



MUNICIPAL DISTRICT OF GREENVIEW No. 16

GREENVIEW INDUSTRIAL GATEWAY COMMITTEE MEETING AGENDA

Wednesday, October 13, 2021

9:00 AM

Administration Building
Valleyview, AB

#1	CALL TO ORDER		
#2	ADOPTION OF AGENDA		
#3	MINUTES	3.1 Greenview Industrial Gateway Committee Meeting Minutes held September 7, 2021.	2
#4	DELEGATION		
#5	BUSINESS	5.1 McDaniels and Associates CO ₂ Presentation	6
		5.2 Greenview Industrial Gateway Stakeholder Event	29
#6	CLOSED SESSION	6.1 Disclosure Harmful to Business Interests of a Third Party (Section 16, FOIP)	
#7	ADJOURNMENT		

Minutes of a
GREENVIEW INDUSTRIAL GATEWAY COMMITTEE MEETING
MUNICIPAL DISTRICT OF GREENVIEW NO. 16

Greenview Administration Building,
Valleyview, Alberta on Tuesday, September 7, 2021

#1
CALL TO ORDER
PRESENT

Chair Winston Delorme called the meeting to order at 1:00 p.m.

Ward 5	Reeve Dale Smith
Ward 8	Deputy Reeve Bill Smith
Ward 1	Councillor Winston Delorme
Ward 2	Councillor Dale Gervais
Ward 3	Councillor Les Urness
Ward 4	Councillor Shawn Acton
Ward 9	Councillor Tyler Olsen
Ward 9	Councillor Duane Didow

ATTENDING

Interim Chief Administrative Officer	Stacey Wabick
Director, Community Services	Dennis Mueller
Recording Secretary	Wendy Holscher
Executive Director, Industrial Development	Kyle Reiling
Manager Communications and Marketing	Stacey Sevilla

ABSENT

Councillor Tom Burton
Councillor Roxie Chapman

#2
AGENDA

MOTION: 21.09.08 Moved by: REEVE DALE SMITH
That the Greenview Industrial Gateway Committee adopt the September 7, 2021, Greenview Industrial Gateway Committee Meeting Agenda as presented.
CARRIED

#3 MINUTES

3.0 MINUTES

MOTION: 21.09.09 Moved by: COUNCILLOR TYLER OLSEN
That the Greenview Industrial Gateway Committee adopt the July 28, 2021, Greenview Industrial Gateway meeting minutes as amended.

- Put carried by motion 21.07.01
- Change out Councillor Olsen, Councillor Smith in attendance

#4 DELEGATIONS

4.0 DELEGATIONS

#5 NEW BUSINESS

5.0 NEW BUSINESS

**FIRST NATION
CONSULTATIONS**

5.1 FIRST NATIONS CONSULTATIONS

MOTION: 21.09.10 Moved by: REEVE DALE SMITH

That the Greenview Industrial Gateway Committee accept the Special Boundary Redesignation Report for information, as presented.

CARRIED

**PURCHASE SALES
AGREEMENT**

5.2 PURCHASES SALES AGREEMENT

MOTION: 21.09.11 Moved by: COUNCILLOR SHAWN ACTON

That the Greenview Industrial Gateway Committee accept the Purchases Sales Agreement Report for the purchase of land with the Province of Alberta, as presented.

CARRIED

MOTION: 21.09.12 Moved by: COUNCILLOR DALE GERVAIS

That the Greenview Industrial Gateway request a committee delegation to meet with the Minister of Environment and the Minister of Finance to discuss progress on the Purchase Sales Agreement.

CARRIED

**MERIDIAN SURVEY
AGREEMENT**

MOTION: 21.09.13 Moved by: COUNCILLOR TYLER OLSEN

That the Greenview Industrial Gateway recommend to Council to Authorize Administration to enter into an agreement with Meridian Survey, Edmonton, Alberta at a cost of \$49,615.00 excluding GST for land surveying services for Greenview Industrial Gateway.

DEFEATED

SURVEY BIDS

MOTION: 21.09.14 Moved by: COUNCILLOR DALE GERVAIS

That the Greenview Industrial Gateway Committee request Administration to bring back preferably 3 local bids for surveying the 2000 acres as outlined in the Purchase Sales Agreement.

CARRIED

C02 SEQUESTRATION

5.3 CARBON (C02) SEQUESTRATION MANAGEMENT PLAN

MOTION: 21.09.15 Moved by: REEVE DALE SMITH

That the Greenview Industrial Gateway Committee accept the Carbon Sequestration (C02) Management Plan report for information, as presented.

CARRIED

**MCDANIELS
AGREEMENT**

MOTION: 21.09.16 Moved by: COUNCILLOR DALE GERVAIS
That the Greenview Industrial Gateway Committee recommend that Council authorize Administration to proceed with McDaniels & Associates Consultants Ltd., Calgary, Alberta to prepare a Carbon Sequestration Management Report for an upset limit of \$35,000.00.
CARRIED

PROCESSED WATER

5.4 PROCESSED WATER MANAGEMENT PLAN

MOTION: 21.09.17 Moved by: COUNCILLOR SHAWN ACTON
That the Greenview Industrial Gateway Committee accept the Process Water Management Plan report for information, as presented.
CARRIED

Chair recessed the meeting at 2:35 p.m.
Chair reconvened the meeting at 2:47 p.m.

STAKEHOLDER EVENT

5.5 GREENVIEW INDUSTRIAL GATEWAY STAKEHOLDER EVENT

MOTION: 21.09.18 Moved by: COUNCILLOR TYLER OLSEN
That the Greenview Industrial Gateway Committee recommend that Council authorize Administration to proceed with a Greenview Industrial Gateway Stakeholder Event, November 10th, 2021, Evergreen Park, Grande Prairie, Alberta.
CARRIED

INFORMATION MATRIX

5.6 GREENVIEW INDUSTRIAL GATEWAY INFORMATION MATRIX

MOTION: 21.09.19 Moved by: COUNCILLOR DUANE DIDOW
That the Greenview Industrial Gateway Committee accept the Greenview Industrial Gateway Information Matrix Report for information, as presented.
CARRIED

STRATEGIC PLAN

5.7 Greenview Industrial Strategic Plan

MOTION: 21.09.20 Moved by: COUNCILLOR SHAWN ACTON
That the Greenview Industrial Gateway Committee recommend that Council adopt the Greenview Industrial Gateway Strategic Business Plan as presented.
CARRIED

**#7
ADJOURNMENT**

7.0 ADJOURNMENT

MOTION: 21.09.21 Moved by: DEPUTY REEVE BILL SMITH
That the Committee adjourn this Greenview Industrial Gateway Meeting
at 3:20 P.M.
CARRIED

CHIEF ADMINISTRATIVE OFFICER

CHAIR



REQUEST FOR DECISION

SUBJECT: **McDaniels and Associates CO₂ Presentation**
SUBMISSION TO: Greenview Industrial Gateway REVIEWED AND APPROVED FOR SUBMISSION
Committee Meeting
MEETING DATE: October 13, 2021 CAO: MANAGER:
DEPARTMENT: CAO SERVICES GM: DM PRESENTER: KR
STRATEGIC PLAN: Development LEG:

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee accept the McDaniels and Associates CO₂ presentation for information, as presented.

BACKGROUND/PROPOSAL:

McDaniels and Associates will provide a presentation to the Committee pertaining to the carbon sequestration opportunities for the Greenview Industrial Gateway project. This will allow the Committee to develop a clear understanding of all aspects of CO₂ sequestration and management relating to the Greenview Industrial Gateway project.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Committee will have a better understanding of the carbon and sequestration opportunities within close proximity of the Greenview Industrial Gateway project.
-

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.
-

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications for the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

N/A

ATTACHMENT(S):

- PowerPoint Presentation – McDaniels and Associates

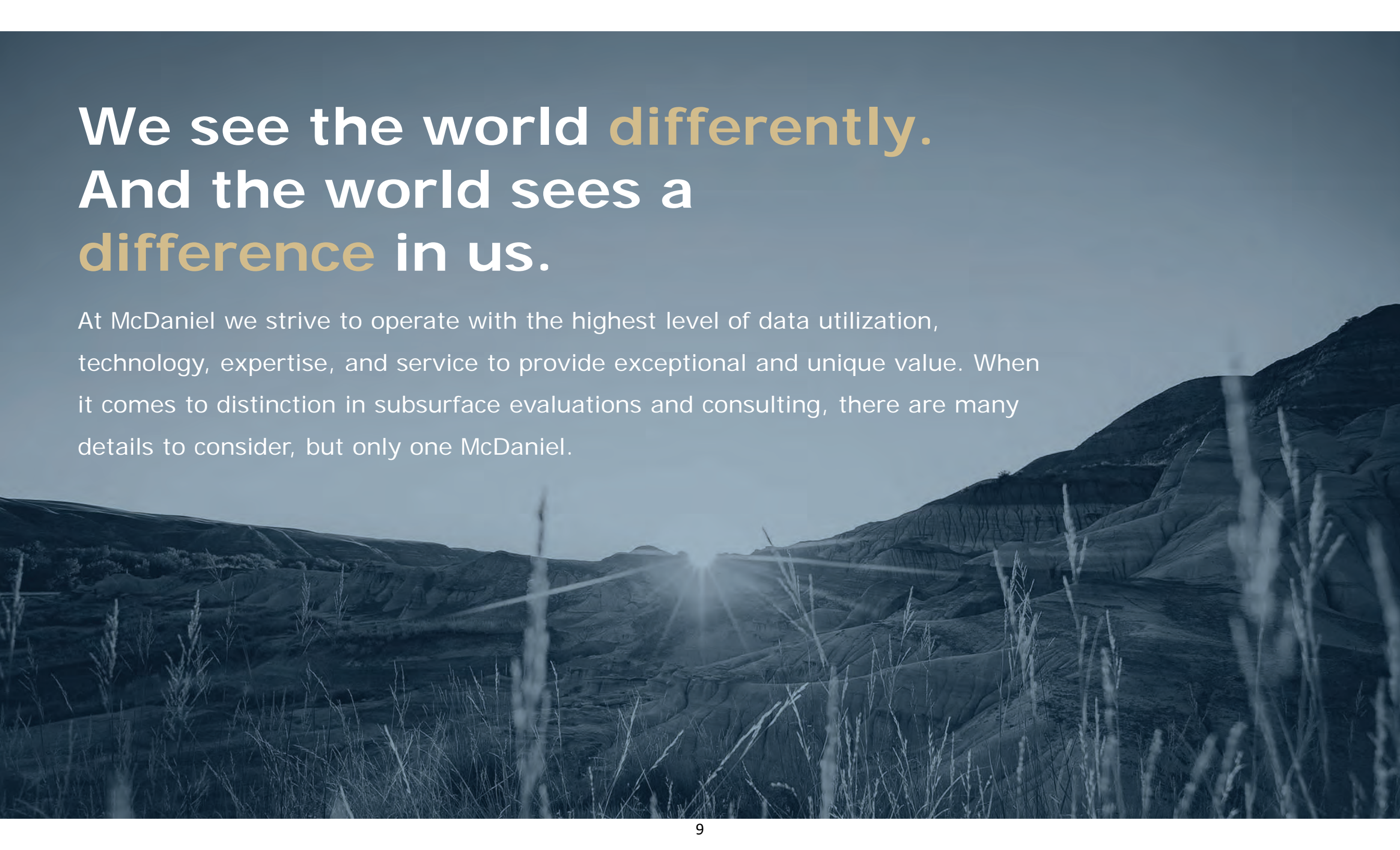


Carbon Solutions MD Greenview Council Meeting



McDANIEL

2021-10-13



We see the world **differently**. And the world sees a **difference** in us.

At McDaniel we strive to operate with the highest level of data utilization, technology, expertise, and service to provide exceptional and unique value. When it comes to distinction in subsurface evaluations and consulting, there are many details to consider, but only one McDaniel.

The McDaniel Difference

Our Experience

- 65-year history of reserve evaluations and upstream consulting experience
- Includes most of the major hydrocarbon basins around the world
- Detailed resource play databases and cutting edge technology dedicated to finding value

Our Services

- Evaluation of oil and gas reserves and resources
- Acquisition & disposition advisory services
- Development optimization
- Carbon Sequestration

Our People

- Approximately 60 employees
- Engineering Team focused on maintaining a detailed evaluation of the entirety of every major resource play in North America
- Geoscientist Team dedicated to building basin-wide geomodels at asset-level details and density



Agenda

- **Initial Scoping Summary**
- Saline Aquifer – Site Screening / Selection
- Next Steps

Oil and Gas Reservoir Storage

Material Balance

Gas Reservoir Estimate Storage:

$$MCO_2 = \rho_{CO_2} \cdot R_f \cdot (1 - F_{IG}) \cdot OGIP \cdot \left[\frac{P_s \cdot Z_r \cdot T_r}{P_r \cdot Z_s \cdot T_s} \right]$$

Oil Reservoir Estimate Storage:

$$MCO_2 = \rho_{CO_2} \cdot [R_f \cdot OOIP \cdot Bo - V_{IW} + V_{PW}]$$

Reservoir Suitability:

Parameter	Criteria
Depth [m]	>1000
Pressure [Mpa]	>7.38
Temperature [°C]	>31
Gas Reservoir Type	Non-Associated
Commingled	No



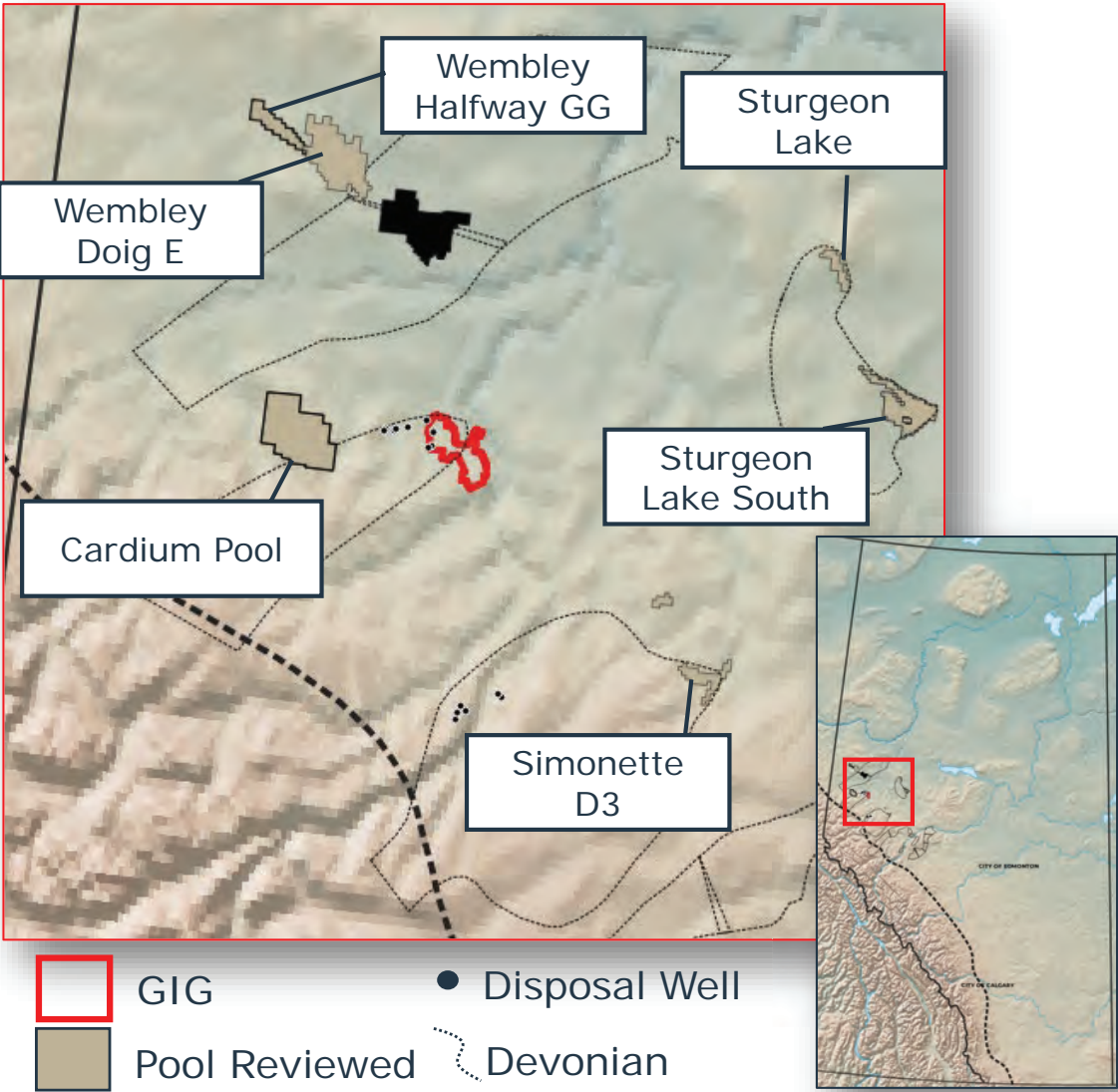
Initial Area of Interest

Initial Scoping Summary

Pure CO₂ Storage in Depleted Oil and Gas Reservoirs and Initial Saline Screening

Pure CO ₂ Storage in Depleted Pools		
Pool Reviewed	Storage Type	Pure Storage Capacity (Mt)
Wembely Halfway GG	Pure Storage	1.3
Wembely Doig E	Pure Storage	1
Cardium Formation	Pure Storage and EOR Candidate	1
Sturgeon Lake South D3	Pure Storage	26
Sturgeon Lake D3	Pure Storage	5

- Pure CO₂ storage potential in depleted oil and gas reservoirs limited in pools *directly offsetting* GIG. Wembely Halfway GG and Cardium show highest pure CO₂ storage capacity.
- Cardium development towards the west identified as potential EOR candidate
- Leduc and Cadotte identified as prospective saline sequestration aquifers pending further investigation
- Offsetting Leduc water disposal wells (Terravita & Secure) high indicate storage and injectivity as proxy for CO₂





Agenda

- Initial Scoping Summary
- **Saline Aquifer – Site Screening / Selection**
- Next Steps

Project Definition

Initial assessment of project

Scope: Site Screening / Selection

CO2 Strategy

- 1 Mt/Yr (20 Yrs)
- Sourced within the outlined "GIG"

Location: 50km around the "GIG"

Storage Size: 0.5 – 2 Mtpa (25 + 10 Yrs)

Geological Units: Winterburn & Woodbend

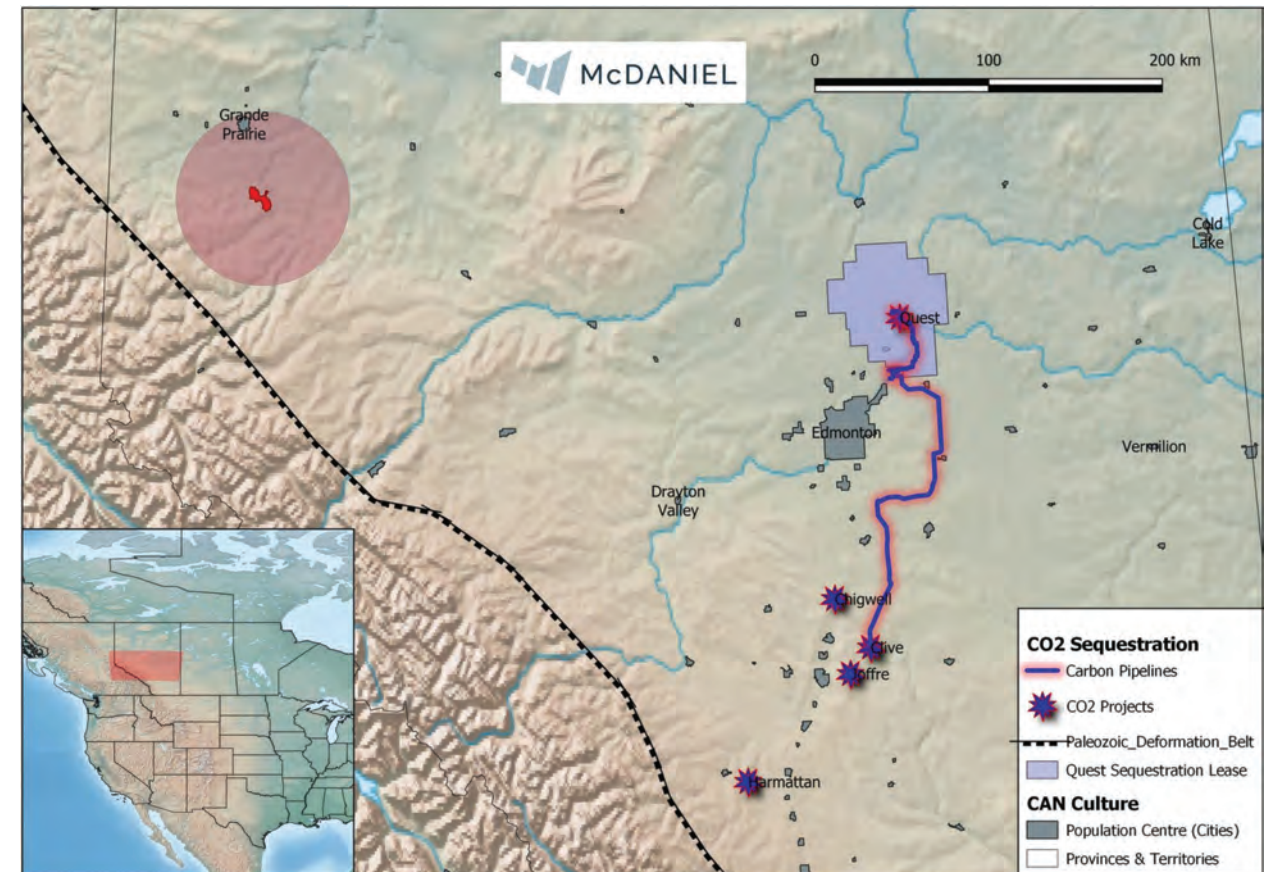
Resources: Subsurface (McDaniel)

Schedule

- Commencement of the evaluation – July 23
- Preliminary Meeting and Presentation - August 18
- Project completion – August 20

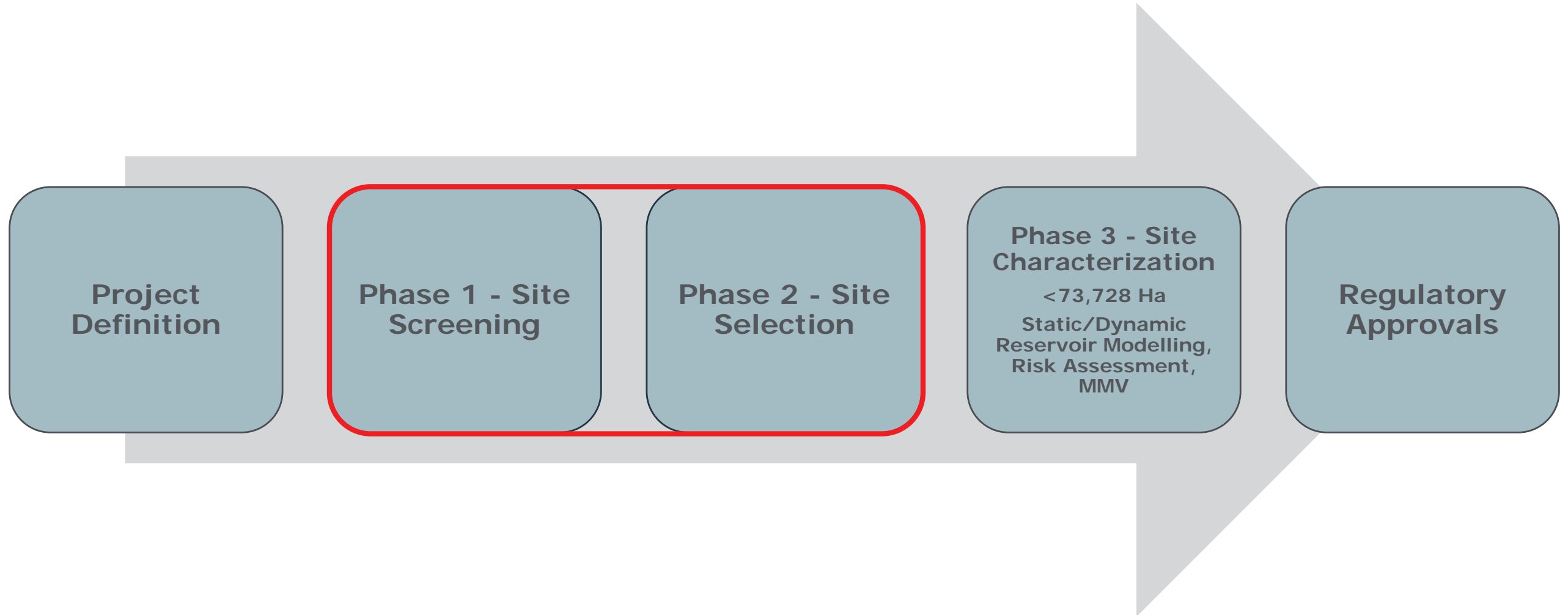
Deliverables

- Subsurface mapping using selected vertical wells to identify reservoir parameters, and potential storage of CO2.
- Professionally stamped report describing technical methodology and analysis reservoir parameters of the target.
- Summary presentation to highlight findings and recommendations



Timeline

Road to Regulatory Approvals – Workflow



Site Screening and Site Selection

Reduce the extent & increase the details (Depth over Breath)

Site Screening/Selection

- Scoping and Investigation
- Using the Best well log suites (Density/Neutron)
- Focus on storage capacity estimate

Site Characterization

- Include more logs and all available log data
- Create a subsurface 3D geological model
- Simulate CO₂ injection
- Refine storage / legacy wells / seals



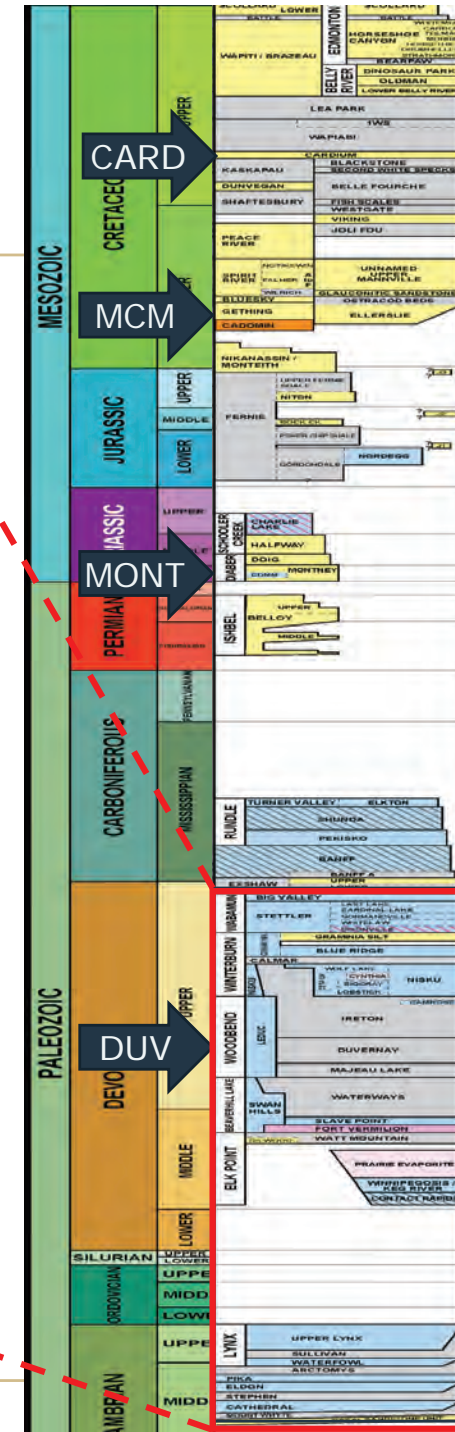
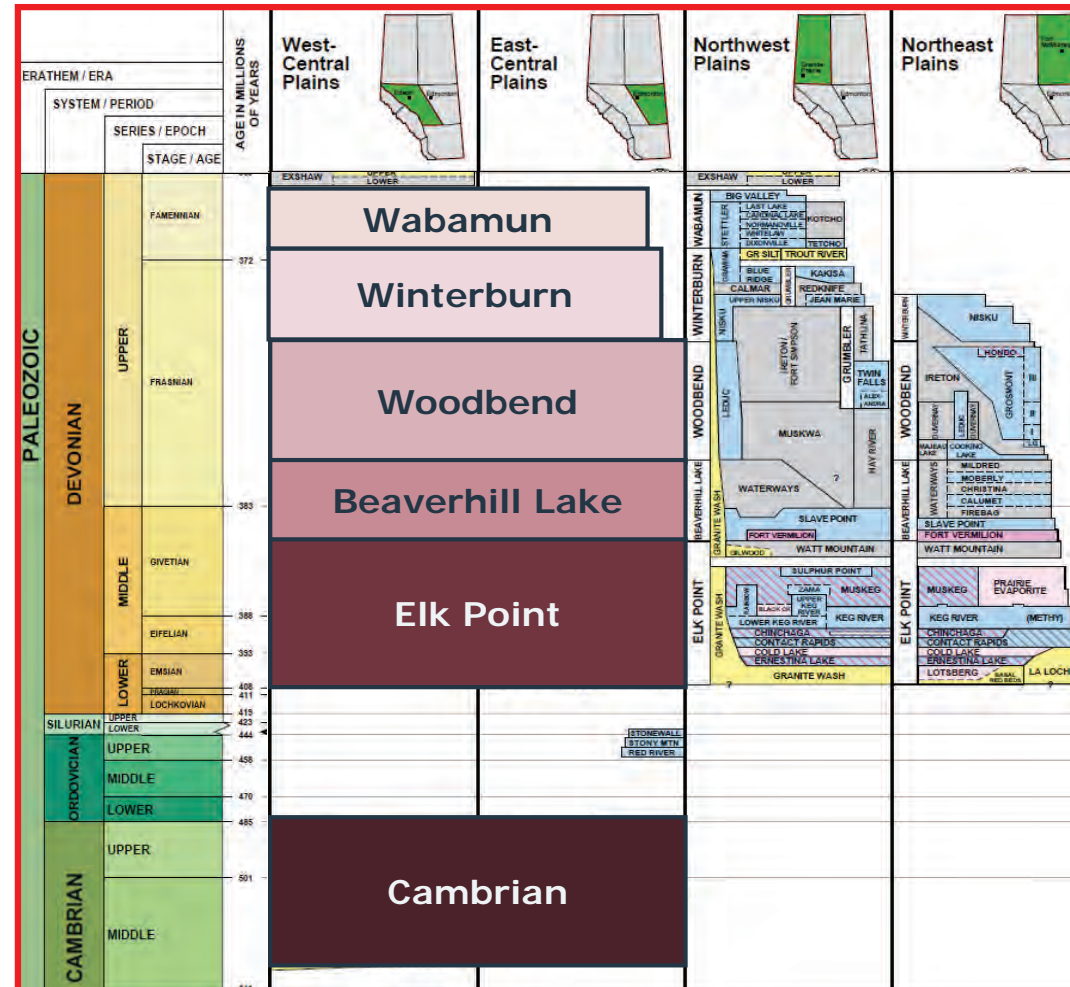
Saline Aquifers

Geological Units

The most prospective saline aquifers are found at the base of the stratigraphic column. These are Devonian and Cambrian in age. Shallower aquifer are not deemed as prospective due to the abundance of legacy wells causing containment concerns and low salinity.

All units are subdivided into six groups:

1. Wabamun
2. **Winterburn**
3. **Woodbend**
4. Beaverhill Lake
5. Elk Point
6. Cambrian



Site Screening/Selection Methodology

Steps – Toward Mass Storage

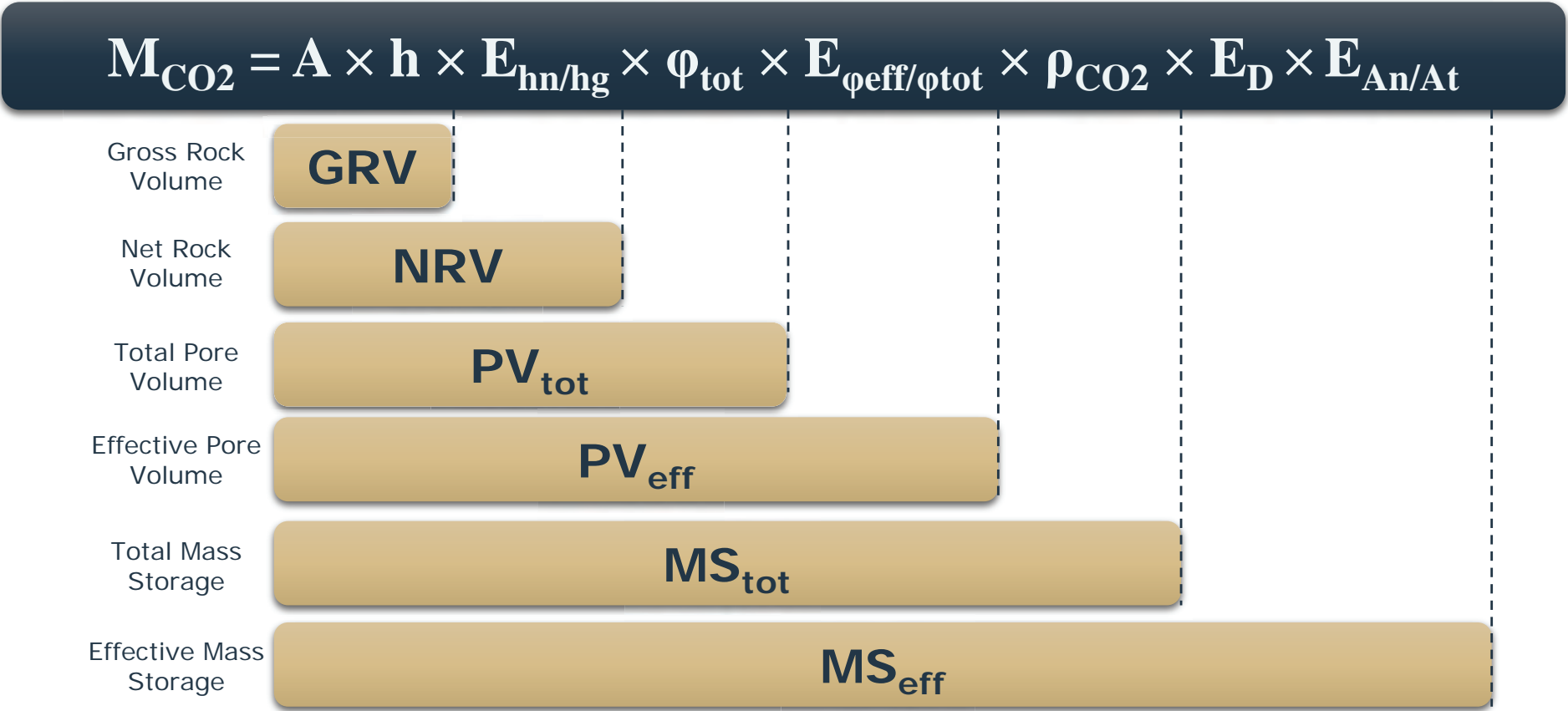
EQUATIONS

- 1. $M_{CO_2} = A \times h \times \phi_{tot} \times \rho_{CO_2} \times E$
- 2. $E = E_{geol} \times E_D$
- 3. $E_{geol} = E_{An/At} \times E_{hn/hg} \times E_{\phi_{eff}/\phi_{tot}}$

PARAMETERS

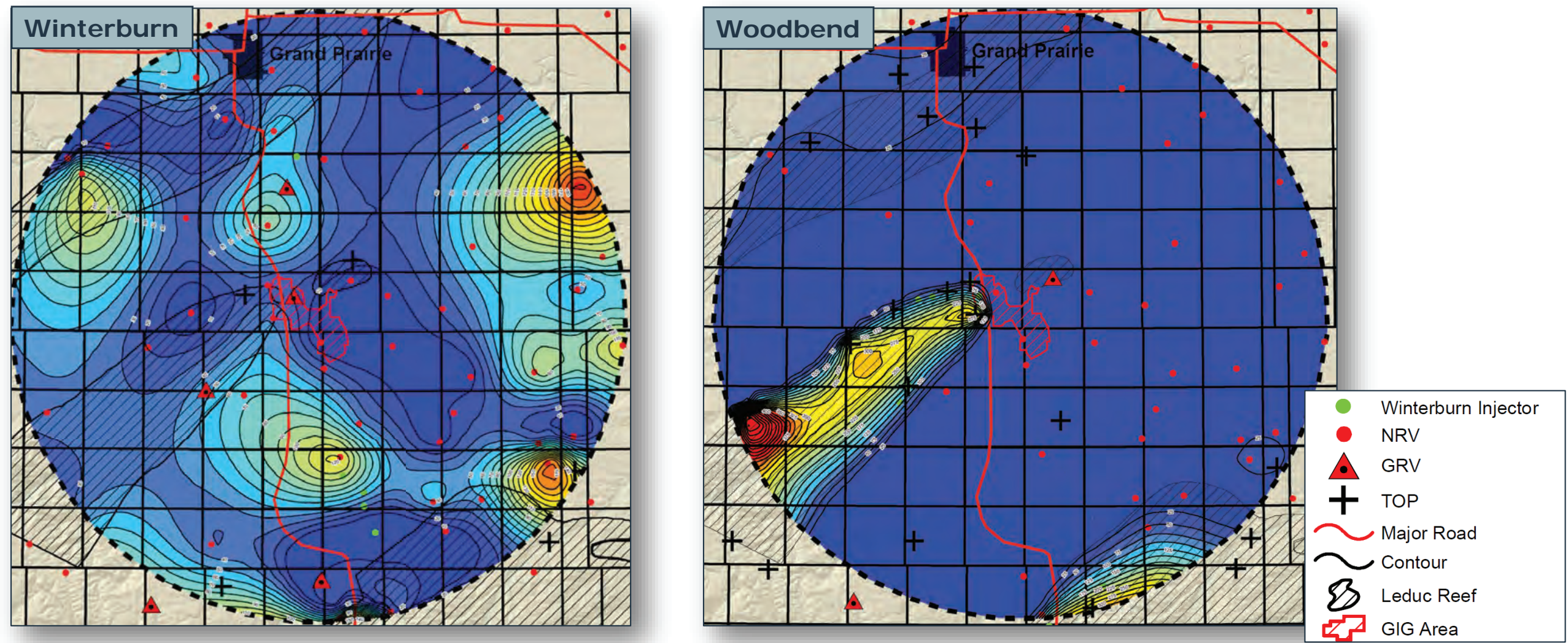
- M_{CO_2} – Mass of CO2
- A – Area
- h – Height
- Φ_{tot} – Total porosity
- ρ_{CO_2} – Density of CO2
- E – Storage efficiency factor
- E_D - Plume displacement ratio
- E_{geol} – Fraction amenable to CO2 storage
- $E_{An/At}$ – Effective area ratio (Typically =1)
- $E_{hn/hg}$ - Effective thickness ratio
- $E_{\phi_{eff}/\phi_{tot}}$ - Effective porosity ratio

CO2 Effective Mass Storage



Winterburn & Woodbend

Effective Mass Storage [Mt/permit]



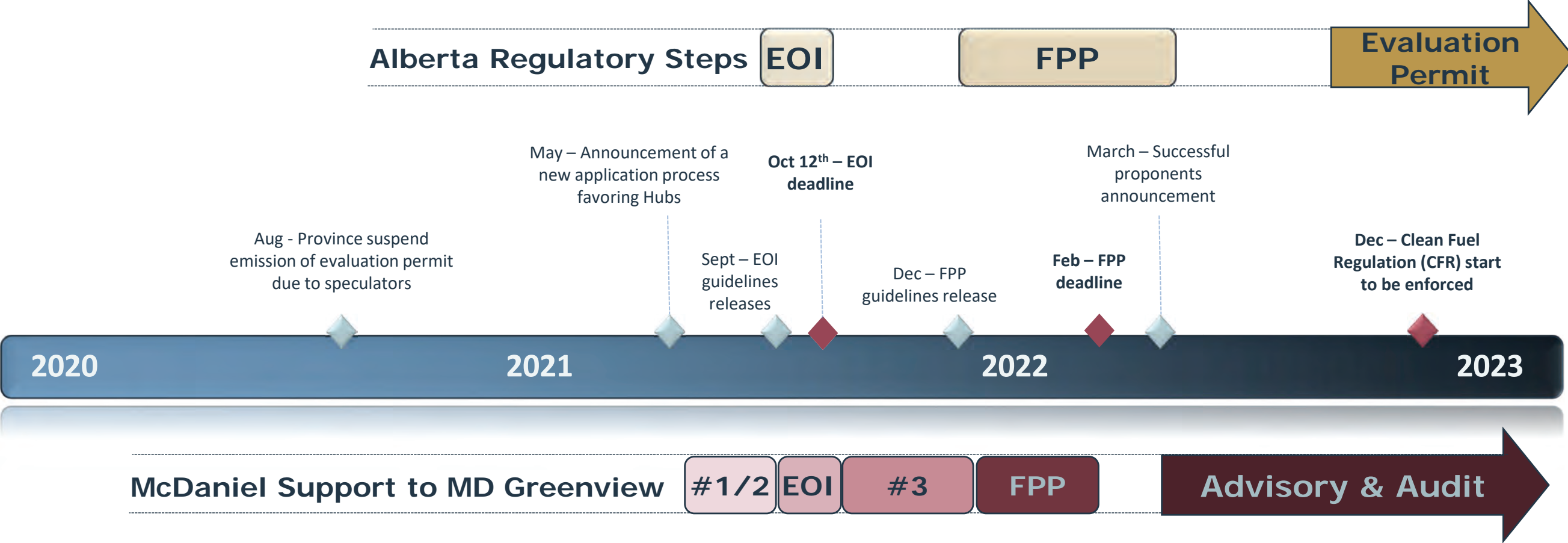


Agenda

- Initial Scoping Summary
- Saline Aquifer – Site Screening / Selection
- **Next Steps**

Road to Regulatory Approval

Alberta Timeline



EOI – Expression Of Interest
FPP – Full Project Proposal

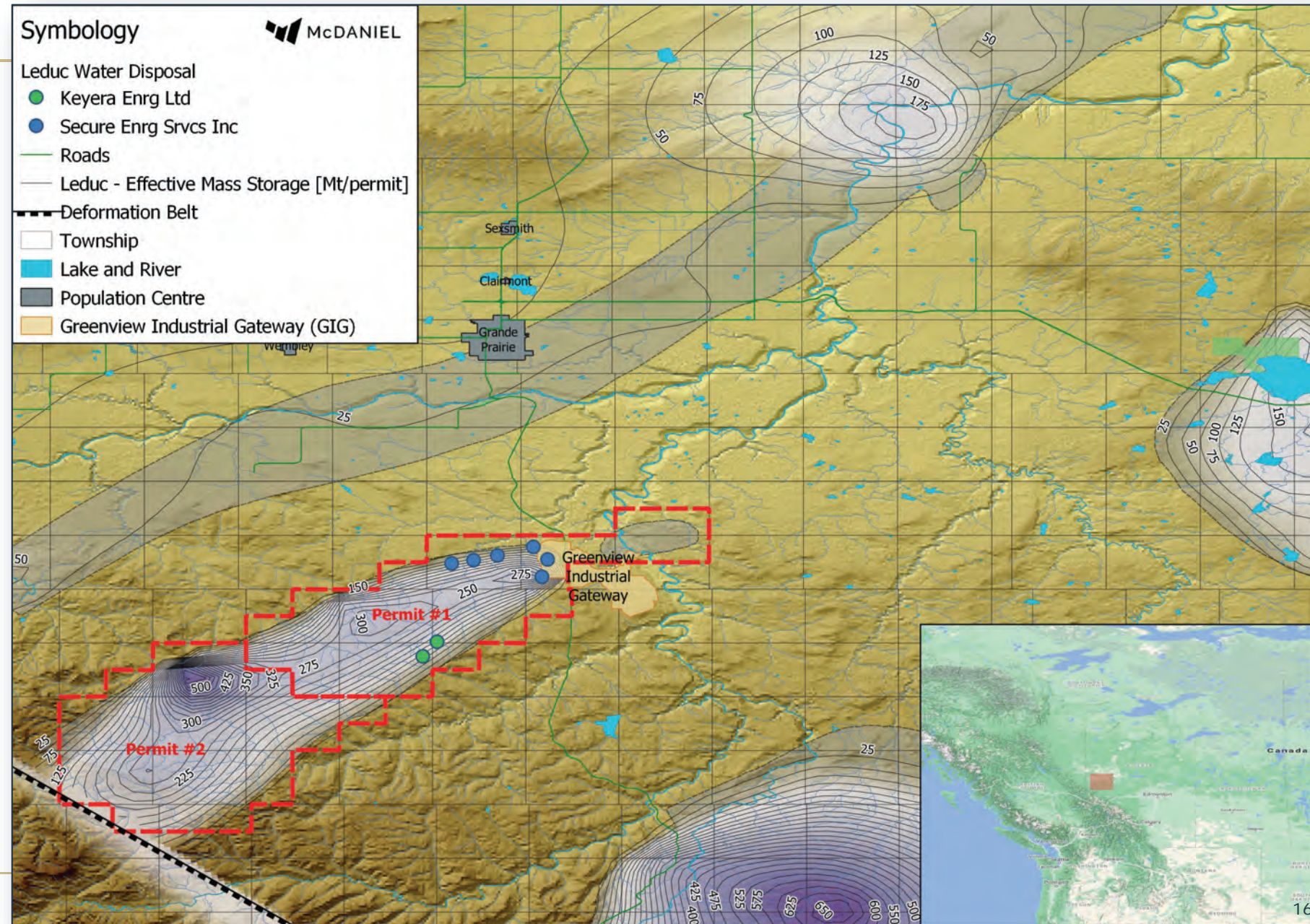
Expression of Interest (EOI)

Permits Location

To capture the Woodbend potential as a carbon sequestration Hub, two permits would likely be required.

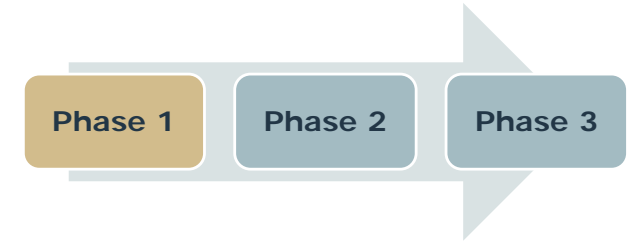
These permits will have overlapping disposal operations with Secure and Keyera.

This geological target is the closest one to the GIG with significant pore space and sufficient well data. Alternative target will require further transport along pipeline.



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Phase 1 – Site Screening



Storage Formations

Identify potential storage formations that will have favourable geological characteristics—including porosity, permeability, thickness, salinity, injectivity—that make them suitable for storage.

Adequate Depth

Assess minimum depth adequate for protection of ground water and evaluate depths at which injected CO₂ will be in supercritical state for improved storage efficiency.

Capacity Estimate

Calculate the prospective storage resource to ensure formations have sufficient pore volumes to accommodate project size.

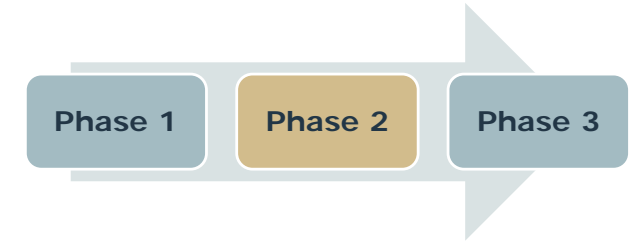
Deliverables

- Professionally stamped technical report
- Sub-surface maps for each prospective zones
- A summary presentation
- Cursory review of regulations and financial incentives

“Phase 1 – Site Screening” can be used to supplement an application for the **Expression of Interest (EOI)**

Carbon Solutions

Phase 2 – Site Selection



Storage Zones

Resolve the internal stratigraphy of prospective zones and refine volumetrics assessment. Provide further depth in the analysis by incorporating all well vintages.

Confining Seal

Analyze confining zones in selected areas. Create stratigraphic and structural framework to illustrate areal extent, thickness, lithology and structural complexity of confining zone

Legacy Wells

Quantify wellbore leakage risk by assessing proximity to nearest well and density of offsets.

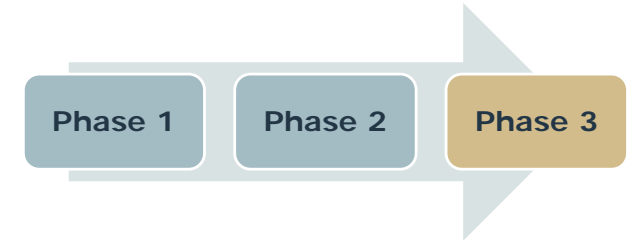
Deliverables

- Professionally stamped summary report
- Sub-surface maps for each prospective zones and seals
- Well proximity analysis maps
- A summary presentation

“Phase 2 – Site Selection” can be used to supplement an application for the **Full Project Proposal (FPP)**

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Phase 3 – Site Characterization



Static Model

3D modeling of the zone and seals – including porosity, permeability, saturation - that can be used in dynamic plume modelling

Plume Model

Dynamic simulation of various development scenarios in order to assess optimal injection design and CO₂ plume growth over time.

Risk Assessment & Measurement, Monitoring and Verification (MMV)

Review of sub-surface risks that need to be addressed and mitigated. Summary of actions to be taken in order to minimize leakage risk of CO₂.

Deliverables

- Professionally stamped model summary report
- A comprehensive list of risks, likelihood and mitigation
- An MMV guidelines report
- A summary presentation

“Phase 3 – Site Characterization”
can be used to supplement an
application for the **FPP** & the
Evaluation Permit

Questions

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David Jenkinson | Executive VP

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p. 403.803.2562





REQUEST FOR DECISION

SUBJECT: **Greenview Industrial Gateway Stakeholder Event**
SUBMISSION TO: Greenview Industrial Gateway Committee Meeting
MEETING DATE: October 13, 2021
DEPARTMENT: CAO SERVICES
STRATEGIC PLAN: Development

REVIEWED AND APPROVED FOR SUBMISSION

CAO: MANAGER:
GM: DM PRESENTER: KR
LEG:

RELEVANT LEGISLATION:

Provincial (cite) – N/A

Council Bylaw/Policy (cite) – N/A

RECOMMENDED ACTION:

MOTION: That the Greenview Industrial Gateway Committee accept the Greenview Industrial Gateway Stakeholder Event report for information, as presented.

BACKGROUND/PROPOSAL:

At the September 14, 2021, Council Meeting the Greenview Industrial Gateway Stakeholder Event details were presented and reviewed. Administration was authorized to proceed with organizing the November 10th, 2021, event as presented.

Planning has proceeded; however, invitations have not been sent to-date as new COVID restrictions have been announced by the province. The selected venue has implemented the restrictions exemption program which requires proof of vaccination or a negative test result. Administration has developed a COVID plan which will suffice with the new regulations and restrictions. The plan includes having COVID rapid tests on-site for individuals attending without a double vaccination card. The full cost per test kit would result in a \$40.00 per person cost, however Administration is attempting to acquire cases of the rapid test kits at a discount cost of \$20.00 per test. Administration estimates the total cost for the rapid test at the event to be \$1,000.00.

Administration recommends proceeding with the event as Greenview has implemented appropriate safety measures for the attendees. The additional costs for the rapid tests will not result in additional funds required to the \$50,000.00 funding upset limit previously approved to host the event.

BENEFITS OF THE RECOMMENDED ACTION:

1. The benefit of the recommended motion is that the Committee will be provided with the safety measures that will be implemented at the Greenview Industrial Gateway event.

DISADVANTAGES OF THE RECOMMENDED ACTION:

1. There are no disadvantages to the recommended motion.

ALTERNATIVES CONSIDERED:

Alternative #1: The Committee has the alternative to alter or deny the recommended motion.

FINANCIAL IMPLICATION:

There are no financial implications to the recommended motion.

STAFFING IMPLICATION:

There are no staffing implications to the recommended motion.

PUBLIC ENGAGEMENT LEVEL:

Greenview has adopted the IAP2 Framework for public consultation.

INCREASING LEVEL OF PUBLIC IMPACT

Inform

PUBLIC PARTICIPATION GOAL

Inform - To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

PROMISE TO THE PUBLIC

Inform - We will keep you informed.

FOLLOW UP ACTIONS:

There are no follow up actions for the recommended motion.

ATTACHMENT(S):

- N/A