

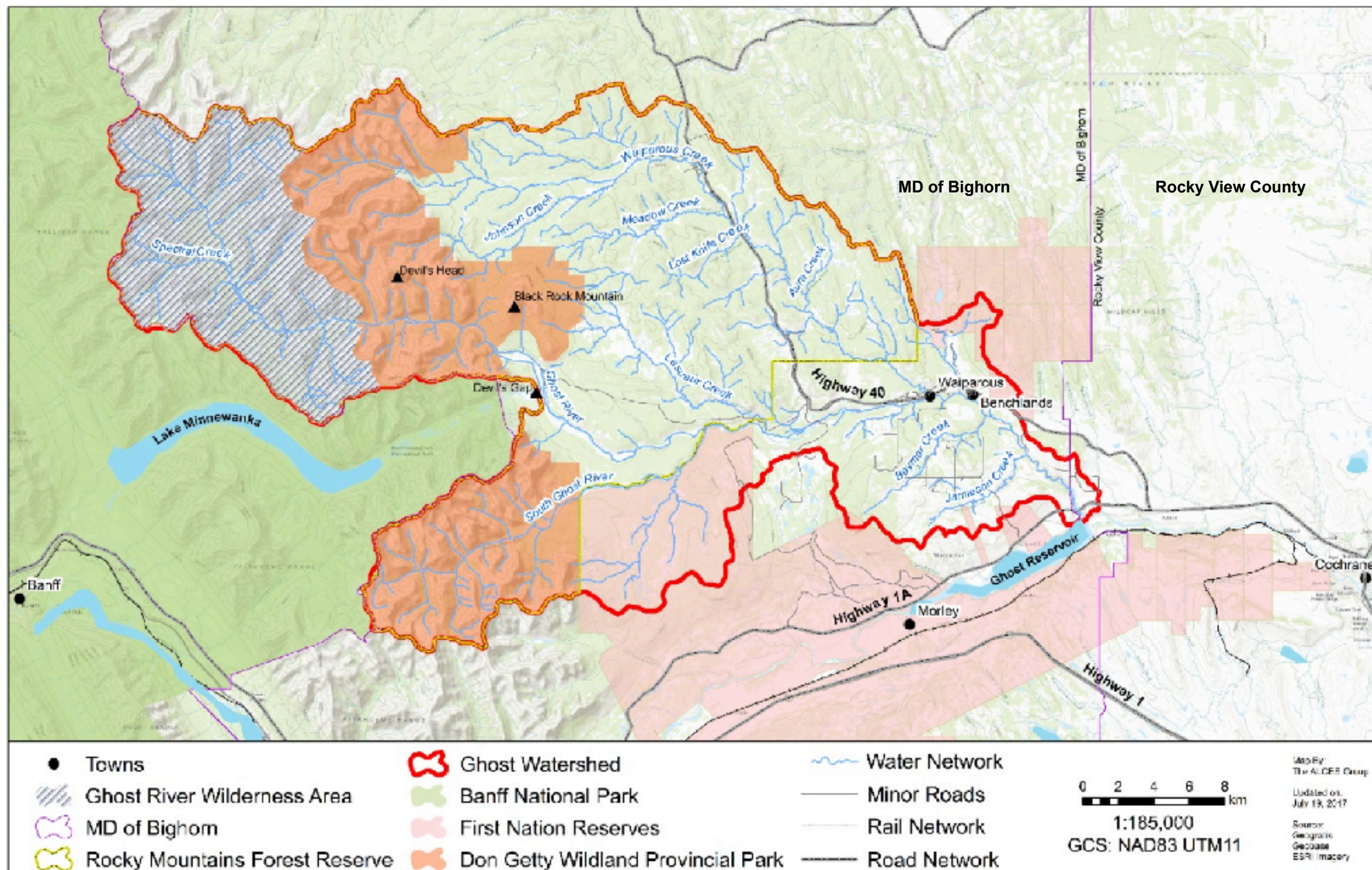
Report on Our Work in 2023

Presented by:
Marina Krainer
Executive Director

GWAS AGM
The Crossing at Ghost River
November 25, 2023



The Ghost Watershed



Who is GWAS?

- ◆ Watershed Stewardship Group (WSG)
- ◆ Established 2002 (celebrated 20 years last year)
- ◆ Largely volunteer driven



Photo credit: K. Unger

What does GWAS do?

- ◆ Gather and share knowledge
- ◆ Raise awareness
- ◆ Work collaboratively to improve watershed health



GWAS Operations Plan - Strategic Objectives

- ◆ Science, research, monitoring & knowledge
- ◆ Outreach, awareness, education
- ◆ Advice and recommendations
- ◆ Ecosystem repair and enhancement



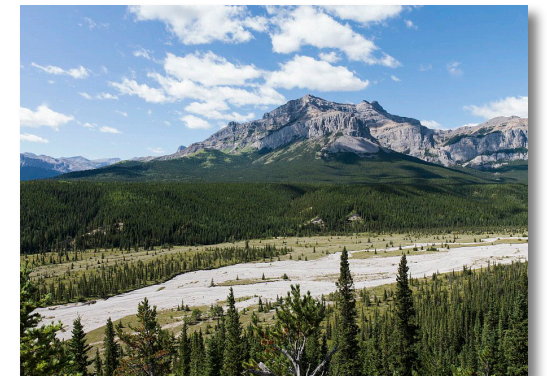
Photo credit: M. Krainer

Ghost River State of the Watershed Report (2018)

- ◆ Water quality data gaps were identified.
- ◆ **Report Recommendation:** “Perform aquatic invertebrate sampling (as per the Canadian Aquatic Biomonitoring Network protocols) at sites within the Ghost Watershed, and use Ephemeroptera, Plecoptera and Trichoptera (EPT) ratios as a proxy for water quality.”



GHOST RIVER STATE OF THE WATERSHED REPORT 2018



FINAL REPORT
(Revised version December 2018)



Ephemeroptera, Plecoptera and Trichoptera



Mayflies (E)



Stoneflies (P)



Caddisflies (T)

Sensitive



Flies and Midges (C)

Tolerant

Ratio of $EPT / EPT + C$
Indicator of water quality

What is CABiN?

- ✦ CABiN - Canadian Aquatic Biomonitoring Network
- ✦ National biomonitoring program developed by Environment and Climate Change Canada
- ✦ Provides standardized sampling protocols



Photo credit: C. Hill

GWAS Water Monitoring Plan

- ◆ Initially a 3-year plan: 2020 - 2022
- ◆ Three focus areas; Ghost River, Waiparous Creek, tributaries
- ◆ CABiN and STREAM, temperature loggers and lead testing



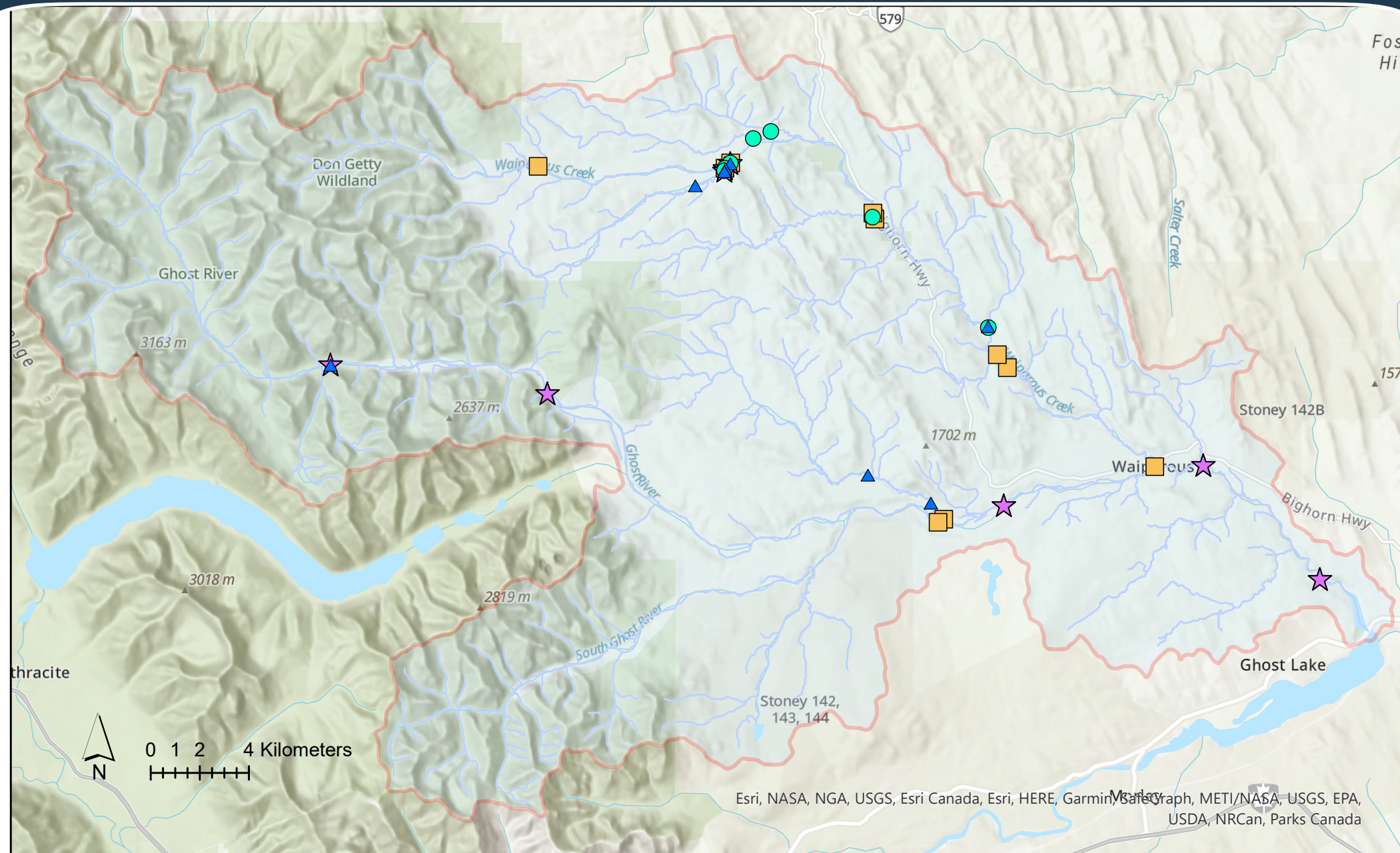
Ghost Watershed Sampling Sites 2020 - 2023

◆ 10 sites in 2020

◆ 7 sites in 2022

◆ 8 sites in 2021

◆ 8 sites in 2023



- ▲ 2023
- 2022
- ★ 2021
- 2020
- Streams
- Ghost_Basin_Project

Author: GWAS
Date Published: November 22, 2023
Scale: 1:225,000
Data Sources: GWAS, MacHydro, Esri Basemap
Coordinate System: NAD83 10TM AEP Forest

GWAS Aquatic Bio-monitoring in 2023

- ◆ Sampled 8 sites in 2023:
 - ◆ Tributaries: Aura Creek, Lesueur Creek (2 sites), Johnson Creek (2 sites)
 - ◆ Ghost River: 1 site (Ghost Wilderness)
 - ◆ Waiparous Creek: 2 sites



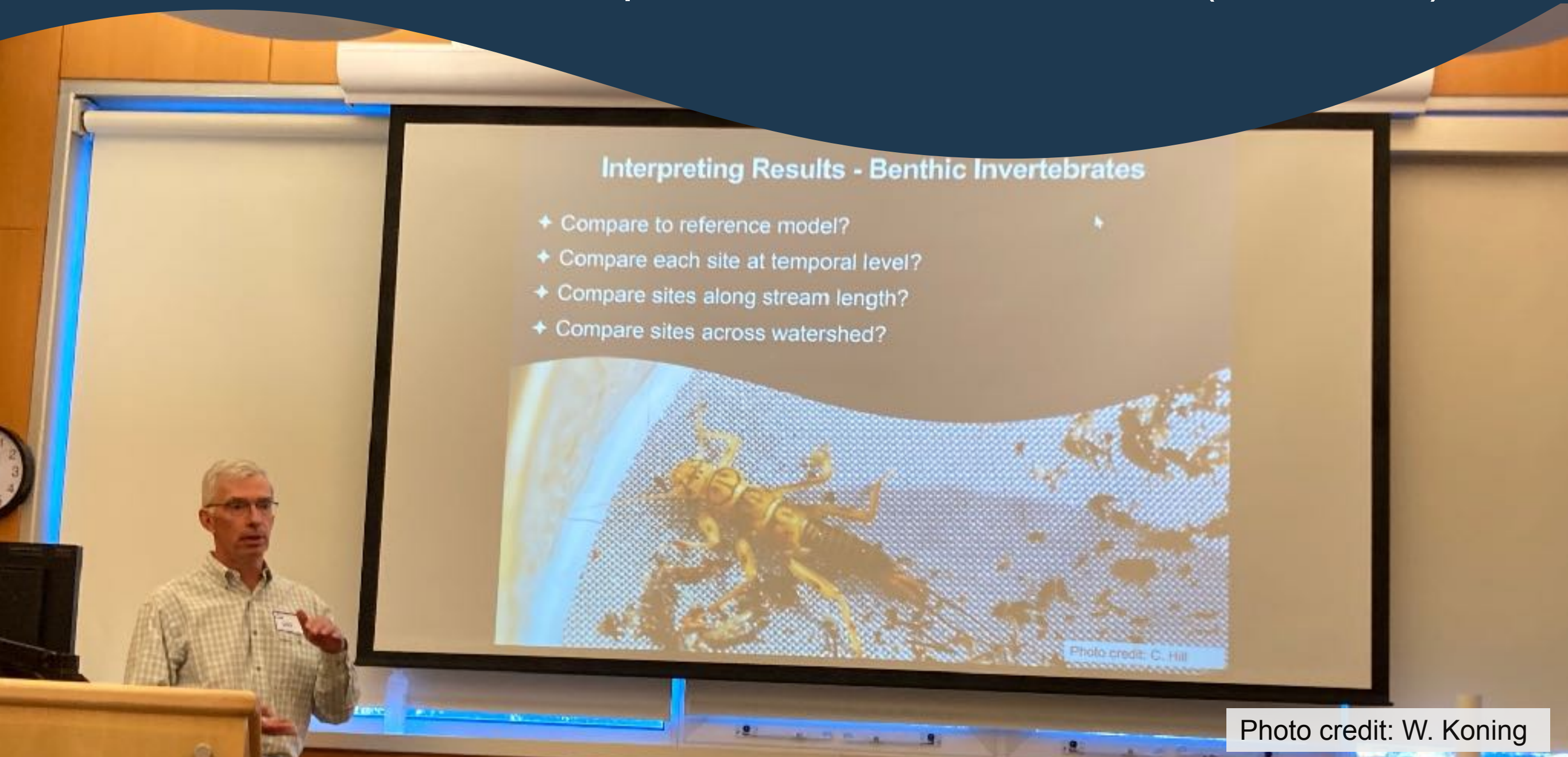
CABiN Results to Date

- ◆ Benthic macro-invertebrate health mostly very good to excellent
- ◆ Water quality mostly excellent
- ◆ Some anomalies and indications of land-use impacts



CABiN - Collaboration

- ♦ Eastern Slopes Collaborative formed
 - ♦ Organizations all along Alberta's Eastern Slopes
 - ♦ Exchange information, share expertise, support each other
- ♦ BRBC CABiN workshops: November 2022, 2024 (Date TBA)



CABiN - Training

- ◆ 2023 CABiN field training took place in Bragg Creek
- ◆ Sofie Forsstrom, Oldman Watershed Council, CABiN Trainer
GWAS ED supported field training course this year
- ◆ Five newly certified CABiN Field Technicians

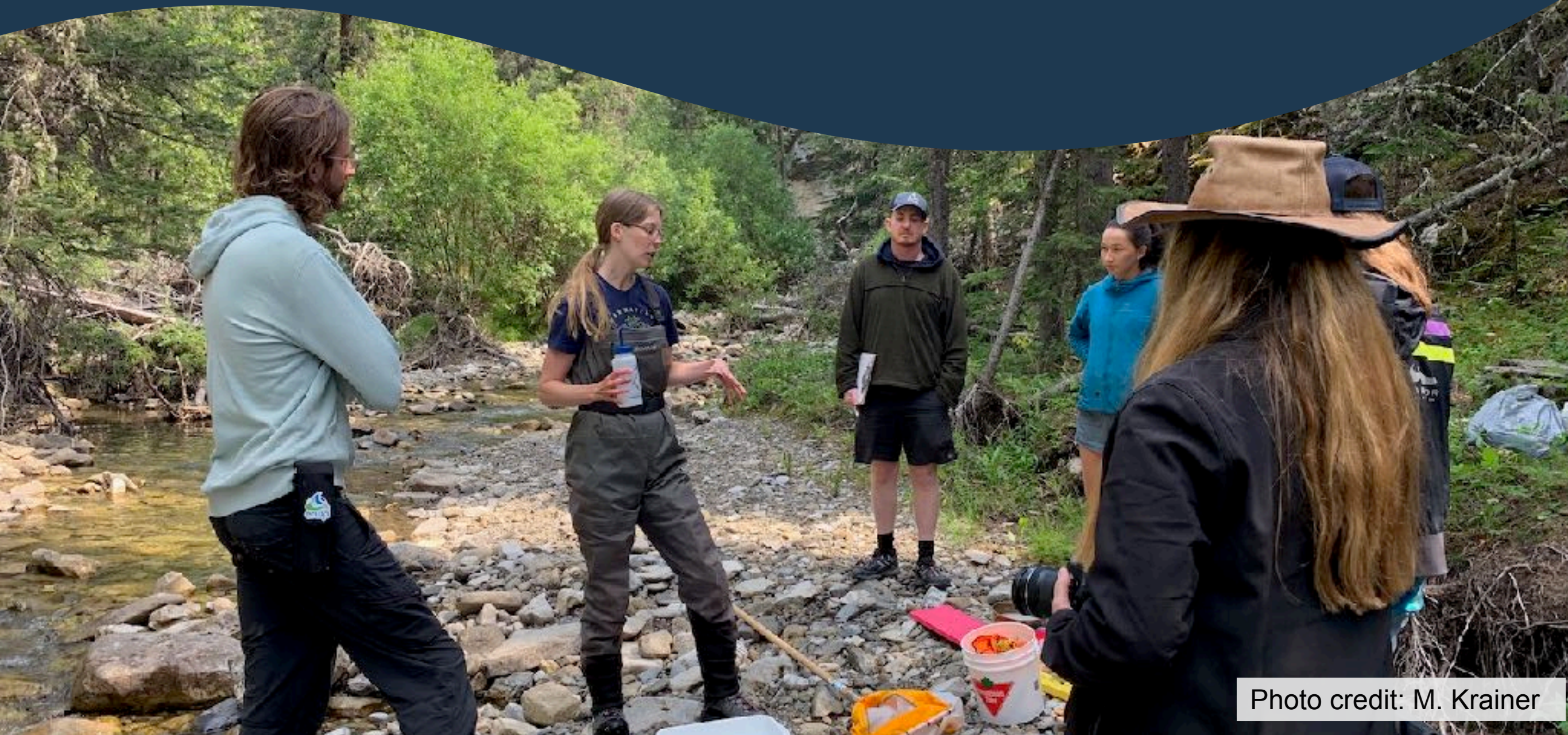


Photo credit: M. Krainer

GWAS Water Monitoring Plan

- ◆ Added stream temperature loggers in 2021
- ◆ Installed 12 stream temperature loggers again in 2023
- ◆ Data shared with GoA Fisheries Biologists and fRI Research



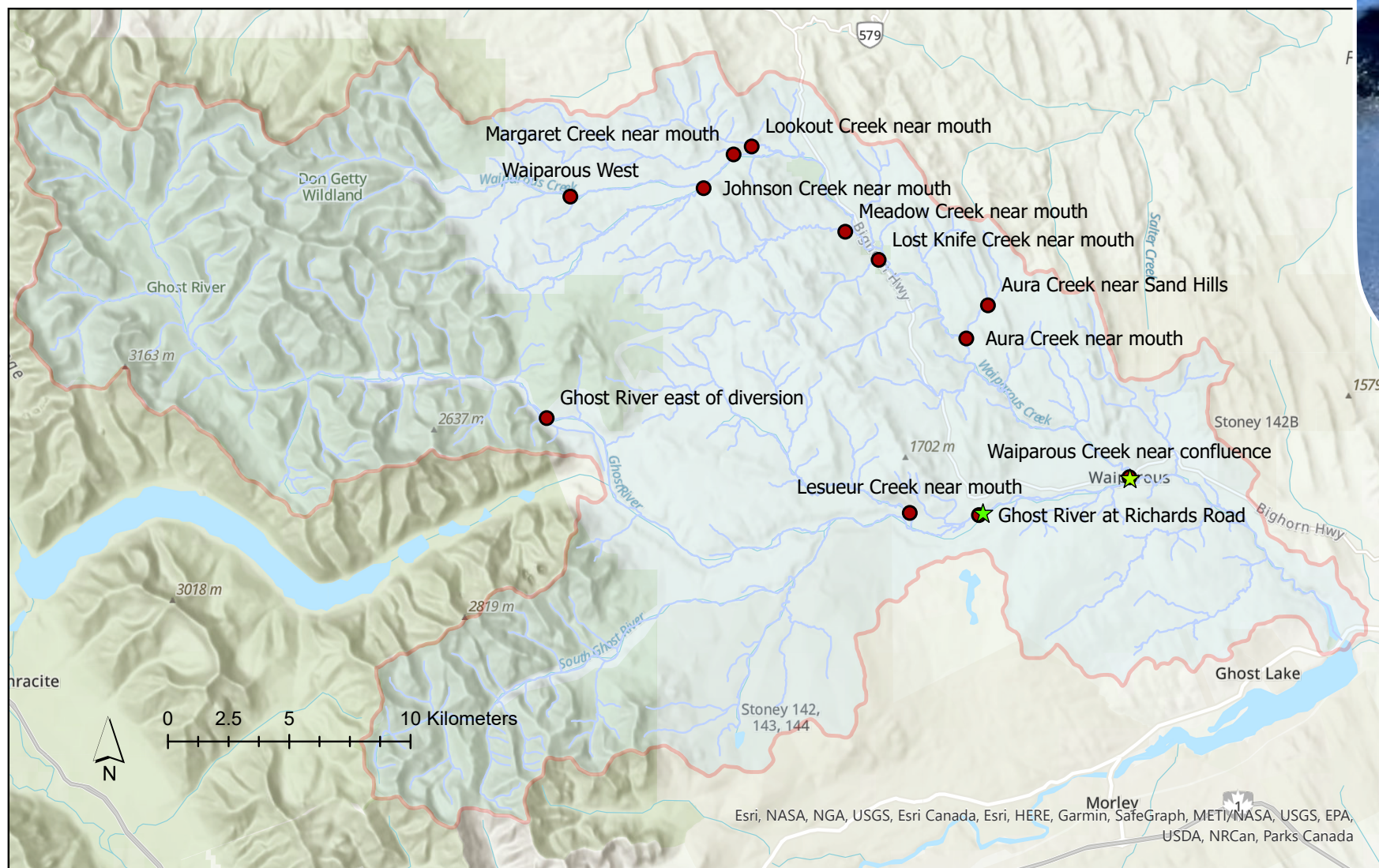
Stream Temperature Loggers

- ◆ Great volunteer commitment!
- ◆ Always looking for more volunteers!



Photo credit: C. Hill

GWAS Temperature Logger Data Collection Sites 2022 and 2023



Water Survey of Canada Stations

Station_No

★ 05BG010

★ 05BG006

● 2022 and 2023 Temperature Logger site

— Streams

□ Ghost_Basin

Author: GWAS

Date Published: November 22, 2023

Scale: 1:225,000

Data Sources: GWAS, MacHydro, ESRI Basemap

Coordinate System: NAD83 10TM AEP Forest

GWAS Water Monitoring Plan

Lead testing:

- ◆ Four Mile Creek
- ◆ Samples taken 2021-2023
- ◆ Smaller amounts of lead were found in stream sediment with higher values at shooting sites



Photo credits: M. Krainer

GWAS Water Monitoring Plan - Lead

- ◆ Soil samples taken in 2023 showed high lead concentrations in several locations.
- ◆ Letter outlining findings submitted to GoA in November 2023

GWAS Lead (Pb) Testing at Four Mile Creek in the Ghost Watershed



Author: GWAS
Date Published: October 17, 2023
Scale: 1:4,000
Data source: GWAS
Geographic Coordinate System WGS 1984
*results displayed in mg/kg

Working Together on Native Trout Recovery

- ◆ Collaboratively work on awareness, closing data gaps and restoration
- ◆ Cows and Fish Native Trout workshops




Photo credit: M. Krainer

Working Together on Native Trout Recovery

- ◆ Virtual workshop held on March 29, 2023
- ◆ Hosted by Cows and Fish
- ◆ 56 people attended!

HOSTED BY

AMY MCLEOD
COWS & FISH



PRESENTERS



MARINA KRANER
GHOST WATERSHED ALLIANCE SOCIETY



MAGI SCALLION
MCELHANNEY



SUSTAINABLE TRAILS WORKSHOP

SPEAKER	TOPIC
MARINA KRANER	USING BIOENGINEERING FOR EROSION CONTROL
MAGI SCALLION	DESIGNING SUSTAINABLE TRAILS
DANNON KRUSE	CALGARY ATV RIDERS ASSOCIATION STEWARDSHIP PROJECTS IN THE GHOST
BARRY TUNZELMANN	2022/23 MARGARET LAKE PROJECTS

Why do we undertake bioengineering?

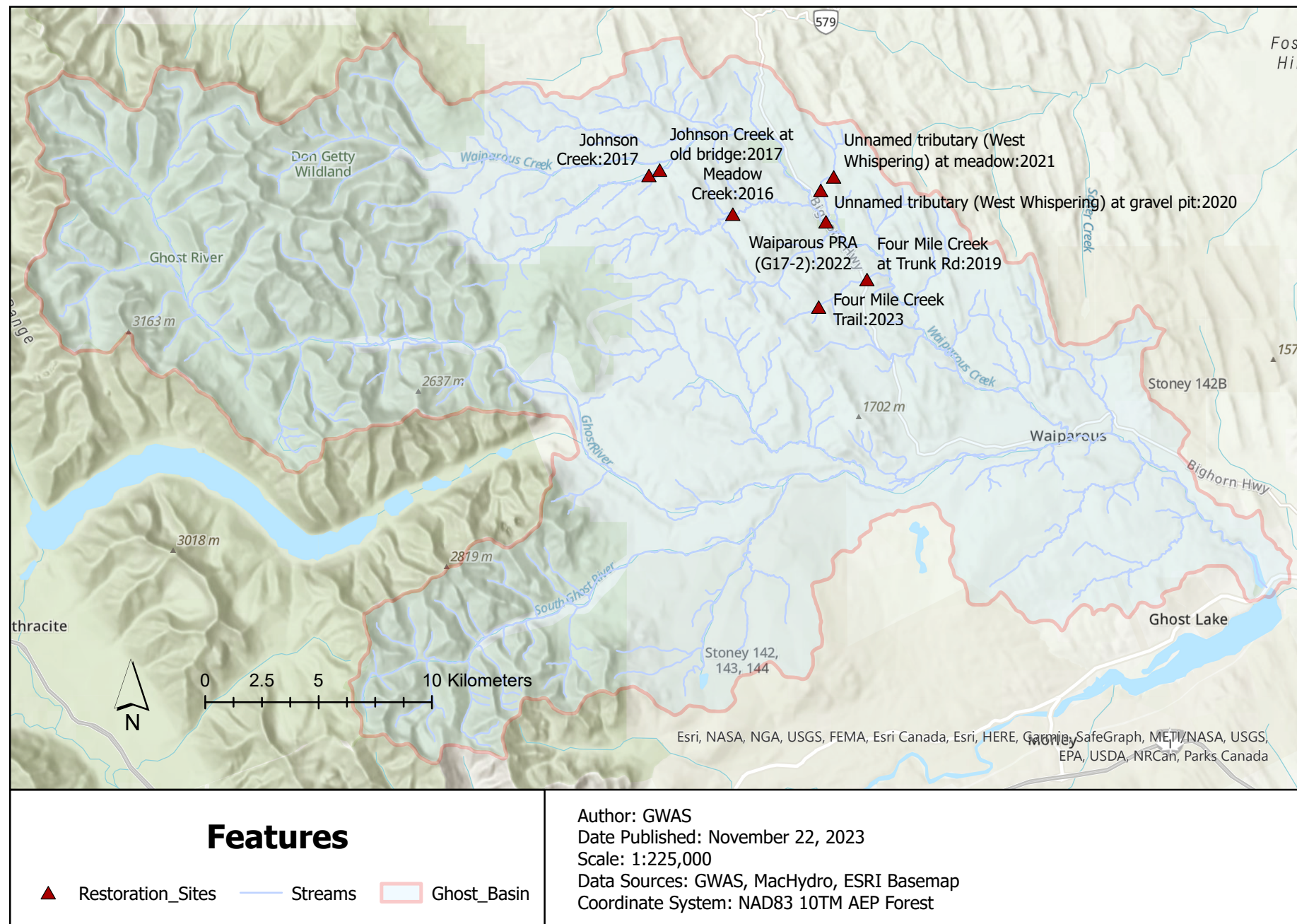
- ✦ Control erosion
- ✦ Prevent channeling of run-off
- ✦ Prevent excessive amounts of sediment from ending up in streams
- ✦ Re-establish riparian vegetation



Bioengineering Sites

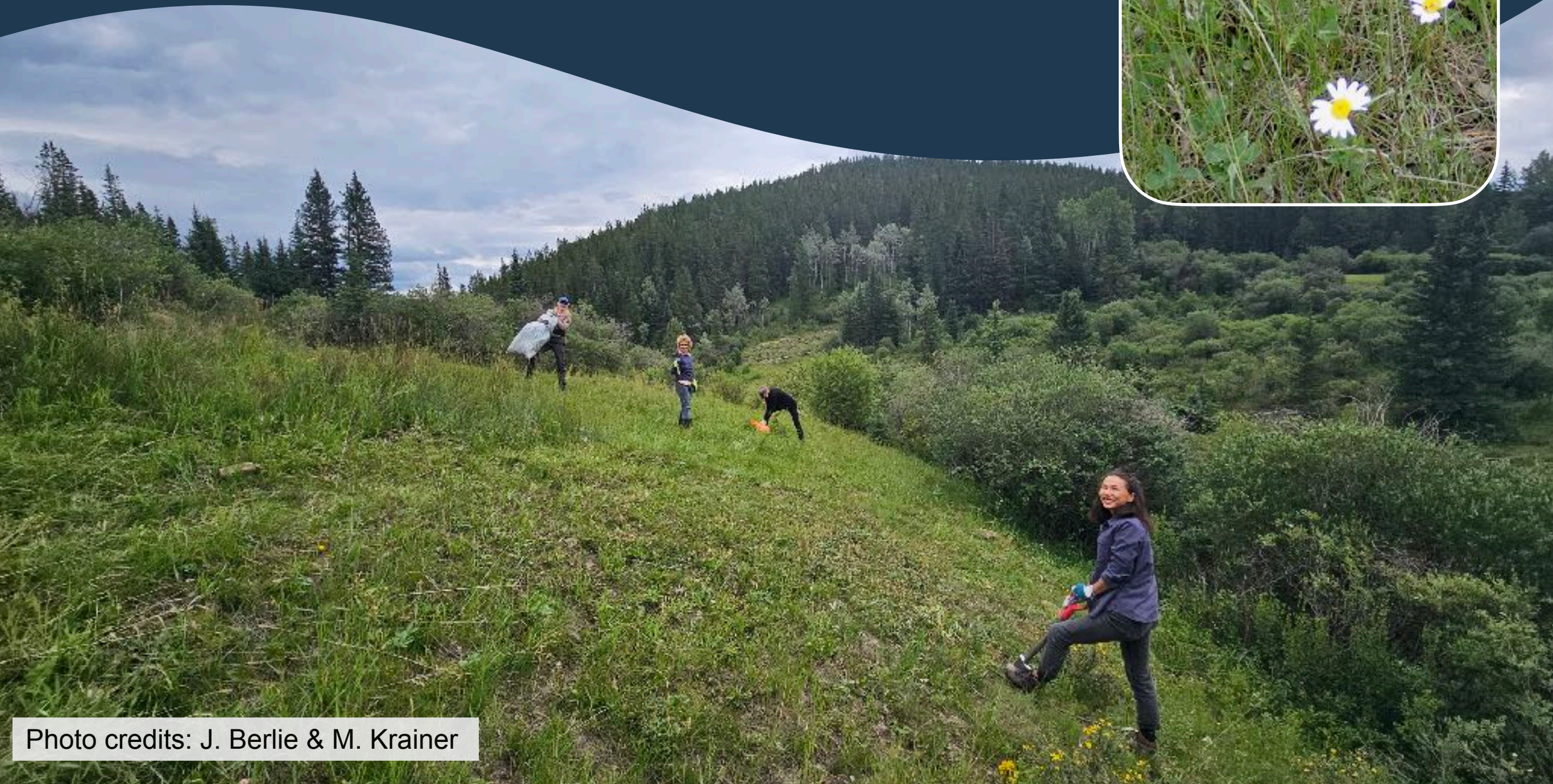
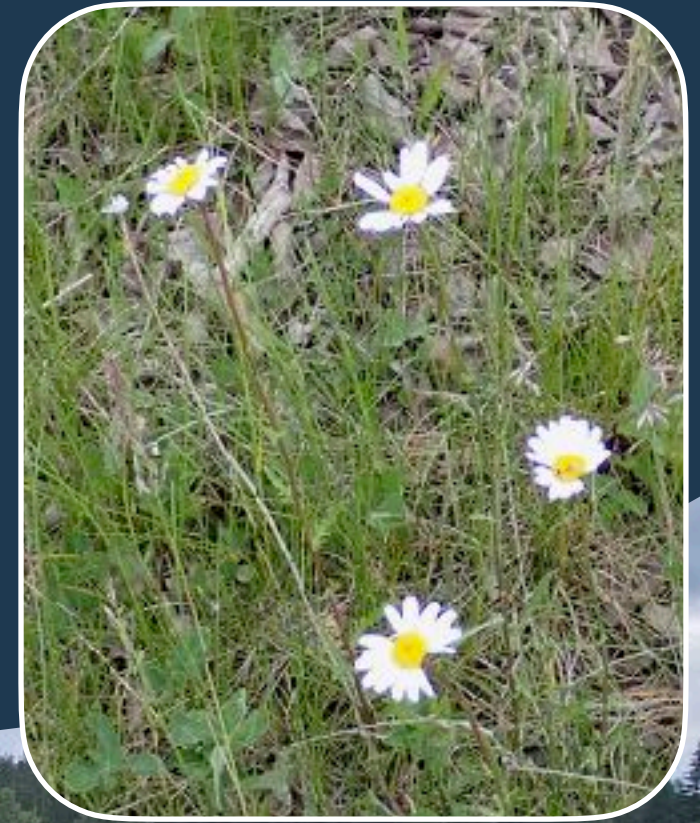
- ◆ Undertaken in partnership with many organizations.
- ◆ BHA, BTFR, CARA, T4T, TUC, C&F, AEPA

GWAS Restoration Sites 2016 to 2023



Bio-engineering Site Maintenance

- ✦ July 27: Field day at 2019 and 2022 restoration sites
- ✦ Four Mile Creek site (2019): pulled ox-eye daisies and thistles



Bio-engineering Site Maintenance

- ◆ Waiparous Creek bridge site (2022):
 - ◆ Pulled perennial sow-thistle
 - ◆ Collected and spread local native seeds
 - ◆ Added some woody debris



Bio-engineering Workshop

- ◆ Held virtually on Sept. 28
- ◆ Presentations by Elliot Lindsay (TUC), bio-engineering specialist Jon Berlie and GWAS ED
- ◆ 5 attendees



This year's bio-engineering projects

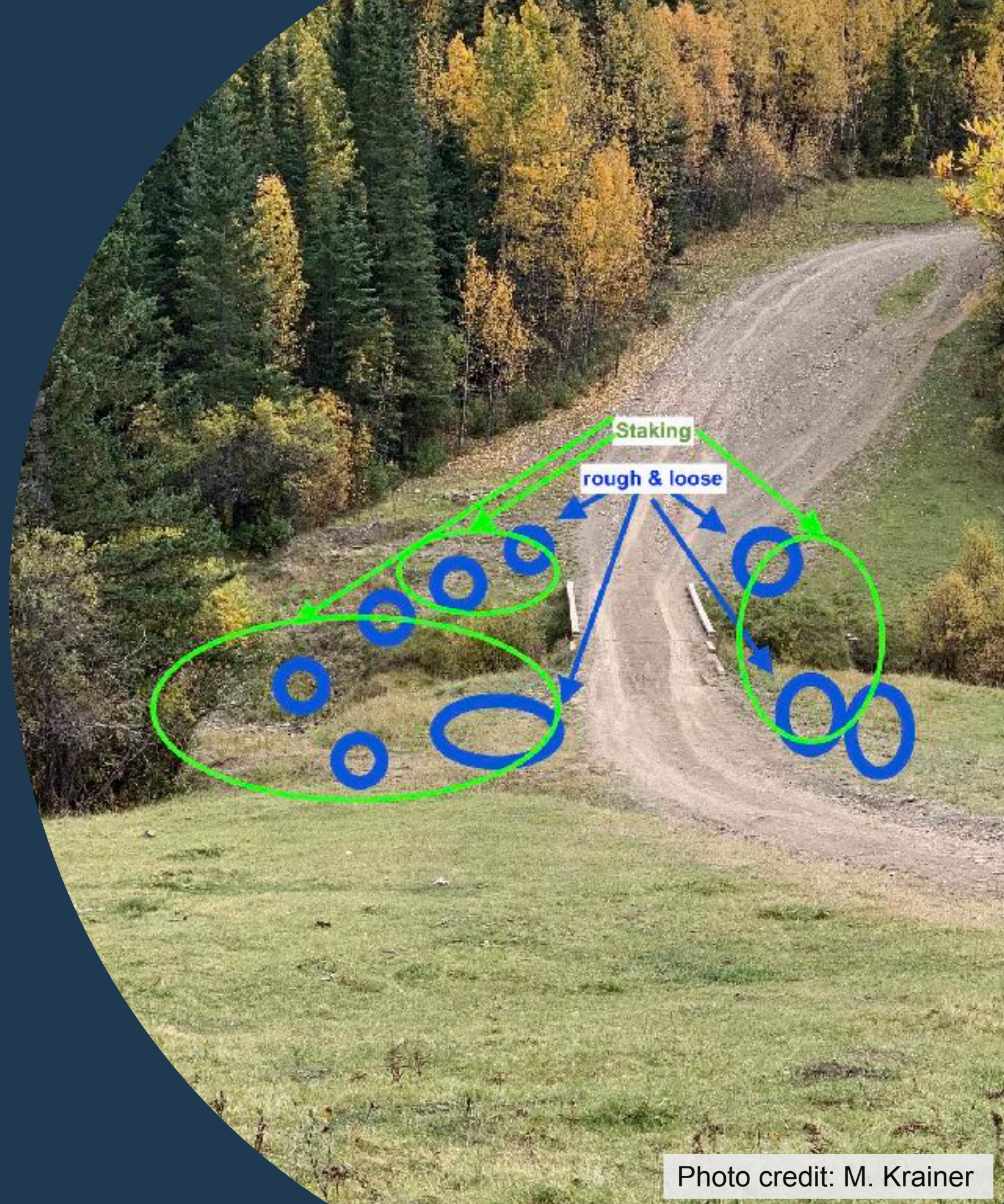
- ◆ 2 sites in 2023
- ◆ Four Mile Creek, Lost Knife Trail bridge
- ◆ Waiparous Creek, PRA OHV bridge



Photo credits: M. Krainer

Lost Knife Trail Bridge Site

- ◆ Designated 4x4 trail
- ◆ Site was identified as high priority for restoration by TUC
- ◆ Originally planned for Sept. 30
- ◆ Rescheduled to Oct. 15 due to poor weather
- ◆ Permit (TFA) obtained from Lands Division – Forestry and Parks



Benefits of Rough and Loose Technique

- ◆ Prevents overland flow
- ◆ Promotes infiltration
- ◆ Prevents erosion
- ◆ Provides diverse habitat



Photo credit: E. Lindsay

Lost Knife Trail Bridge Site

- ◆ 7 volunteers
- ◆ 1 excavator with operator, rough and loose
- ◆ App. 600 willow stakes planted



Photo credits: M. Krainer

Waiparous Creek PRA - OHV Bridge Site

- ◆ Noticed tracks into creek next to designated OHV bridge this summer
- ◆ Discussed issue with AB Parks and applied for permit
- ◆ Received permit on Friday at 4pm!



Photo credits: M. Krainer

Waiparous Creek PRA - OHV

- ◆ 5 volunteers
- ◆ 1 excavator with operator, rough and loose
- ◆ App. 500 willow stakes planted



Photo credits: M. Krainer

Bio-engineering workshops

- ◆ Promote collaboration
- ◆ Team-building
- ◆ Opportunity to share knowledge and perspectives
- ◆ Improve watershed health and fish habitat

Generously funded by:



Thank you to our Bio-engineering Specialist!

- ✦ Jon Berlie -
Burly Creations
- ✦ Diploma in restoration
of natural systems,
University of Victoria
- ✦ Certified ecological
restoration practitioner
with the Society for
Ecological Restoration



Photo credit: M. Krainer

Assessment and Monitoring

- ◆ Comparison over time
- ◆ CABiN
- ◆ Riparian Health Inventories
- ◆ Undertake site revisits

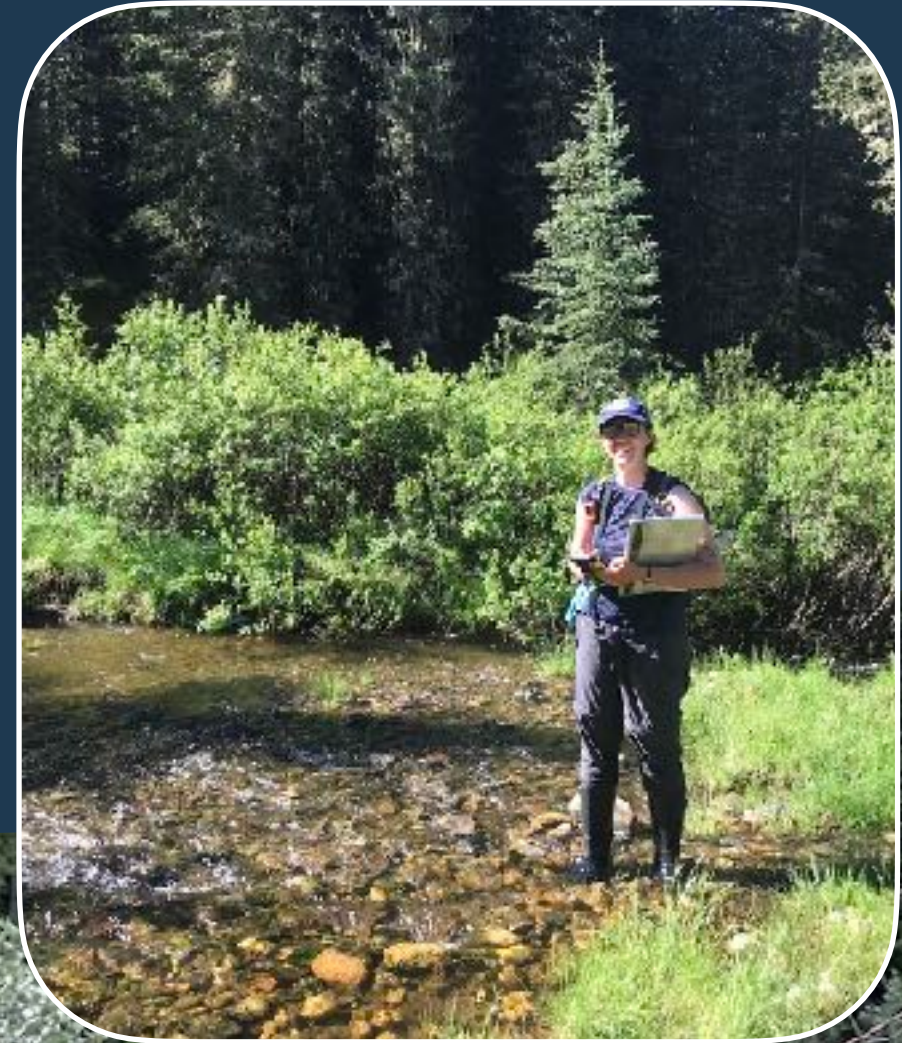


Photo credit: M. Krainer and K. Hull

2022 Bio-engineering Site Monitoring

- ◆ Significant survival and growth despite very dry fall and spring!
- ◆ Rough and loose captured lots of sediment



Photo credit: M. Krainer

2022 Bio-engineering Site Monitoring

2022



2023



Photo credits: J. Berlie

2022 Bio-engineering Site Monitoring

2022



2023



Photo credits: J. Berlie & M. Krainer

Education & Outreach

- ◆ School field trips
- ◆ Calgary Mayor's Environmental Expo
- ◆ Field tours with partners, funders, government staff
- ◆ Presentations
- ◆ and more



Photo credit: J. Langbein

Outreach to Recreational Users

- ◆ GWAS participated in Recreational Stewardship Fair hosted by Cows and Fish for the third year
- ◆ Opportunity to engage recreational users and network with motorized user groups.

Generously funded by:



Walks in the Watershed

- ◆ Connect people to nature
- ◆ Show the beauty and the challenges
- ◆ Successfully completed over 80 walks and hikes since 2004
- ◆ 6 WiWs in 2023



Photo credit: M. Krainer

Collaborative Work

- ✦ Bow River Basin Council (BRBC) Online State of the Basin
- ✦ BRBC Watershed Stewardship Coordinating Committee
- ✦ City of Calgary Source Water Protection Plan
- ✦ BRBC Forums and other workshops



Photo credit: W. Koning

Being a Voice for the Watershed

- ◆ SLS forest harvest plans for Ghost Watershed
- ◆ On-going communication with GoA lands department on recreation issues (target shooting, random camping and trails)



Photo credits: K. Hull & M. Krainer

Forestry

- ✦ First learned about new logging plans at May 2022 SLS Open House.
- ✦ Area was last logged in 2013/14 and areas to the north of it in 2020.

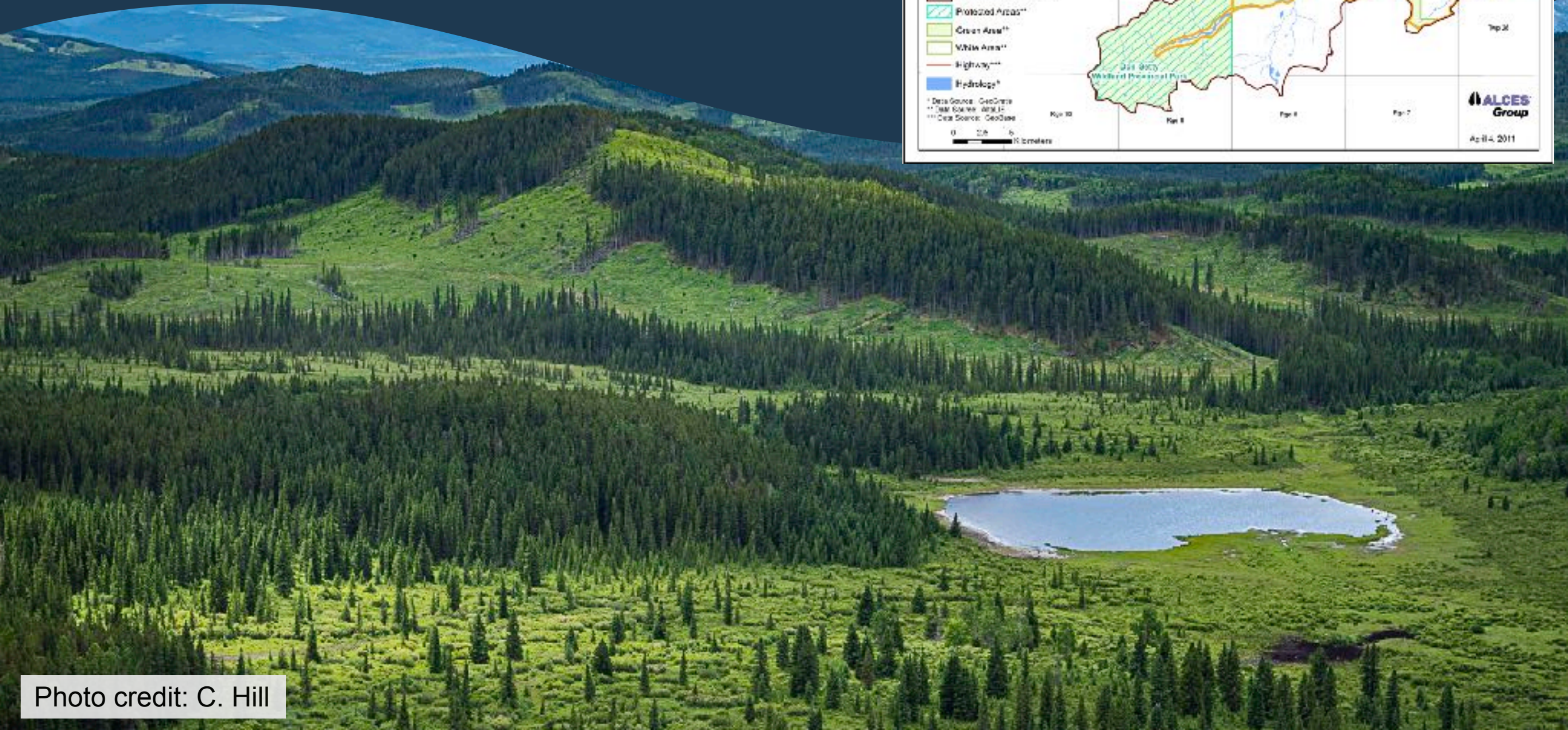
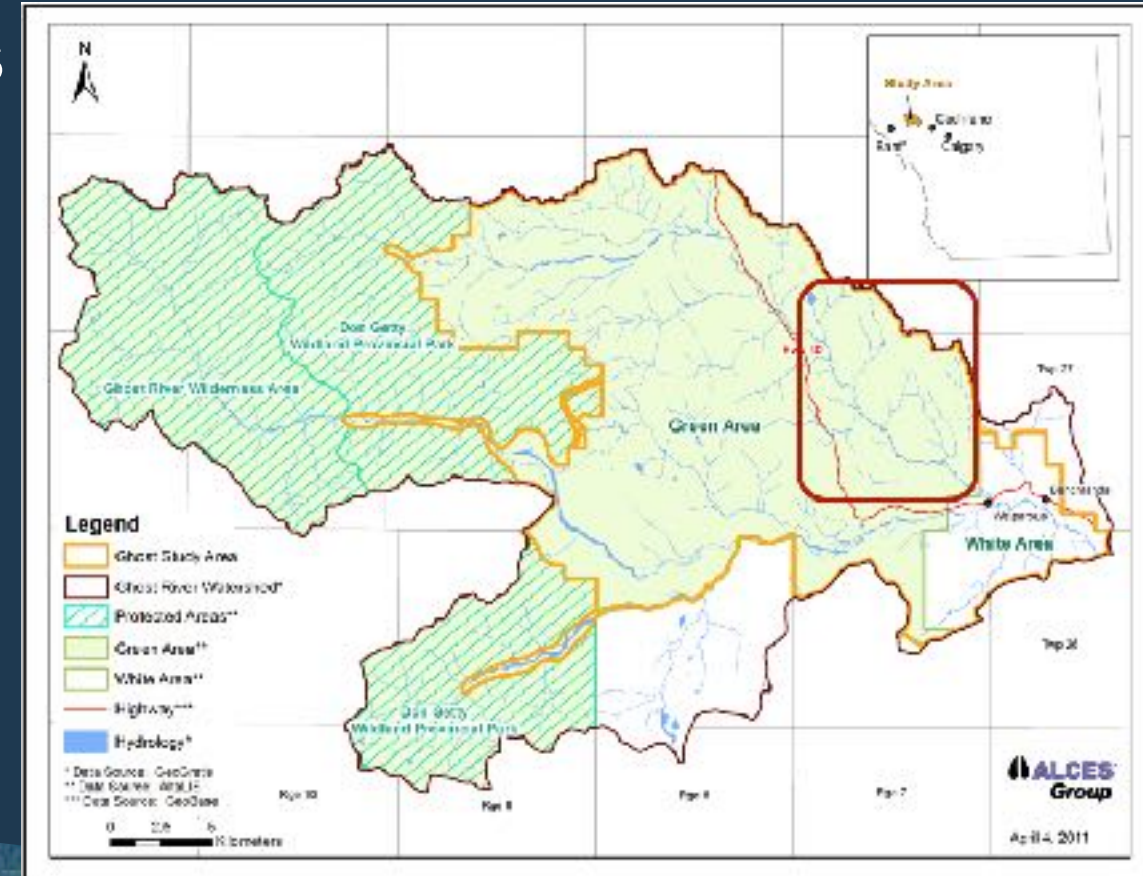


Photo credit: C. Hill

Forestry

- ◆ New blocks right next to the 2013/14 blocks and around Sand Hills. Concentration of cut blocks in a relatively small area.
- ◆ Concerns about ecological integrity and function.

2013 Cut Block
Photo taken: August 2023

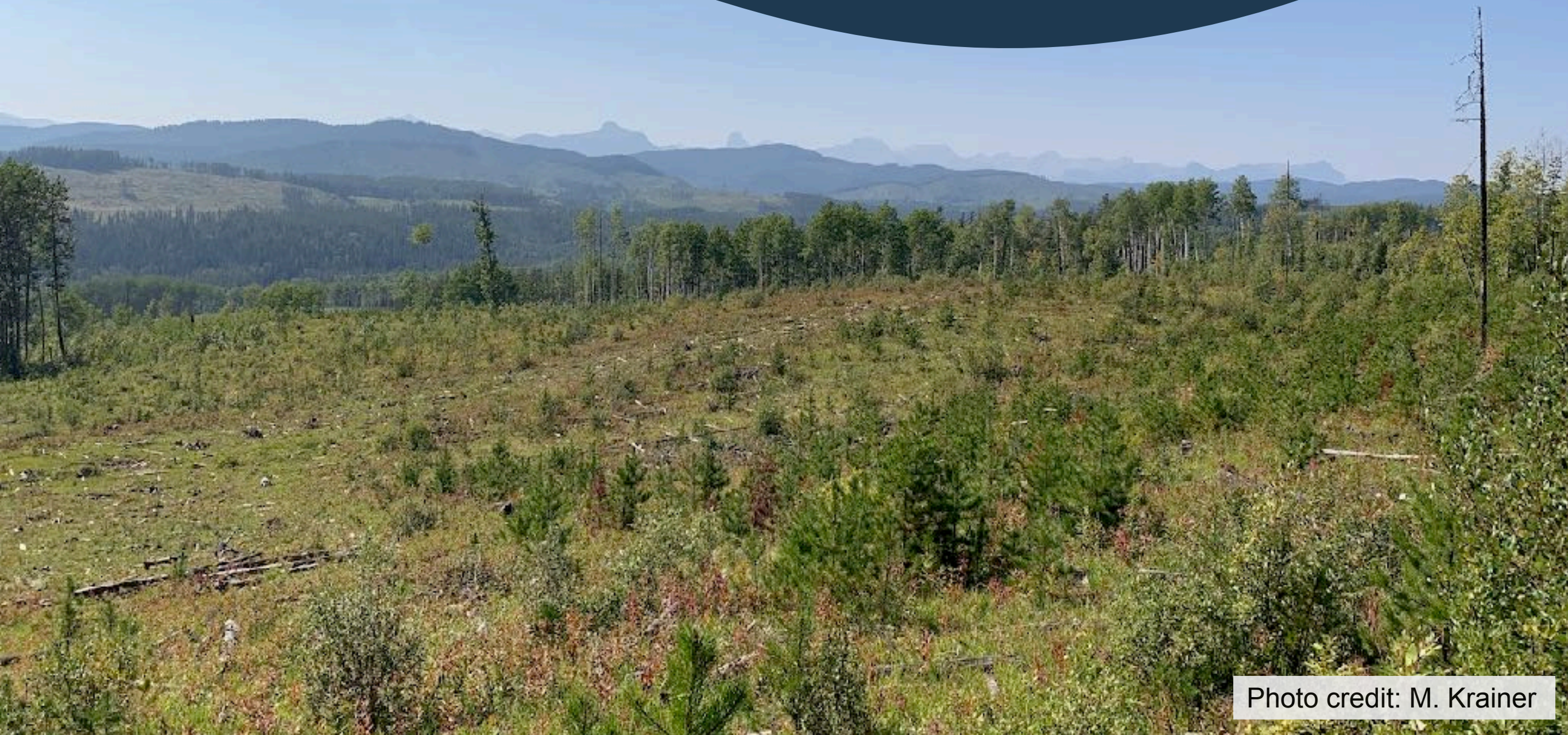


Photo credit: M. Krainer

Forestry

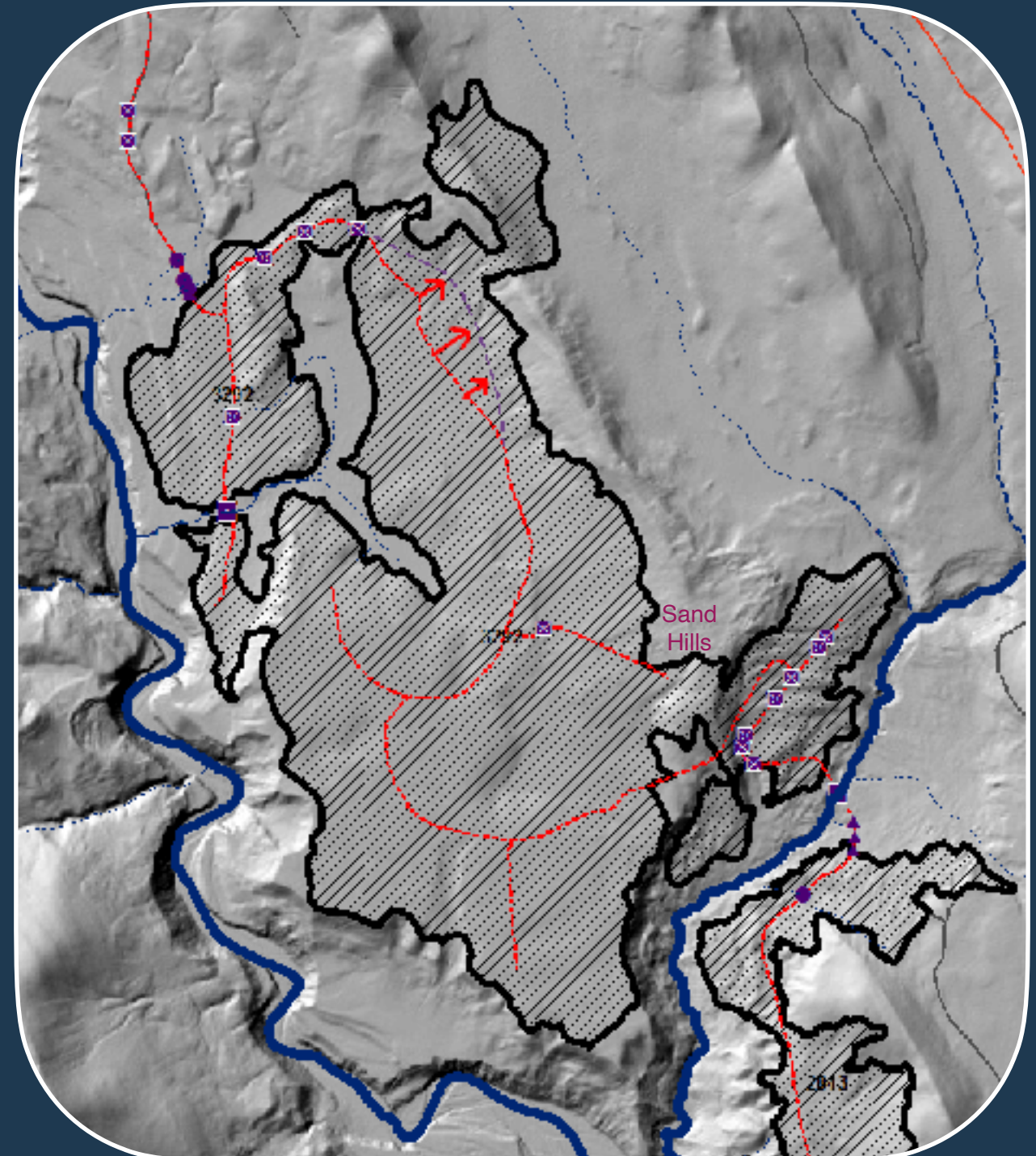
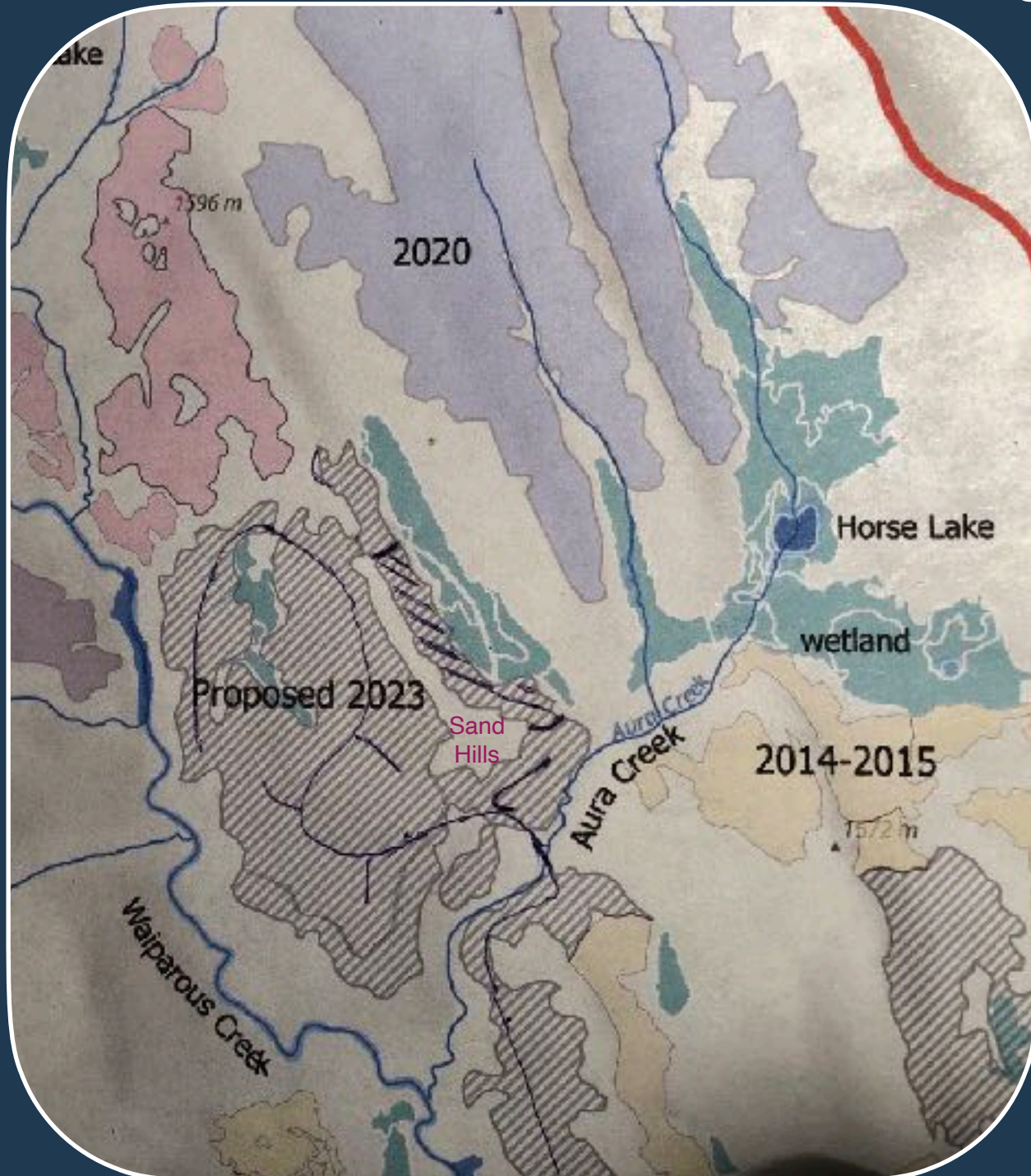
- ◆ Sent letter outlining concerns to SLS in Sept 2022
- ◆ Met with AB Forestry staff in November 2022 and June 2023
- ◆ Red tape reduction expedited approval process
- ◆ Met with SLS in June and in the field in August 2023



Photo credit: M. Krainer

Changes to Logging Plans

- ◆ SLS agreed to reroute haul road away from areas with highly erodible soils at The Cache and the Sand Hills.
- ◆ Portion of block to the NE of Sand Hills removed from harvest plan.
- ◆ SLS will revisit location of bridge across Aura Creek.



Western Toad

- ◆ COSEWIC Status: Special Concern (S3: vulnerable to extirpation or extinction)
- ◆ Found Western Toad tadpoles adjacent to Ghost River



Photo credit: M. Krainer

Western Toad

- ◆ Reported illegal trail next to Ghost River at Richard Road (tracks through wetland with western toad and tadpoles present)
- ◆ Conservation officers are patrolling the area more frequently now



Western Toad

- ◆ Technical report produced by Peter Balagus, B.Sc., P.Biol., QWSP Wildlife - Wetlands Ecologist:
“Breeding Ecology of the Western Toad in the Ghost River Watershed” (2023)
- ◆ Data submitted by Peter Balagus to AB government database
- ◆ Significant in-kind contribution by Peter.
A big thank you to him!



Photo credit: M. Krainer

Western Toad

- ◆ Contacted MD of Bighorn to propose bio-engineering project to protect breeding grounds near Richards Road
- ◆ Well received by MD. Planning on working collaboratively on this project in 2024.

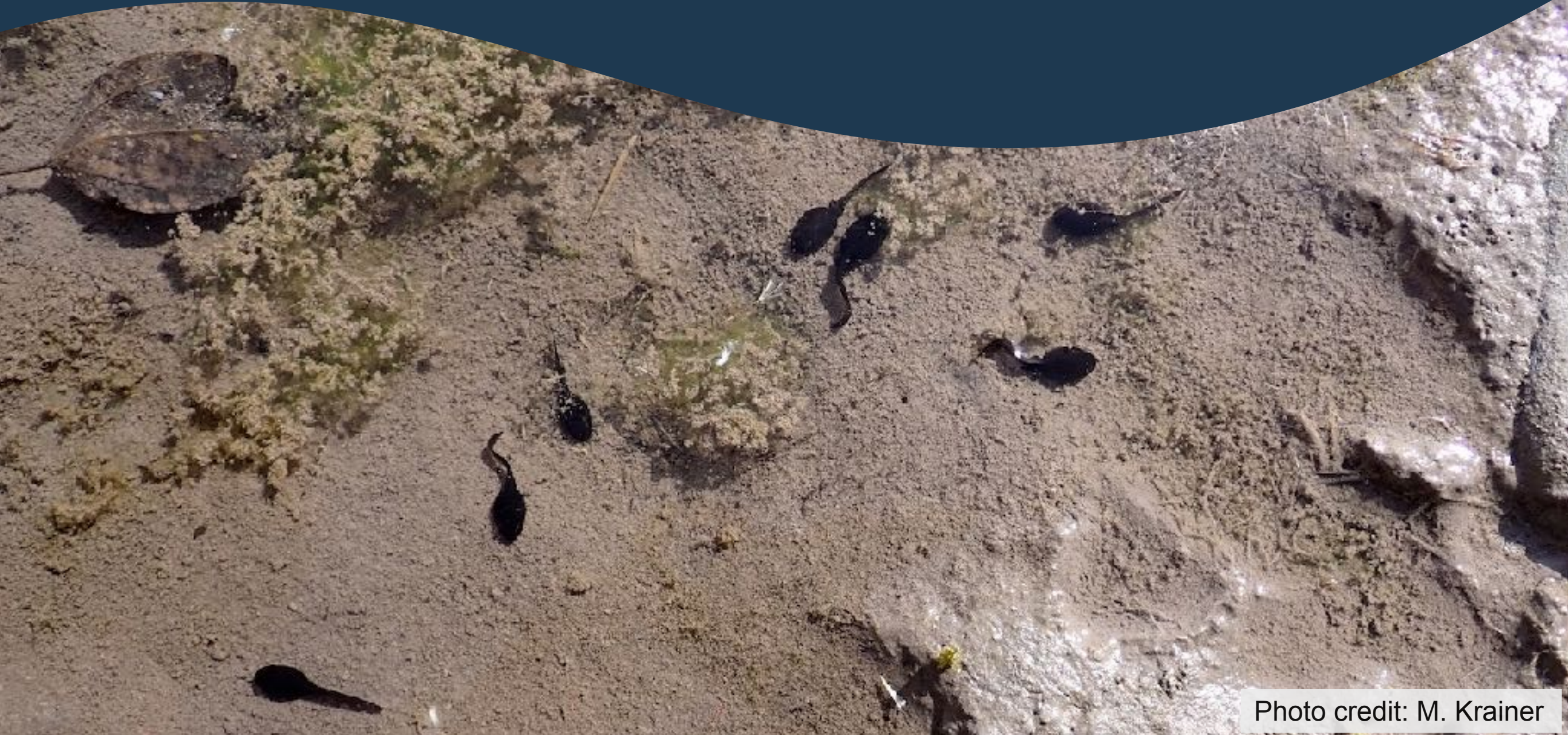


Photo credit: M. Krainer

Ghost River Diversion

- ◆ Old diversion structure has been inoperable since 2013 flood
- ◆ TransAlta is proposing to rebuild the diversion with a new design
- ◆ Water Act application planned for 2024
- ◆ North Ghost River is home to a population of bull trout



BRBC Groundwater Monitoring Program

- ◆ Looking for domestic groundwater well owners to participate.
- ◆ Equipment will be provided by BRBC.
- ◆ Detailed well log from when the well was drilled will be needed to find suitable wells.
- ◆ If you are interested in participating, we can provide more details!



Thank You to our Volunteers!

- ◆ A dedicated, skilled and enthusiastic Board of Directors
- ◆ Passionate volunteers



Photo credit: C. Hill

Plans for 2024

- ◆ Continue Water Monitoring Program,
- ◆ More Walks in the Watershed,
- ◆ On-going collaboration with partners,
- ◆ Bio-engineering,



Photo credit: M. Krainer

Plans for 2024 (continued)

- ◆ Education & Outreach,
- ◆ Working with CARA and Trails4Tomorrow on projects and outreach,
- ◆ Continue to be a voice for the watershed.



How can you help?

- ◆ Being a member of GWAS / Joining the GWAS Board
- ◆ Raising awareness with family and friends
- ◆ Volunteering for field work (WQ sampling, bio-engineering, etc.)
- ◆ Helping with educational events
- ◆ Taking photos in the Ghost Watershed



Photo credit: M. Krainer

Thanks to our Partners



Photo credit: M. Krainer

Thank you to our funders!

Alberta Conservation Association

Alberta Ecotrust

BP Volunteers

City of Calgary

Forest Resource Improvement Association of Alberta
(FRIP grant sponsored by SLS and BRBC)

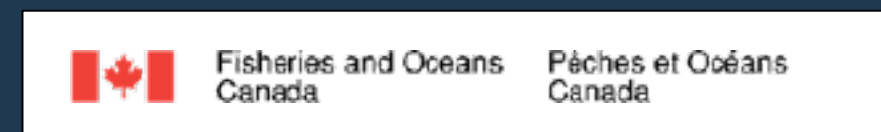
Land Stewardship Centre

MD of Bighorn

TD Friends of the Environment

Fisheries and Oceans Canada - Habitat Stewardship Program
&

our members and all the generous individual donors!



The logo for the Ghost Watershed Alliance Society is displayed against a scenic background of snow-capped mountains and evergreen trees. The word "Ghost" is in a large, blue, serif font with a subtle drop shadow. Below it, "Watershed Alliance Society" is written in a smaller, blue, serif font.

Ghost

Watershed Alliance Society

Thank you!

Questions?

For more information please visit our website:

WWW.GHOSTWATERSHED.CA