

JEAN MARIE RIVER Mackenzie River

Our vision for our river

- historical + present cause for transportation + gatherings
- access to river by all means & transport (land, plane, etc) need to be preserved
- want to keep bridges coming! Even as we build change
- river is our life
- river is defining point for community. It is part of life everyday
- had to close road all along river
- houses may need to move soon
- health centre - to move/rebuild HSS + INF co-ordinating
- HTP, sewage, pipe
- power plant - has it need to be moved
- Samba ke shifted, blocking boat launch
- boat launch - slope is unstable
- airstrip + garage set flooded at bridge due to ice blockage
- divers causing change:
 - permanent flow
 - water level fluctuations
 - sediment accumulation (sandbars)
 - erratic weather
- Q does river conditions contribute to erosion?
- Q how do change in EC affect water flow into local river

As buildings ~~are~~ + infrastructure are out, we are rebuilding away from river. No new develop ment in flood zone.

Where we are today

- Step 1 (Recognize the Problem)
- Step 2 (Manage the Threat)
- Step 3 (Gather/Assess Info)
- Step 4 (Evaluate Options + Plan)
- Step 5 (Take Action)

Too Erosion caused by ice scouring the banks in the spring - banks are smaller

Ongoing retreat of river bank during my lifetime due to ice scour

Houses being rebuilt in response to the flooding. But the houses only have 1 door and are too tall to jump out of in a fire.

Action Plan: no new buildings in current lot - new buildings are going in further back

Concept	What's happening	What does it
1. Retrogressive bank slump (flow line slide)	Flow line slides occur when the slope can no longer hold up and erodes away from the top of the bank. As the lower support disappears, the soil above becomes unstable and falls to the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
2. Undercut crevasses	These occur where the bottom of the bank, as the lower support disappears, the soil above becomes unstable and falls to the river.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
3. Shallow erosion due to ice push	Ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
4. Retrogressive bank slump (flow line slide)	Flow line slides occur when the slope can no longer hold up and erodes away from the top of the bank. As the lower support disappears, the soil above becomes unstable and falls to the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
5. Shallow erosion	A thin layer of soil is slowly washed away, leaving the ground surface other than the slope top.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
6. Shallow erosion from groundwater seepage	Water seeps through the soil and causes the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
7. The erosion from spring breakup flows	Water seeps through the soil and causes the soil to erode away from the river.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
8. Shallow bank erosion	Water seeps through the soil and causes the soil to erode away from the river.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
9. Point bar formation in response to erosion of opposite bank	Point bar formation occurs when the river bends and the soil is deposited on the inner bank.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
10. Fluvial erosion from ice	Ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
11. Shallow bank erosion	A thin layer of soil is slowly washed away, leaving the ground surface other than the slope top.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
12. Bank failure after snow fall	When a bank fails, it erodes and the soil is deposited on the river.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
13. Ice-jam related erosion	Ice jams in the river cause the water to back up and erode the banks.	Flowing water, gravity, and permafrost melting that causes soil to fall and erode.
14. Head erosion from ice	Head erosion occurs when the ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
15. Head erosion from ice	Head erosion occurs when the ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
16. Head erosion from ice	Head erosion occurs when the ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
17. Head erosion from ice	Head erosion occurs when the ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
18. Head erosion from ice	Head erosion occurs when the ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
19. Head erosion from ice	Head erosion occurs when the ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.
20. Head erosion from ice	Head erosion occurs when the ice pushes against the bank and forces the soil to erode away from the river.	Warning temperatures, melting ice in permafrost, rising water, and gravity pulling soil down.

LOOKING FORWARD

CHALLENGES & BARRIERS

Challenge: Mackenzie River - too high turbidity levels to support grayling - but are seeing salmon.

Considering moving the airport closer to the highway. (Avoid future flooding)

IDEAS & SOLUTIONS

Mostly deal with flooding. Ice scour is removing some soil like a dozer.

Development of plan language considerations to support all phases of project.

Work with Samba Ke on guardian initiatives. Training with youth on GIS with Samba Ke. Develop training on preliminary desktop assessments using free data + tools. so interested water + others can use free data + tools to help their community get preliminary info on rate of change - hotspots etc.

Monitoring the shoreline

Ground Study: Land contamination makes food production hard in the community (fuel dumped)

Look into a desktop/preliminary assessment. We want more info on rate of change for our residents + council

Priorities & Next Steps

Questions + Needs

- Need desktop assessment to tell us the rate of change of our riverbank

CHALLENGES & BARRIERS

Challenges + Barriers
1. Capacity
2. Time
3. Funding
4. Need knowledge synthesis from multiple disciplines
Ex. Geomorphology, Permafrost + hydrology, Aquatic Ecology, Climatology, Greatchain, Land use Planning, Traditional knowledge

Questions &

Ques. How much does the need?



Erosion-related
• Community River and Mackenzie
• Jean Marie
• Jean Marie
• slope below
• Thawing permafrost community

JEAN MARIE RIVER

Mackenzie River

Our vision for our river

As buildings ~~with~~ infrastructure age out, we are rebuilding away from river
No new development in flood zone.

Where we are today

Step 1
(Recognize the Problem)

STEP 2
(Manage the Threat)

STEP 3
(Gather/Assess Info)

STEP 4
(Evaluate Options + Plan)

STEP 5
(Take Action)

Toe
Erosion caused by ice scouring the banks in the spring-banks are smaller

Ongoing retreat of riverbank during my lifetime due to ice scour

Houses being rebuilt in response to the flooding. But the houses only have 1 door and are too tall to jump out of in a fire.

Action Plan:
no new buildings in current foot-
new buildings are going in further back

LOOKING FORWARD

LOOKING FORWARD

CHALLENGES & BARRIERS

Challenge:

Macenzie River - too high turbidity levels to source water. Not seeing grayling - but are seeing salmon.

Considering moving the airport closer to the highway.
(Avoid future flooding)

IDEAS & SOLUTIONS

mostly deal with flooding
ice scour is removing some soil like a dozer

Development of plain language communication to support all phases of work

- work with Samba Ke on guardian initiatives.
- training with youth on GIS with Samba Ke
- develop training on preliminary desktop assessments using free data + tools ↓

- do group training so interested youth + others can use free data + tools to help their community get preliminary info on rate of change + hotspots etc.

Monitoring the shoreline

Ground Study:
Land Contamination makes food production hard in the community (fuel dumped)

Questions
+
Needs

- Need desktop assessment to tell us the rate of change of our riverbank.

Look into a desktop/preliminary assessment. We want more info in rate of change for our residents + council

Priorities
&
Next Steps