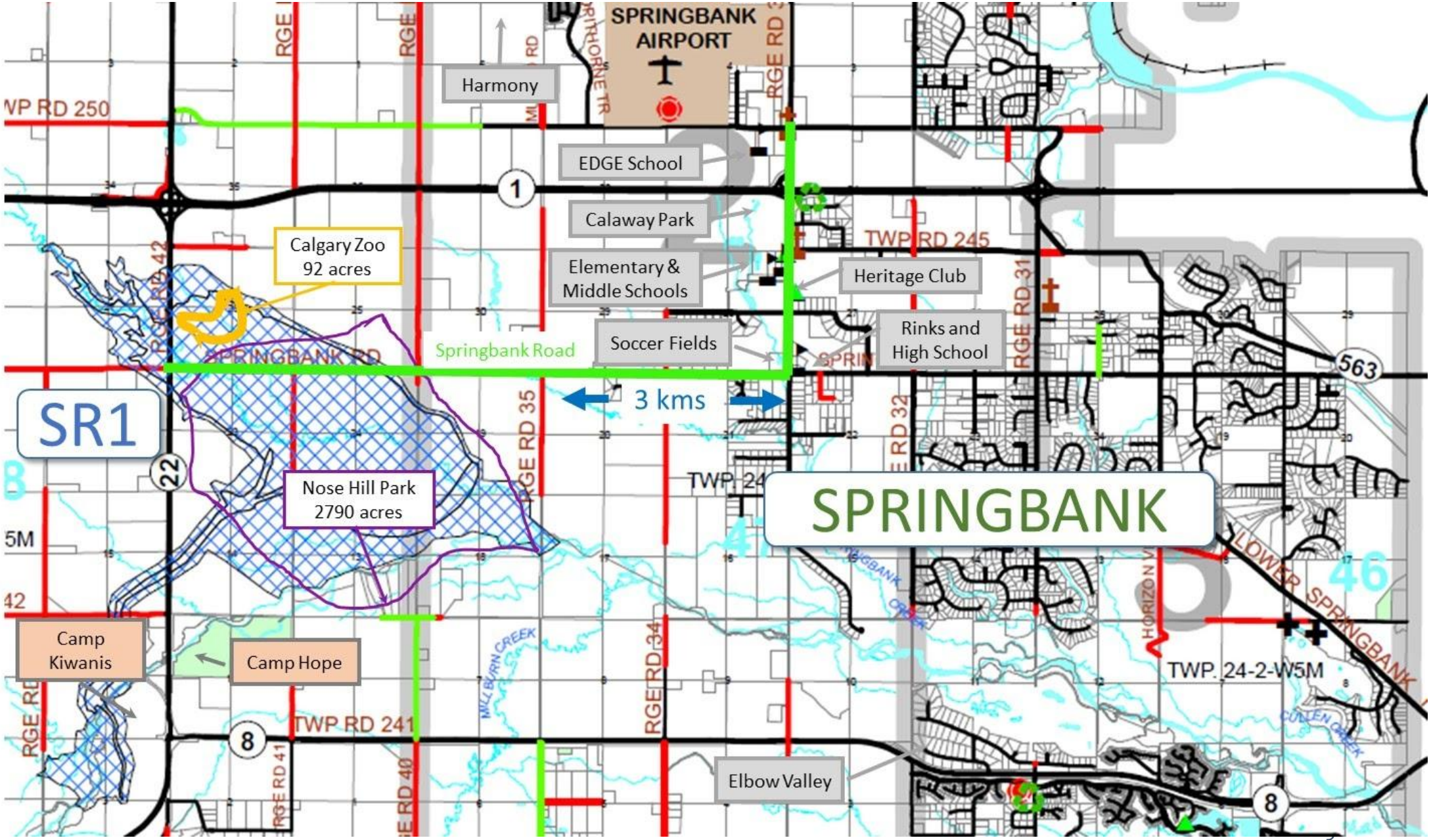
SPRINGBANK OFF-STREAM RESERVOIR (SR1): Project Need & Justification

Topic 1

Karin Hunter, SCLG

SR1 Outcomes

A discussion on Public Interest


SPRINGBANK AIRPORT
Harmony
EDGE School
Calaway Park
Elementary & Middle Schools
Heritage Club
Rinks and High School
Soccer Fields
Springbank Road
3 kms
Calgary Zoo 92 acres
Nose Hill Park 2790 acres
Camp Kiwanis
Camp Hope
Elbow Valley
SR1
SPRINGBANK
TWP RD 250
TWP RD 245
TWP RD 241
TWP. 24-2-W5M
RGE RD 42
RGE RD 35
RGE RD 34
RGE RD 31
RGE RD 41
RGE RD 40
SPRINGBANK RD
LOWER SPRINGBANK
563
22
1
8
46

Observations

- SR1 creates UNEQUAL OUTCOMES for communities along the Elbow River
  - The Project has been created to provide its full benefits ONLY to residents downstream of the Glenmore Reservoir
- MC1 would have created EQUAL flood mitigation outcomes
- The total cost of the SR1 + Bragg Creek flood mitigation is FAR above the cost of MC1 and doesn't create EQUAL protection for communities between SR1 and the Glenmore Reservoir

Observations

- All environmental outcomes (with the exception of post-flood water quality) are felt by residents of Rocky View County, Redwood Meadows and Tsuut'ina Nation
- These communities are not adequately protected from flood by SR1 yet bear the risks, environmental degradation, and negative societal outcomes of the Project
- Construction and road closures (ongoing during SR1 use) will be most acute for upstream communities & businesses
- The Project has increased in size, cost and complexity over the past 7 years

Observations

- The environmental impact of SR1 is far more substantial than originally predicted
- The SR1 project was preferred, in part, because it left the river in a more natural system (Deltares, Exhibit 13)
  - *There is no longer anything natural about SR1*
- The sedimentation of the Reservoir was NOT UNDERSTOOD in 2014 or 2015
  - *This is a SIGNIFICANT, NEW consequence of the structure that only came to light in 2018/2019*

Flood Mitigation: 2013 @1240cms

	Upstream of Bragg Creek	**Bragg Creek**	**Redwood Meadows**	**Springbank**	**Elbow Valley to Glenmore Reservoir**
Flood Mitigation (2013)	None	None	Berms	None	None
Impacts	Loss of park infrastructure (pathways, parking, washrooms, etc) bridge damage Cost: ?	Terrible Damage to town: pathways, infrastructure, homes, businesses flooded; groundwater flooding Bridge closed; people trapped/stranded $1.9 M for RVC (1) Disaster Relief (Infrastructure for RVC est. at $13M (2))	Significant damage to berms; loss of riprap downriver; Townsite almost lost, groundwater flooding Roads closed - people trapped / stranded $2.7M in Disaster Relief + $1.9 for Tsuut'ina	Flooding of homes south of River on RR40 Glencoe, Elbow Springs & River Spirit Golf courses damaged	Pathways washed away, roads flooded and closed Groundwater flooding

Exhibit X: Disaster Recovery Funding from 2015 IBI Report Appendix F

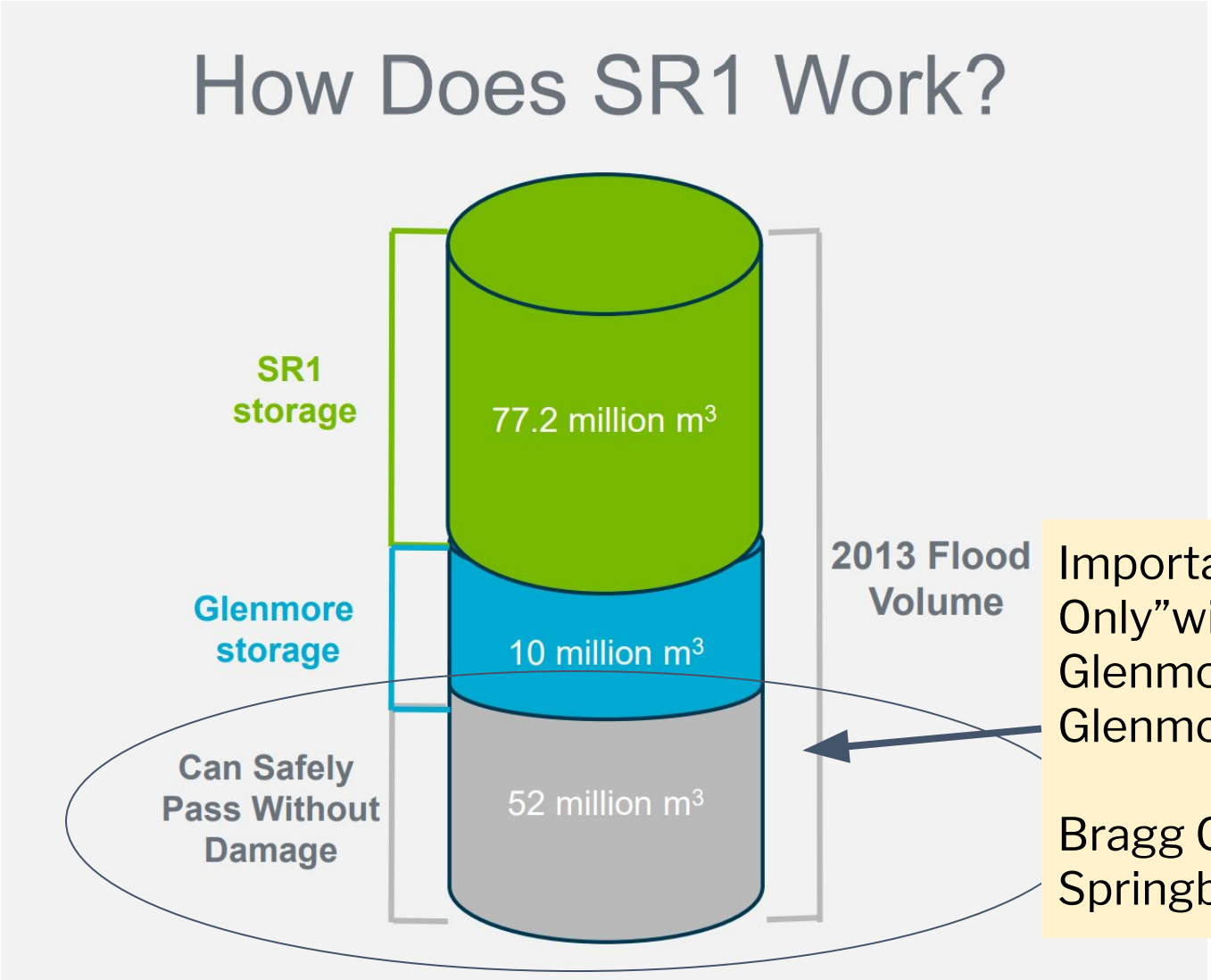
(1) Global News Article:

Flood Mitigation: SR1 + Berms @1240cms

Time Period & Flood Mitigation	Upstream of Bragg Creek	Bragg Creek	Redwood Meadows	Springbank	Elbow Valley to Glenmore Reservoir	Downstream of Glenmore Reservoir
Post 2013: New Measures	None	New Berms 1:100yr	Repaired Berms (protection level unknown)	SR1	SR1	SR1 (Add Capacity to Glenmore Reservoir)
Flow Rates	Unmitigated	Unmitigated	Unmitigated	640cms* (~1:50yr)	640cms* (~1:50yr)	160cms (target); 1:200yr mitigation
With SR1 in a 1:200 flood	Expect more damage to infrastructure	Berms may be overtopped; catastrophic flooding Expect loss of riprap Groundwater flooding to continue	Berms may be overtopped; catastrophic flooding Expect loss of riprap Groundwater flooding to continue	Expect flooding downstream of SR1 in low lying areas (golf courses, some homes)	Expect flooding in low areas; this is still a large flood because SR1 cannot mitigate the entire flow	The Glenmore Reservoir should absorb the excess river volume to mitigate downstream flooding of ALL kinds (overland and groundwater)

- Best case scenario is that SR1 takes a full 600cms as it is designed; the balance still goes down the river (at 1240cms, that is 640cms). This is still a LARGE flood. In AEP 2020 Flood Mapping (Exhibit TBC) is 640cms is approximately a 1:50 year flood.

Summary: Misleading framing of benefits



Alberta Transportation Presentation to Bragg Creek October 2020, p5

- https://www.alberta.ca/assets/documents/trans-springbank-bragg-creek-information-session.pdf

Important to Note:
Only"without damage" downstream of Glenmore Reservoir, not between SR1 and Glenmore.

Bragg Creek is only 1:100 (2013 is 1:200)
Springbank is only to ~1:50

Bragg Creek Berms: Lower protection than SR1 provides Calgary

Exhibit TBC: 2017 RVC Presentation on Bragg Creek Berms, pg 11

- Berms are built to 1:100 at Bragg Creek
- SR1 is 1:200 for Calgary

Exhibit 91: IR 178

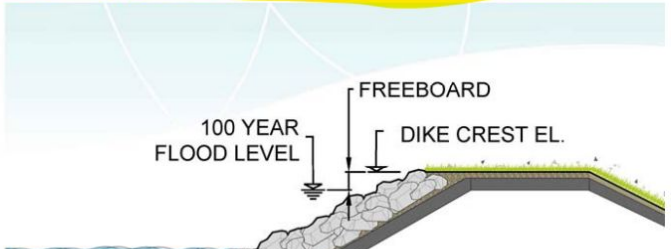
- 3.9km of berming at Bragg Creek

Bragg Creek Flood Mitigation Project
Design Considerations

ROCKY VIEW COUNTY
Cultivating Communities

amec foster wheeler

- Design based on an estimated 100-year flood water level (provincial standard) plus a minimum freeboard of 0.6 m (i.e. 2 ft)



Response 178

a. Aside from the Project, only the Rocky View County Bragg Creek Flood Mitigation Project is currently in planning stages on Elbow River. The MC1 Option is not being applied for; it is not a project.

The Bragg Creek Flood Mitigation Project is located approximately 12 km southwest of SR1 and is composed of 3,922 m of discontinuous hard structures on the east and west banks of Elbow River within and upstream of Bragg Creek. This project is being completed by Rocky View County and is currently undergoing regulatory review and approval. The Bragg Creek

Bragg Creek Berms: Will still result in groundwater flooding

Exhibit TBC: 2017 RVC Presentation on Bragg Creek Berms, pg 14

Meanwhile, Calgary's target of 160cms is designed to prevent basement flooding downstream of Glenmore Reservoir

Why do Calgary residents receive a better outcome?

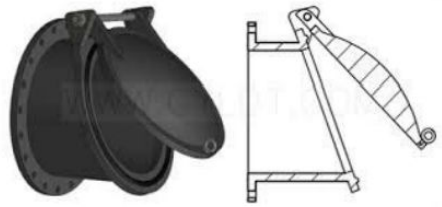
MC1 provided an equal outcome for all

Bragg Creek Flood Mitigation Project
Surface Drainage & Groundwater

ROCKY VIEW COUNTY
Cultivating Communities

amec foster wheeler

- Surface Drainage
  - A swale on the landowner side of the proposed barrier will direct surface drainage to corrugated steel pipes through the barrier
  - An automatic flap gate will be provided at the pipe outlet which will open as a result of water pressure from the landowner side or close as a result of river water pressure during extreme floods



  - A back-up, manually operated sluice gate system will also be provided
- Groundwater Review
  - Flood structures will not impact existing shallow wells or groundwater levels during non-flood conditions
  - Flood structures will reduce but not eliminate the risk of basement flooding as a result of groundwater seepage during extreme floods

Flawed Decision Making

Project Decision: In 2014/ 2015, sedimentation was not well understood

Exhibit 13, page 1

- Sediment accumulates in the SR1 reservoir over time, ruining the land permanently
- With depths up to 4m and 2.3 million tons in a design flood, this creates an ongoing environmental and societal hazard

Without additional information on **sediment transport**, it is difficult to express a well substantiated preference for either of the two projects from this point of view. However, given the fact that MC1 will trap all bed-material load, one might argue that MC1 is likely to have more impact on sediment transport. This would imply that SR1 could be preferred from this point of view. This needs to be verified by sediment transport studies. The impact of SR1 to the natural flow of the Elbow is smaller than MC1. **From an environmental point of view, SR1 leaves the river as a more natural system.**

Project Decision: SR1 sedimentation is a disaster

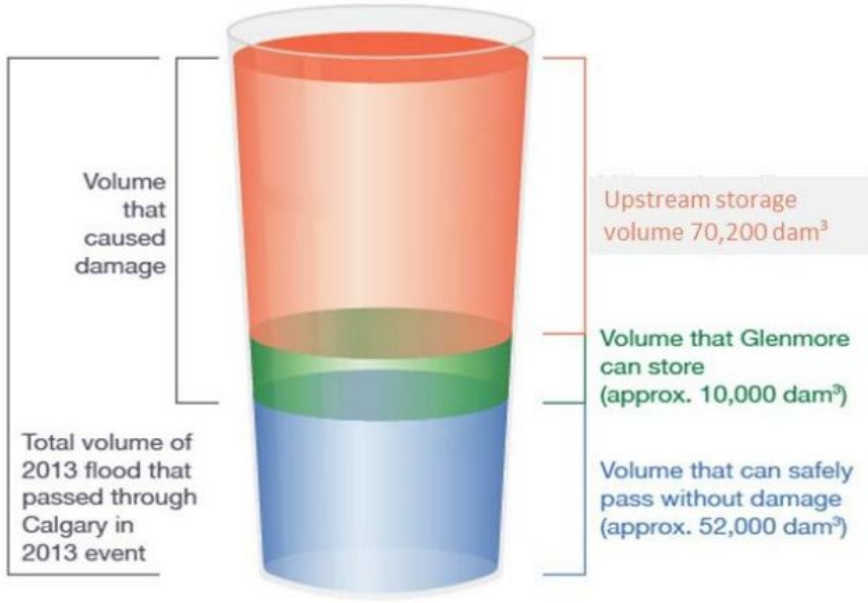
Exhibit TBC: 2018 Rocky View County Report, pg 3

It is proposed that SR1 will divert water when Elbow River water flow reaches 160 m³/s. The intention is to limit flows downstream of Glenmore Dam to less than 170 m³/s. A 160 m³/s flow is about a 1 in 6 year flood meaning that there is a 17% chance the reservoir will be used every year.

Once the flood event is over, the reservoir will drain back into the Elbow River. It is expected that water retention will last for about two months (58 to 82 days) with dead water storage in isolated pockets with an estimated total size of 296 acres (120 hectares).

Upon drainage, 700 acres of land will have 1 to 400 cm. of silt deposits (Appendix 1), and it is reasonable to assume that all land within the reservoir will be subject to some degree of silting. Siltation will make more than half of the reservoir area non-viable for agriculture operations and subject to invasive weeds. The project description notes that reservoir land north of Springbank Road "may remain open to grazing" (Appendix 2).

Figure 1: Water Retention Volumes



Project Decision: Long-term environmental and societal impacts of sediment remain unclear

Exhibit 93: IR300

Table IR300-1 Suspended Sediment Mass, and Percent Diverted and Released from the Off-Stream Reservoir (from Table 6-6 in Volume 3B, Section 6)

Flood	Diversion time (days)	Suspended sediment mass diverted into the reservoir (kt)	Suspended sediment mass released out of the reservoir (kt)	Percent suspended sediment remaining in the reservoir (%)	Percent suspended sediment released out of the reservoir (%)	Loss of retention volume in the reservoir due to remaining sediment (%)
Design Flood	3.75	2,389	90	98.2	1.8	1.1
1:100 year flood	1.80	1,268	220	88.3	11.7	0.5
1:10 year flood	0.38	1.3	1.1	95.4	4.6	0.0
NOTE: kt - kilotonne						

Project Decision: MC1 was assumed to be negative for wildlife

ENVIRONMENTAL IMPACTS

- The environmental reviews undertaken have consistently described the MC1 proposal as fundamentally more ecologically sensitive to disturbance than SR1.
- The Elbow Valley is home to a number of species at risk or concern, including grizzly bears, harlequin ducks, bull trout, westslope cutthroat trout, and wolverine.
- Construction of MC1 would permanently alter fish habitat and interfere with fish spawning.
- MC1 would require the removal of trees and vegetation from the reservoir area, and would irreparably alter the habitat for wildlife and fish population.
- Deltares notes that "From an environmental point of view, SR1 leaves the river as a more natural system."[1]
- Since SR1 is an off-stream project, less in-stream work will be required during its construction.

Exhibit TBC: AEP Report on Infrastructure, 2015 page 2 - NOT A FULL REPRESENTATION!

- SR1 impacts 3km of river, Bragg Creek berms another 2.5km of river. Is this still more natural?
- SR1 destroys most of its 3600 acre footprint through diversion, berming, the massive embankment, the diversion channel and outlets/spillways
- These statements from 2015 were judgements reached without proper due diligence

Project Decision: 2017 reports provide a balanced view of wildlife and MC1

Exhibit 03: MC1 Vol 1 : A permanent pond has POSITIVE effects on wildlife

By this time, SR1 was the chosen project and these reports were only used for CEAA evaluations, as an alternative needed to be provided. SR1 is also negative for ungulates and grizzlies, as is now evident. No positive outcomes for wildlife identified for SR1.

After the implementation of mitigation measures, adverse residual effects to Wildlife and Wildlife Habitat would remain due to a change in habitat for all VCs. Positive effects to a change in habitat would also be likely; for example, the creation of the permanent pond could provide habitat for bats, piscivorous birds, and amphibians. Adverse residual effects to a change in movement would remain for Grizzly Bear, Ungulates, and Amphibians and Reptiles. A residual effect on change in mortality risk would remain for Grizzly Bear, Ungulates, Bats, Breeding Birds, Raptors and Owls, and Amphibians and Reptiles. All residual effects to Wildlife and Wildlife Habitat VCs are likely to be non-substantive.

Project Decision: Fish - 2014/2015 Conclusions Reached Too Quickly, Positive MC1 Effects Ignored

Exhibit 101: IR14-1 MC1 Preliminary Design Report, 2017, Page 4

SR1 may result in the extirpation of bull trout from the Elbow River and MC1 would have created NEW habitat! How is SR1 better for fish?

- Potential effects of the project on wildlife will vary among the different species that inhabit or use the project area. The Dam will create additional lake habitat, which will benefit diving waterfowl and other water birds and provide new wintering habitat for fish. Construction of the Dam and related works will, however, result in the removal of some wildlife habitat areas from active use and the alteration of habitat features in certain areas. These impacts can be reduced by minimizing the area of disturbance, reclaiming temporarily-used areas after construction, and identifying off-site habitat offsetting opportunities.
- The Dam will convert existing upstream riverine habitat into lake habitat, which could result in a change in the composition of fish species within the permanent pond area, with a relative increase in the prevalence of species that favour lake ecosystems or are more adept to environmental changes. Overall, the extent of fish habitat, relative to the area of existing riverine habitat, will increase. Creation of the permanent pond can also be expected to result in some new rearing and wintering habitat (i.e. increased ice cover during winter).

Project Decision: Fish SR1 is negative for Bull Trout (2021)

Exhibit 181: EIA Complete Letter, 2021

Bull trout may be extirpated because of SR1!

Given the above noted items, AEP- FM is of the opinion that this project, as proposed, will present a high risk to fish populations in this reach of the Elbow River. Additionally, it is also of the opinion that Bull Trout may eventually become extirpated from this stream reach given the unique life history characteristics of Bull Trout in the Elbow River (i.e. documented use from Elbow Falls to Glenmore Reservoir and their late age to maturity) given the frequency of operation.

This project may put the local population of Bull Trout at high risk and may lead to extirpation in this reach of the Elbow River. If this population declines as a result of this project, this would represent a trade-off for fish populations in this reach. It should be further noted that fluvial life history strategies of large Bull Trout only reside in 2 reaches of the Elbow River; upstream of Elbow Falls, and downstream of Elbow Falls. Any plans to offset these losses should be carefully considered as it is unclear whether Bull Trout could persist sustainably in this reach of the Elbow River with the flood diversion operational over the long term. If deemed as an acceptable trade-off by regulatory agencies, alternative offsets

Project Decision: 2015 reports imply that MC1 is a recreational disaster

SOCIAL AND RECREATIONAL VALUE

- MC1 would have a direct negative impact on the recreational and social values of the region.
- AMEC notes that "current users appear to place a high social value on the area in its present state".[3]
- The area is the single access point for one of the most heavily used recreational areas in Kananaskis Country with an estimated half a million visitors annually.
- This area includes the primary access to the McLean Creek Off-Highway Vehicle Zone, Moose Mountain Downhill Biking and secondary access to the West Bragg Creek trails, the Elbow River camping and trailhead facilities, and numerous sight-seeing and day use facilities such as "Elbow Falls".
- Other outdoor recreational opportunities and experiences include cross-country skiing, snowshoeing, hiking, camping, equestrian riding, off-highway vehicle (OHV) use, backpacking, rafting, fishing, hunting, canoeing, kayaking, and paddle boarding.

- SR1 affects grazing areas and ranch lands for a small number of Albertans. This will have an impact as these are legacy ranching families with a strong stewardship ethic.

Exhibit TBC: AEP Report on Infrastructure, 2015 page 3 - NOT A FULL REPRESENTATION!

- A permanent pond is created by MC1 to replace Allen Bill Pond
- New recreation could occur in the area, even as it is changed by the MC1 dam

Project Decision: 2017 reports present a balanced view of MC1 recreational impacts

Exhibit 101: IR14-1 MC1 Preliminary Design Report, 2017, page ES-2

This impacts are small compared to the large scale impacts of SR1, which impacts livelihoods, homes and businesses, while removing and ruining thousands of acres of land from a Key Wildlife Biodiversity Zone.

- Elbow Valley Ranger Station (EVRS) and its water/wastewater treatment facilities,
- Approximately 10 kilometers of Highway 66 and the existing bridge over the Elbow River,
- McLean Creek Campground store,
- McLean Creek wastewater lift stations,
- 19 camping stalls at the McLean Creek Campground, and
- Various power and communication lines.

The existing EVRS, park camping and trails were reviewed to determine general function and usage in order to either mitigate or plan replacement of the facilities. The impacted facilities were considered in the plan to be either relocated or replaced on a like for like basis. The cost of demolition, or relocation and reclamation and/or new construction was considered and included.

Project Decision: Positive socio-economic benefits of MC1 were dismissed

Exhibit 16: Environmental Overview of the Dam at MC1, 2017, page 140

All ancillary benefits of MC1 were IGNORED! Recreation can still take place at MC1.

The Allen Bill Pond facilities, which were damaged by the 2013 flood, would need to be removed as they would be located within the permanent pond dead storage (base reservoir) area. Based on the conceptual design, the proposed McLean Creek dam site and permanent pond would have similar recreational amenities as Allen Bill Pond.

Meanwhile, SR1 provides NO identified recreational benefits to the public and REMOVES or HARMS valuable recreational services that exist there today (Kamp Kiwanis, Moose HIll Ranch, existing activities such as horseback riding,, hiking, hunting, etc.)

Project Decision: 2014/2015 - No comparison of operating risk

Exhibit TBC: IR14-1 MC1 Preliminary Design Report, 2017, Page ES-1

MC1 is “relatively simple” to operate.

Operating this dam will be relatively simple as the only mechanisms are the gates for the Outlet Tunnels and the fish passage tunnel. During the passage of flood events, the fish tunnel gate will be closed. The gates in the low level Outlet Tunnels would initially be adjusted to limit releases through the tunnels to approximately 212 m^3/s, and these outflows would be maintained until the reservoir level surcharges to an elevation of 1424.4 meters. If the reservoir should rise to elevation 1424.4 meters, which is equivalent to passage of 2013 flood event, these gates would be further opened and additional flow would be released to prevent further rise of the pond elevation, if possible. For very large events, exceeding the 1000-year return period, the Outlet Tunnel gates would be fully opened and additional pond rise will occur. The Service Spillway would be activated for a flood greater than the 1000 year event. During passage of the project’s Inflow Design Flood, the Probable Maximum Flood, the reservoir is expected to rise to elevation 1428.1 meters. Flood waters would be passed by the Outlet Tunnels, the Service Spillway and the Auxiliary Spillway in the right abutment. Thus, the dam is designed to safely pass the Probable Maximum Flood.

Project Decision: SR1 operating risk is substantial

Exhibit 13: Deltares, 2015, Page 7

Meanwhile, SR1 is complex and has many unpredictable elements caused by managing the diversion structure. See Austin Engineering report (Exhibit TBC)

DECISION CONSIDERATIONS:

Storage:

We conclude that, depending on the design, both storage sites can provide the required storage volumes. As with all detention measures, in-stream or off-stream, the effect of storage heavily depends on the expected range in possible flood hydrographs, accurate forecasts and quick operation of the gates. It is expected that SR1 is more sensitive for differences in flood hydrograph or inaccurate forecasts than MC1. However, the effect of storage at the MC1 site on the discharge in Calgary will also depend on the runoff that is generated downstream of the proposed location. This is likely to be less of a problem at the SR1 location.

Project Decision: Drought was ignored

Exhibit 101: IR14-1 MC1 Preliminary Design Report, 2017, page 43 and Exhibit 13, Deltares p 4

SR1 CANNOT protect against drought while MC1 can! How is this missed in the evaluation of alternatives?

It should be noted that the preliminary operating strategy for MC1 has focused primarily on flood management. However, the permanent storage of the facility can also be used to provide additional water supply in the event of an extreme drought. If needed, the projects 3,500 dam^3 permanent storage volume could be utilized to augment flow releases during a severe drought period. Depending on the value associated with this type of flow augmentation capability, it may even be desirable to increase the project permanent pool level. This could be assessed as a part of future optimization studies should the project advance past the conceptual level of study.

The conceptual design includes a small permanent pool in the valley bottom, permanently containing approximately 4,000 dam^3 of water as dead storage. This storage should prevent incoming larger bottom sediment from plugging the intake area. There is no low level outlet to release the dead storage. Additional water could be contained above the dead storage El. 1,398.0 m (i.e., multi-use storage) by regulating the permanent outlet gates. The potential benefit and/or need for multi-use storage at this site has not yet been reported.

Deltares Report

Project Decision: Time and money

Exhibit TBC: AEP Report on Infrastructure, 2015 page 4

- SR1 is now far more costly than MC1 and has proven NOT to be faster
- There is tremendous political pressure and will behind SR1

CONCLUSION

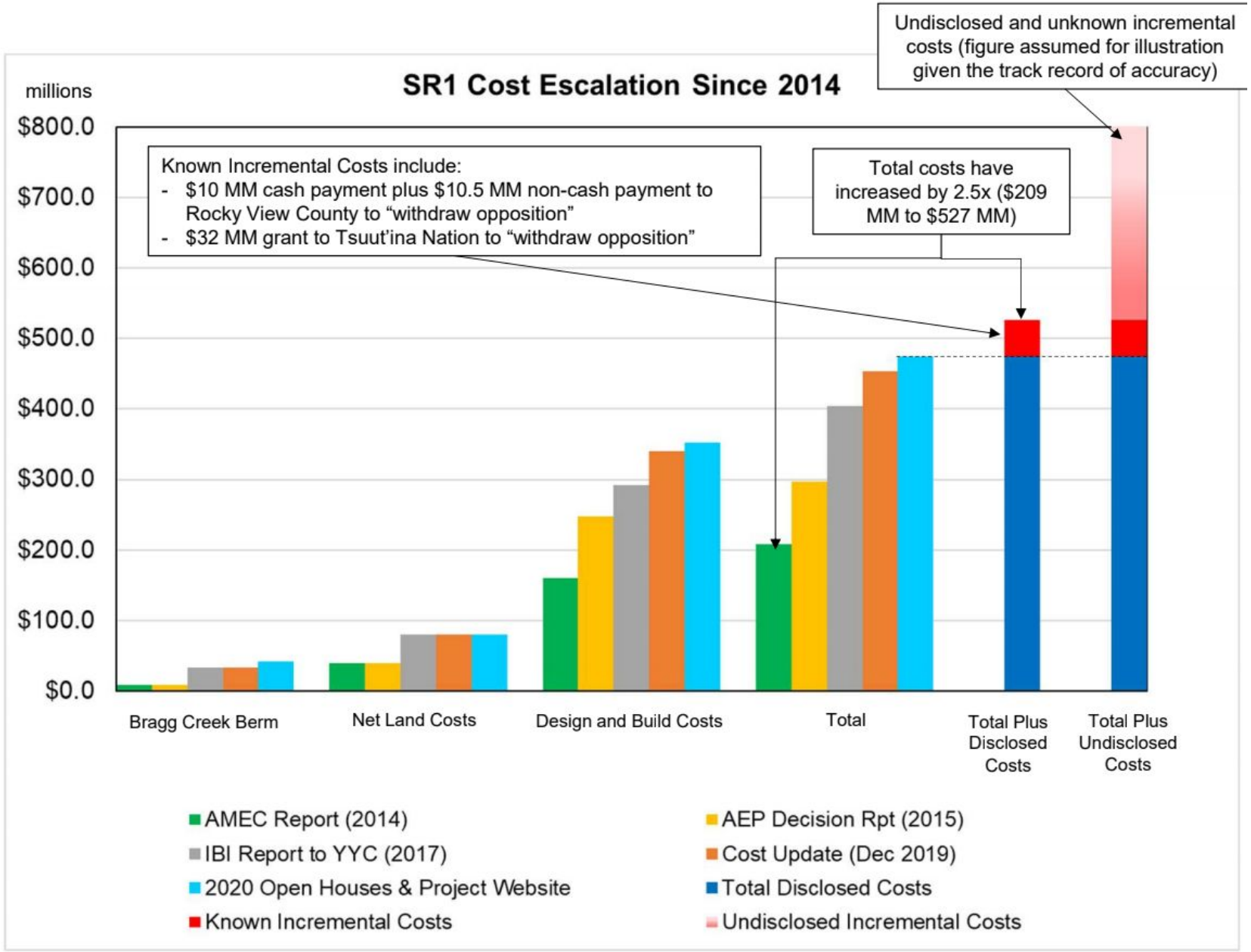
- Deltares agreed with previous assessments that SR1, combined with local mitigation at Bragg Creek and Redwood Meadows, was less expensive, more environmentally-friendly, could be delivered on a shorter timeline, and presented less risk during construction than MC1.

Project Cost Discussion

Refer to 2021 Cost Escalation Exhibit

SR1 Cost Escalation

- Alberta Transportation stated that SR1 represented the lowest cost alternative
- Since the decision was made to pursue the SR1 option, the costs have escalated from $209 million (AMEC 2014) to $527 million (Total plus Known Incremental Costs for Rocky View County and Tsuut'ina Nation to withdraw opposition)
  - This represents a 2.5x increase in costs
  - This does not include any undisclosed costs



Tsuut’ina Nation: Facilitation Payment for SR1

Details of Compensation
April 1, 2020

Calgary

Springbank reservoir change of heart comes with $32M for Tsuut'ina flood mitigation

Nation says 'concerns' about dam remain on the record

Rachel Ward · CBC News · Posted: Apr 28, 2020 11:17 AM MT | Last Updated: April 28, 2020

At the time, the Alberta government said an agreement had been reached but declined to provide specifics.

The Tsuut'ina Nation chief and council have now published some details about that agreement — specifically, the key financial figure.

"The Tsuut'ina Nation has been able to negotiate a grant for $32 million from the province of Alberta for, among other things, flood mitigation, restoration and prevention," council said in a statement posted to Facebook on Saturday.

"In return for this grant, we have removed our opposition to the Springbank Off-Stream Reservoir (SR-1)."

cbc.ca/news/canada/calgary/springbank-reservoir-tsuutina-nation-1.5547788

Rocky View County: Facilitation Payment for SR1

Details of Compensation May 29, 2020

https://www.rockyview.ca/news/article/1814/rocky-view-county-signs-sr-1-agreement

Compensation Details:

$10 Payment

$10.5M infrastructure

$9.4M Bragg Berm Overage

$? Highway 22 @Bragg

Total = $29.9M

rockyview.ca/news/article/1814/rocky-view-county-signs-sr-1-agreement

Rocky View County Signs SR-1 Agreement

Friday, May 29, 2020

Rocky View County has signed an agreement with the Alberta Government that compensates the municipality for lost revenue should the Springbank Off-Stream Reservoir project (SR-1) be completed.

If SR-1 proceeds, Rocky View County will receive $10 million from the Province to address the future loss of municipal property taxes on the 3,870 acres (1,566 hectares) of land that will be impacted. The Alberta Government is also committed to deal with certain road or infrastructure issues that may arise from the construction and operation of SR-1.

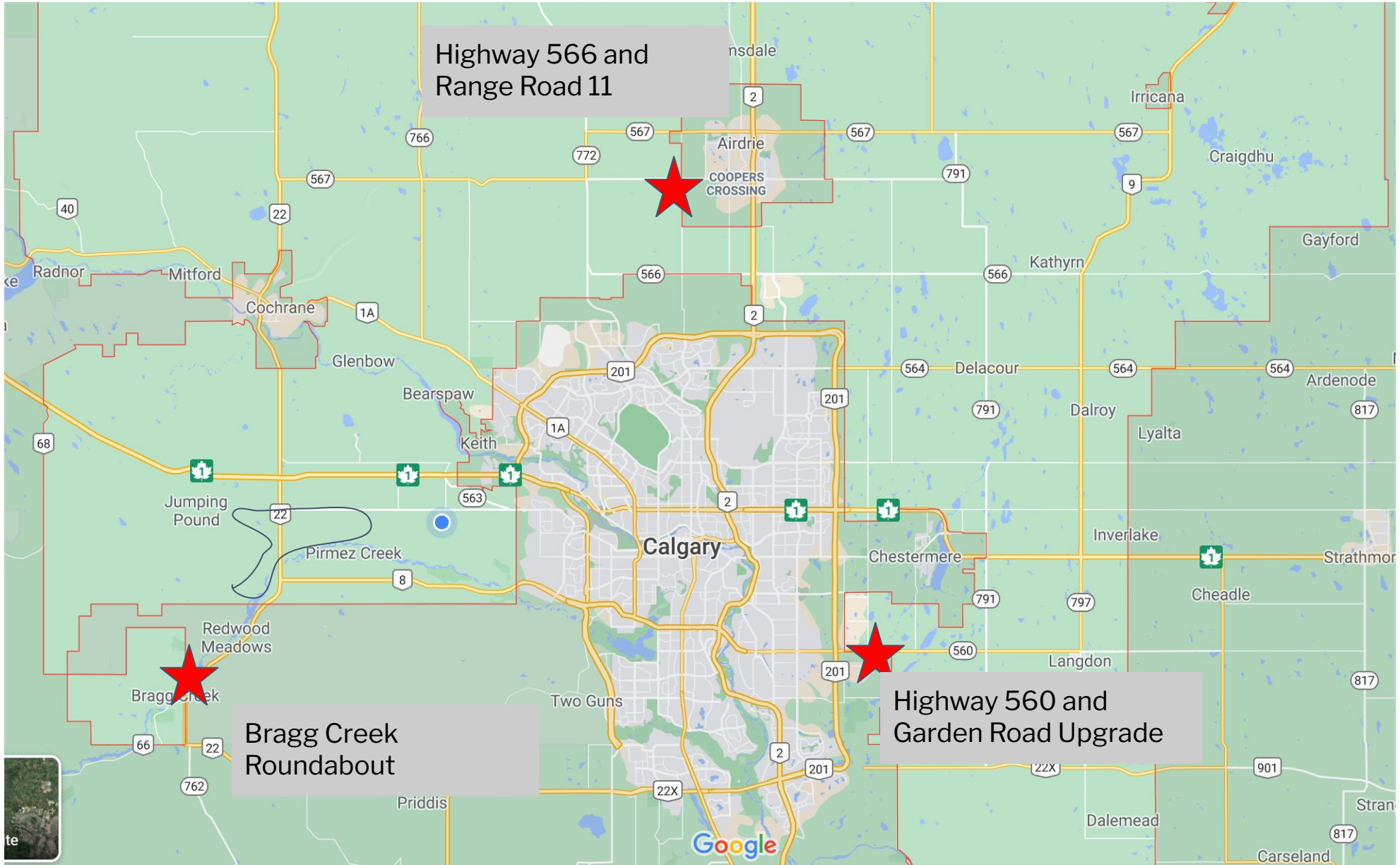
The Province has also announced its support for a number of transportation projects in the County that are not tied to SR-1. Those projects are:

- $2.5 million for upgrading the intersection at Highway 560 and Garden Road (west of Langdon near the Calgary boundary)
- $8 million for a new roundabout at Highway 566 and Range Road 11 (east Balzac)

The Government of Alberta has committed to undertake improvements on Hwy 22 at Bragg Creek, and will work closely with the County and the Tsuut'ina Nation to implement safety and congestion solutions, and enable further development in the area to occur.

Proper flood protection for Bragg Creek has long been a concern of the County with the SR-1 approach, and an additional announcement has helped mitigate that issue. The Province will commit $9.4 million to fund flood mitigation in Bragg Creek. This is on top of the $32.8 million already dedicated by the Alberta and Federal governments.

Rocky View County: Infrastructure Investments through facilitation payment



SR1 Cost: Land cost recovery of $60

Exhibit 100: Appendix IR6-1, pg 2 & 8

- Construction of SR1 requires the acquisition of private land. Land values and purchase costs were estimated for the benefit/cost analyses completed in 2015 and 2017. The market land value was assessed based on comparable sales for equivalent highest and best land uses. Typical compensation values for non-market transactions were added. A detailed assessment of individual property owner's specific damages was not possible. Since the original land acquisition estimates, Alberta Transportation has begun negotiations with land owners with the objective of achieving voluntary, willing sellers. During this process, it has become apparent that willing sales of the land will require much higher compensatory amounts than originally suggested. Accordingly, the current estimate for acquiring all land from affected owners has been revised to $140 million.

- IBI Group, working with a licensed real estate appraiser, assessed the probable costs of land acquisition for the SR1 project footprint. It was assumed that any additional land acquired outside of the footprint would be re-sold for similar values, resulting in a recovery of those costs. Total land costs, including damages were estimated at $66 million. An additional $14 million contingency was added to account for the anticipated negotiating timeframe, administration and other unforeseen damages. The total land cost used was $80 million.

Land resale of $60M is not realistic - it is optimistic!

Who would want to live near the reservoir or diversion inlet?

A more conservative approach would be to assume NO land resale.

Bragg Creek Berms: Another $9M

Exhibit TBC : Exhibit D.3 from 2015 IBI Report

Exhibit TBC: RVC Report on Bragg Creek Berms

Item No.	Item Description	Unit	Quantity	Unit Price	Extension
	ALLOWANCES				
1	Larger Riprap sizing	Allow.	Allowance		$200,000
	TEMPORARY FACILITIES				
2	Mobilization and Demobilization	L.S.	1	Lump Sum	$50,000
3	Existing and Temporary Roads	L.S.	1	Lump Sum	$10,000
	SITE PREPARATION				
4	Clearing & Grubbing	ha	3	$2,000.00	$6,251
5	Topsoil & Subsoil Stripping	m^3	11315	$5.00	$56,577
6	Care of Water	L.S.	1	Lump Sum	$75,000
	EXCAVATION				
7	Common Excavation	m^3	13820	$6.50	$89,831
	FILL PLACEMENT				
8	Low Permeable Fill	m^3	56263	$10.00	$562,628
9	Common Fill	m^3	9577	$6.00	$57,461
	GRANULAR AND RIPRAP MATERIALS				
10	Granular Drain Rock	tonnes	5456	$35.00	$190,966
11	Riprap Zone 6B	tonnes	14770	$130.00	$1,920,103
12	Riprap Zone 6A	tonnes	202	$110.00	$22,176
13	Gravel Armour	tonnes	9231	$40.00	$369,251
14	Non-Woven Geotextile	m^2	15385	$3.00	$46,156
	SITE CONSTRUCTION				
15	600 Dia. Perforated HDPE Pipe	m	2947	$120.00	$353,606
16	CSP Well Supply and Installation	L.S.	12	$15,000.00	$180,000
	LANDSCAPING				
			15390	$1.50	$23,084
			30779	$6.00	$184,674
			30779	$3.50	$107,727
					$4,505,490
					$1,126,373
					$540,659
					$6,173,000

2020 Update

In June and July 2019, the County obtained approval for construction from Alberta Environment and Parks under the Water Act and Public Lands Act, and authorization by Fisheries and Oceans Canada under the Fisheries Act.

The tender for construction closed in October 2019. The lowest bid exceeded the initial project estimate of $32.8 million. In April 2020, the Government of Alberta committed additional funds that will allow the project to proceed, with an updated budget of $42.2 million.

SR1 Cost: Latest Estimate

Exhibit TBC: Ab Transportation
Open House in Bragg Creek
October 2020 & Project Website

**Excludes Upstream Mitigations, and facilitation payments and includes $60M in land cost recovery*

Cost and Budget

- Total project budget is $432 million.
- Final project cost will be based on:
  - final land acquisition costs;
  - final design and tendering;
  - cost of conditions from the regulatory process; and
  - project taking longer to complete relative to initial assumptions.

Updated Benefit/Cost from IBI

Exhibit 90, Page 2.40, IR22-1 and IR30, page 2.49

According to the Proponent, SR1 now has a WORSE benefit/cost ratio than SR1, before the latest cost increases ($12M). These numbers exclude Bragg Creek costs and benefits:

Table IR22-1 Present Values Assuming a 4% Discount Rate

Indicator	2017 analysis		2019 analysis	
	SR1	MC1 Option	SR1	MC1 Option
PV Benefits	$653,008,000	$578,997,000	$591,610,000	$481,467,000
PV Costs	$388,943,000	$402,999,000	$432,258,000	$340,832,000
Net Present Value	$264,065,000	$175,998,000	$159,352,000	$140,635,000
Benefit/Cost Ratio	1.68	1.44	1.37	1.41

Include Bragg Creek (IR30):

1.28

The flood mitigation at Bragg Creek is a separate project, already underway. However, if the estimated $32.8 million for Bragg Creek flood protection is added to the projected costs of SR1 in 2019, and the $180,000 in AAD added to the benefits for that protection, the benefit cost ratio would decrease from 1.37 to 1.28.

Benefit/Cost: More work to do

Exhibit 90, Page 2.40, IR22-1 and IR30, page 2.49

The SR1 benefit/cost should be updated to include:

- The latest Project costs ($432M)
- Bragg Creek $42.2M.
- Removal of Lease Revenue from SR1
- Mitigation Costs (CEAA Draft Conditions)

THE LATEST COST ESTIMATES OF SR1 AND BRAGG CREEK FLOOD MITIGATION WILL FURTHER REDUCE THE BENEFIT/COST RATIO BELOW THAT OF MC1.

WHY IS THIS PROJECT PROCEEDING?

Project Scope

Refer to Exhibit by Karin Hunter, SCLG
The SR1 project has continued to change and grow as issues with the Project are identified

SPRINGBANK OFF-STREAM RESERVOIR (SR1): PROJECT NEED & JUSTIFICATION

Topic 1

2013 Flood Review: Upstream

Karin Hunter

Remembering 2013

Upstream of Calgary

Bragg Creek

- (https://www.youtube.com/watch?v=NObJReIIus8)
- https://www.youtube.com/watch?v=ptpPrzHg4qk (1:16-4:02)

2013: Bragg Creek & Area

https://globalnews.ca/news/1338378/10-memorable-images-of-bragg-creek-in-the-2013-flood/

A year after the 2013 June floods, here's a look "by the numbers" at the impact on Bragg Creek:

168 – The number of millimetres of rain that fell over three days, causing Bragg Creek and the Elbow River to spill their banks.

1,150 – The number of people evacuated from their homes.

321 – The number of homes and businesses that were damaged.

37 – The number of homeowners offered provincial buyouts.

$13,225,000 – The cost of road and bridge repairs and infrastructure improvements throughout Rocky View County.

The force of the floodwater is strong enough to uproot trees outside the Bragg Creek Trading Post/ June 20,2013. **Global News**

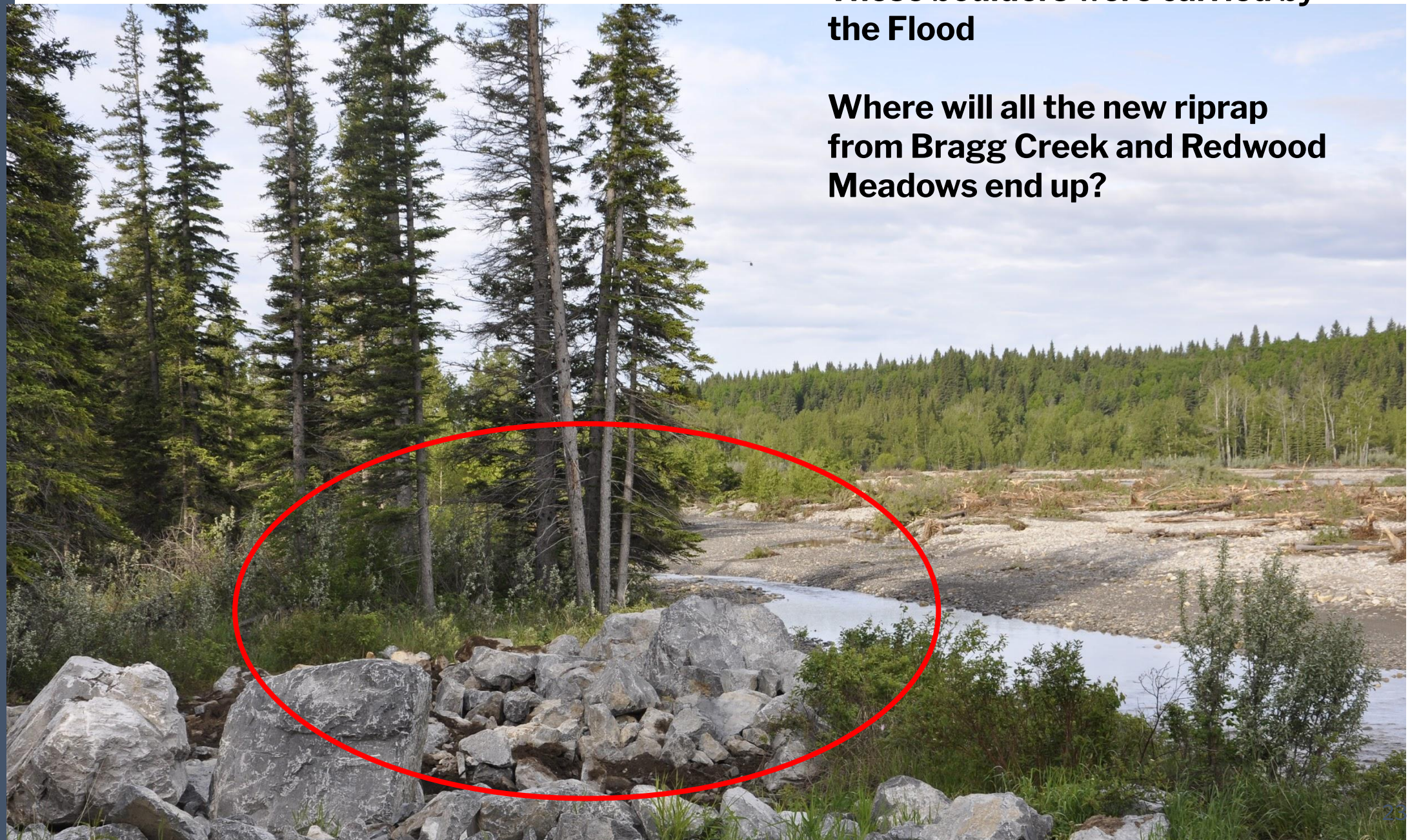

DEERE


22 SOUTH
Bragg Creek
8 EAST
Kamp
Kiwanis
t Ahead


PEPSI

These boulders were carried by the Flood

Where will all the new riprap from Bragg Creek and Redwood Meadows end up?



SPRINGBANK OFF-STREAM RESERVOIR (SR1): A Timeline of SR1

Topic 1

Karin Hunter, SCLG

Videos Created for SR1

Barbara Recollection https://www.youtube.com/watch?v=jqzNtjx-XME&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=2&t=18s

Barbara Berms https://www.youtube.com/watch?v=bCHytOD0de0&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=9

Debris Deflector: https://www.youtube.com/watch?v=ObIkCjLRa9s&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=24

Karen Massey – Interview https://www.youtube.com/watch?v=vuPeZ1I0G4U&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=17

Mary Robinson – Interview https://www.youtube.com/watch?v=dTS8K3RNruI&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=16

Mary Robinson - Consultation & Floodplain Berm
https://www.youtube.com/watch?v=S-YRBpAjokc&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=1&t=23s

Brian and Lee Drewry – Impacts and Reflection on SR1
https://www.youtube.com/watch?v=ZKrrhPPktog&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=14&t=1s

Bragg Creek Berms (Karin) https://www.youtube.com/watch?v=UU1XDW91Q7Y&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=3

SR1 Decision Making (Karin) https://www.youtube.com/watch?v=jWks08GGClw&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=4

Township Road 250 Detour https://www.youtube.com/watch?v=fEbT0ywejVE&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=10

2013: July: Flood Recovery Task Force Announced by Allison Redford, Premier & MLA Calgary Elbow (Exhibit ?)

The panel will provide input to the government on worldwide breakthroughs in flood prevention technology, offering advice and recommendations. .

The community flood mitigation panel will be led by Allan Markin, the President and CEO of Amp Financial Inc.

"As someone whose home was badly damaged by the recent flooding, I have a keen interest in looking at innovative solutions aimed at preventing future flood damage on a community-wide basis," says Markin. "Together, we can rebuild our flood-damaged communities, restore the operations and beauty of our neighbourhoods, and minimize future flood damage."

Other members of the panel will include:

- Tino DiManno, a civil engineer who currently serves as the western Canadian Sr. V.P. of Stantec Consulting
- Richard Lindseth, president of the Architectural Foundation of Alberta.

"We are resilient. We are tough. And we're going to be smart about rebuilding our communities, together," says Redford. "I want to thank the advisory panel members in advance for helping us with that challenge."

https://calgary.ctvnews.ca/redford-government-appoints-advisory-panel-to-prevent-future-flooding-1.1376842

2013:

August: WaterSmart Paper

- *The 2013 Great Alberta Flood: Actions to Mitigate, Manage and Control Future Floods, pg 5*

Summary of Recommendations

There are actions that can be taken to mitigate, manage, and control the impacts of extreme weather events resulting in floods and the inevitable opposite condition of severe drought. These are summarized into six recommendations:

1. Anticipate and plan for more extreme weather events, including both flood and drought.
2. Improve our operational capacity to deal with potential extreme weather scenarios through better modelling and data management.
3. Investigate the cost/benefit balance of investing in physical infrastructure such as on and off-stream storage, diversions, and natural infrastructure such as wetlands.
4. Consider flood risks in municipal planning and strengthen building codes for new developments in flood plains.
5. Evaluate options for overland flood insurance.
6. Manage our water resources collaboratively, following the examples of the Bow River Consortium and the Cooperative Stormwater Management Initiative, and ensure Watershed Planning and Advisory Councils (WPACs) across the province have proper authority and funding.

2013:

October: Stantec Report (Exhibit ??,)

- *Proposed Mitigation Measures for Elbow, Sheep, Highwood River Basins, pg 2*

2.2 RIVER FLOWS

Figure 2.2 shows the June 2013 hydrographs for Elbow River flows entering Glenmore Reservoir and discharging over the reservoir's spillway (Source: City of Calgary). As shown, the peak flow over Glenmore Reservoir was recorded to be about 700 m^3/s. City of Calgary officials indicated that the Elbow River downstream of Glenmore Reservoir can accommodate a flow of about 180 m^3/s before protective measures such as sand bagging are implemented to prevent flooding of private property. From these results it was estimated that a total temporary storage capacity of about 100 million (M) m^3 would be required within the Elbow River basin upstream of Glenmore Reservoir to fully mitigate the 2013 flows to 180 m^3/s.

2013:

October: Stantec Report (Exhibit ??,)

- *Proposed Mitigation Measures for Elbow, Sheep, Highwood River Basins, pg 2*

Flow data was also obtained from Alberta Environment and Sustainable Resource Development (ESRD) for the two active Water Survey of Canada gauging stations on the Elbow River upstream of Glenmore Reservoir. Station 05BJ004 is located at Bragg Creek and station 05BJ010 is located at the Sarcee Bridge. As shown by **Figure 2.3,** there are some gaps in the data for the Sarcee Bridge station, although this is not considered to be crucial for this review. What is more significant is that the flow data provided by ESRD suggest a significantly lower peak than that of the City's data for Glenmore Reservoir inflows; both locations being essentially the same. We discussed this with Ms. Colleen Walford, a River Flow Forecaster with ESRD, who indicated that the City of Calgary data is more reliable because they measure they measure the rise in water level in Glenmore Reservoir and thus translate the stage to volume over time. The June 2013 flow exceeded the established discharge rating of station 05BJ010 so the results are not reliable.

2013:

October: Stantec Report (Exhibit ??,)

- *Proposed Mitigation Measures for Elbow, Sheep, Highwood River Basins, pg 3*

Retention facilities result in the potential for permanent impacts within the permanently wet reservoir. This can result in significant costs to mitigate these impacts and a lengthy period for regulatory approvals. By comparison, detention facilities only cause temporary impacts during construction of the berm/dry dam structure itself which can be mitigated. For this reason dry detention storage facilities were considered for the Elbow River rather than retention facilities.

Existing 1:50,000 scale topographic mapping was initially studied for potential storage sites. Factors that were considered for identifying favourable sites included narrow sections of the river valley to minimize dry dam width, wide upstream valley for enhanced flooded area which translates to storage volume and minimal impacts on farmstead sites, recreation areas or buildings. Sites located on any First Nations land were avoided in this review.

Three potential sites were initially identified for possible consideration. Upon helicopter inspections undertaken on August 6, 2013, two of the sites were chosen as potential favourable storage locations and their locations revised. The proposed detention storage locations are shown on **Figure 2.4**. Both sites are located upstream of Bragg Creek. Site EQ1 is located on the Elbow River at the junction of Quirk Creek. Site EC1 is located on Canyon Creek about 4 km north of secondary Highway 66. .

2013:

October: Stantec Report (Exhibit ??,)

- *Proposed Mitigation Measures for Elbow, Sheep, Highwood River Basins, pg 5*

2.4 FLOW DIVERSION

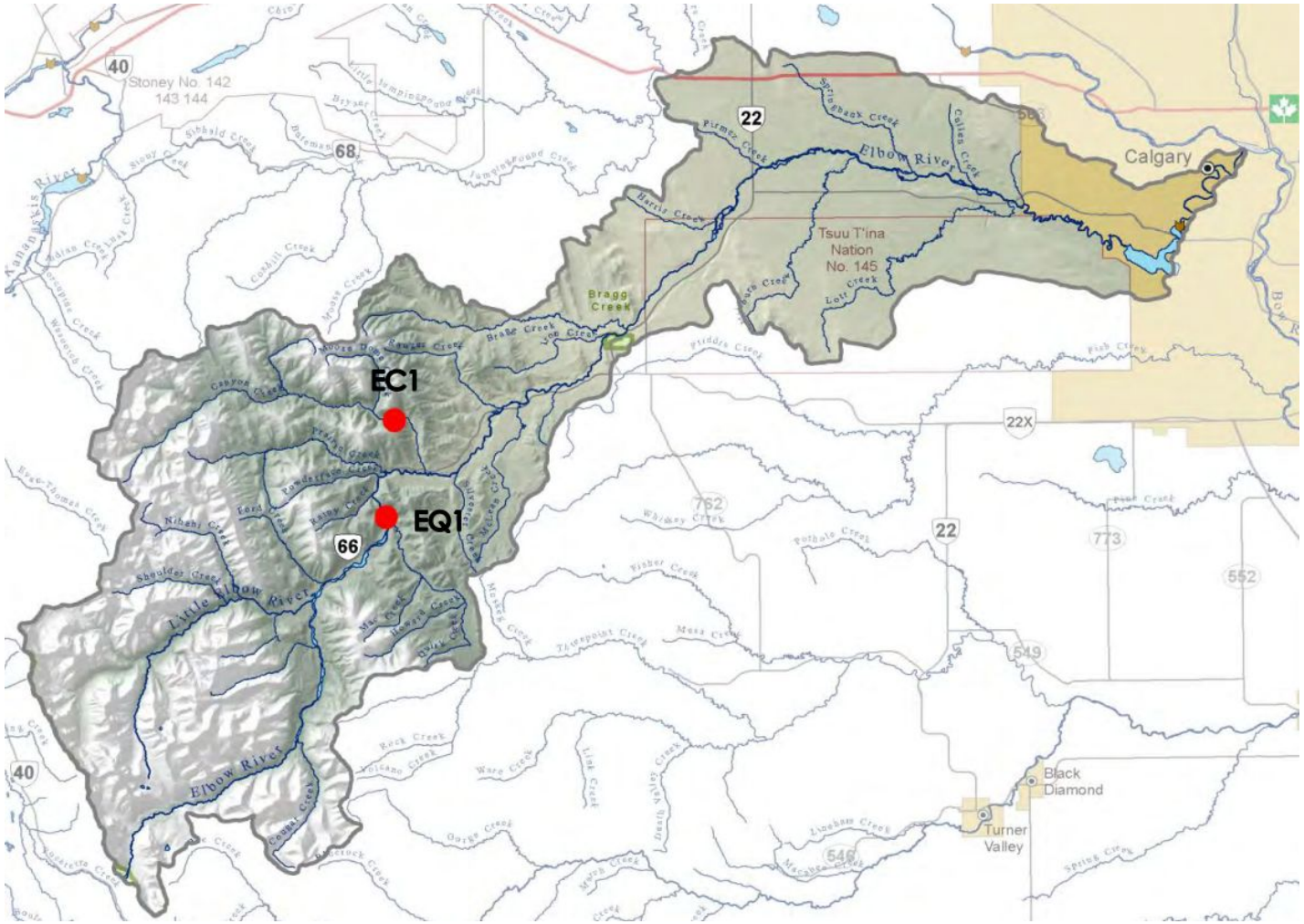
Additional storage is required to further mitigate the 2013 flood level; preferably downstream of Bragg Creek. However additional suitable sites were not found between Bragg Creek and the City of Calgary. As an alternative, it is proposed to divert flood flows from Glenmore Reservoir to bypass the Elbow River through the City of Calgary.

Three options were considered for this Glenmore Reservoir diversion. Two options involved diverting the flows directly to the Bow River along either 58th Avenue or Heritage Drive, as shown on **Figure 2.10**. Both alignments comprise an underground 8.0 m dia. pipe that would be tunneled under the ground surface to accommodate a peak flow of 500 m^3/s. The third option involved diverting the flows south to Fish Creek, but this was not considered further because of potential impacts to Fish Creek. Upon further review of the other two alignments, the 58th Avenue alignment is preferred.

2013:

October: Stantec Report (Exhibit ??,)

- *Proposed Mitigation Measures for Elbow, Sheep, Highwood River Basins, pg 28, Fig 2.4*



2013: October: Flood Recovery Task Force hires AMEC to conduct an assessment of flood mitigation

- *SAFRTF June 2014 Vol 1, Page 1(Exhibit ?)*

Southern Alberta Flood Recovery Task Force
Flood Mitigation Measures for the Bow, Elbow and Oldman River Basins
Volume 1 – Summary Recommendations Report – Final
June 2014

amec

1.0 INTRODUCTION

Following the floods of June 2013, the Government of Alberta (GoA) set up the Southern Alberta Flood Recovery Task Force (SAFRTF). In October 2013, AMEC Environment and Infrastructure, a Division of AMEC Americas Limited (AMEC), was contracted to provide a flood mitigation feasibility study for the Bow River, Elbow River, and Oldman River basins.

This study was undertaken under contract to the SAFRTF (CON0015233) and in accordance with the agreed AMEC proposal document submitted to the SAFRTF on 16th September 2013.

2013: November: 1st Meeting of *Water Collaborative*

- *Source: Calgary River Communities Action Group*

secure | protectcalgary.com/water-collaborative-and-why-we-must-do-what-we-can-to-prevent-this-kind-of-catastrophic-damage/

Water Collaborative and Why We Must Do What We Can to Prevent This Kind of Catastrophic Damage

NOVEMBER 24, 2013 BY CRC ACTION GROUP IN NEWS

We understand that the Flood Advisory Panel has completed its work and that the Government of Alberta has hired the firms AMEC and AECOM to move the mitigation project to the design and construction phase. The GOA has invited CRCAG to become a member of the Water Collaborative. The Water Collaborative is a collection of stakeholder organizations coming together to discuss and review mitigation plans of action. Other members of the Collaborative include WaterSmart, the Bow River Basin Council, Trouts Unlimited, Ducks Unlimited, various Irrigation Districts, TransAlta, The City of Calgary's Flood Panel, Mr. Allan Markin, the Town of High River, Amec and AECOM. We are pleased to be at the table representing homeowners interests. The first meeting of the Water Collaborative was held on Thursday November 14. We expect that at the next meeting in early December we will learn of some proposed timelines for mitigation projects.

We will continue to give voice to our primary message:

Why Upstream Flood Mitigation Needs to Happen!

Comment: NO REPRESENTATION FROM ROCKY VIEW COUNTY, REDWOOD MEADOWS OR TSUUT'INA NATION

2014:

January: WaterSmart Report (Exhibit ??)

- *Review of Historical Detention Sites (included Mclean Creek, Page 16)*

4. Recommendations

WaterSMART recommends further investigation into the Priddis Diversion concept. Based on review of the 1986 Elbow River Floodplain Mangement Study and the potential to divert 345 m^3/s, this diversion makes it a ideal choice as it bypasses both Bragg Creek and the City of Calgary. Furthermore after a brief review of the topography surrounding the Priddis Valley, further storage on this diversion is practical, making it cost effective. Flooding of Fish Creek and other low lying areas along the diversion would be ideal to off-set property damage within the City of Calgary. Moreover, due to the location of the Priddis Deversion concept it would be an ideal project to couple with natural mitigation solutions like wetland development. Addtionally, the diversion has the potential to be channeled to meet up with Pine Creek, subsequently splitting river flows in order to reducing flow volumes. It is recommended that this concept be modeled in the Bow River Operational Model (BROM) and considered as an alternative to the proposed Calgary ByPass (BCP1, Map 1).

WaterSMART also recommends that the historical resevoir sites identifed by the Department of Interior in the 1890s, along with the McLean Site should be further investigated for fesiability.

2014: January: Meeting of *Water Collaborative*

- *Source: Calgary River Communities Action Group*

Not secure | protectcalgary.com/january-23-water-collaborative-meeting-notes/

Water Collaborative Meeting Notes

JANUARY 29, 2014 BY CRC ACTION GROUP IN MEETINGS & UPDATES, NEWS

Water Collaborative Meeting Minutes Thursday, January 23

Attendance
Groups represented were:
Government of Alberta, Flood Recovery Task Force
Community Flood Mitigation Advisory Panel
WaterSMART
HydroLogics
Calgary River Communities Action Group
Millarville Residents' Group
Eastern Irrigation District
Western Irrigation District
City of Calgary
City of Medicine Hat
Town of High River
Town of Okotoks
MD of Foothills
TransAlta
AECOM

Andre Corbould: Update from the Flood Recovery Task Force (FRTF)
Andre began the meeting by sharing the latest information on the FRTF's ongoing projects, as well as a couple new items.

- Engineering consultants AMEC and AECOM continue their work to review and assess flood mitigation options for the Highwood, Elbow, Bow, Sheep, Oldman, and South Saskatchewan river basins
- Consultants (Stantec and IBI/Golder) have recently been selected for the Red Deer and Athabasca basins
- An RFP will soon be issued for consulting engineers to examine natural, non-structural solutions for flood mitigation

Comment: NO REPRESENTATION FROM ROCKY VIEW COUNTY, REDWOOD MEADOWS OR TSUUT'INA NATION

2014: March: Meeting of *Water Collaborative*

- *Source: Calgary River Communities Action Group*

ecure | protectcalgary.com/new-drp-surveywater-collaborative-noteshillhurst-sunnyside-notesmore-info-on-stampede-flood-walls/

Water Collaborative Notes

The Water Collaborative meets monthly to review and comment on Government of Alberta and Municipal mitigation plans.

Notes from Water Collaborative Meeting / Wednesday, March 12

Groups present at this meeting:
Government of Alberta – Flood Recovery Task Force (FRTF)
City of Calgary
Ghost Lake
Town of High River
Hillhurst-Sunnyside Residents' Association
Calgary River Communities Action Group
Transalta
Town of Okotoks
City of Medicine hat
Stantec
Government of Alberta – Environment & Sustainable Resource Development (ESRD)
AECOM
Municipal District of Foothills
Eastern Irrigation District

Comment: NO REPRESENTATION FROM ROCKY VIEW COUNTY, REDWOOD MEADOWS OR TSUUT'INA NATION

2014: March: Meeting of *Water Collaborative*

- *Source: Calgary River Communities Action Group*

Other updates:

Andrew Wilson (FRTF) presents on the FRTF's trip to tour Ohio dry dams. Andrew notes there were 5 dams built between 1918 and 1922, built to 1:500 plus 40% level and they have never filled to max capacity. They are paid for by special levy on property tax by homeowners who benefit from the dam. Andrew notes the difference between dry and wet dams, that dry dams are simpler, eliminate operating decisions about when to release water.

When dry dam is "wet", must actively manage debris. Need to access inlet during flood event. Full service wet dams offer more flexibility but come with greater operations complexity. Using floodplain more effectively works better than multiple pieces of infrastructure. Chief engineer from Ohio says dam can rise 15 – 20 feet in a day during a flood event. He also notes environmental impact is minimal because river flows normally most of the time, only held back during flood event.

Cathy Maniego (FRTF) gives an update on a couple of potential holding sites in the Highwood basin.

Andre speaks about budget and the financial commitment over three years, approximately $700 million. Also federal budget had $200 million over 5 years for flood mitigation, but when split between provinces and first nations there won't be too much money for Alberta.

Megan Van Ham (WaterSmart) presents on the Bow River Basin quarterly forum.

Objective is to assess mitigation options throughout the basin, including consequences of mitigation throughout entire watershed.
Will submit report to FRTF and share publicly at end of March.
Looking at natural, infrastructure and operational solutions with short, medium, and long term timing considerations.

2014: March: AMEC Helicopter Tour of Elbow River Detention Sites

– *Source: Calgary River Communities Action Group*

ıre | protectcalgary.com/amec-re-the-elbow-and-transalta-re-the-bow-plus-city-of-calgary-update/

1. AMEC Work Regarding Dry Dam/Diversions for the Elbow River

On Thursday, March 6th, members of the Flood Advisory Panel (Allan Markin, Robert Samaska and Richard Lindseth), Amec (Ken Kress) and CRCAG (Emma May and Jack Davis) met at the offices of AMEC.

Ken Kress of AMEC has 40 years experience in dam building and the South Saskatchewan Basis. He notes that the Elbow River flood potential and risks were studied and reported on in significant detail nearly 30 years ago. Works such as a dry dam were recommended at the time. Mr. Kress presented us with maps of the possible detention dam sites and a solid review of the engineering behind the chosen locations. Mr. Kress' experience in this very area and depth of knowledge was very impressive. On March 17th further geological testing of the sites will be initiated. Mr. Kress will be presenting a comprehensive formal report to the Alberta Government at the end of the month.

The group then took a helicopter tour up the Elbow River watershed to see firsthand the chosen sites. Mr. Kress explained his proposals throughout the flight and gave us rough estimations of the potential of these sites to mitigate flooding in Calgary and in other vulnerable communities.

We look forward to the release of the detailed engineering plan that Mr. Kress is preparing. As these plans to mitigate become ever more detailed they also become more actionable. Proposals to build dams have been recommened in the past but have never enjoyed the sustained political support that is required to get a project committed to and completed. It is imperative that we keep this political will alive and that we continue to press for detailed timelines of the projects. These are projects that would typically require extensive regulatory reviews requirements and we are asking our government to streamline this process as best they can in the face of the urgent situation that is before us.

2014: March: Bow Basin Flood Mitigation and Watershed Management Project

- *Table 4, Page 29 (Exhibit ?)*

Table 4: Flood mitigation options: Elbow River

Concept Category	Short Term (Quick Wins by 2014)	Medium Term (2-5 years - by 2018)	Long Term (> 5 years)
Natural Mitigation	• Initiate bio-engineered bank protection where appropriate	• Increase the capacity of the Elbow River through Calgary • Natural channel design through developed areas • Engineered wetlands in Fish Creek • Wetland detention capacity of the whole Bow Basin	• Mitigation through land management and use practices that reduce runoff throughout the Bow Basin
Operational Mitigation	• Operate Glenmore for flood control • Dredging in reservoir and/or river reaches	• Low impact development to manage storm water	
New Infrastructure Mitigation	• Armour river banks in key spots • Divert high flow into suitable low-lying areas	• Diversion from Glenmore to Bow River under 58th Ave. • Priddis Creek area diversion upstream of Bragg Creek to Fish Creek, with detention • Glenmore to Fish Creek diversion (SWCRR or other path), with detention • Multiple historically identified detention sites • Dikes protecting downtown Calgary infrastructure	• Dry dam at Quirk Creek (EQ1) • Dry dam on Canyon Creek (EC1) • Detention on Prairie Creek • Multiple small detentions instead of one • Expand capacity of Glenmore reservoir

Comment: No mention of SR1 at this point despite its advanced stage of review by AMEC

2014:

April: WaterSmart Report

- *Progress Report on Actions to Mitigate, Manage and Control Flooding, Page 5*

1. **Short-term gaps**
   - Conduct cost-benefit and risk analyses to assess the best use of capital funds to support infrastructure spending decisions – Underway but not yet completed.
   - Conduct cost-benefit and risk analyses to assess the best use of capital funds to support municipal planning and land-use decisions – Underway but not completed.
   - Use the best available risk assessment tools – This is a focus of the City of Calgary's Expert Panel, but we are unclear on specific progress on this action.
2. **Medium-term gaps**
   - Improve predictive capacity through increased modeling and data management – Well underway but not yet completed.
   - Develop a better understanding of the relationship between flooding and groundwater – Just now receiving increased attention.
   - Re-evaluate the potential for slumps and mudslides during flood events – Just now receiving increased attention.
   - Engage public health professionals in assessing flood mitigation measures – Not done to date to the best of our knowledge.
   - Improve watershed management, especially headwater areas so that natural wetlands and riparian zones continue to act as a buffer for heavy rainfall – Identified as a key issue but not yet underway.
3. **Long-term gaps**
   - Refine our zoning and building codes – Underway but not yet completed.
   - Consider creating a Headwaters Management Authority – No action to date.
   - Implement a Water Literacy Campaign – Underway but more to do.

2014: June: AMEC Report for the Flood Recovery Task Force

- *SAFRTF June 2014 Vol 1, Page 4(Exhibit ?)*

4.1.2 Offline Storage at Springbank Road

The off-stream dam site at Springbank Road (SR1) is located just west of Calgary, approximately 18.5 km upstream of the Glenmore Reservoir in a relatively undeveloped valley in a ranchland area.

Comment: First public report that mentions SR1. There is already a design attached to this report, indicating much work on the Project by this point in time. This is less than 12 months post-flood.

2014: June: AMEC Report for the Flood Recovery Task Force

- *SAFRTF June 2014 Vol 1, Page 4(Exhibit ?)*

Re SR1:

The offline storage has been designed to contain a minimum 41,200 dam^3 of flood water, which when combined with the 15,400 dam^3 that can be made available with relatively short notice at the Glenmore Reservoir, would provide full protection for the 1% AEP flood to the existing works in the Elbow Valley floodplain downstream of the Glenmore Reservoir. Additional storage is provided above the minimum 41,200 dam^3 value which will provide significant additional protection for larger floods, should they occur. As currently envisioned in this conceptual design, the maximum flood storage at the site is 57,000 dam^3 (i.e., reservoir El. 1,210.5 m). Even more storage could be provided at this site with a higher dam but project costs would be higher.

2014: June: AMEC Report for the Flood Recovery Task Force

- *SAFRTF June 2014 Vol 1, Page 4(Exhibit ?)*

Re SR1:

The project could be designed as a dry pond, or could include a smaller permanent storage pond (live storage). The permanent pond component would serve to dissipate energy when flood water enters the reservoir, and could be used for recreational/environmental purposes and/or an additional water supply source for the City of Calgary. For the purpose of this conceptual assessment a live storage containment of 9,000 dam^3 has been assumed providing a maximum pond depth of 10 m.

2014: June: AMEC Report for the Flood Recovery Task Force

- *SAFRTF June 2014 Vol 1, Page 10 (Exhibit ?)*

4.1.3 Recommendations for Major Infrastructure

At the time of writing this report, only limited ground investigation data were available at McLean Creek (MC1) and Springbank Road (SR1). The data that is being obtained is vital in determining the viability of either scheme. Though the schemes are radically different in design, based on the information currently available there is little to choose between the two in terms of economics.

Since time is an important factor in this project and a decision cannot be made as to the viability of either scheme, it is recommended that environmental assessments and design for both MC1 and SR1 be taken forward until such time as one becomes the preferred project.

Recommendation V1.1: Environmental assessments and preliminary design for both MC1 and SR1 schemes should be progressed until such time as one becomes the preferred scheme.

2014: June: AMEC Report for the Flood Recovery Task Force

– *SAFRTF June 2014 Vol 1, Page 10 (Exhibit ?)*

7.0 RECOMMENDATIONS FOR LOCAL MEASURES IN THE ELBOW RIVER BASIN

7.1 Channel Diversions

Previous studies have suggested that flow could be diverted from the Elbow River near Bragg Creek into Priddis Creek.

At Priddis, downstream of the confluence with Fish Creek, the 1% AEP estimate is 244 m^3/s. There is already a considerable floodway area with infrastructure and properties at risk. Using Priddis Creek to carry Elbow River overflow would significantly extend the floodway and increase flood risk to properties already at risk. The Priddis flood study does not estimate flood frequency beyond the 1% AEP event. However, more than doubling the discharge through Priddis would require substantial buyouts or an engineered channel through the hamlet to ensure those risks are managed effectively. For this reason, AMEC does not feel that this is a feasible option for the protection of the City of Calgary.

Recommendation V4.11: It is recommended that the concept of diverting flow from the Elbow River into the Priddis/Fish Creek basin be abandoned.

2014: June: AMEC Report for the Flood Recovery Task Force

- *SAFRTF June 2014 Vol 1, Page 10 (Exhibit ?)*

7.2 Flood Defences at Bragg Creek

If flood protection infrastructure for the City of Calgary is located downstream of Bragg Creek, there may be a need to protect the hamlet with dykes. Also, the construction schedule for a major infrastructure project may be long. If a decision is made to proceed with SR1 as the preferred flood storage scheme for the Elbow River, then the detailed design and planning for the dykes at Bragg Creek should be initiated as soon as possible.

Recommendation V4.12: It is recommended that once the preferred scheme for Calgary has been identified, flood defences, if necessary, be constructed as soon as possible at Bragg Creek.

2014: June: AMEC Report for the Flood Recovery Task Force

- *SAFRTF June 2014 Vol 1, Page 11 (Exhibit ?)*

Recommendation V4.13: It is recommended a complete economic appraisal of feasible engineering flood mitigation options be undertaken following completion of the conceptual design for the Calgary (58th Ave) tunnel and the dams at MC1 and SR1.

2014: June: AMEC Report for the Flood Recovery Task Force

- *Volume 4 Appendix G, Page 24 (Exhibit ?)*

Southern Alberta Flood Recovery Task Force
Volume 4 - Flood Mitigation Measures – Final
Appendix G – Springbank Off-stream Storage Project
May 2014

amec

This conceptual design has provided for a portion of the reservoir to be used for purposes other than, or in addition to, flood storage (i.e. multi-use storage). This concept needs to be endorsed or rejected and the amount of such multi-purpose storage established.

Sediment transport has been identified as a major factor in diversion structure design and should be addressed at the onset of preliminary design, as the results of this assessment could significantly impact the diversion structure configuration. Preliminary design would include hydraulic and sediment transport modelling, if required, to produce detailed structure outline drawings and better establish project cost. Preliminary design should include more detailed subsurface soils investigations and stakeholder involvement. Land access will be required for the preliminary design and environmental field investigations.

2014:

July: Meeting with certain affected landowners (most landowners were not aware)

- Exhibit X: Landowner Presentation: Cost $193M

Moving Forward: Next Steps for SR1

- **Select a firm to complete detailed engineering and design**
  - RFP closes on August 6, 2014
- **Undertake detailed engineering and design**
  - Beginning September 2014 (12-14 months)
- **Regulatory review process**
- **Land conversations**

Off-Stream vs On-Stream Storage

- **Drought Protection: live storage can be added to either option**
- **On-stream (MC1): $189 Million**
  - Protects Bragg Creek and Calgary
  - Store 58,000 dam³ of water
- **Off-stream (SR1): $193 Million**
  - Protects Calgary
  - Store 57,000 dam³ of water
  - Less physical disturbance to the stream
  - Less construction window restrictions
  - Fish passage on the Elbow River can be implemented

2014: June: Proponent submits Project Summary to NRCB

- *(Exhibit ?) - Disappeared off NRCB website*

FILE NRCB COPY

Project Summary Table			
Proponent Name:	Alberta Transportation	Date:	July 11, 2014
Project Name:	Springbank Off-stream Storage Project	Company Contact Name and Information:	Syed Abbas, Director Water Management Section Transportation 3rd fl Twin Atria Building 4999 - 98 Avenue Edmonton, AB T6B 2X3 Phone: 780 644-7022 Fax: 780 415-0475 E-mail: syed.abbas@gov.ab.ca
Name of Company that will hold Approval:	Alberta Transportation until project completion then transfer to Alberta Environment and Sustainable Resource Development for Operation	Company Website:	www.transportation.alberta.ca
Type of Project (e.g., in-situ, mine, quarry, upgrader, etc.):	Off-stream water storage (flood control) reservoir	New Project, Expansion, Additional Phase or Modification:	New
Projected Construction Start (Month/Year):	08/2016	Projected Operation Start (Month/Year):	10/2017
Life of Project (# years, YYYY - YYYY):	2017-indefinite Permanent installation	Project Location (Legal Land Description) and Municipality:	Project centered on Section 24-Township 24 –Range 4, West of the Fifth Meridian in Rocky View County
Total Project Area (ha):	Approximately 600 ha (full extent to be determined in final design)	Private, Federal, or Provincial Land:	Private (to be purchases by Crown)
Nearest Residence(s) (km):	One residence within flooded area.	Nearest First Nation Reserve(s) (name and km):	Tsuu T'ina Nation 145 (3 kilometres from diversion structure)
Types of Activity (major project processes, components including capacity/size, if availalble):	Capture and storage of flood water for later release (maximum 57,000 dam^3).	Power Source (If on site power generation describe quantity (MW) and facilities):	Minor requirements for controls from local grid.

2014:

July: Meeting of *Water Collaborative*

- *Source: Calgary River Communities Action Group*

cure | protectcalgary.com/crcag-water-collaborative-meeting-alberta-watersmart-summaries/

AUGUST 28, 2014 BY CRC ACTION GROUP IN NEWS

Water Collaborative Update -July 17, 2014

The Water Collaborative meets monthly to review and discuss Provincial and Municipal mitigation projects.

Update on the Springbank Diversion (SR1)

The RFP for SR1 has been issued. The request for a consultancy firm to handle the final engineering and Environmental Impact Assessment (EIA) has gone out and will close early August. To date, there has been significant work done on the environmental impact study and the next step will be determining the final design of the project. There is also a priority to continue engagement with The City of Calgary, Rockyview County, and landowners. It was also expressed that there is the intent to have an Elbow River Basin specific engagement so that all interested parties can attend.

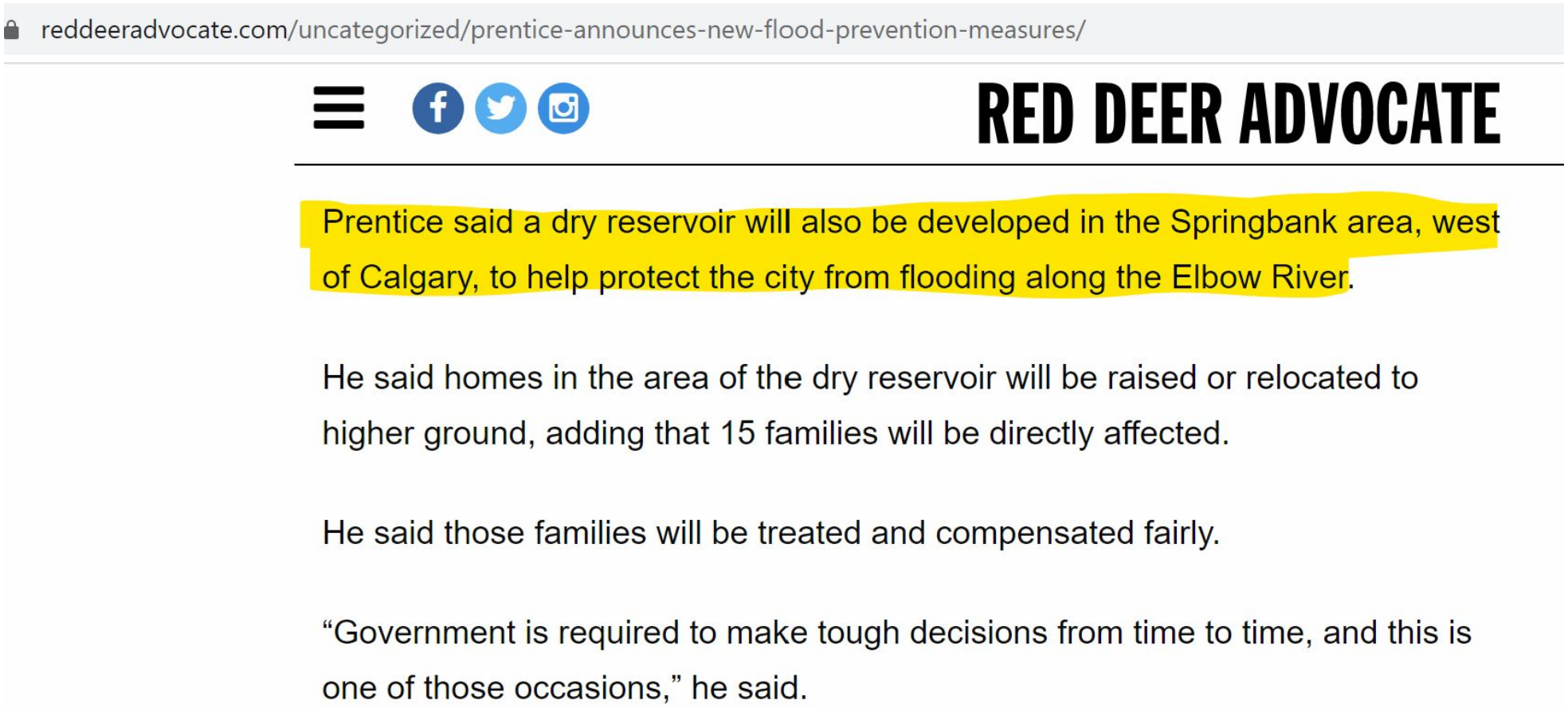
ESRD visit to the Netherlands

The trip to the Netherlands was to determine how the Government of Alberta and the Netherlands can partner together to adopt some of the current technologies and innovations in place in the Netherlands for flood control.

Members of the ESRD learned that the Netherlands has 23 Water Boards that drive water policies in the country. There is a sophisticated system involved in the regulation of water in the Netherlands, where all 23 boards work collaboratively and seamlessly.

2014: September: Announcement of SR1

- *Various Media Coverage*



reddeeradvocate.com/uncategorized/prentice-announces-new-flood-prevention-measures/

RED DEER ADVOCATE

Prentice said a dry reservoir will also be developed in the Springbank area, west of Calgary, to help protect the city from flooding along the Elbow River.

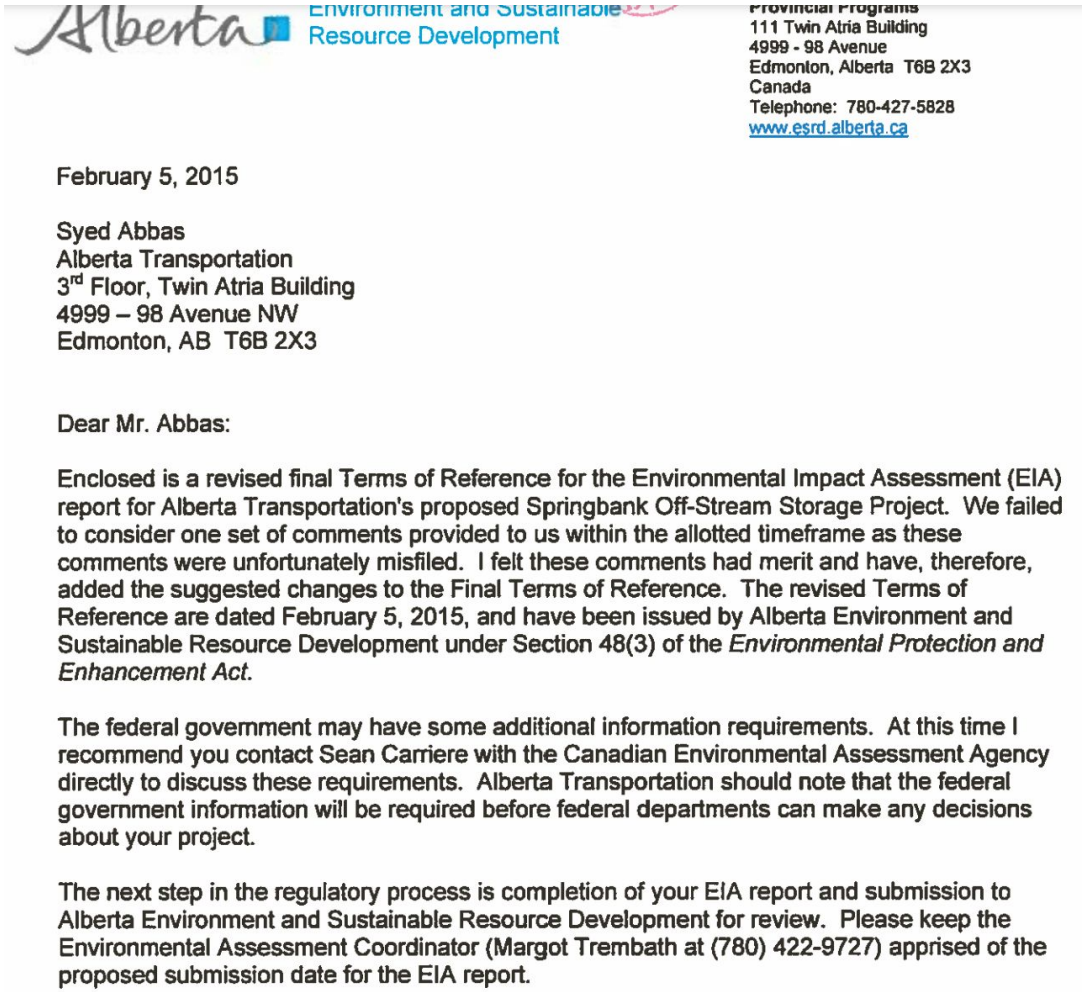
He said homes in the area of the dry reservoir will be raised or relocated to higher ground, adding that 15 families will be directly affected.

He said those families will be treated and compensated fairly.

“Government is required to make tough decisions from time to time, and this is one of those occasions,” he said.

2015: February: Proponent submits Terms of Reference for EIA finalized

– *Exhibit 01*



Alberta Environment and Sustainable Resource Development

Provincial Programs
111 Twin Atria Building
4999 - 98 Avenue
Edmonton, Alberta T6B 2X3
Canada
Telephone: 780-427-5828
www.esrd.alberta.ca

February 5, 2015

Syed Abbas
Alberta Transportation
3rd Floor, Twin Atria Building
4999 – 98 Avenue NW
Edmonton, AB T6B 2X3

Dear Mr. Abbas:

Enclosed is a revised final Terms of Reference for the Environmental Impact Assessment (EIA) report for Alberta Transportation's proposed Springbank Off-Stream Storage Project. We failed to consider one set of comments provided to us within the allotted timeframe as these comments were unfortunately misfiled. I felt these comments had merit and have, therefore, added the suggested changes to the Final Terms of Reference. The revised Terms of Reference are dated February 5, 2015, and have been issued by Alberta Environment and Sustainable Resource Development under Section 48(3) of the *Environmental Protection and Enhancement Act*.

The federal government may have some additional information requirements. At this time I recommend you contact Sean Carriere with the Canadian Environmental Assessment Agency directly to discuss these requirements. Alberta Transportation should note that the federal government information will be required before federal departments can make any decisions about your project.

The next step in the regulatory process is completion of your EIA report and submission to Alberta Environment and Sustainable Resource Development for review. Please keep the Environmental Assessment Coordinator (Margot Trembath at (780) 422-9727) apprised of the proposed submission date for the EIA report.

Comment: No Terms of Reference prepared for either MC1 or for the Glenmore Bypass

SR1 was clearly the project chosen by this time

2015: February: Project Comparison "Fact Sheet"

- *Project Factsheet (Exhibit ?), Cost PV $255M incl PV operating costs of 1.8m/ year*

Alberta Government

Environment and Sustainable Resource Development

Elbow River Flood Mitigation Project Decisions Fact Sheet

Benefit-cost analysis studies show the Springbank Off-stream Reservoir offers a higher benefit-cost ratio than the McLean Creek Dry Dam or Glenmore Reservoir Diversion (also known as the Calgary Tunnel).

Benefit-Cost Ratios for Proposed Projects

	Worst-Case Damage Scenario		Anticipated Damage Scenario	
	1:100 Protection	1:200 Protection	1:100 Protection	1:200 Protection
Springbank Off-stream Reservoir	1.87	2.07	1.32	1.32
McLean Creek Dry Dam	1.43	1.65	1.01	1.05
Glenmore Reservoir Diversion	1.21	1.20	0.81	0.83

2015: February: Bow River Basin: Room For the River: Updated Report w Addendum

– *p ii and 57, Exhibit ?*

Maintaining or creating room for the river in Alberta would involve using both the natural landscape and built infrastructure to channel high flows around infrastructure (diversion), create a larger river cross section to allow high flows to pass (conveyance), detain high flows temporarily (storage), and offer local protection where needed. Contributors to the pilot strongly urged that: Alberta protect the health of the province's watersheds, remembering that "the protection of the aquatic environment is an underlying principle for managing natural resources in Alberta";[1] mitigation activities be grounded in respecting our rivers and their many values; and the environmental, social, and economic trade-offs for mitigation options be thoroughly understood.

McLean Dam (MC1) and Springbank Diversion (SR1)

- It was noted by many respondents that the Dutch Room for the River the approach makes reference to the consequence of infrastructure failure and thus does not recommend large infrastructure solutions.
- Respondents commented that both MC1 and SR1 are large infrastructure solutions and that smaller more ecological based solutions may be favourable wherever possible.
- Many respondents noted that engineered structures such as dams and dykes should be considered temporary and potentially dangerous measures of flood defence.
- There were many requests for immediate release of the cost-benefit analyses for large flood projects as well as preliminary environmental analyses for MC1 and SR1 before final decisions are made regarding whether to proceed with these projects.

2015: Deltares Report, SR1 Cost

- *Exhibit 13, Page 1, 5*

Executive Summary (pg 1)

Without additional information on **sediment transport**, it is difficult to express a well substantiated preference for either of the two projects from this point of view. However, given the fact that MC1 will trap all bed-material load, one might argue that MC1 is likely to have more impact on sediment transport. This would imply that SR1 could be preferred from this point of view. This needs to be verified by sediment transport studies. The impact of SR1 to the natural flow of the Elbow is smaller than MC1. **From an environmental point of view, SR1 leaves the river as a more natural system.**

MC1 (pg 5)

The conceptual design includes a small permanent pool in the valley bottom, permanently containing approximately 4,000 dam^3 of water as dead storage. This storage should prevent incoming larger bottom sediment from plugging the intake area. There is no low level outlet to release the dead storage. Additional water could be contained above the dead storage El. 1,398.0 m (i.e., multi-use storage) by regulating the permanent outlet gates. The potential benefit and/or need for multi-use storage at this site has not yet been reported.

Pg 7

It should be acknowledged that detailed engineering design has not occurred for either scheme and both are subject to refinement.

2015: Bow River Basin: Room For the River: Updated Report w Addendum

– *p ii and 57, Exhibit X*

Maintaining or creating room for the river in Alberta would involve using both the natural landscape and built infrastructure to channel high flows around infrastructure (diversion), create a larger river cross section to allow high flows to pass (conveyance), detain high flows temporarily (storage), and offer local protection where needed. Contributors to the pilot strongly urged that: Alberta protect the health of the province's watersheds, remembering that "the protection of the aquatic environment is an underlying principle for managing natural resources in Alberta";[1] mitigation activities be grounded in respecting our rivers and their many values; and the environmental, social, and economic trade-offs for mitigation options be thoroughly understood.

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2015:

October: Exhibit TBC

- AEP Decisions on the Elbow River Infrastructure

SUMMARY

In June 2015, Alberta Environment and Parks commissioned the Dutch research foundation Deltares to review the original infrastructure proposal reports and a subsequent benefit/cost study for flood mitigation work on the Elbow River and provide a recommendation on which project to take forward to construction-ready status.

The Deltares (2015) report recommends moving forward with project design and Environmental Impact Assessment for the Springbank Off-stream Reservoir (SR1) in combination with local mitigation for Bragg Creek and Redwood Meadows because of lower environmental effects, lower cost and less risk during construction when compared to the McLean Creek Dam (MC1).

Deltares' view on protecting communities against flooding over the long term highlights the government's approach to multiple mitigation elements. This includes the importance of being prepared for a range of flood hydrographs. Building infrastructure must be considered a complement to the multiple other facets of mitigation.

The assessment that follows is focused on MC1 and SR1 in combination with upstream mitigation. The scale of these projects offers a substantial reduction in risk and is being designed to the 2013 scale event.

2017:

September 2017, Exhibits 3-7 : MC1 Reports

Elbow River at McLean Creek Dam (MC1)
Environmental Impact Screening Report

Executive Summary and Sections 1.0 – 5.0

Section 1.0 – Introduction
Section 2.0 – MC1 Option Setting, Benefit and Alternatives
Section 3.0 – MC1 Option Description
Section 4.0 – Environmental Impact Screening Methodology
Section 5.0 – Summary of Environmental Social and Economic Assessment

Prepared for:
Alberta Transportation

Prepared by:
Hemmera Envirochem Inc.
Suite 302, 322 11th Avenue SW
Calgary AB TR 0C5

File: 2025-001.01
September 2017

2018:

March:

Springbank EIA is filed (after being rejected in 2017) Exhibit 17

March 26, 2018

Ms Shelly Boss
Project Manager, Prairie and Northern Region
Canadian Environment Assessment Agency
Government of Canada
Canada Place
9700 Jasper Avenue, Suite 1145
Edmonton, AB T5J 4C3

Dear Ms Boss:

Subject: SPRINGBANK OFF-STREAM RESERVOIR PROJECT
RESUBMISSION OF ENVIRONMENTAL IMPACT STATEMENT

On October 17, 2017, Alberta Transportation applied to the Alberta Natural Resources Conservation Board (NRCB) under Section 5 of *Natural Resources Conservation Board Act* for approval to construct and operate the Springbank Off-stream Reservoir Project (the Project). Alberta Transportation also applied to the Canadian Environmental Assessment Agency (CEA Agency) under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) for approval by the federal Minister of Environment and Climate Change.

On November 16, 2017 Alberta Transportation received correspondence from the CEA Agency, requesting additional information be provided within the Environmental Impact Statement (EIS) to achieve conformity with the Guidelines for the Preparation of an Environmental Impact Statement pursuant to the *Canadian Environmental Assessment Act, 2012* for the Springbank Offstream Reservoir Project, issued to Alberta Transportation on August 10, 2016.

This updated EIS, dated March 2018, incorporates all additional information requested by the CEA Agency. The EIS includes a concordance table, Volume 1, indicating location in the EIS of the additional information requested by the CEA Agency.

Alberta Transportation also received correspondence from the CEA Agency on December 19, 2017 – Annex 2: Early Technical Issues and Advice to the Proponent. Alberta Transportation will be responding to Annex 2 under separate cover by end April 2018.

Sincerely,

2018:

December 11: Exhibit TBC: Rocky View County report on SR1, page 9

CONCLUSION:

While recognizing the need for downstream flood protection for the city of Calgary, this report makes the following observations regarding the decision to build the Spring Bank Dry Reservoir (SR1):

- SR1 impacts are placed solely on the County and Tsuut'ina Nation, and specifically the residents of Springbank, with no mitigating benefits:
  - Downstream and other mitigation measures to share the impacts have been neglected,
- Other options were not given the same level of technical evaluation as SR1, which:
  - Resulted in a skewed cost / benefit comparison; and
  - Resulted in the premature dismissal of other options;
- Value-based decisions favouring SR1 were made by technical experts without the input of impacted stakeholders and the public; and
- The need for regional drought protection, water delivery, and recreation was not considered.

The Tsuut'ina Nation does not believe it was appropriately consulted on SR1 with respect to its Treaty and Traditional lands. This has the potential to delay or halt the SR1 process - it also provides an opportunity to:

- Step back, evaluate, and reconsider all options on an equal technical basis;
- Fully engage the public and stakeholders on value-based decisions within the context of sharing the impact of flood mitigation;
- Implement other flood control measures as identified in the Room for the River report, such as improving conveyance, purchasing flood-prone properties, conserving riparian areas, and establishing new wetland and flooding areas; and
- Appropriately consult with the Tsuut'ina Nation and engage them as partners who may bring a new solution to the table.

2019:

July 11: Exhibit TBC: Tsuut'ina votes to oppose SR1

- https://www.thestar.com/calgary/2019/07/11/tsuutina-first-nation-votes-to-formally-oppose-springbank-flood-mitigation-project.html

CALGARY—Tsuut'ina First Nation Chief Lee Crowchild said his council has passed a resolution that officially opposes provincial plans to build the Springbank reservoir, citing environmental and cultural concerns for the land squared off for the flood mitigation project.

On Thursday, Crowchild told reporters while the First Nation is "pro-development" — pointing to projects like the Grey Eagle Casino and the southwest ring road — the reservoir threatened the integrity of the treaty-protected land.

"The land is still being used to this day for sustenance hunting. After time, and according to the province, much of that area will be rendered toxic, a no-go land for humans or animals," he said.

The dry dam, also known as SR1, is a contentious $432-million flood mitigation project by the province, expected to span about 3,870 acres of land. It would divert water from the Elbow River to an off-stream reservoir 15 kilometres west of Calgary near Springbank Rd.

2019:

Exhibit TBC: Ignasiuk report on SR1 to Alberta Transportation (released 2020), pg 10

Independent Reviewer Observations and Comments

In my view, the requirement to resubmit the EIA resulted in a delay of the regulatory process by approximately 6 months. This delay is attributable in large part to the federal process and the CEAA determination of deficiency. However, even absent the federal deficiency determination, AEP's requirement that the HHRA be revised and resubmitted likely would have caused 2 to 3 months of regulatory delay. The original EIS submitted by AT was more focused on the provincial terms of reference than the Final EIS Guidelines. That said, these information requirements could have been addressed through the SIR process. Finally, I note that Stantec advised AT not to file the EIS in October of 2017 on the basis that there was insufficient time to incorporate necessary information in the EIS and it would likely be rejected by CEAA. I understand external legal counsel also expressed concerns that the EIS was not ready to be filed. I am not aware of who made the decision to file the EIS despite these warnings, or why.

As it pertains to the SIR process, the number of information requests in SIR #1 is unprecedented. I have worked on large-scale mining projects (which include processing facilities and engage far more environmental disciplines than SR1) that were subject to less than half this many information requests in the first round. Typical first round SIRs consist of approximately 190 information requests and very often less.

2020: April - Tsuut'ina Nation: Withdrawal of Opposition

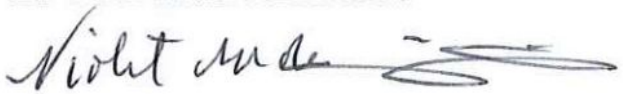
Dear Ms. Trembath and Mr. Kennedy:

Re: Proponent: Alberta Transportation
Project: Springbank Off-Stream Reservoir Project

I write on behalf of, and as the official consultation contact for, the Tsuut'ina Nation ("Tsuut'ina"). Tsuut'ina hereby withdraws all of its objections in relation to the Project proceeding forward in the regulatory process. Further, Tsuut'ina will not participate any further in the regulatory review processes in relation to the Project. Should you have any questions, please contact Terry Braun, General Counsel, at 403-238-6210.

Yours truly,

TSUUT'INA NATION



Violet Meguinis

April 1, 2020

Exhibit 130

2020: May - Rocky View County: Withdrawal of Opposition: Press Release

rockyview.ca/news/article/1797/rocky-view-county-withdraws-sr-1-objections

Rocky View County Withdraws SR-1 Objections

Wednesday, May 13, 2020

Rocky View County Council has voted to withdraw its objections to seeing the Springbank Off-Stream Reservoir project proceed through the environmental and regulatory review processes.

In December of 2018, County Council voted to oppose the project commonly called SR-1, unless other flood mitigation options were subjected to a full analysis. Council agreed at their May 12, 2020 meeting to allow SR-1 to undergo the federal government's Natural Resources Conservation Board review, and provincial regulatory processes without opposition from Rocky View County.

The decision came after the Province announced $196.3 million to help continue work on SR-1 over the next three years. With the province's clear commitment to SR-1, Rocky View County will allow any concerns or issues over the project to be dealt with through the relevant approval processes.

Posted in: News & Updates Springbank

2020 - Rocky View County: Withdrawal of Opposition Motion May 12, 2020

2020-05-12-19 (K-2)
All Divisions – Confidential Closed Session Item – SR-1
File: RVC2020-19

MOVED by Councillor Henn that Council authorizes Administration to prepare and sign the Agreement with the Province of Alberta, and authorizes the signing of the Statements of Non-Objection.

Carried

SPRINGBANK OFF-STREAM RESERVOIR (SR1): LAND USE

Topic 2

Karin Hunter, SCLG

Exhibits

1. Exhibit 13: Deltares Report
2. Exhibit 198: Springbank Community Association Comments to CEAA - 1 General
3. Exhibit 216: Proposed Land Use SIR 4-05
4. Exhibit TBD: Video: Mary Robinson Interview
5. Exhibit TBD: Video: Brian Copithorne and Lee Drewry Interview

General Comments

- It is evident that the future state of SR1 is uncertain
- No precedent for this type of sediment accumulation and its long-term impacts on the land, ecosystem, health and community
- Proponent has focused on short-term view of the operations of SR1 and has not provided a long-term view for that this reservoir
- Land-use plans and plans for the ongoing management of the lands are not-sufficient
- WHAT IS THE WORST CASE SCENARIO FOR THESE LANDS OVER TIME?

Rushed Decision & Bad Judgements

Environmental Impacts		MC1 has detrimental effects to the environmental impact on spawning grounds and wild life trekking. SR1 is pasture land and its use does not change except during high river discharges.	SR1

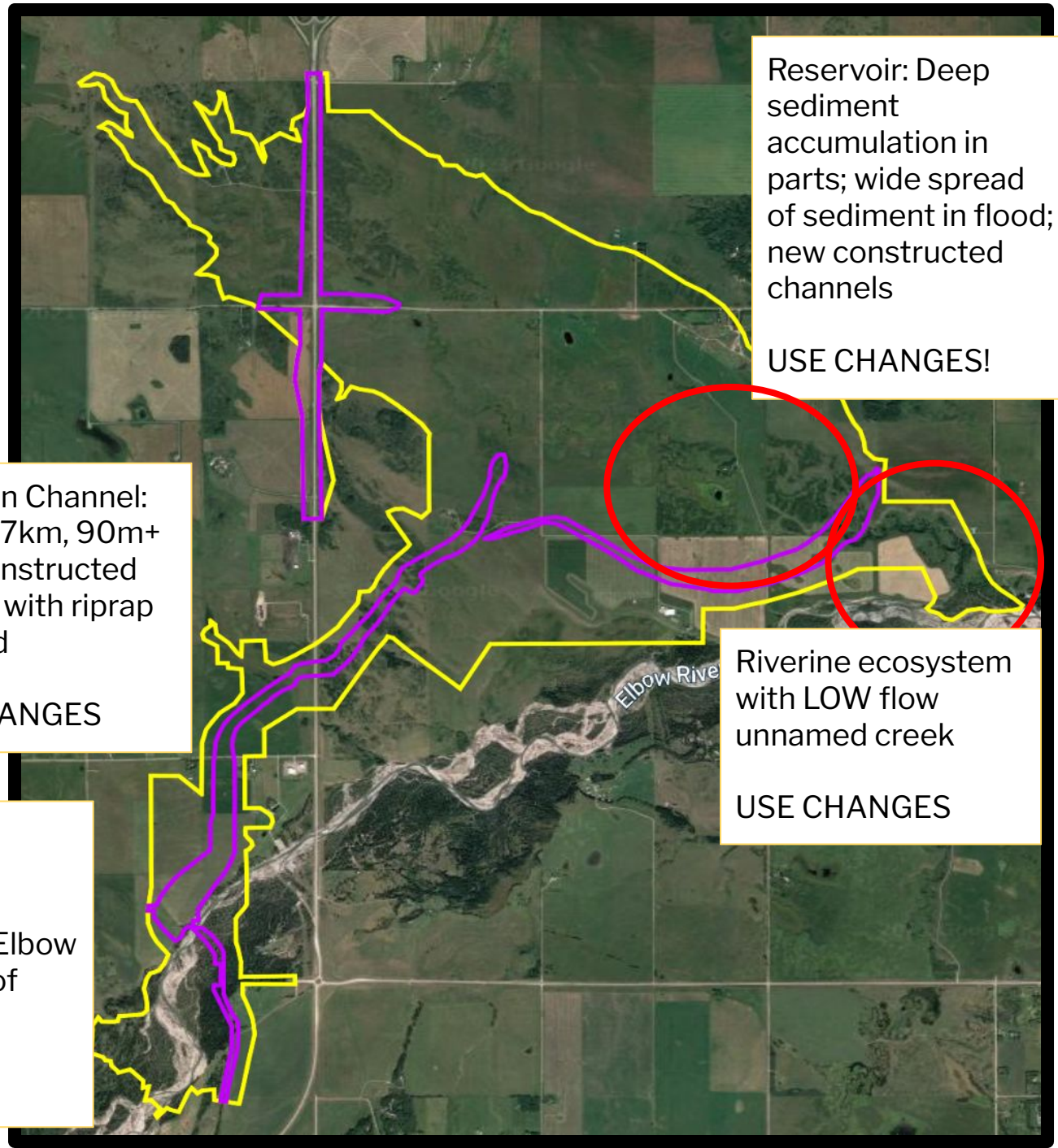
Page 3: Deltares

"SR1 is pasture land:" **GROSS OVERSIMPLIFICATION**

- some of SR1 is pasture land; it is also a valuable river ecosystem, forest, wetlands and native grasslands in a Key Wildlife Biodiversity Zone.

"Its use does not change except during high river discharges": WRONG

- The diversion channel, inlet, floodplain berm (totalling approx. 50% of the project) are permanently and irreparably ruined
- The reservoir is changed fundamentally post-flood by sediment accumulation



Reservoir: Deep sediment accumulation in parts; wide spread of sediment in flood; new constructed channels

USE CHANGES!

Diversion Channel: Deep, 4.7km, 90m+ wide constructed channel with riprap and road

USE CHANGES

Riverine ecosystem with LOW flow unnamed creek

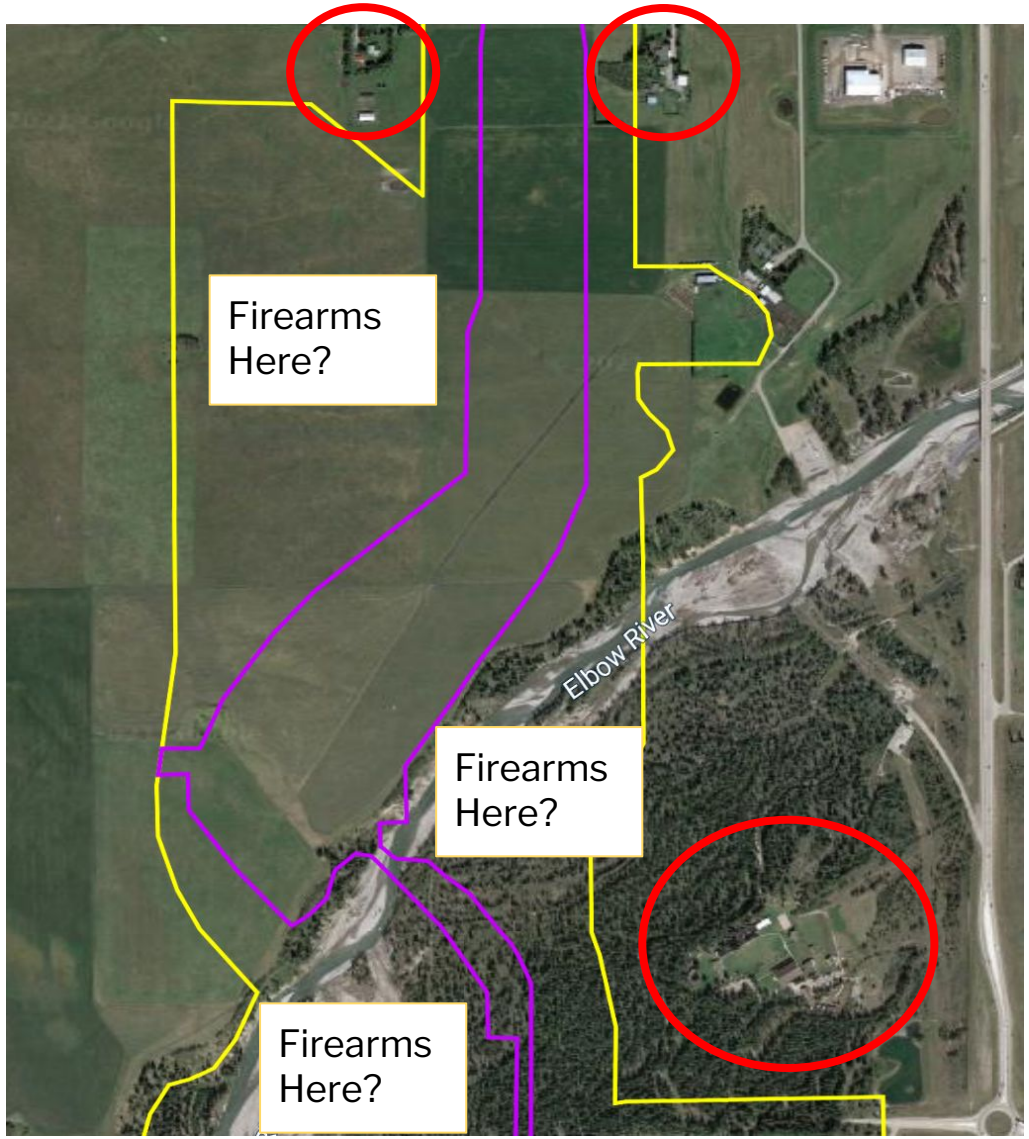
USE CHANGES

Diversion Inlet: Massive concrete structures & reconstruction of Elbow River + 130 acres of DEFORESTATION

USE CHANGES

Little Clarity on Future Land Use

- Where will firearms be permitted?
- How will rules be enforced?
- How will homeowners be protected for trespassing and hunting activities?



Public Access

- Crown Land is public land
  - *Camping, fires, hunting,*
  - *Litter & unauthorized parking*
- Where are parking lots and road access points?
- What servicing is needed to provide access?
  - *Will there be washrooms?*
  - *Garbage bins and garbage collection?*

Little Clarity on Future Land Use

- How will “leases” function given the unpredictability of floods?
- How will cattle grazing take place post-flood?
- Why are certain areas off limits to public but not to Indigenous users?

Competing Land Uses	Proposed Mitigation
Access to the LUA for secondary uses restricted during specified periods of the year	Access to the LUA for all secondary uses will be prohibited during the flood season each year to ensure the safety of all individuals. There may be additional periods where access may be prohibited, determined by the operator (e.g., maintenance activities). The communication plan will include a process for communicating when access is prohibited beyond the standard restricted access flood period.
Grazing and traditional plant harvesting	The Government of Alberta will identify the locations of traditional plant harvesting through the First Nation Land Use Advisory Committee and will not install temporary grazing sites on or near these locations to the extent practicable. Alberta Transportation has committed to notifying Indigenous groups about Project activities and schedules, including provision of Project maps and discussing key traditional plant harvesting periods. Alberta Transportation has committed to providing opportunities for plant harvesting or relocating medicinal and ceremonial plants prior to construction.

Table 5.1

Exhibit 216

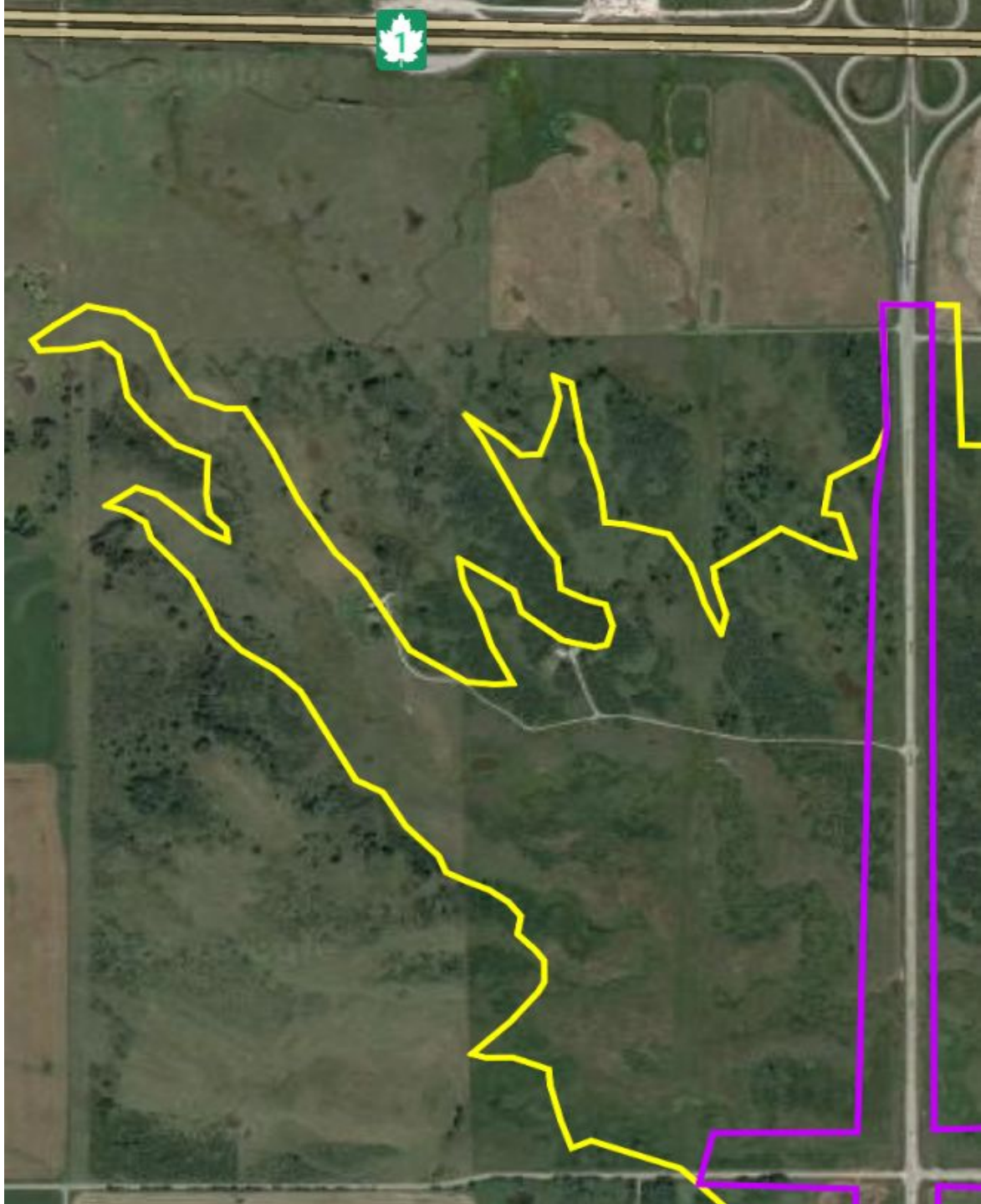
Conflict: SR1 and Community

- SR1 footprint is clearly linked to elevations
  - *The result is an odd shape that cuts across driveways, yards and private land*
  - *Can this odd shape be managed so as not to cause harm?*
- The Proponent has NOT provided plans:
  - *New home access roads for residents - NO PLANS & COST*
-

Land Use Plan does NOT address this conflict

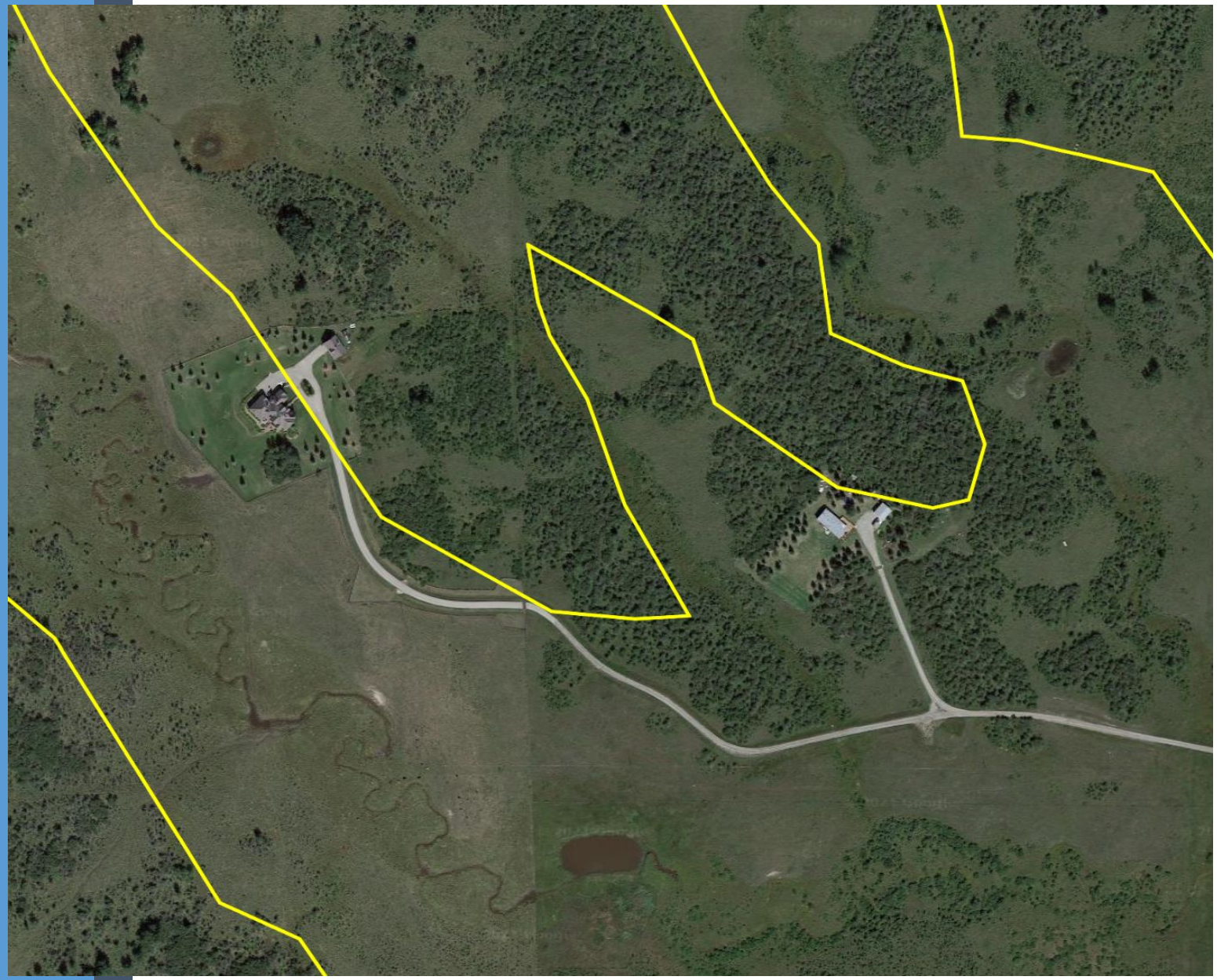
NE Corner of Project
Families DO NOT want to give up their heritage land

- What is new access point?
- How will homes be protected?
- Why is this odd shape allowed at all? Is there not some mitigation that can occur here so as not to sterilize so much land?



Land Use Plan does NOT address this

NE Corner of Project
Zoomed

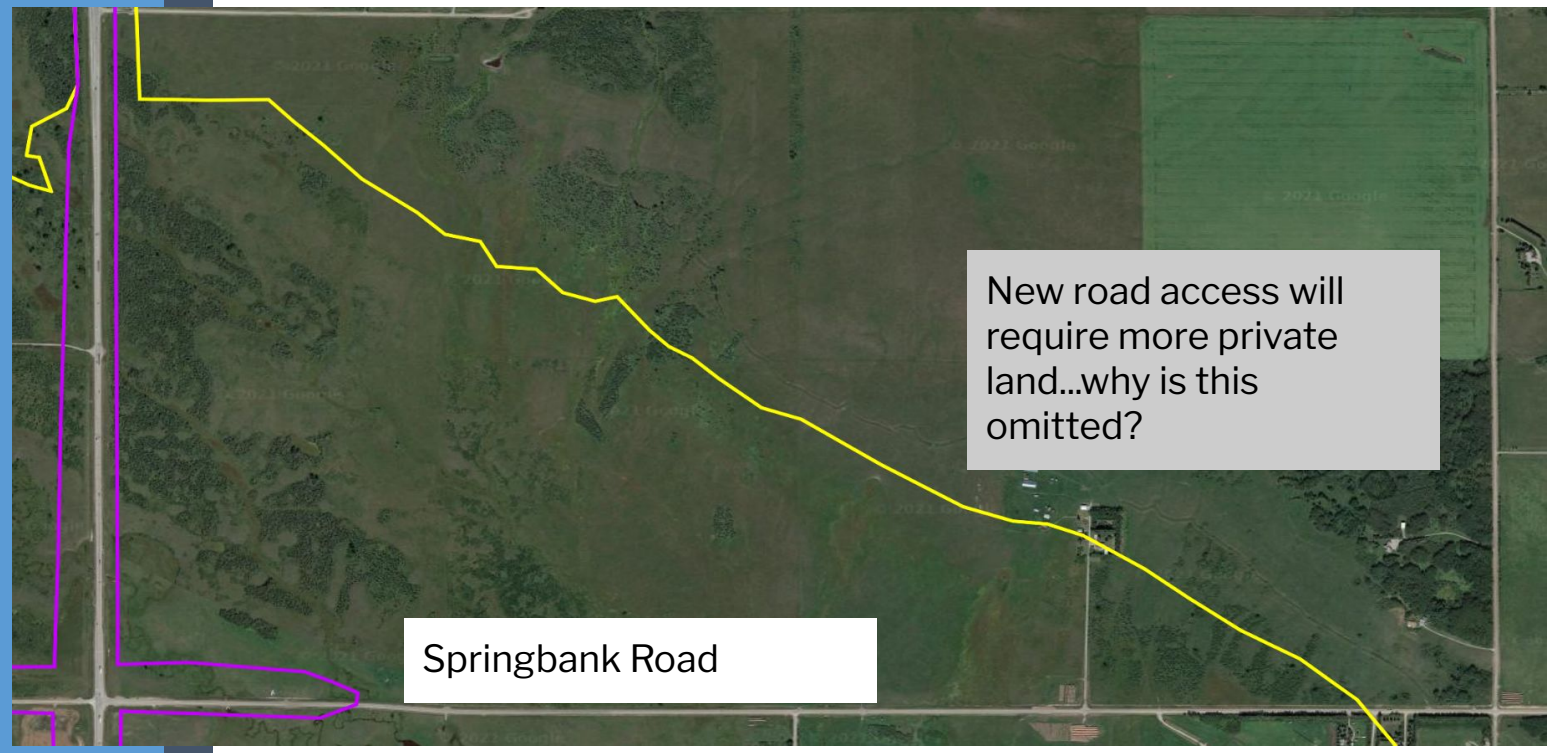


Land Use Plan does NOT address this

North Side of Reservoir

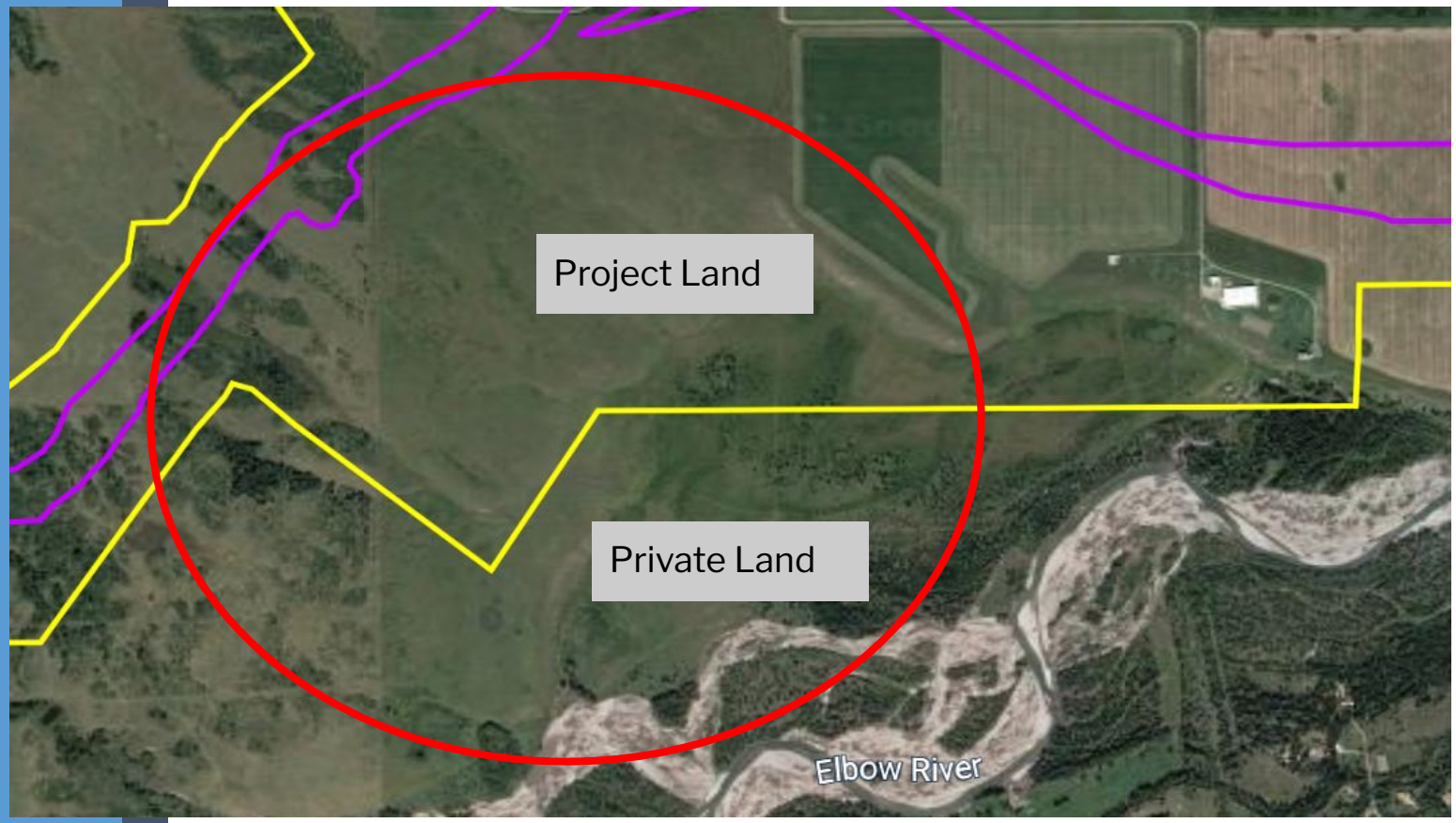
Land Use Plan does NOT address this

Zoomed Out
North Side of Reservoir
Where is new road access?



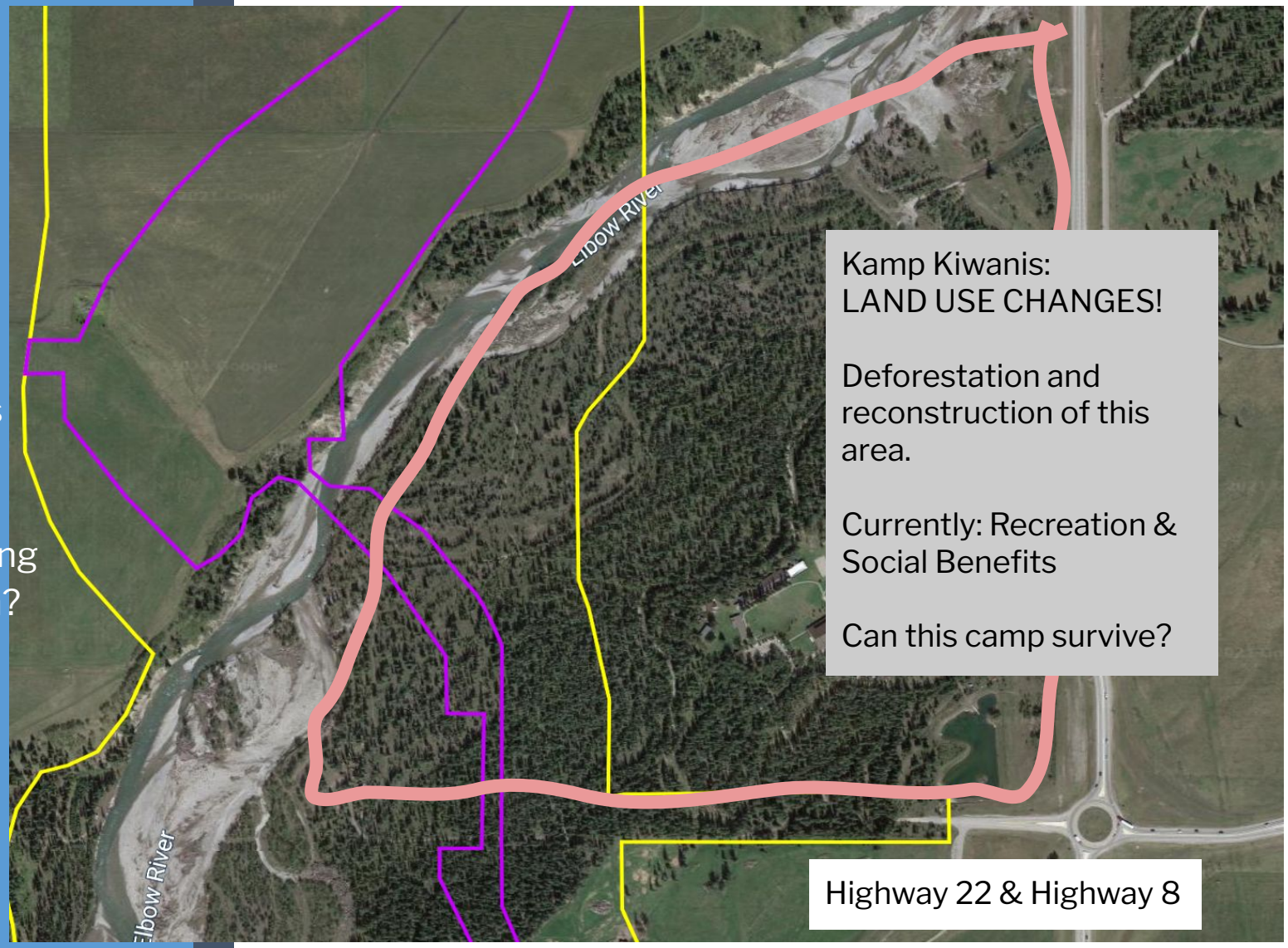
Emergency Spillway over Private Land

Why would water from the Emergency Spillway traverse private land? T



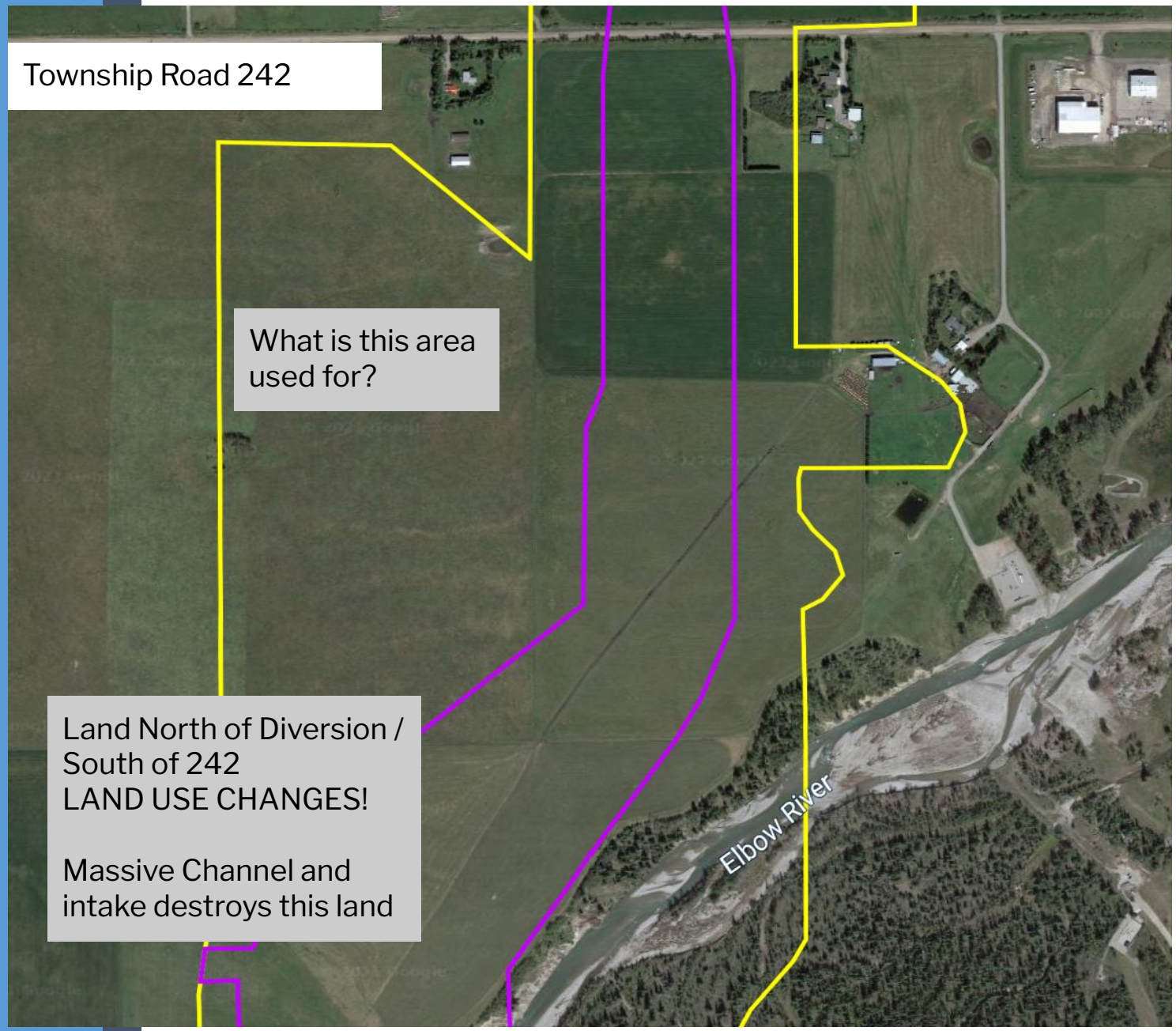
Kamp Kiwanis

- What is the Plan for this important organization and this land?
- What is the future land use?
- How will the camp operate during the 3 years of SR1 construction?



Complete Disregard for Impacts

Diversion channel through the middle of landowner's land!, dividing the two homes.



SPRINGBANK OFF-STREAM RESERVOIR (SR1): SR1 DESIGN, SAFETY & RISK

Topic 3

Karin Hunter, SCLG

Exhibits

1. Exhibit 13: Deltares Report
2. Exhibit X: 2015 AEP Decision Report on Elbow River
3. Exhibit 133: ERSA Submission
4. Exhibit 194: Springbank Community Association Comments to CEAA - 1 General
5. Exhibit 199: Springbank Community Association Comments to CEAA - 7 Risk
6. SCLG Reports: Austin Engineering Report, Ian Dowsett Report, Dave Klepacki, Jon Fennel
7. Exhibit TBC: Township Road 250 Detour (youtube video re: flood & construction detour route
   - *https://www.youtube.com/watch?v=fEbT0ywejVE&list=PLFC1GSkP9Bb0gPHVADRlj3ZeESvtE2rke&index=10*

General Comments

1. The decision to choose SR1 over MC1 did not include any meaningful discussion of risk
2. SR1 is an unproven and untested design
3. The flood operations of SR1 are complex and have not received the appropriate attention from regulators
4. Climate change has been ignored
5. Additional risk to area residents (traffic, pipelines, SR1 malfunctions and accidents) is not addressed
6. A comprehensive risk assessment MUST be completed for this Project

SPRINGBANK OFF-STREAM RESERVOIR (SR1): WATER

Topic 4

Karin Hunter, SCLG

Exhibits

1. Exhibit 13: Deltares Report
2. Exhibit TBC: 2015 AEP Decision Report on Elbow River
3. Exhibit 133: ERSA Submission
4. Exhibit 194: Springbank Community Association Comments to CEAA - 1 General
5. Exhibit 197 - Springbank Community Association Comments to CEAA - 2 Fish
6. SCLG Exhibits: Dave Klepacki, Jon Fennel, Allan Locke
7. Video of Brian Copithorne
   - https://www.youtube.com/watch?v=ZKrrhPPktog&list=PLFC1GSkP9Bb0gPHVADRIj3ZeESvtE2rke&index=14&t=1s

General Comments

1. Climate change has been ignored
    a. *SR1 is a useless tool for drought - fire & water security*
2. Fish rescue is unrealistic
    a. *Extirpation of Bull Trout (AEP)*
3. Disregard for local concerns
    a. *Springs*
    b. *Wells / drinking water*
4. Uncertain long-term effect on the aquifer

SPRINGBANK OFF-STREAM RESERVOIR (SR1): AIR, HUMAN HEALTH & TERRESTRIAL

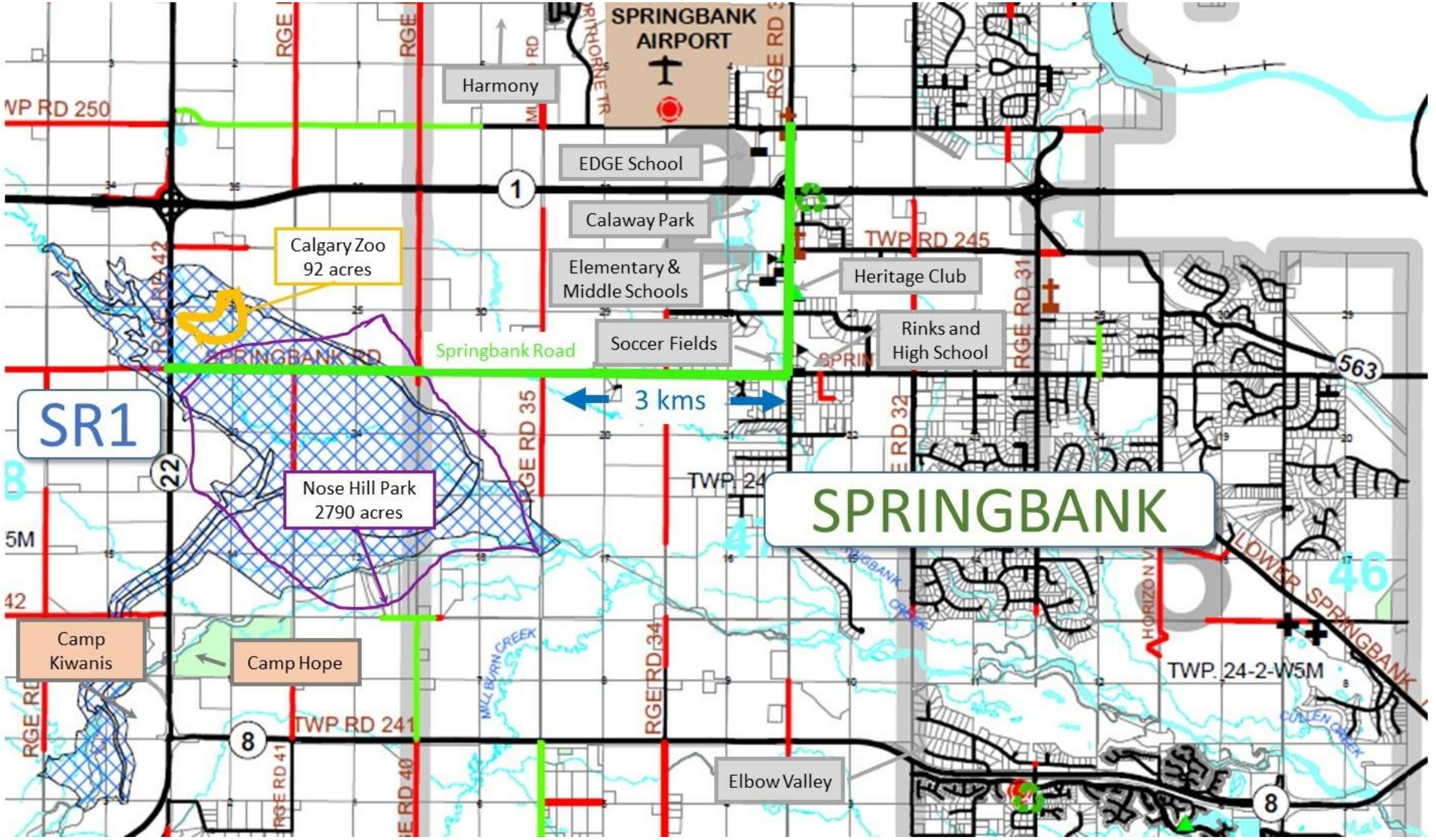
Topic 5

Karin Hunter, SCLG

Exhibits

1. Exhibit TBC: 2015 AEP Decision Report on Elbow River
2. Exhibit 13: Deltares Report
3. Exhibit 94: Section 6 Terrestrial
4. Exhibit 133: ERSA Submission
5. Exhibit 193-196 - Springbank Community Association Comments to CEAA
6. SCLG Exhibits: Brian Zelt, Dave Klepacki, Cliff Wallace, Brian Osko, Austin Engineering

Human Health: SR1 will exist in a community!



Human Health: 2014/2015 - no consideration of negative health outcomes within the Springbank community

Exhibit TBC: 2015 AEP recommendations on infrastructure, pg 3

- No mention of the Springbank community AT ALL
- No mention of ANY negative environmental effects from SR1
- The only reference to the general area is the following:

- SR1 affects grazing areas and ranch lands for a small number of Albertans. This will have an impact as these are legacy ranching families with a strong stewardship ethic.

Human Health: What we know now

- The Project creates negative outcomes for human health that were not anticipated in 2015 as a result of the fugitive dust created by sedimentation
- The Project has uncertain future operating conditions that require "monitoring" but without identifying adequate "mitigations"
  - *Water is of particular concern (contamination of wells, springs, the the aquifer)*
  - *This creates significant uncertainty for the Springbank community and nearby residents*
  - *It is CRITICAL that mitigations be proposed and documented*

Environment: 2014/2015 SR1 was considered a“more natural” solution

Exhibit 13: Deltares Report Executive Summary (pg 1)

Without additional information on **sediment transport**, it is difficult to express a well substantiated preference for either of the two projects from this point of view. However, given the fact that MC1 will trap all bed-material load, one might argue that MC1 is likely to have more impact on sediment transport. This would imply that SR1 could be preferred from this point of view. This needs to be verified by sediment transport studies. The impact of SR1 to the natural flow of the Elbow is smaller than MC1. **From an environmental point of view, SR1 leaves the river as a more natural system.**

- At this point, there is nothing natural about SR1, with the exception of the far NW corner of the footprint
- In fact, most of the project area will be disturbed during construction and the balance during operations (major pipeline disturbances also required)
- Sediment is the most significant, unknown factor over the long run

Sedimentation projections

Exhibit 93, IR300-1: There can be no ignoring this consequence

Table IR300-1 Suspended Sediment Mass, and Percent Diverted and Released from the Off-Stream Reservoir (from Table 6-6 in Volume 3B, Section 6)

Flood	Diversion time (days)	Suspended sediment mass diverted into the reservoir (kt)	Suspended sediment mass released out of the reservoir (kt)	Percent suspended sediment remaining in the reservoir (%)	Percent suspended sediment released out of the reservoir (%)	Loss of retention volume in the reservoir due to remaining sediment (%)
Design Flood	3.75	2,389	90	98.2	1.8	1.1
1:100 year flood	1.80	1,268	220	88.3	11.7	0.5
1:10 year flood	0.38	1.3	1.1	95.4	4.6	0.0
NOTE: kt - kilotonne						

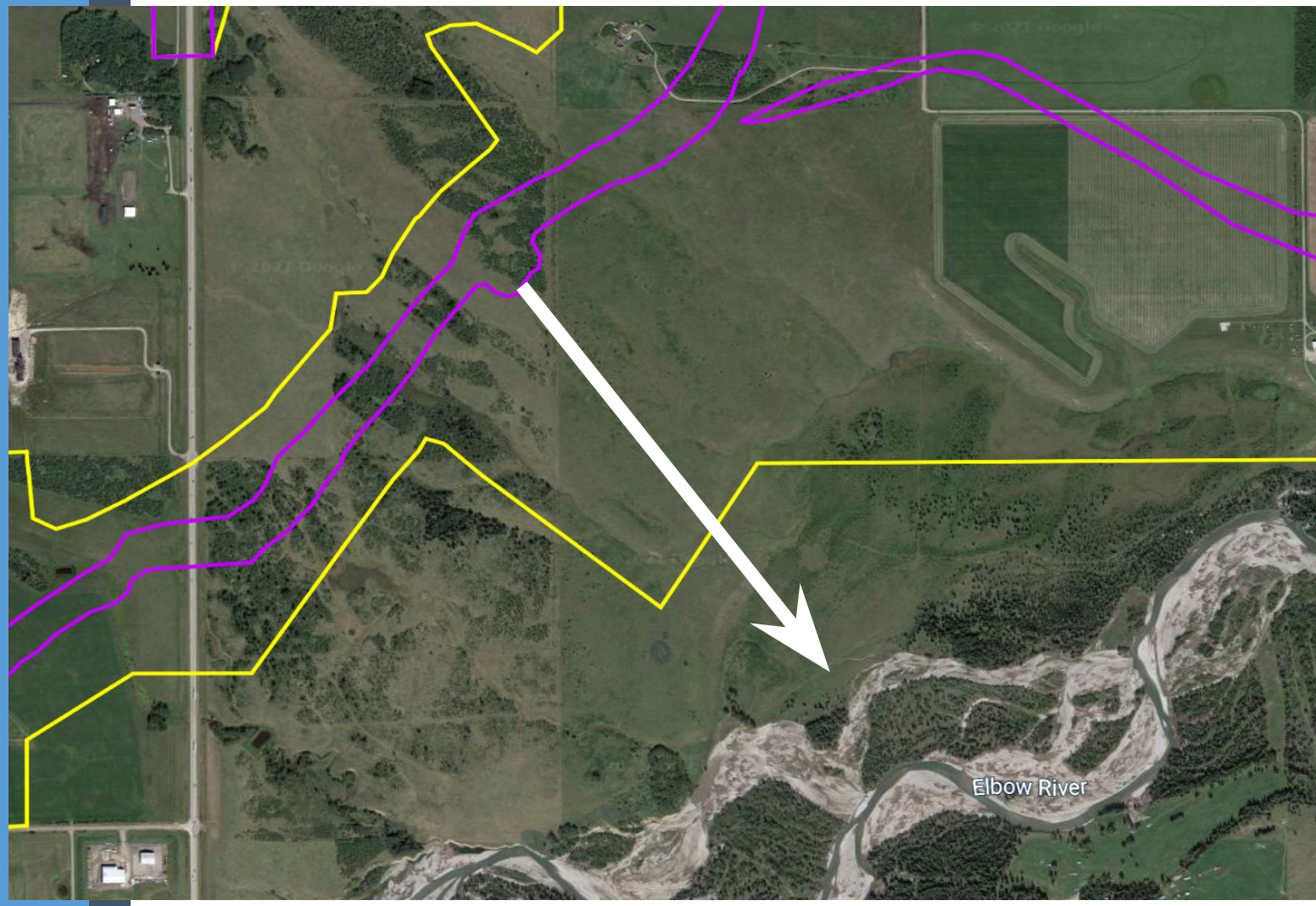
Environment: what we know now

- The Project creates negative outcomes for wildlife & biodiversity that were not anticipated in 2015
- Much focus on reservoir, yet there are major components that have not received adequate review: unnamed creek, diversion inlet, diversion channel, emergency spillway
- Sediment accumulation is the big unknown factor in the future of this land and was NOT ANTICIPATED when the Project was selected
- This project requires repeated intervention in the river ecosystem post-flood (sediment removal, debris cleanup, etc.) which will create ongoing environmental disturbances
- The Project has uncertain future operating conditions that require “monitoring” but without identifying adequate “mitigations”
  - *This creates significant uncertainty for the Springbank community and nearby residents*
  - *It is CRITICAL that mitigations be proposed and documented*

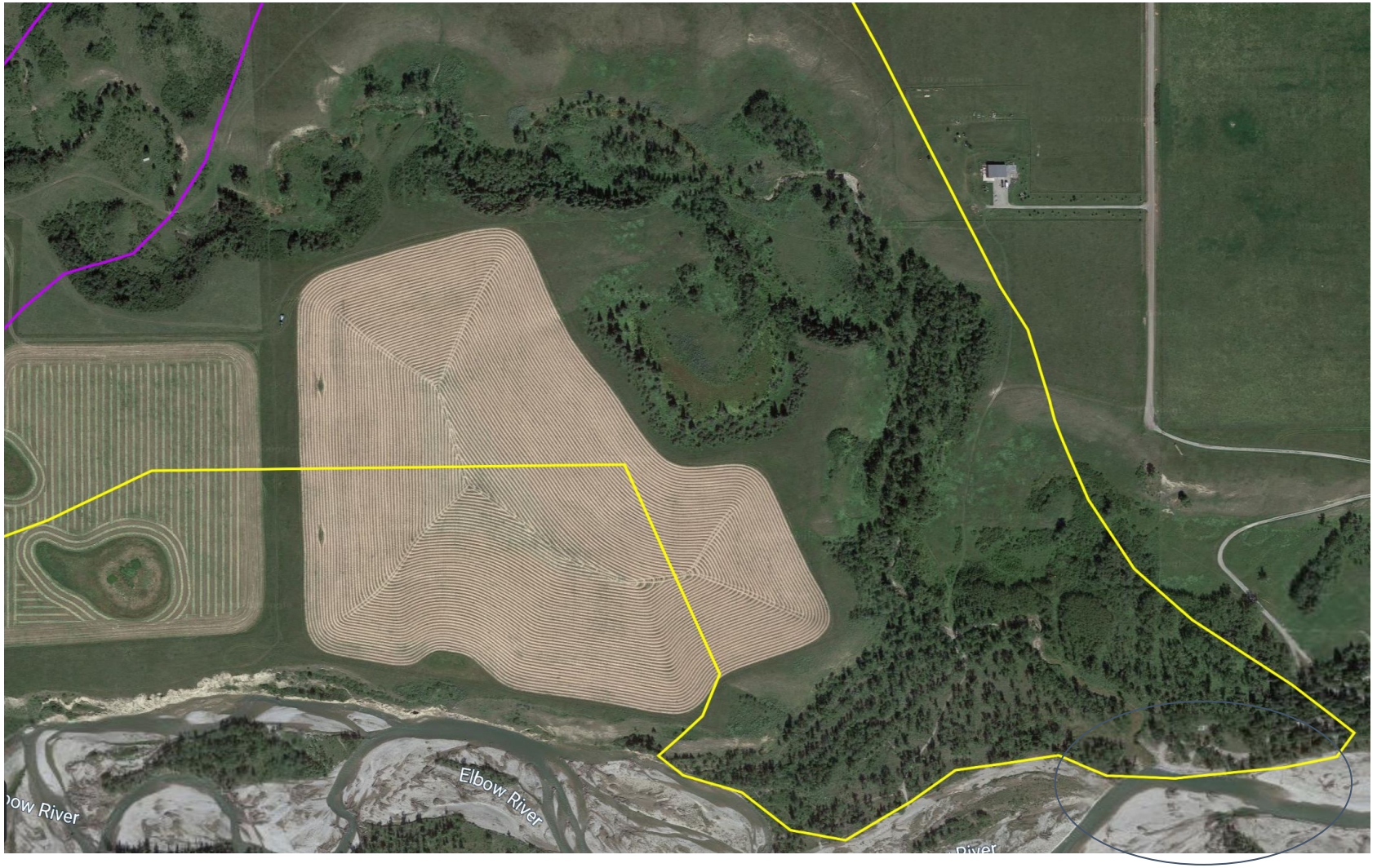
Wildlife clearing activities are unrealistic

See comments in Exhibits 194-197

Environmental: What happens to this area if the spillway is activated?



What is the future of the unnamed Creek?



What happens at the confluence of unnamed creek and Elbow River?

What type of erosion protection?

How will this creek cope with high flow rates of 27cms?

Pipeline Disturbances

This is significant work - much disturbance during construction

Exhibit 2, 2016 Project Description
Fig 3-5