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Aggregates Let's Build

Critical To the Advancement of the
Alberta Economy

October 4, 2023





Sand and Gravel
"You can't build without it"





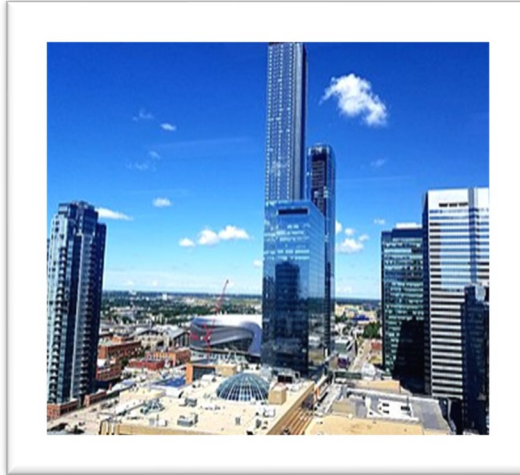
What is Aggregate?

- Material used in construction. Includes sand, gravel, and crushed stone (coarse particulate).
- Quarried Material (Consolidated)
- Sand and Gravel (Unconsolidated Deposits)
 - Fluvial or Glaciofluvial (Flowing Water Derived)
 - Fines Washed Away





Aggregate Uses: Foundation to All Construction



Aggregates in Sports

“Street golf”





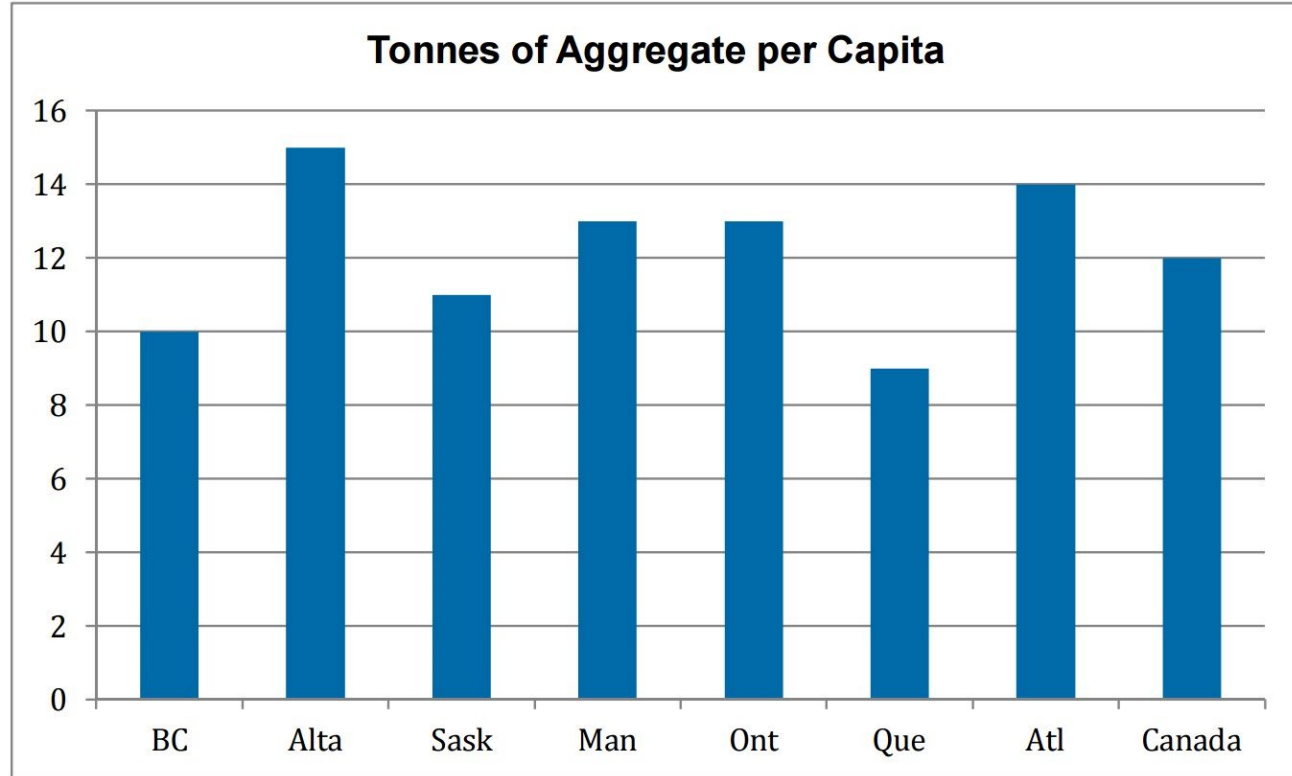
Aggregate Tidbits

- Non-renewable
- How much do you consume?

15tonnesperson / year, every year

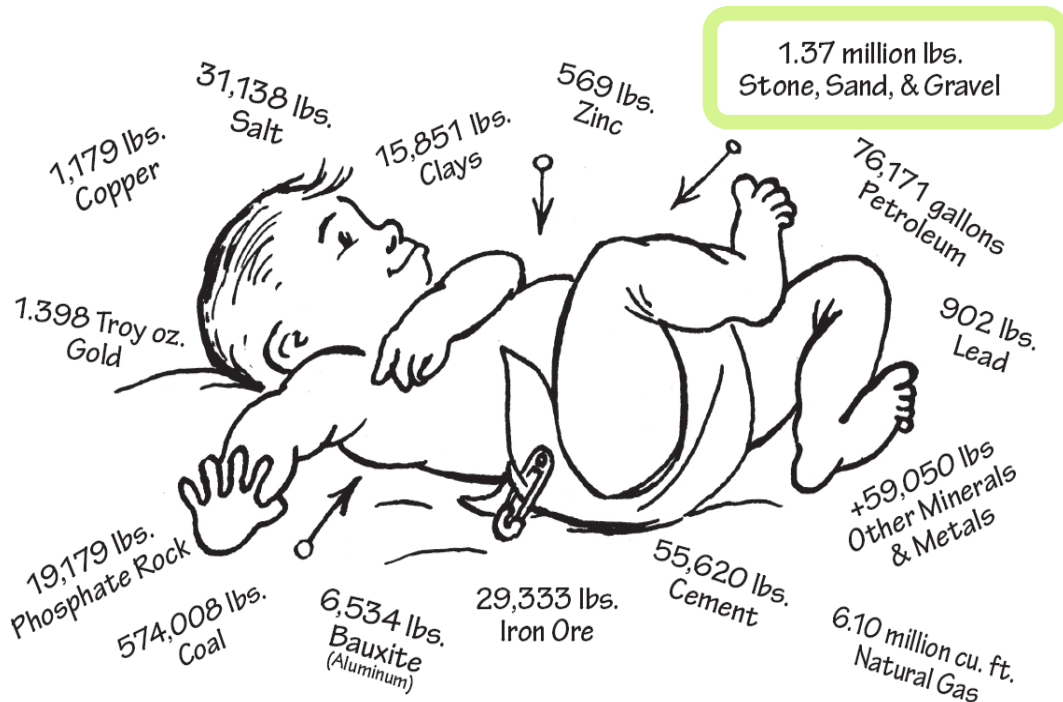
3–4 million truck loads / year

Annual
Aggregate
Consumption
per Capita





Every American Born Will Need...



3.3 million pounds of minerals, metals, and fuels in their lifetime



Aggregate Use for One House





Aggregate Tidbits

- Average house uses 440 tonnes when accounting for associated infrastructure (sewer, driveway, sidewalks, street, patio)

Reference OSSGA (Ontario Stone Sand & Gravel Association)

- Two lane road requires 100,000 tonnes /mile

Reference ASGA (Alberta Sand & Gravel Association)

- Ready mix – approx. 4000 lb. mix (1 cu. yd) you will need:

- 564 lbs. of cement/yard = 5,036 lbs/truck
- 1,452 lbs. of sand/yard = 13,068lbs/truck
- 1,656 lb. of gravel/yard = 14,904lbs/truck

- Denver International Airport required about 10 million tonnes of aggregate

Reference Lafarge North America Website

- Average school 30-40K / hospital requires 60K tonnes of aggregate

Reference British Columbia Stone and Gravel Association





Alberta Projects Requiring Aggregate

Project	Location	Total Aggregate (Tonnes)
IOL Southland Rail Terminal	Strathcona County, AB	500,000
65 Avenue Overpass (Hwy 2)	Leduc, AB	400,000
Amazon Facility	Parkland County, AB	300,000
Shell Scotford Upgrader	Sturgeon County, AB	1,200,000
NE Segment of Anthony Henday	Edmonton, AB	4,000,000
CNRL Horizon and Albian Sites	RMWB, AB	2,000,000

Royal Alberta Museum

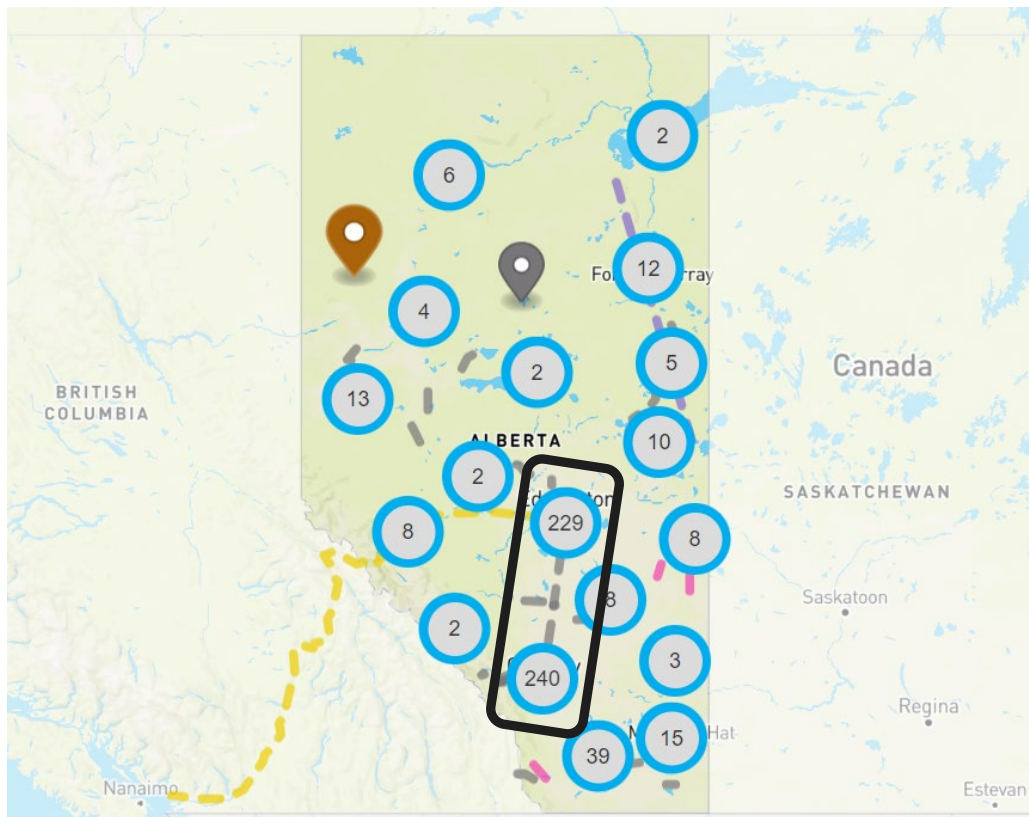
- Largest Museum in Western Canada
- >18,000 m³ Concrete
- Approximately 33,000 tonnes of Aggregate





Major Alberta Projects (>\$5M)

643 Projects
Cost \$176.2 B



- Commercial
- Institutional
- Pipelines
- Retail
- Industrial
- Mixed-Use
- Power
- Tourism / Recreation
- Infrastructure
- Oil and Gas
- Residential



Increased Regulatory and Public Scrutiny

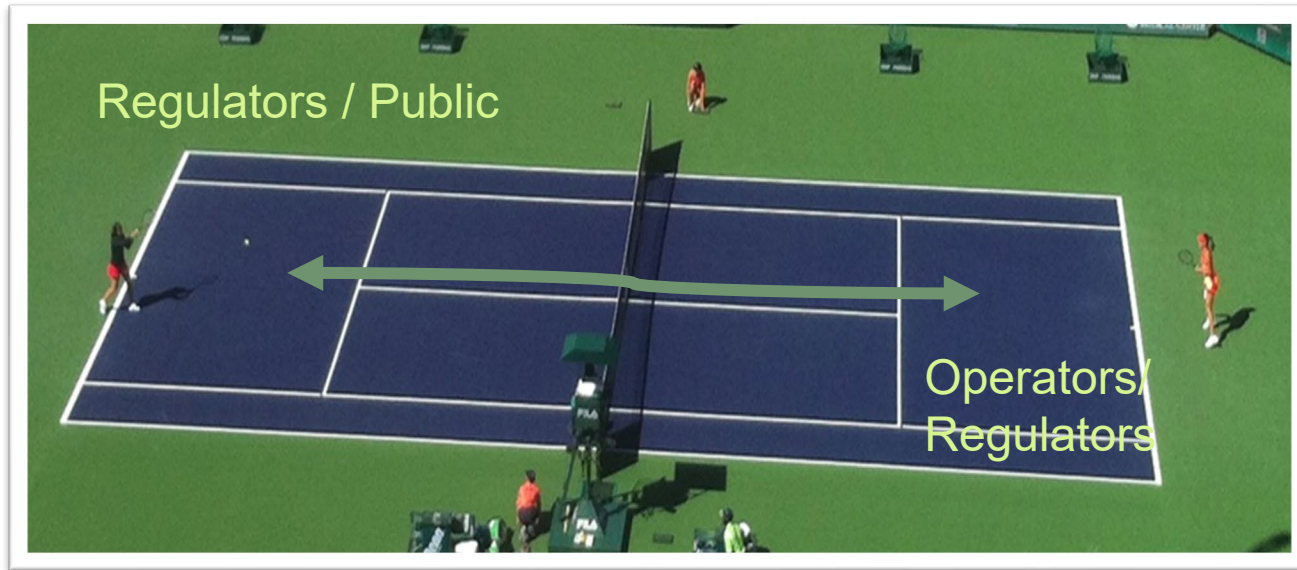
- No longer an “identify and dig” operation
- Protracted timelines for regulatory approvals
 - More environmental studies required
 - Increased costs associated with regulatory approvals
 - More appeals (costly – legal)
 - Intense public opposition (NIMBY)
- Increased monitoring and performance standards
- Sterilization of resources one of biggest issues (gravel in the ground, but will never be extracted).





Statements of Concern (SOCs) / Supplementary Information Requests (SIRs)

- SOCs / SIRs Translate to additional questions/answers/time/costs



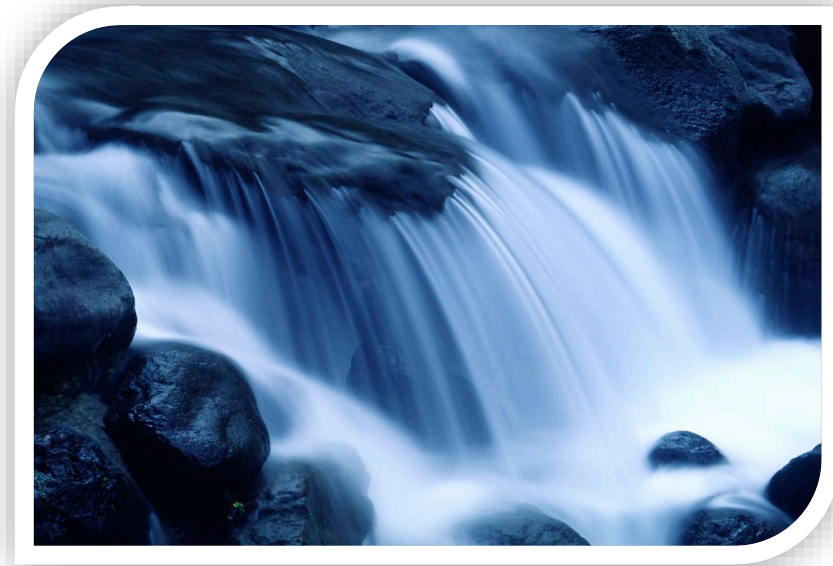


Primary Sources of Gravel in Alberta (Unconsolidated)

GlacioFluvial
(Glacial Meltwater Water Derived)



Fluvial
(Water Derived)



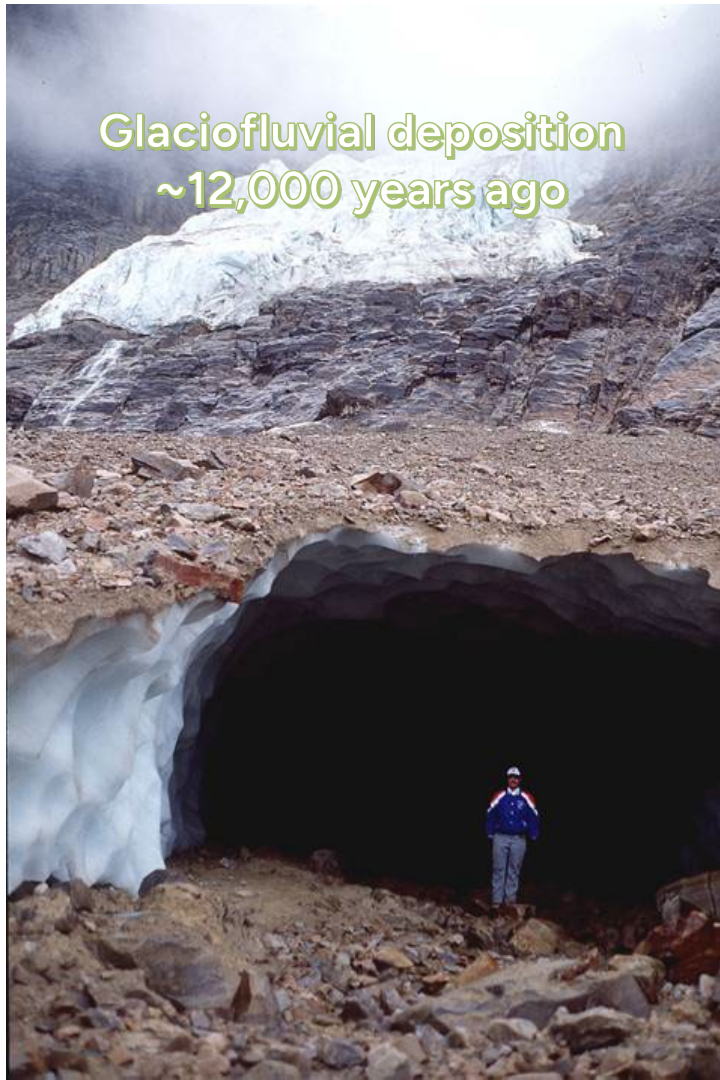
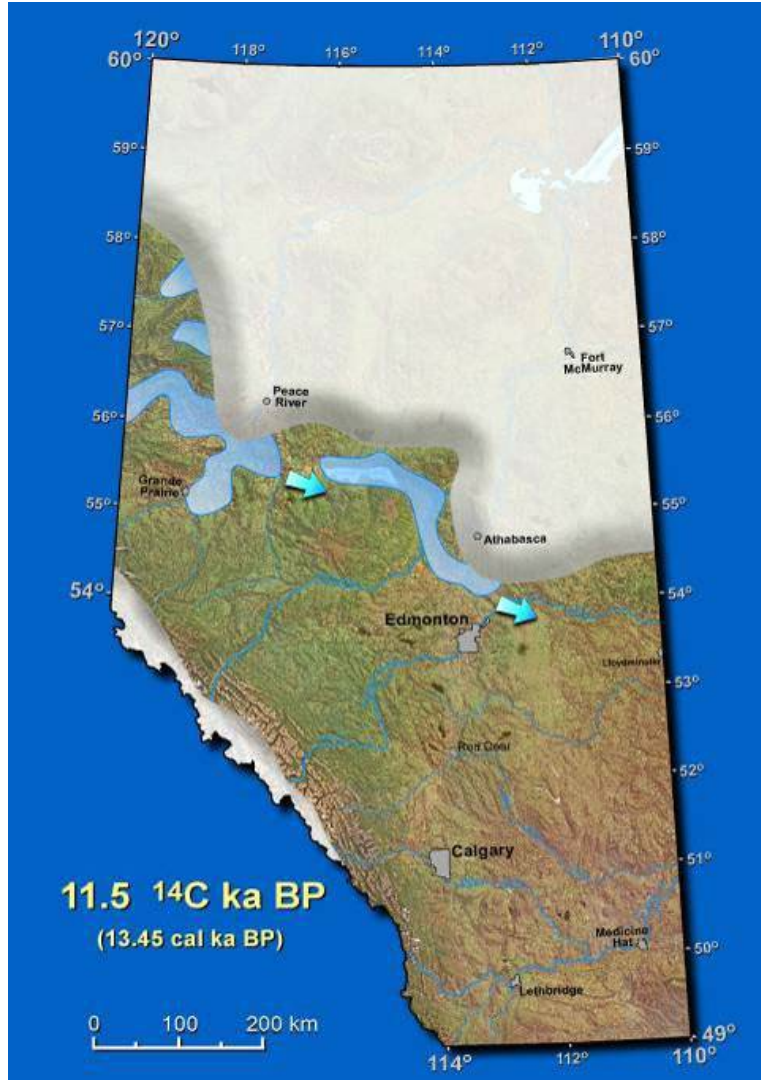
- Non-renewable
- Deposits are where they are

Material carried away from melting glacier

Glacial outwash

Glacial lake







Elk Point

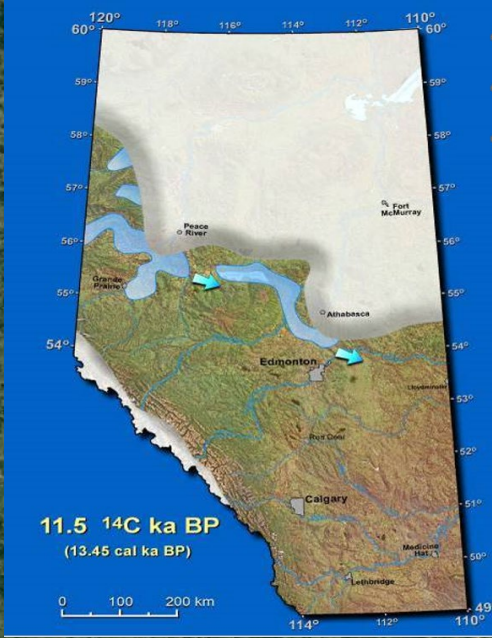
Glacial Outwash



Calahoo-Villeneuve

Onoway

Edmonton



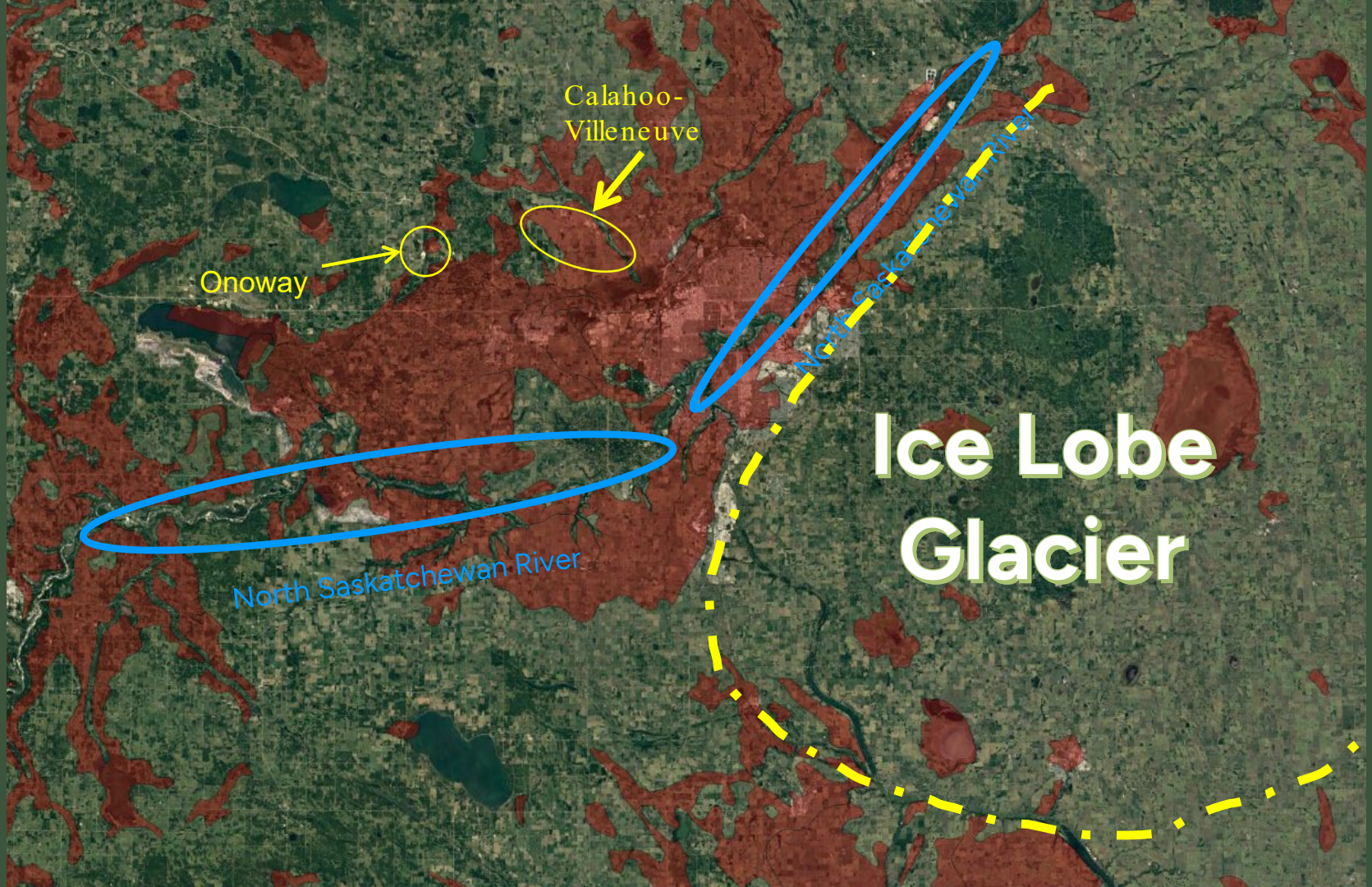
Ice Lobe Glacier

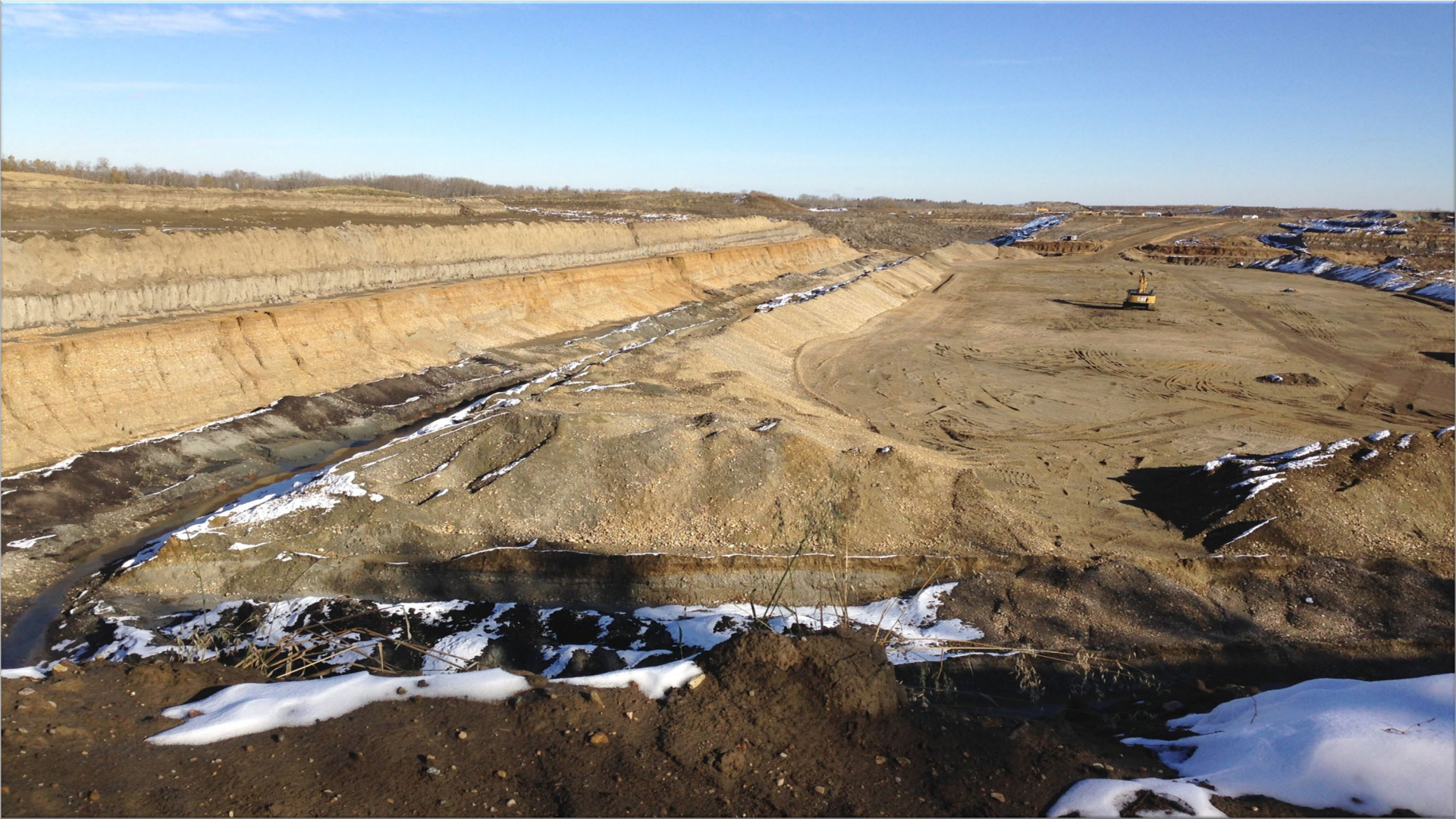
Calahoo-
Villeneuve

Onoway

North Saskatchewan River

North Saskatchewan River







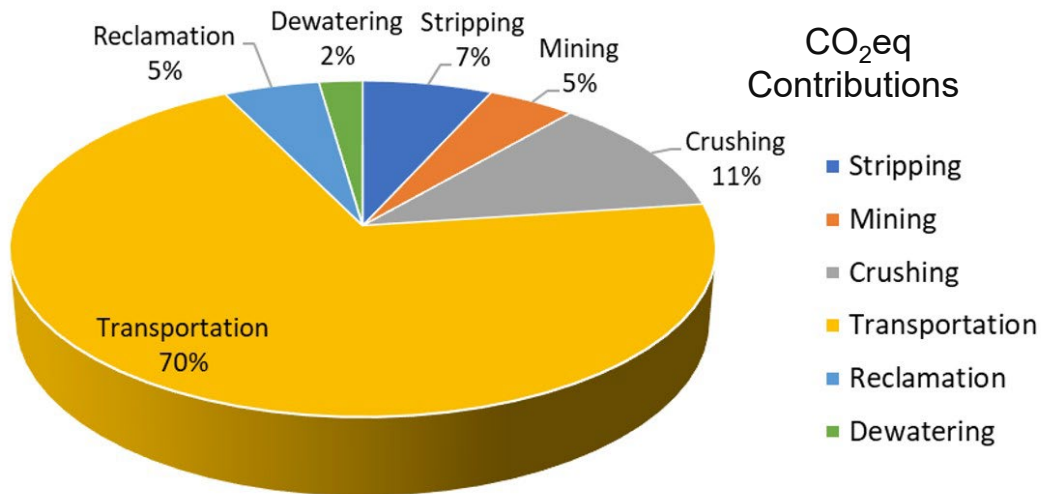
Greenhouse Gas Implications

- How will changes over time to the aggregate industry impact climate change?





Steps to Deliver Aggregate: Villeneuve to Edmonton

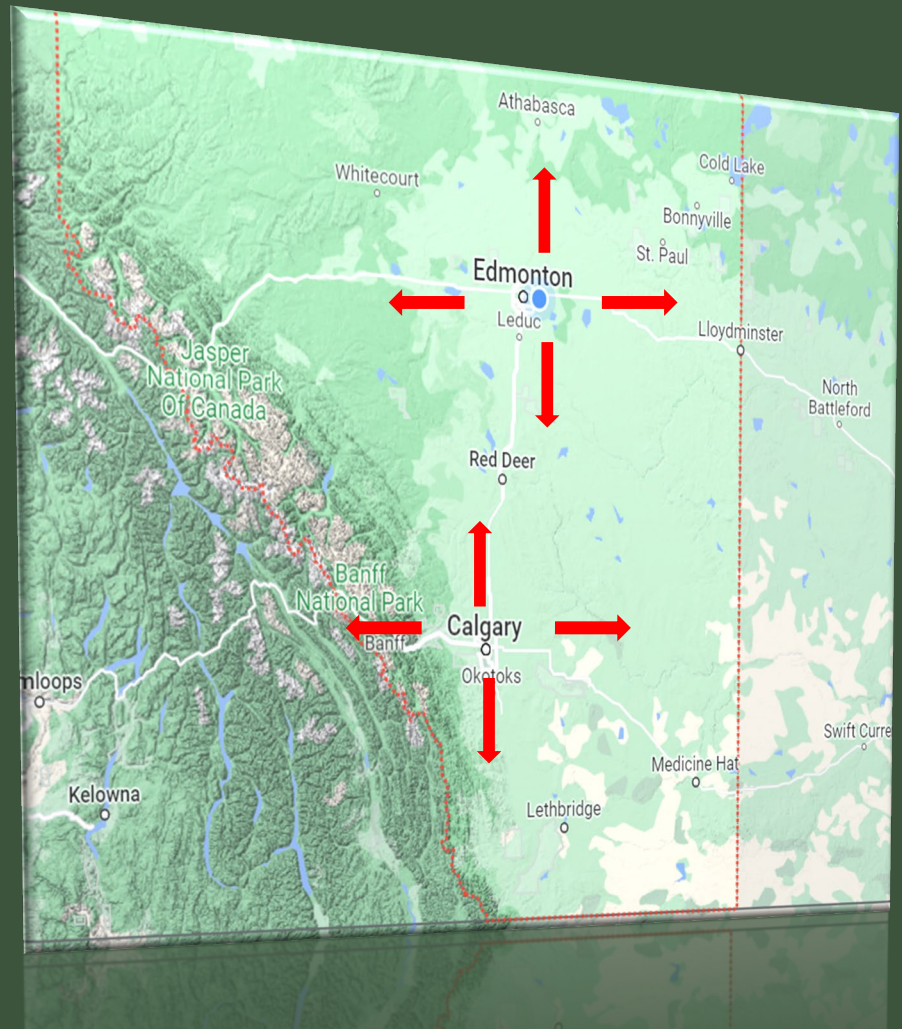


Total GHGs– 14.76 kgCO₂eq/tonne– **37,000tonnes/year**
10.33 kgCO₂eq/tonne– Haul to Market– **26,000tonnes/year**
Transportation Distance to Market **24km**



Where Are Things Headed?

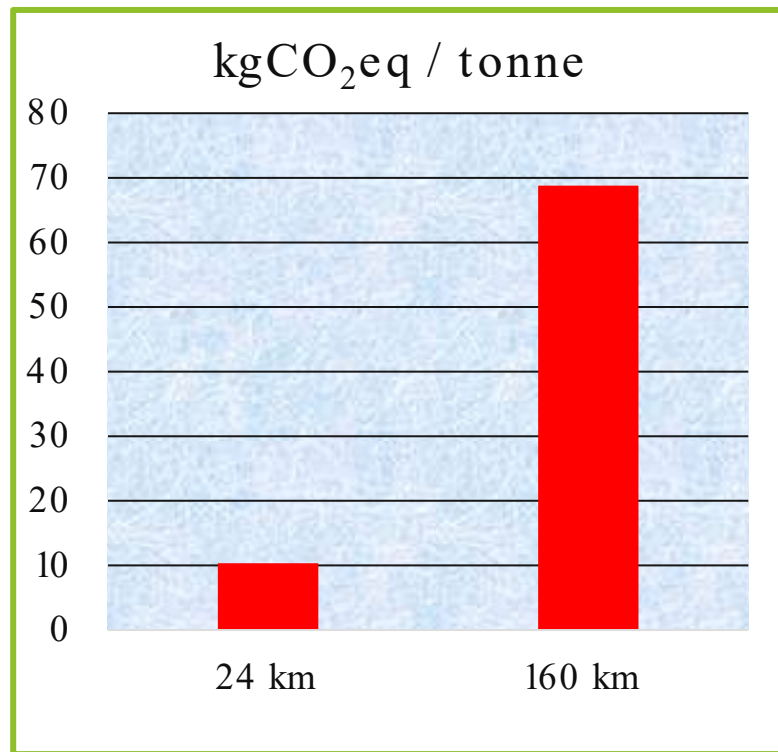
- Near market aggregate sources are being rapidly depleted.
- Double the distance requires double the number of trucks on the road.
- Many gravel sources will never be extracted due to public opposition and land use conflicts.
- Cost implications for Municipalities, Province, Federal Government (>60% of all gravel is used in infrastructure projects).
- Cost implications business, public.
- Dramatically higher Greenhouse Gas contributions.





Where Things Are Headed (Villeneuve Example)

- Once near market sources are depleted (24 km), next major gravel deposits are approximately 160 km distant (6.7x further)
- Only about 10-12 years out
- >6x as many trucks (mileage)
- Equivalent to adding an extra 53,000 cars on the road/year (CO₂eq)
- Implications to delivery cost and environment



Climate Resiliency

Aggregates will be used for:

- Armouring
- Dykes
- Reconstruction



Hwy 1 - Abbotsford

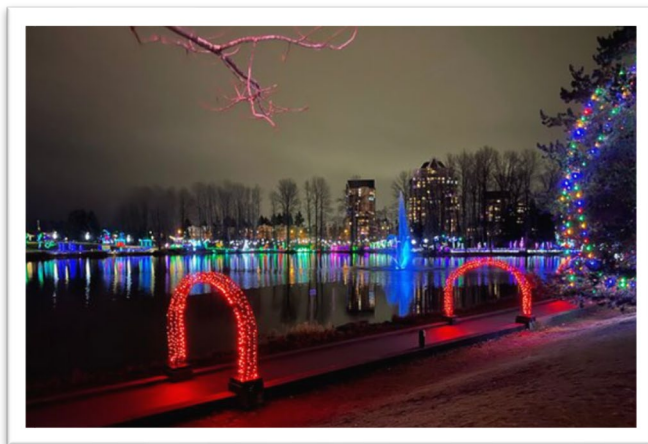


Edmonton 1915

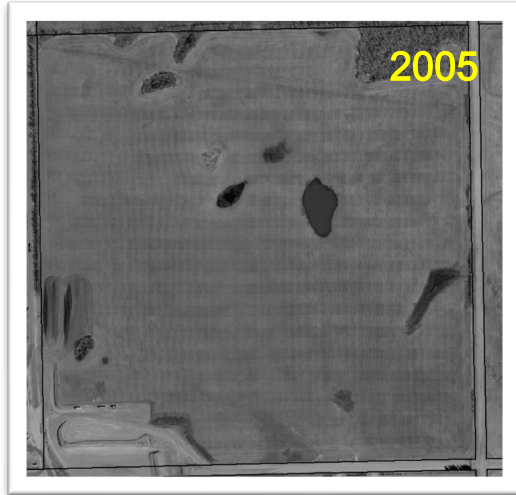


Reclamation

- Aggregate extraction offers the opportunity to have multiple uses out of the same parcel of land.
- Aggregate producers are required to put up bonds for reclamation.
- Funds are returned when reclamation is complete and reclamation certificate obtained.
- In many instances, it's not recognized that an aggregate pit existed at that location.



Reclamation
Examples



Pit (Villeneuve
Area)



Gravel Pit
Reclaimed to
Fish Habitat



Reclaimed Gravel Pit (Villeneuve)

Reclamation
certificate received



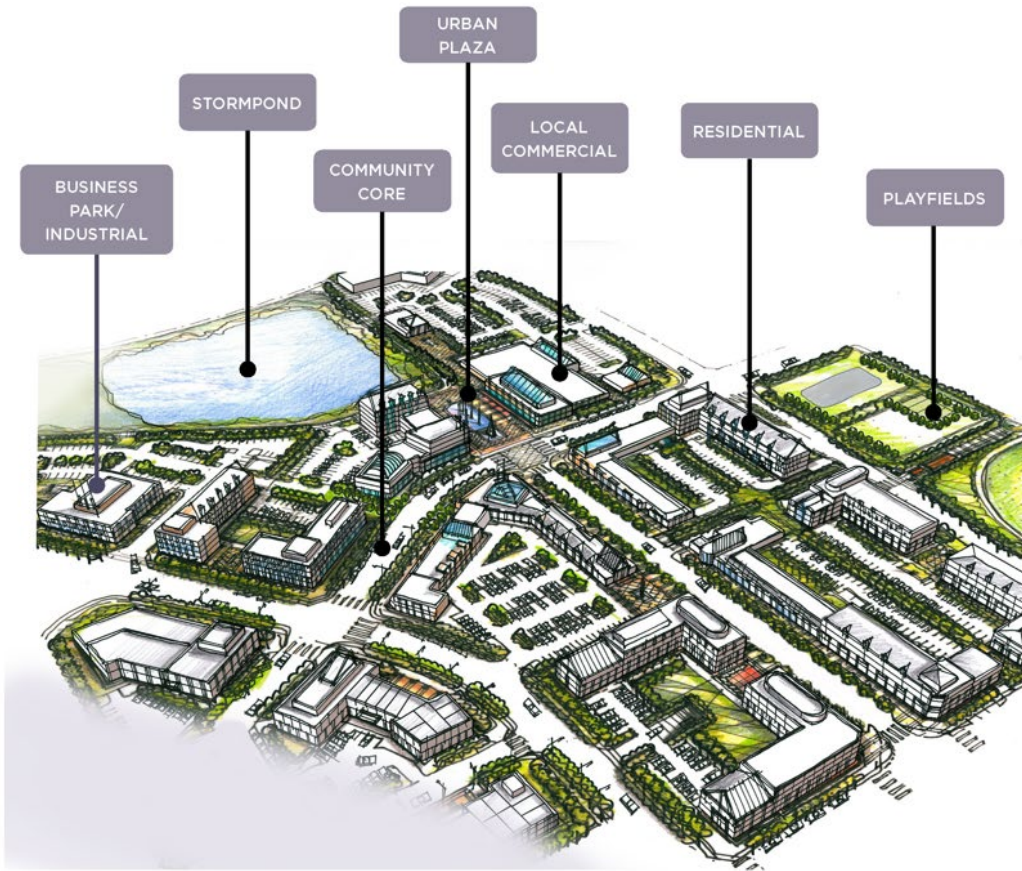


Legends Golf Course



Greystone Burnswest Cochrane, AB

- Rezoned
Community
Development







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