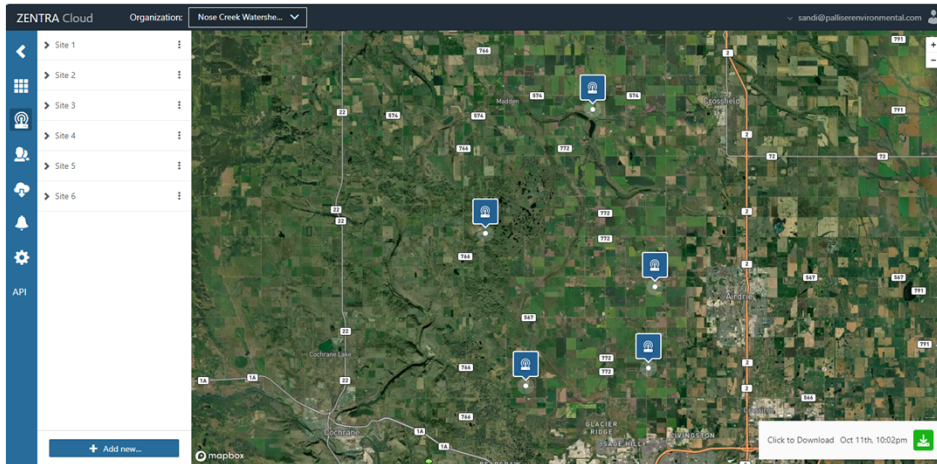


Treated effluent release will be used to trace constituents as water flows downstream

Input variables for modelling



# Weather and Soil Moisture Monitoring Network



## Other Activities 2023

- Continue efforts on the Riparian Management Strategy, building on the Riparian Intactness Assessment
- Hosted a Stakeholder Group Meeting
- Hosted Industry Focus Group meeting

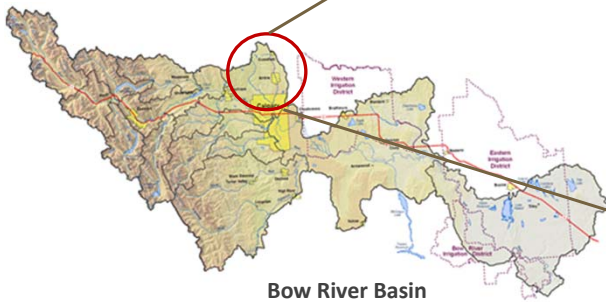




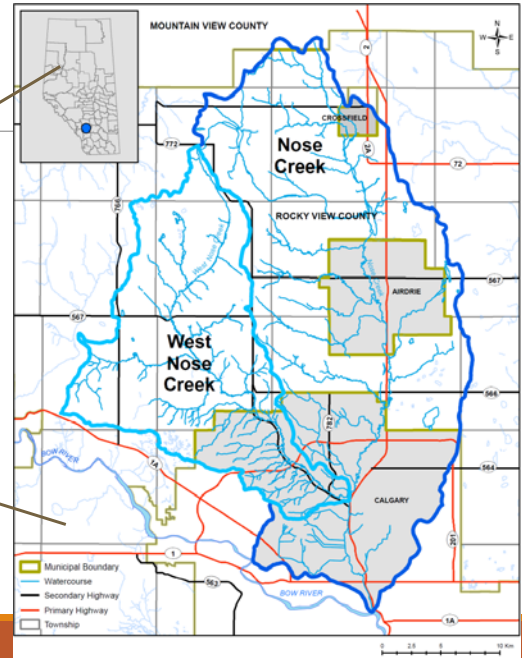
# Nose Creek Watershed

Size: 989 km<sup>2</sup>

Important tributary to the Bow River



Bow River Basin



# NCWP Outcomes

The NCWP continues to strive to achieve the outcomes established in the Nose Creek Plan.



## Water Quantity and Stormwater Management

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Minimize the degradation of natural hydrology and stream channel morphology is minimized.

Through mitigation, the cumulative impacts of urban development on watershed resources is minimized

## Surface Water Quality

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Surface water and stormwater quality improve.

Water quality condition supports a variety of uses, and aquatic life.

The cumulative impact of land use on water quality is minimized.

## Riparian Protection

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Local and regional flood and drought mitigation efforts are supported.



## Riparian Protection

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Permanent watercourses are able to naturally meander within their floodplain.



## Riparian Protection

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Ephemeral and intermittent watercourses are maintained.



## Riparian Protection

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Wetlands are integrated into development and retained in the watershed.



## Riparian Protection



Contiguous and healthy riparian corridors maintain water quality and support biodiversity.



## Riparian Protection

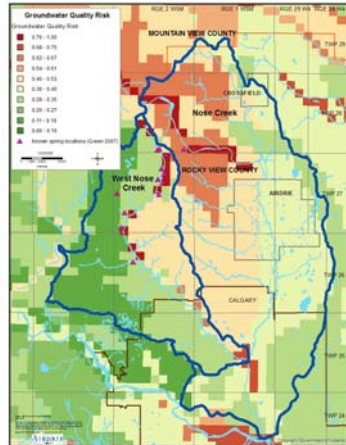
Stoney Grandmother and her grandchildren (Photo: City of Airdrie)

Currently not reflected in the Nose Creek Plan, but consideration to be given:

Indigenous ways of life, including social, cultural and spiritual, practices are sustained by healthy riparian areas.



## Groundwater



Groundwater quality and quantity is protected for users and the aquatic environment.

## Biodiversity

Native plants support stable streambanks.



## Biodiversity

Conditions for fish and aquatic life are improved.



## Biodiversity – Fish Community

Brook Trout (*Salvelinus fontinalis*)

Brown Trout (*Salmo trutta*)

Brook Stickleback (*Culaea inconstans*) (5)

Fathead Minnow (*Pimephales promelas*) (24)

Goldfish (*Carassius auratus*)

Lake Chub (*Couesius plumbeus*)

Longnose Dace (*Rhinichthys cataractae*)

Longnose Sucker (*Catostomus catostomus*) (40)

Mountain Whitefish (*Prosopium williamsoni*)

- Northern Crayfish (*Orconectes virilis*)
- Northern Redbelly Dace (*Chrosomus eos*)
- Northern Pike (*Esox lucius*)
- Prussian Carp (*Carassius gibelio*) (17)
- Pearl Dace (*Margariscus margarita*)
- Rainbow Trout (*Oncorhynchus mykiss*)
- Trout-perch (*Percopsis omiscomaycus*)
- White Sucker (*Catostomus commersonii*) (11) (AEPA 2023)

**TRITON**  
Environmental Consultants

## Biodiversity – Fish Community



## Biodiversity

Invasive species are managed appropriately.

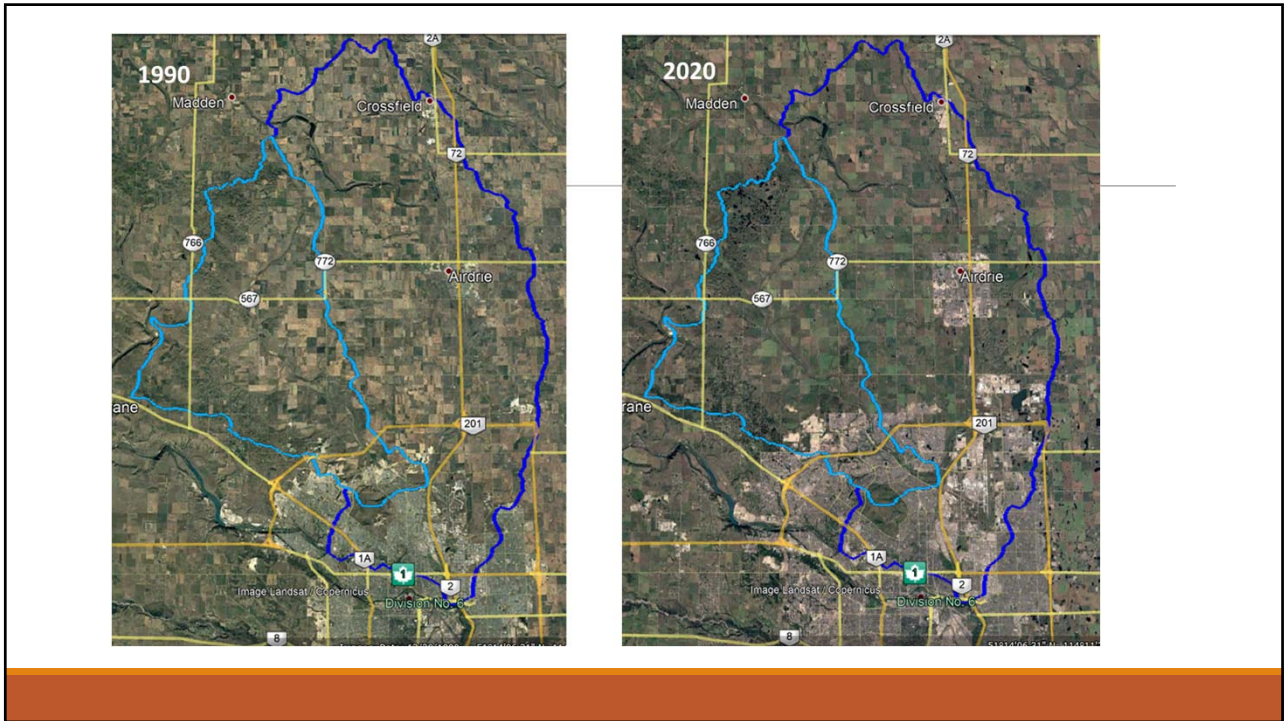


Photo 12. Prussian Carp Fry captured during electrofishing at Site 1.



Photo 12. Adult Prussian Carp caught during electrofishing at Site 1.







## Acknowledgements

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Creative Sentencing Program



ROCKY VIEW  
COUNTY  
Cultivating Communities




# Special Presentation

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In 2023, the NCWP was the recipient of the Emerald Award – Governance Category

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**32nd Annual  
Emerald Awards  
Recipient**

**Government**  
Nose Creek Watershed Partnership  
Celebrating 25 Years of Watershed Planning, Policy and Action  
2023

Alberta Emerald Foundation

The NCWP congratulates all past and present Board, Technical Team, Subcommittee, Stakeholder Group, Funding Organizations and consultants who have contributed to 25 yrs of planning, policy and action.

To Our Past and Present Mayors, Reeve and Council Members

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Thank you for your vision.



Calgary  
YYC CALGARY INTERNATIONAL AIRPORT  
CITY OF AIRDRIE  
COMMUNITY & OPPORTUNITY  
THIS IS CROSSFIELD  
EST 1907  
ROCKY VIEW COUNTY  
Cultivating Communities  
**32nd Annual  
Emerald Awards  
Recipient**

## To Our Current NCWP Board

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Clint Goodman, City of Airdrie  
 Matt Chilakos, Rocky View County  
 Mike Murray, BRBC  
 Phil McMechan, City of Calgary  
 James Jorgensen, Calgary Airport Authority  
 Joe Holstein, Town of Crossfield



## To Our Current NCWP Technical Team

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Bert van Duin, City of Calgary	Emily (Xue) Chen, Alberta Environment and Parks
Erica Yaholnitsky, City of Calgary	
Phil McMechan, City of Calgary	Tom Tang, Alberta Environment and Parks
Andrew Dormer, City of Airdrie	Jon Slaney, City of Calgary
Jeff Manryk, City of Airdrie	Andrew Huang, City of Calgary
James Jorgensen, Calgary Airport Authority	
Harris Switzmann, Calgary Airport Authority	
Joe Holstein, Town of Crossfield	
Mike Murray, BRBC	

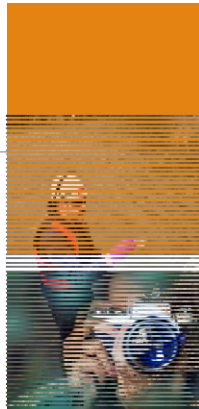


# To Our SubCommittees

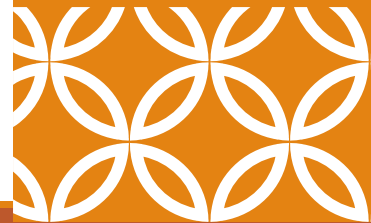
Water Quality Subcommittee

Water Modelling Subcommittee

Weather and Soil Moisture Monitoring Subcommittee



Teams in Action



## To all the NCWP Stakeholders



## To Our NCWP Funders and Sponsors



Creative Sentencing Program



Land Stewardship Centre



Calgary



ROCKY VIEW COUNTY  
Cultivating Communities



BRBC



## To the Consultants

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Barr Engineering and Environmental Sciences Canada

Compass Geomatics Ltd.

CPP Environmental

Fiera Biological Consulting Ltd.

KWL

Triton Environmental Consultants



## Last but not least... to the NCWP Alumni

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Tim Dietzler, Past NCWP Chair

Terry Thompson

Yin Deong

Erin MacMahon

Wendell Koning









## Please Register for the upcoming ALIDP conference AND TRAINING

**Register Now!**



**Program Overview:**

- Mon Nov 13 -** PCSWMM LID Training (Instructor: Mike Gregory of CHI)
- Tue Nov 14 -** Track 1: Stormwater Design Brilliance (Instructor: Bert van Duin of The City of Calgary)  
Track 2: Landscaping Training
- Wed Nov 15 -** Conference Day 1
- Thurs Nov 16 -** Morning: Conference Day 2  
Afternoon: Soil Cell Training (Instructor: David Seeliger of MPE)



**Designing for Tomorrow Nov 15 and 16, 2023 Calgary**

# Lunch Time

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