2022

E3 Lithium 43-101 Technical Report: Lithium Resource Estimate

BASHAW DISTRICT PROJECT, CENTRAL ALBERTA

BY:

DARON ABBEY, M.SC, P.GEO

ALEX HALUSZKA, M.SC, P.GEO

PETER EHREN, M.SC, AUSIMM

REPORT DATE: AUGUST 23, 2022

EFFECTIVE DATE: JULY 11,2022

Forward Looking Information Statement

This report contains forward-looking statements regarding E3 Lithium Ltd. (“E3 Lithium” or “the Company”) and the potential of its current and future projects. Generally, forward-looking statements can be identified by the use of forward-looking language such as “plans”, “expects”, “budgets”, “schedules”, “estimates”, “forecasts”, “intends”, “anticipates”, “believes”, or variations of such words and phrases, and statements that certain actions, events or results “may”, “could”, “would”, “might”, “will be taken”, “will occur” or “will be achieved”. Forward-looking statements are based on the opinions and estimates of E3 Lithium as of the date such statements are made. Forward-looking statements are subject to known and unknown risks, uncertainties and other factors that may cause the actual results, levels of activity, performance or achievements of E3 Lithium to be materially different from those expressed or implied by such forward-looking statements, including, but not limited to, risks related to: E3 Lithium’ ability to effectively implement its planned exploration programs; unexpected events and delays in the course of E3 Lithium’ exploration and drilling programs; changes in project parameters as plans continue to be refined; the ability of E3 Lithium to raise the capital necessary to meet its milestones, conduct its planned exploration programs and to continue exploration and development on its properties; the failure to discover any significant amounts of lithium or other minerals on any of E3 Lithium’ properties; the fact that E3 Lithium’ properties are in the exploration stage and exploration and development of mineral properties involves a high degree of risk and few properties which are explored are ultimately developed into producing mineral properties; the fact that the mineral industry is highly competitive and E3 Lithium will be competing against competitors that may be larger and better capitalized, have access to more efficient technology, and have access to reserves of minerals that are cheaper to extract and process; the fluctuations in the price of minerals and the future prices of minerals; the fact that if the price of minerals deceases significantly, any minerals discovered on any of E3 Lithium’ properties may become uneconomical to extract; the continued demand for minerals and lithium; that fact that resource figures for minerals are estimates only and no assurances can be given than any estimated levels of minerals will actually be produced; governmental regulation of mining activities and oil and gas in Alberta and elsewhere, including regulations relating to prices, taxes, royalties, land tenure, land use, importing and exporting of minerals and environmental protection; environmental regulation, which mandate, among other things, the maintenance of air and water quality standards and land reclamation, limitations on the general, transportation, storage and disposal of solid and hazardous waste; environmental hazards which may exist on the properties which are unknown to E3 Lithium at present and which have been caused by previous or existing owners or operators of the properties; reclamation costs which are uncertain; the fact that commercial quantities of minerals may not be discovered on current properties or other future properties and even if commercial quantities of minerals are discovered, that such properties can be brought to a stage where such mineral resources can profitably be produced therefrom; the failure of plant or equipment processes to operate as anticipated; the inability to obtain the necessary approvals for the further exploration and development of all or any of E3 Lithium’ properties; Risks inherent in the mineral exploration and development business; the uncertainty of the requirements demanded by environmental agencies; E3 Lithium’ ability to hire and retain qualified employees and consultants necessary for the exploration and development of any of E3 Lithium’ properties and for the operation of E3 Lithium’ business; and other risks related to mining activities that are beyond E3 Lithium’ control. Although E3 Lithium has attempted to identify important factors that could cause actual results to differ materially from those contained in the forward-looking statements in this presentation, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements contained in this presentation. E3 Lithium does not undertake to update any forward-looking statements except in accordance with applicable securities laws. Unless otherwise indicated, Chris Doornbos, P. Geo., President and CEO at E3 Lithium Ltd. and a Qualified Person under National Instrument 43-101, has reviewed and is responsible for the technical information contained in this report.

1: Certain scientific and technical information contained herein is derived from the Inferred Minerals Resources outlined in NI 43-101 report for Clearwater Lithium Project PEA (September 17, 2021), Exshaw West Property (September 21, 2021), North Rocky Property (December 22, 2017) and Bashaw Resource Project (August 23, 2022). NI 43-101 Report and accompanying News Releases can be found on E3 Lithium’s website (www.e3lithium.ca) or SEDAR (www.sedar.com).

DATE, SIGNATURE AND CERTIFICATE OF QUALIFICATIONS

Alexander Haluszka
Matrix Solutions Inc.
Suite 600, 214 - 11 Avenue SW Calgary, Alberta T2R 0K1
Phone: 403 513 9435
ahaluszka@matrix-solutions.com

To accompany the Report entitled "E3 Lithium NI 43-101 Technical Report: Lithium Resource Estimate, Bashaw District Project, Central Alberta"

Effective Date: July 11, 2022
Issue Date: August 23, 2022

I, **Alexander Haluszka**, M.Sc., P.Geo., hereby state that:

1. I am employed as a Principal Hydrogeologist with Matrix Solutions Inc., Suite 600, 214 - 11 Avenue SW Calgary, Alberta T2R 0K1, telephone 403 513 9435, email address ahaluszka@matrix-solutions.com

2. I have the following academic and professional qualifications and experience:
   a. Academic
      i. B.Sc., Hons. (Geology), University of Calgary, Calgary, Alberta, 2006
      ii. M.Sc., (Geology, specializing in Carbonate Sedimentology), University of Calgary, Calgary, Alberta, 2009
   b. Professional
      i. Registered Professional Geoscientist in Alberta
      ii. Registered Professional Geoscientist in British Columbia
      iii. Registered Professional Geoscientist in Saskatchewan
      iv. Registered Professional Geoscientist in Manitoba
   c. Areas of Specialization Relevant to this Report
      i. Carbonate sedimentology
      ii. Petroleum geology and geophysical log interpretation
      iii. Regional hydrodynamics and hydrogeological assessment
      iv. 15 years of experience in geological mapping, geophysical log interpretation and hydrogeological assessment studies

3. I am a "qualified person" for the purposes of National Instrument 43-101 — Standards of Disclosure for Mineral Projects (the "Instrument").

4. I visited the Bashaw District on April 28, 2022

5. I am responsible for co-authoring materials in all sections of the Mineral Resource Estimate other than Section 13. The material in this Report reflects my best judgment in light of the information available to me at the time of preparation

6. I am independent of E3 Lithium Ltd. as described in section 1.5 of the Instrument

7. I do not hold, nor do I expect to receive, any securities or any other interest in any corporate entity, private or public, with interests in the properties that are the subject of this report or in

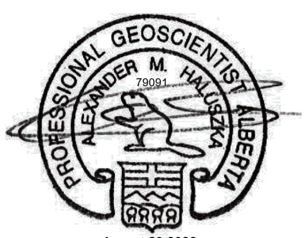
the properties themselves, nor do I have any business relationship with any such entity apart from a professional consulting relationship with the issuer, nor to the best of my knowledge do I have any interest in any securities of any corporate entity with property within a two (2) kilometer distance of any of the subject properties.

8. I have read the Instrument, and Sections 1-12 and 14-26 have been prepared in compliance with the Instrument

9. As of the date of this Report, and to the best of my knowledge, information, and belief, the sections of the Report under my responsibility as stated above contain all scientific and technical information that is required to be disclosed to make this Report non-misleading.

10. I consent to the public filing of the Technical Report titled "E3 Lithium NI 43-10 Technical Report: Lithium Resource Estimate, Bashaw District Project, Central Alberta" by E3 Lithium Ltd. I also consent to any extracts from or a summary of the Technical Report in any type of disclosure document with any stock exchanges or other regulatory authority and any publication by them, including electronic publication in the public company files on the websites accessible by the public, of the Technical Report for E3 Lithium Ltd.

DATED this August, 23, 2022, at Calgary, Alberta, Canada



August 23 2022

Alexander Haluszka, M.Sc., P.Geo.

DATE, SIGNATURE AND CERTIFICATE OF QUALIFICATIONS

Daron G. Abbey
Matrix Solutions Inc.
Unit 7B, 650 Woodlawn Road W Guelph, Ontario N1K 1B8
Phone: 226 314 1947
dabbey@matrix-solutions.com

To accompany the Report entitled “E3 Lithium NI 43-101 Technical Report: Lithium Resource Estimate, Bashaw District Project, Central Alberta”

Effective Date: July 11, 2022
Issue Date: August 23, 2022

I, **Daron G. Abbey**, M.Sc., P.Geo., hereby state that:

1. I am employed as a Principal Hydrogeologist with Matrix Solutions Inc., Unit 7B, 650 Woodlawn Road W Guelph, Ontario N1K 1B8, telephone 226 314 1947, email address dabbey@matrix-solutions.com

2. I have the following academic and professional qualifications and experience:
   a. Academic
      i. B.Sc., Hons. (Env. Sci), Carleton University, Ottawa, Ontario, 1996
      ii. M.Sc., (Earth Sciences, specializing in Hydrogeology), Simon Fraser University, Burnaby, British Columbia, 2000
   b. Professional
      i. Registered Professional Geoscientist in Alberta
      ii. Registered Professional Geoscientist in Ontario
      iii. Registered Professional Geoscientist in Saskatchewan
   c. Areas of Specialization Relevant to this Report
      i. Conceptualization of Groundwater flow and Solute Transport systems;
      ii. Sedimentary Geology and 3D Hydrostratigraphic Model Development
      iii. Fractured Rock Hydrogeology including Solute Transport
      iv. Resource Estimation for Brine Deposits
      v. 25 years of experience in geophysical, hydrogeologic and solute transport studies.

3. I am a "qualified person" for the purposes of National Instrument 43-101 — Standards of Disclosure for Mineral Projects (the "Instrument").

4. I have not visited the Bashaw District Resource Area for an inspection.

5. I am responsible for co-authoring materials in all sections of the Mineral Resource Estimate other than Section 13. The material in this Report reflects my best judgment considering the information available to me at the time of preparation

6. I am independent of E3 Lithium Ltd. as described in section 1.5 of the Instrument

7. I do not hold, nor do I expect to receive, any securities or any other interest in any corporate entity, private or public, with interests in the properties that are the subject of this report or in

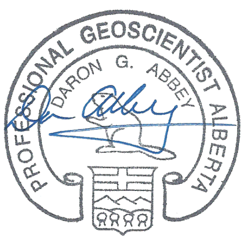
the properties themselves, nor do I have any business relationship with any such entity apart from a professional consulting relationship with the issuer, nor to the best of my knowledge do I have any interest in any securities of any corporate entity with property within a two (2) kilometer distance of any of the subject properties.

8. I have read the Instrument, and Sections 1-12 and 14-26 have been prepared in compliance with the Instrument

9. As of the date of this Report, and to the best of my knowledge, information, and belief, the sections of the Report under my responsibility as stated above contain all scientific and technical information that is required to be disclosed to make this Report non-misleading.

10. I consent to the public filing of the Technical Report titled "E3 Lithium NI 43-10 Technical Report: Lithium Resource Estimate, Bashaw District Project, Central Alberta" by E3 Lithium Ltd. I also consent to any extracts from or a summary of the Technical Report in any type of disclosure document with any stock exchanges or other regulatory authority and any publication by them, including electronic publication in the public company files on the websites accessible by the public, of the Technical Report for E3 Lithium Ltd.

DATED this August, 23, 2022, at Guelph, Ontario, Canada



2022-08-23

Daron Abbey, M.Sc., P.Geo.

I, Peter Ehren, MSc., AusIMM (CP = Chartered Professional), as author of chapter 13 -Mineral Processing and Metallurgical Testing- and sections 25.1 -Reasonable Prospect for Eventual Economic Extraction-, 25.3 Lithium Processing / Production, 25.4 -Significant Risks & Uncertainties- of this report entitled "NI 43-101 Technical Report: Lithium Resource Estimate, Bashaw District, Central Alberta", prepared by E3 Lithium., dated August 14, 2022, do hereby certify that:

1. I am an independent consultant and owner of Ehren-González Limitada at Alberto Arenas 4005 112, La Serena, Chile
2. I graduated with a Master of Science Degree in Mining and Petroleum Engineering, with a specialization in Raw Materials Technology and Processing Variant at the Technical University of Delft, The Netherlands in the year 1997
3. I am an independent consultant, a Member of the Australasian Institute of Mining (AusIMM) and metallurgy and a Chartered Professional of the AusIMM.
4. I have practiced my profession for 25 years.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. This report is based on my personal review of information provided by the Issuer and on discussions with the Issuer's representatives. My relevant experience for the purpose of this report is:
    - 1997 — Final Thesis of MSc.degree: "Recovery of Lithium from Geothermal Brine, Salton Sea", BHP Minerals, Reno Nevada.
    - 1998-2001 — Process Engineer, Salar de Atacama, SQM
    - 2001-2006 — R&D Manager, Lithium and Brine Technology, SQM.
    - 2006 — Process Project Manager, SQM
    - 2007 till date — Independent Lithium and Salt Processing Consultant, Ehren-González Limitada

I have previously been involved in the several brine resource projects, where under:

- Salar de Olaroz for Orocobre, Argentina (2009-2019)
- Salar de Cauchari for Advantage and Orocobre, Argentina (2010-2019)
- Salar Salinas Grandes for Orocobre, Argentina (2010-2013)
- Salar de Maricunga for Li3 Energy and Minera Salar Blanco, Chile (2011-2022)
- Salar de Atacama and Silver Peak for Albermarle, Chile (2014 - 2016)
- Rann of Kutch, Archean Group, India (2015)
- Lake Mackay, Agrimin, Australia (2014-2016)
- Salar Pastos Grandes, Argentina (2018-2022)

7. I have not been able to visit the site.
8. I am independent of E3 Lithium.
9. I have not had prior involvement with the properties that are the subject of the Technical Report.
10. As of the date of this certificate, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
11. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
12. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
13. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated August 14, 2022

Yours Truly

Peter Ehren, AusIMM (CP)

I, Peter Ehren, pursuant to section 8.3 of National Instrument 43-101 – Standards for Disclosure of Mineral Projects, consent to the public filing of the technical report titled "NI 43-101 Technical Report: Lithium Resource Estimate, Bashaw District, Central Alberta", prepared by E3 Lithium., dated July 11th, 2022. I have read the document and confirm that it fairly and accurately represents the information in the technical report in sections 13, 25.2, 25.3, 25.4, and 26.2 which I am responsible for as a Qualified Person. The undersigned also consents to the use of extracts from, or a summary of, the technical report in news releases or other E3 Lithium disclosure.

Dated this August 19, 2022.

____

Signature of Qualified Person

Peter Ehren
PEC
Process and Environmental Consultancy
Lithium expert
MSc. Raw Materials Technology
QP NI 43-101 and JORC
AusIMM CP

www.lithium-experts.com

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1 Summary

E3 Lithium (E3 or the Company), an emerging lithium developer and leading lithium extraction technology innovator, is a public company with a head office located in Calgary, Alberta. The company trades on the Toronto Venture Exchange, as well as the OCT and Frankfurt markets (TSXV: ETL | FSE: OU7A | OTCQX: EEMMF).

The purpose of this technical report update is to incorporate the results of recent sampling programs and combine the Exshaw and Clearwater resource areas into a single, larger resource area (the Bashaw District [BD]), reflecting updated E3 mineral leases and agreements. E3 updated the reservoir conceptualization and improved the volumetric calculation based on additional data review and technical analysis (geological data, such as petrophysical modeling leveraging Flow Zone Indicator (FZI) methodology, and additional core description work). Additionally, E3 has removed the production factor cut-off used in previous assessments, as it is a "modifying factor" to be used for reserves estimation and does not impact the initial resource estimates.

E3 retained Alex Haluszka, P.Geo., and Daron Abbey, P.Geo., of Matrix Solutions Inc. as Qualified Persons (QPs) to supervise the work and author this technical report on the resource estimate of the BD Project in conformity to National Instrument 43-101 (NI 43-101) standards. Peter Ehren, AUSIMM, of Process and Environmental Consultancy was retained as the QP for Section 13 and joint QP for Sections 25 and 26.

1.1 Property Location and Ownership

E3's Alberta Lithium Project consists of 70 Metallic and Industrial Mineral (MIM) Permits that overlie the Leduc Reservoir in Southern Alberta. All permits are held 100% by 1975293 Alberta Ltd (Alberta Co)[i], a wholly owned subsidiary of E3, and have a total area of 510,995.81 hectares (ha). The BD consists of 45 of E3's 70 MIM Permits, covering 329,002 ha. The total BD is 593,115.5 ha and contains three sub-project areas: Clearwater, Exshaw, and Drumheller (Figure 1).

The authors of this Technical Report have not reviewed the 70 MIM Permits held by E3. The legal and survey validation is not in our expertise, and we are relying on E3's land persons and lawyers to review. Through personal communication with E3, the senior authors have no reason to question the validity or the good standing of the E3 permits.

1.2 Geology and Lithium Brine Sourcing

The BD is in the southwestern part of the Western Canada Sedimentary Basin (WCSB). In this area, the Upper Devonian (Frasnian) sediments of the Woodbend Group were deposited in a shallow inland sea bounded by the emergent Peace River Arch to the northwest and the West Alberta Ridge to the southwest, creating a barrier between the sea and the open ancestral Pacific to the west (Potma, et al. 2001[ii]). The flooded carbonate platform of Cooking Lake provided structural highs and a favorable environment for the extensive reefal buildups of the Leduc Formation. The BD encompasses the Bashaw reef complex, which extends southeast from near Camrose and terminates near Crossfield at the edge of the E3 permit area. The Meadowbrook-Rimbey Leduc reef complex is west of the BD. The Duvernay and

Ireton basinal shales and carbonate muds, which conformably encase and overlay the Leduc buildups, create seals for the hydrocarbon pools and the Leduc brine resource. The Leduc limestone deposits are partially to completely replaced by dolomite, a process that enhanced the porosity and permeability of the reservoir. Current data suggests that Cooking Lake remains predominantly limestone. The main oil, gas, and lithium-brine mineralization accumulations in E3's permit area occur in dolomitized reefs of Devonian age at true vertical depths greater than 1,400 meters (m) in the subsurface.

In the previous Clearwater and Exshaw resource estimates, two hydrostratigraphic units were identified: the reef margin and reef interior/lagoon. Further geological work has identified three lithostratigraphic facies (lithofacies) that were defined for the resource: (1) high energy Leduc reef flat; (2) mixed energy Leduc reef flat to open lagoon; and (3) lower energy Leduc lagoonal facies. These facies were identified based on petrophysical logs and core data. Further analysis by E3 has indicated that porosity and permeability within these lithofacies are not significantly variable and can be considered as a single net pay unit, which is also supported by pressure continuity across the BD, for the inferred resource estimate.

1.3 Resource Estimate

The inferred resource estimate was developed in stages:

- Data compilation and review of previous reporting
- Core descriptions and reservoir depositional framework/lithofacies analysis
- Updated geological mapping, and reservoir volume calculation
- Collection of brine samples
- Evaluation of reservoir properties/petrophysics
- Statistical analysis of key parameters for inferred resource estimate

The mineral resource estimate for the BD is 4,398,000 tonnes of lithium (see Section 14.10 Inferred Resource Estimate), which equates to 23,400,000 tonnes of lithium carbonate equivalent (LCE)[iii]. This resource estimate is classified as inferred due to the geological evidence being sufficient to imply but not verify geological, grade or quality continuity. Inferred mineral resource estimates can be upgraded to indicated and measured mineral resource with continued exploration. At that time, modifying factors can be applied to indicated and measures mineral resources, enabling them to be categorized as mineral reserves. E3 is completing additional characterization and sampling work in order to support upgrading a portion of the resource to indicated and measured in the near future (see Section 26: Recommendations).

2 Introduction

Throughout this report, E3 utilizes reservoir engineering terminology rather than hydrogeological terminology per past reports. This change is aligned with the anticipated recovery method via existing oilfield technologies (wells, pumps, and pipelines) to extract the lithium-rich brine[iv] from the reservoir and supply it to the direct lithium extraction (DLE) technology. A summary of key terminology is provided in Table 1.

Table 1: Reservoir Engineering versus Hydrogeology Terminology

<table>
<tr><th>Reservoir Term</th><th colspan="2">Equivalent Hydrogeological Term</th></tr>
<tr><td>Reservoir/Net Pay</td><td>Aquifer</td><td rowspan="2">Hydrostratigraphic Units</td></tr>
<tr><td>Seal</td><td>Aquitard</td></tr>
<tr><td>Recoverable Volume</td><td colspan="2">Specific Yield</td></tr>
<tr><td>Total System Compressibility Product</td><td colspan="2">Specific Storage</td></tr>
<tr><td>Irreducible Connate Water</td><td colspan="2">Bound water</td></tr>
</table>

E3 has also adapted the standard oilfield approach for evaluating data distribution and variance which involves calculating "P10," "P50," and "P90" values. These metrics represent the 10^{th}, 50^{th}, and 90^{th} percentile values in a given data distribution. It is important to note that the 50^{th} percentile value (P50) represents a median and is not a mean value but these terms are equal for normal data distributions. Average (mean) values are still presented in some sections of the report where appropriate and are described as such.

2.1 Terms of Reference

E3 retained Alex Haluszka, P.Geo., and Daron Abbey, P.Geo., of Matrix Solutions Inc. as QPs supervising and authoring the work for all sections of the resource estimate except for Section 13: Mineral Processing and Metallurgical Testing for the BD Project in conformity to NI 43-101 standards. Peter Ehren, AUSIMM, of Process and Environmental Consultancy was retained as the QP for Section 13 and portions of Section 25 and 26. The report was prepared by E3 under the supervision of the QPs and is to be used by E3 for the purpose of supporting commercial project evaluation and/or financing. E3 prepared the information on the legal description and mineral rights in 4.2 Property Description and 4.3 Property Royalties.

2.2 Sources of Data

The report is based upon information and data collected, compiled, and validated by E3 and reviewed by the QPs. Mineral rights and land ownership information was provided by E3. Information contained within the report was derived from the following:

- E3-supplied exploration maps, logs, laboratory analyses, third-party reports, and field test data
- Original bench tests on collected brine samples
- Oil and gas data compiled by the Government of Alberta
- Published literature (see 27 References)

Sources of information are listed in 27 References and are acknowledged where referenced in the report text.

2.3 Site Visit

A site visit during field sampling was performed by Alex Haluszka, P.Geo., of Matrix Solutions Inc. on April 28th, 2022. See 12 Data Verification of this report for a description of the site visit.

A site visit was not required by Alex Haluszka, P.Geo., or Daron Abbey, P.Geo., to validate the geoscience data utilized in the report as the data was not sourced by E3 and was instead sourced from the Alberta Energy Regulator database, collected from decades of oilfield development by various operators. Sampling data utilized in this report was addressed in the site visit by Alex Haluszka, P.Geo. (above).

A site visit was not required by Peter Ehren, AUSIMM, to validate the Section 13 data as the review was completed remotely.

3 Reliance on Other Experts

This report relies on analysis and results from petrophysical modeling by Stirling Consulting Petrophysics, DST analysis by Melange Geoscience, and Drivet Geological Consulting performed core logging/facies descriptions with E3 staff (Joanie Kennedy, P.Geo.). Barry Smee (Smee and Associates) provided the certificate and analysis for the certified reference material (CRM). Darren Kondrat (Rockyview Geoservices) provided seismic interpretation. The QP's reviewed third-party information to confirm that it was completed by qualified experts and properly authenticated.

4 Property Description and Location

4.1 Location

E3's BD Project is located in south-central Alberta between the cities of Edmonton and Calgary (Figure 1). The project overlies the reefal deposits of the Leduc Formation, a hydrocarbon producer and reservoir for brines containing lithium.

4.2 Property Description

E3's BD is 593,115.5 hectares (Ha) and contains 3 Sub-Project areas: Clearwater, Exshaw, and Drumheller (Figure 1). The BD consists of 45 Metallic and Industrial Mineral Permits that overlie the Leduc Formation in Southern Alberta (Figure 2) covering 329,002 hectares (Ha). These 45 permits completely or partially intersect the BD boundary, with 327,242 ha falling within the boundary and 1,760 ha falling outside. The claims are interspersed with privately owned (Freehold) land. A list of permits associated with the BD can be found in Appendix A.

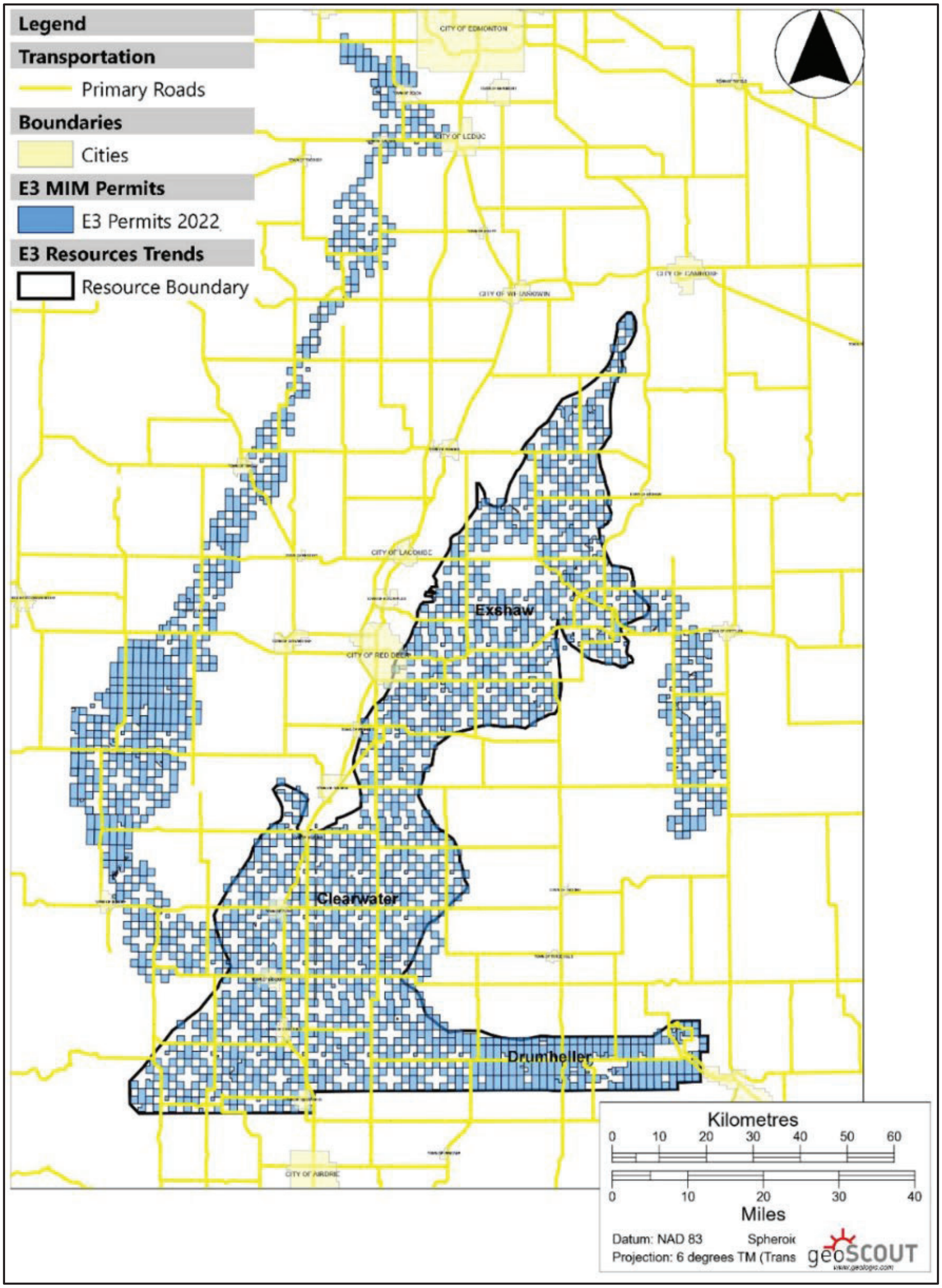
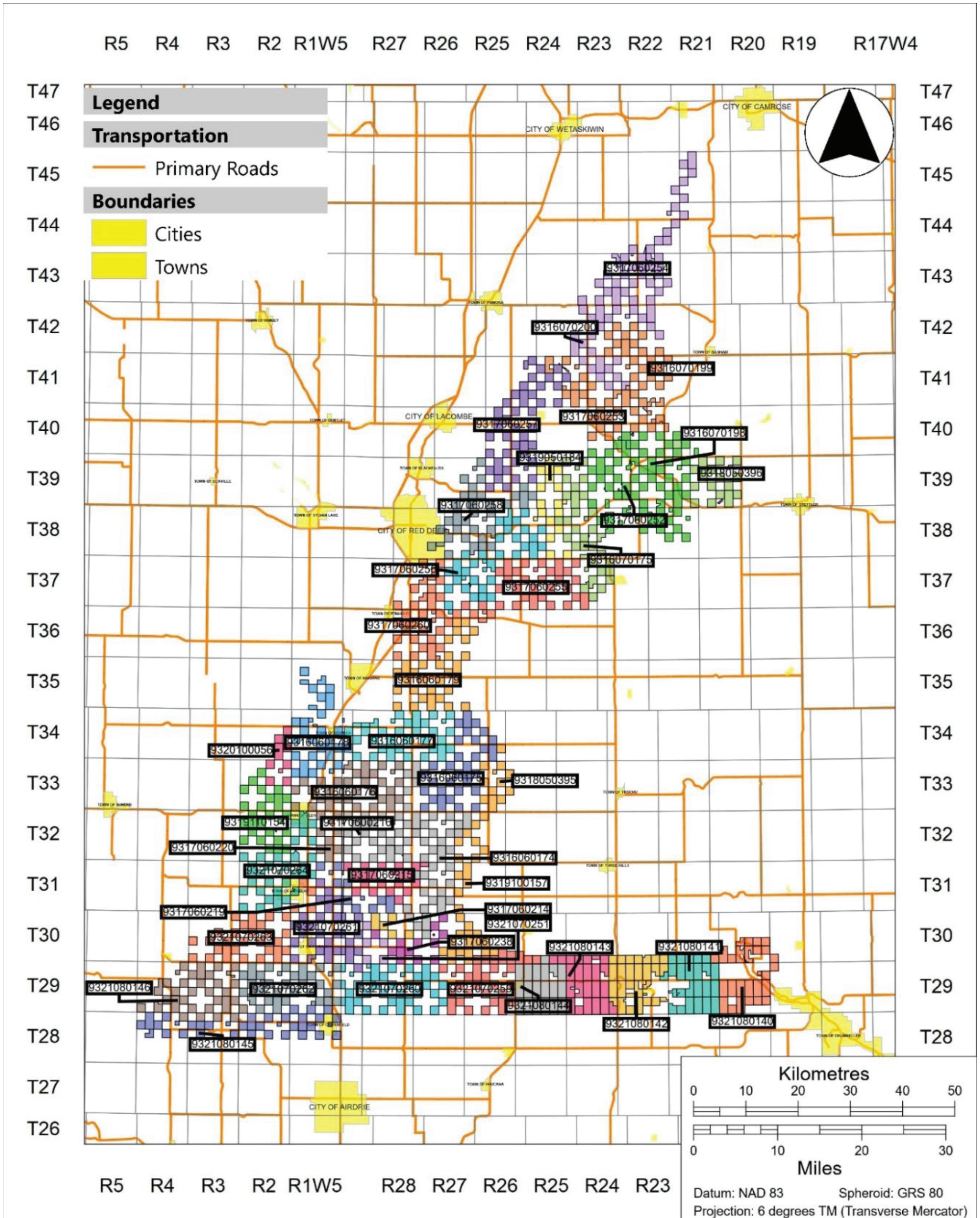


Figure 1: Bashaw District Project Permits (E3, 2022)



geoSCOUT
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Figure 2: Permits Associated with the Bashaw District Project, Alberta, Canada (E3, 2022)

Alberta Metallic and Industrial Mineral Permits grant the explorer the exclusive right to explore for metallic and industrial minerals for seven consecutive two-year terms (total of fourteen years), subject to traditional biannual assessment work on Crown Land. Work requirements for maintenance of permits in good standing are CAD 5.00/ha for the first two-year term, CAD 10.00/ha for each of the second and third terms, and CAD 15.00/ha for each the fourth, fifth, sixth and seventh terms. The 70 MIM permits have a total 2-year in-ground expenditure commitment of CAD 3,468,685 (Appendix A).

The statutes also provide for conversion of Permits to Metallic Minerals Leases once a mineral deposit has been identified. Leases are granted for a renewable term of 15 years and require annual payments of CAD 3.50/ha for rent to maintain them in good standing. There are no work requirements for the maintenance of leases and they confer rights to minerals. Complete terms and conditions for mineral exploration permitting and work can be found in the Alberta Mines and Minerals Act and Regulations (Metallic and Industrial Minerals Tenure Regulation 145/2005, Metallic and Industrial Minerals Exploration Regulation 213/98). These and other acts and regulations, with respect to mineral exploration and mining, can be found in the Laws Online section of the Government of Alberta Queen's Printer website[v].

The mineral permits are interspersed with privately owned (Freehold) land, where the surface and/or minerals rights are owned by private individuals and/or companies and not the crown. The Freehold lands do not pose an obstacle to brine assay and mineral processing test work within the mineral permits owned by E3, as E3 can take assays and perform testing over areas that they own the permits and extrapolate the data to cover the areas that do not include E3 permits. The reservoir itself is not confined to the E3 permits but spans the whole BD. E3 has recently entered into a partnership with Imperial Oil with the option to purchase a number of the freehold permits in the area to fill in some gaps within permit area; however, it is important to note that current regulations do not require ownership of offsetting permits to exploit the entire resource area. The inferred resource volume in this report includes all lands within the BD outline, both Crown and Freehold.

Work is currently underway to establish a regulatory framework for brine hosted minerals under Bill 82 (passed in December 2021). The Alberta Energy Regulator (AER) and Alberta Energy are currently working to establish directives under this bill and the pathway to a new framework for developing Lithium in Alberta is well underway, with finalized guidance expected to be established by early 2023.

4.3 Property Royalties

On September 24, 2020, E3 signed a Royalty Agreement pursuant to which it has agreed to pay to the royalty owner a perpetual production royalty equal to 2.25% (the "Royalty") of the gross proceeds from all products that are mined or extracted from eight specific Clearwater MIM permits.

E3 has the option, at any time before September 30, 2022, to purchase all or a portion of the royalty at a price of:

- CAD$800,000 for the entire 2.25% of the Royalty, or
- CAD$100,000 for each 0.25% of the Royalty, provided that the maximum amount to purchase the entire 2.25% of the Royalty will be CAD$800,000.

The permit numbers are 9316060174, 9316060175, 9316060176, 9316060177, 9316060178, 9316060179, 9320100056 and 9319110154.

4.4 Environmental Issues

At the current stage of the project, there are no known environmental liabilities to E3 over the BD based on the information provided by E3.

5 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

5.1 Accessibility

The BD is readily accessible by air and ground transportation (Figure 3). The City of Red Deer (population of 100,844) is located at the junction of Alberta Provincial Highway 2 ("Hwy 2") and Highway 11; Hwy 2 is the main corridor between Edmonton and Calgary and runs North-South directly through the Clearwater Property. There are international airports in Calgary (YYC) and Edmonton (YEG). Red Deer hosts a regional airport (YQF). Major and secondary provincial highways, and all-weather roads developed to support oil/gas infrastructure, occur throughout the permit areas. Further access to the properties is provided by secondary one- or two-lane all-weather roads, and numerous all weather and dry weather gravel roads. The resource area can be accessed year-round, ensuring mineral test work and extraction is not limited to certain months of the year. Two rail lines (Canadian Pacific Railway and the Canadian National Railway) are present throughout the area and connect to the major centers of Edmonton and Calgary, which occur north and south of the resource area, and then to all North America.

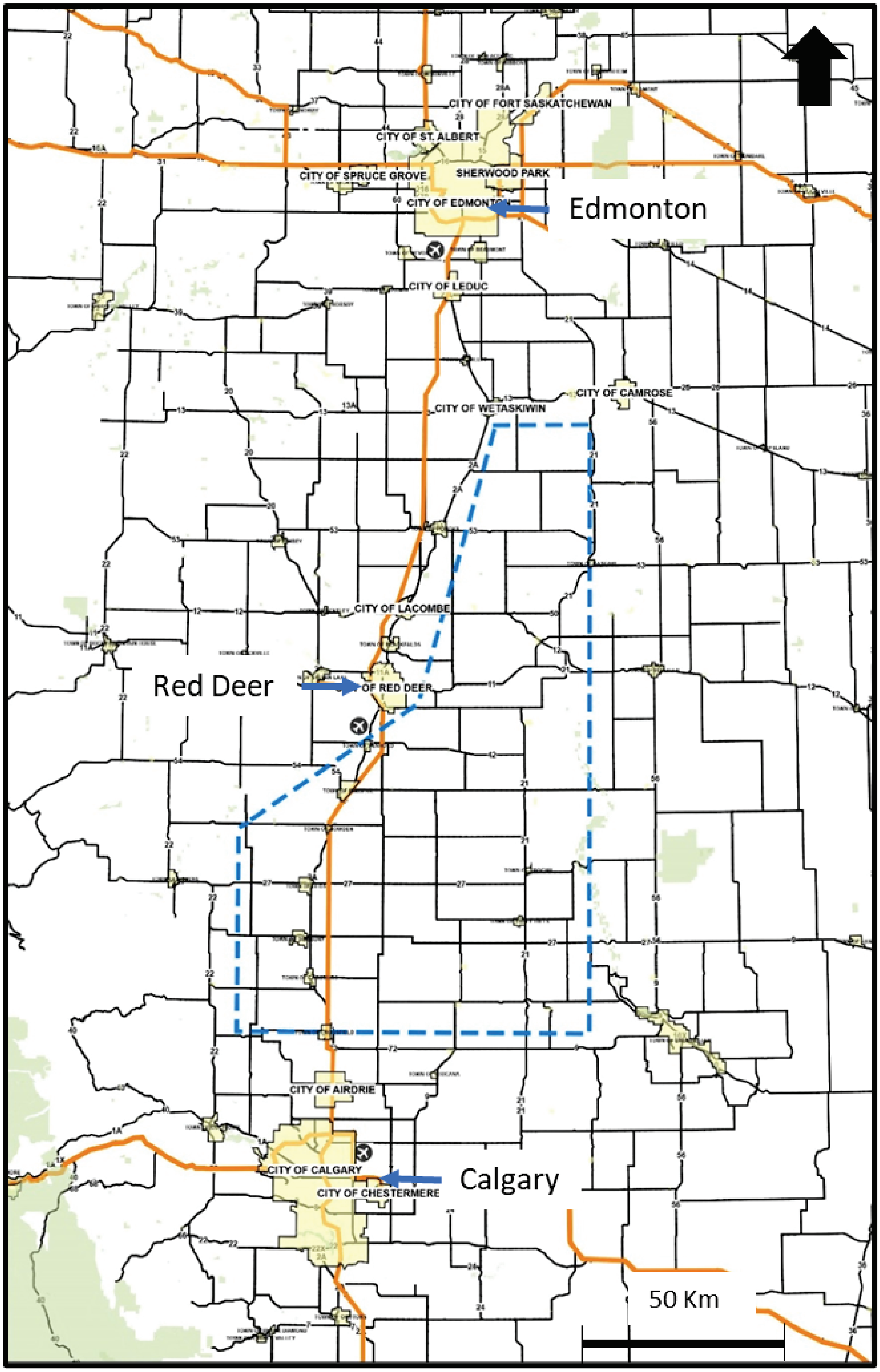

Figure 3: Infrastructure Access to Bashaw District[vi]

5.2 Climate

Calgary, Alberta has a humid continental climate with severe winters, no dry season, warm summers and strong seasonality (Köppen-Geiger classification: Dfb). During summer, average daily high temperatures 23.2 (73.8 °F) and average daily low temperatures are 8.4°C (47.1°F). Winter temperatures have average daily highs of -2.1°C (28.2°F) during the day and average daily lows of -13.3°C (8.1°F) generally shortly after sunrise. Total annual precipitation averages 395 mm (15.6 inches). A summary of Calgary climate data by month is shown in Figure 4. A 10-year summary of high-low-mean air temperature and mean precipitation for township 35, range 25 W4M, the center of the BD, is shown in Figure 5. As this is a reservoir that will be produced using DLE technology to extract lithium from brine, there are no climate related limitations to resource extraction, unlike the situation for salar-type deposits.

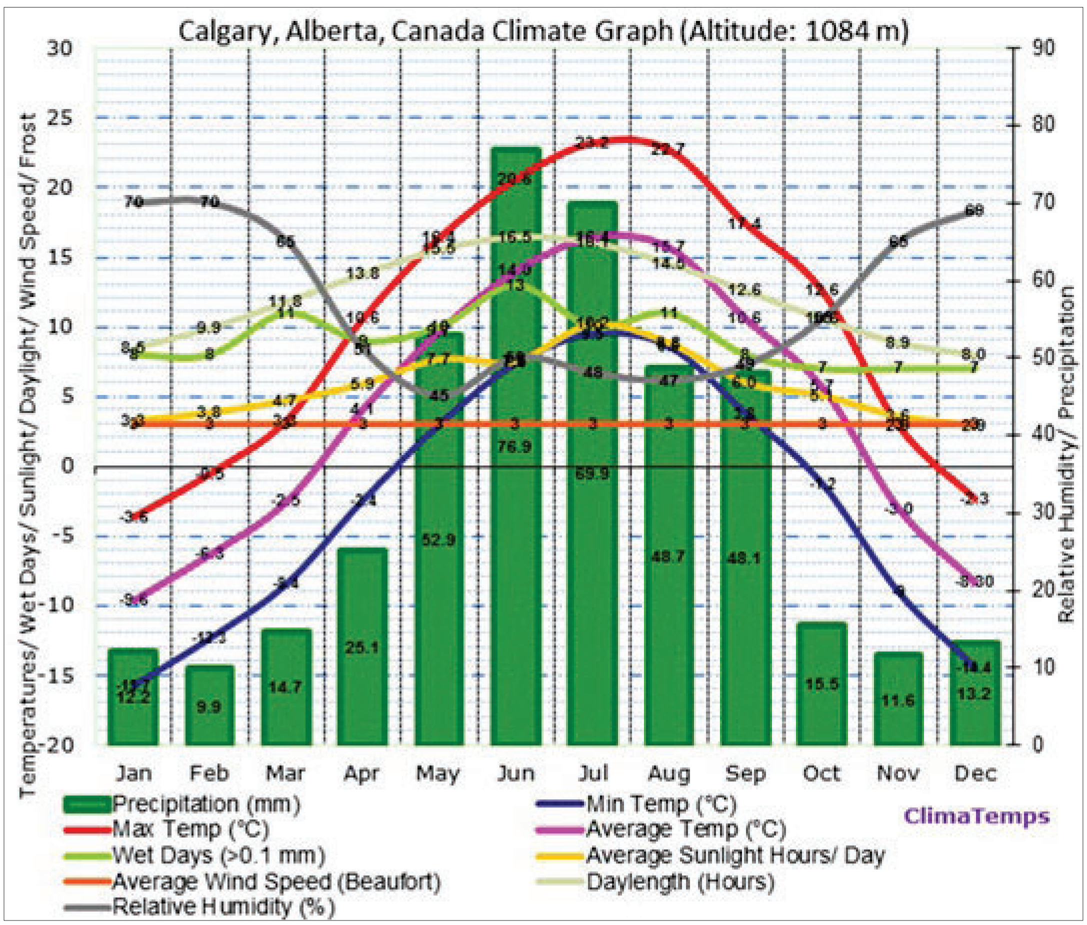

Figure 4: Summary of Monthly 2021 Climate Data for Calgary, Alberta[vii]

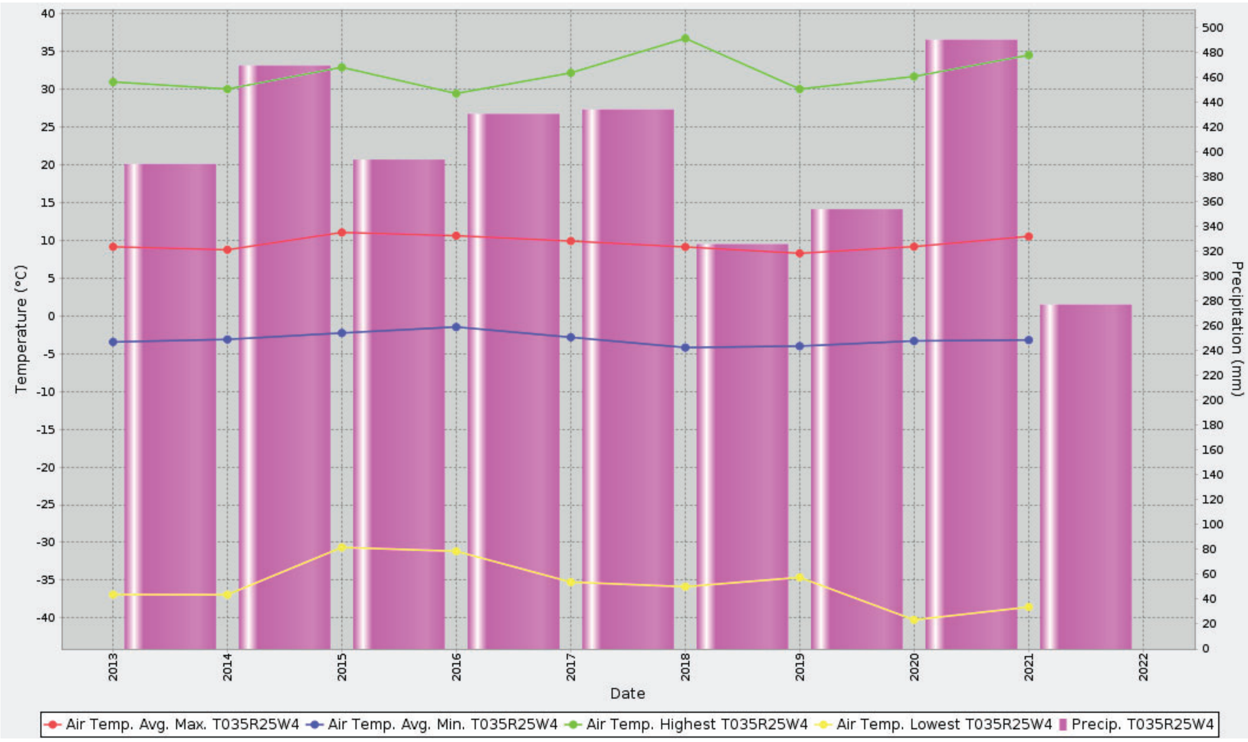

Figure 5: 10-year Temperature and Precipitation Ranges for T35N R25W (ACIS, 2022)

5.3 Local Resources

Accommodation, food, fuel, and supplies are readily obtained in the City of Red Deer and the towns of Olds, Sylvan Lake and Innisfail. Internet and phone coverage are available throughout the permit areas. Many trained workers live in the area and work in the oil and gas sector. These workers have the skills and expertise required to develop lithium from their related experience in oil and gas. Service companies, including those providing wireline services, testing, maintenance work, and drilling, all operate locally and will be capable of meeting the company's needs relating to drilling, production and construction.

5.4 Infrastructure

There is a significant amount of infrastructure in the area to support over 70 years of oil and gas development operations. Oil resources are typically produced in the area using pump jacks as the form of artificial lift. Hydrocarbons and water produced from the wells are delivered to separation facilities (either on site or at a satellite location) via underground pipelines. After separation, the various fluids and phases enter a network of pipelines designed for the transportation of gas, oil and water to specific destinations for upgrading, processing, to market, or for disposal. Pipelines specific to water are designed mainly to transport wastewater for subsurface disposal and/or injection purposes. These water pipeline networks are specifically located in areas developed for oil and gas.

Main highways are maintained and upgraded by municipal and provincial governments, and secondary gravel roads are well maintained. Grid electrical distribution and transmission infrastructure is available throughout the resource area and many of the locations sampled for this resource have power accessible directly at the lease. There is adequate land in the area for process plants and related future infrastructure.

5.5 Physiography

The project area lies within the Southern Alberta uplands and Western Alberta plains. The dominant landform is undulating glacial till plains, with about 30 percent as hummocky, rolling, and undulating uplands. The average elevation is 750 masl but ranges from 500 masl near the Alberta–Saskatchewan border to 1,250 masl near Calgary and 700 masl near Edmonton. The Red Deer River is the dominant topographic feature; it flows south-southeast from middle of the Exshaw property to Drumheller in the in the southeast of the permit area. The region is dominantly farmland with numerous creeks and wetlands occurring throughout the property. Clusters of forested terrain are dominated by aspen, balsam poplar, lodge pole pine and white spruce. Vegetation in the wetland areas is characterized by black spruce, tamarack and mosses. The area is generally composed of farmland and prairie grasses.

6 History

In the BD, there have been no known drilling exploration programs to target elevated concentrations of lithium in brine. Historical testing of lithium in water, prior to E3, was conducted as part of routine chemistry analysis by oil and gas operators in the area. This data was compiled in a comprehensive overview of the mineral potential of formation waters from across Alberta by the Government of Alberta (Hitchon et al., 1993[viii], 1995[ix]). Subsequent collection of brine water from actively producing oil and gas wells was conducted by the AGS by Eccles and Jean (2010)[x] and later by Huff (2016)[xi] and was analyzed for lithium. A summary of the petroleum exploration and production and the lithium brine related geological data sourced from the petroleum industry are summarized below.

6.1 Oil and Gas Drilling History

The Leduc #1 well, drilled by Imperial Oil, was one of the first oil wells in Alberta drilled into Late Devonian strata in 1947. Some of the highest production rates and volumes historically come from Devonian aged formations, this includes the Beaverhill Lake Group and the Swan Hills, Leduc, Nisku, and Wabuman formations. The Leduc reefs were a prevalent target for hydrocarbons from the mid to late century due to their size and very high porosity and permeability. Currently there is resurgence in drilling activity in the Devonian with the improvement of technology allowing for the development of lower permeability unconventional oil reservoirs such as the Duvernay Formation. A significant volume of hydrocarbons has been produced from the Devonian as well as from some of the younger zones above in the Mississippian and Cretaceous. It is the Leduc Formation that is of significance with respect to this assessment for mineral brine potential in the BD.

The BD contains several Leduc oil pools of note (e.g., Clive, Bashaw, Nevis, Three Hills Creek, Wimborne, Wood River, Garrington, Innisfail, Lone Pine Creek, Joffre, Swalwell, Lochend, Penhold, Duhamel and Malmo; Figure 6). A total of 13,729 wells have been drilled within the BD dating back to 1947, targeting the former mentioned pools and as exploratory wells delineating hydrocarbon potential. Of these wells, 2,398 have intercepted the Leduc formation. The Innisfail oil field along the western edge of the BD, was discovered in 1956 by Canadian Oils Ltd., and the Wimborne field along the eastern edge, was discovered by Seaboard Oil Company in 1954. The Duhamel oil field on the northern edge, was discovered in 1950 by Socony Vacuum Exploration Co., and the Swalwell field and the town of Crossfield define the southern edge of the resources area. The Swalwell was discovered in 1953 by Canadian Delhi Oil LTD. A total of 1,457 wells are classified as having produced, currently producing or injecting into the Leduc Formation.

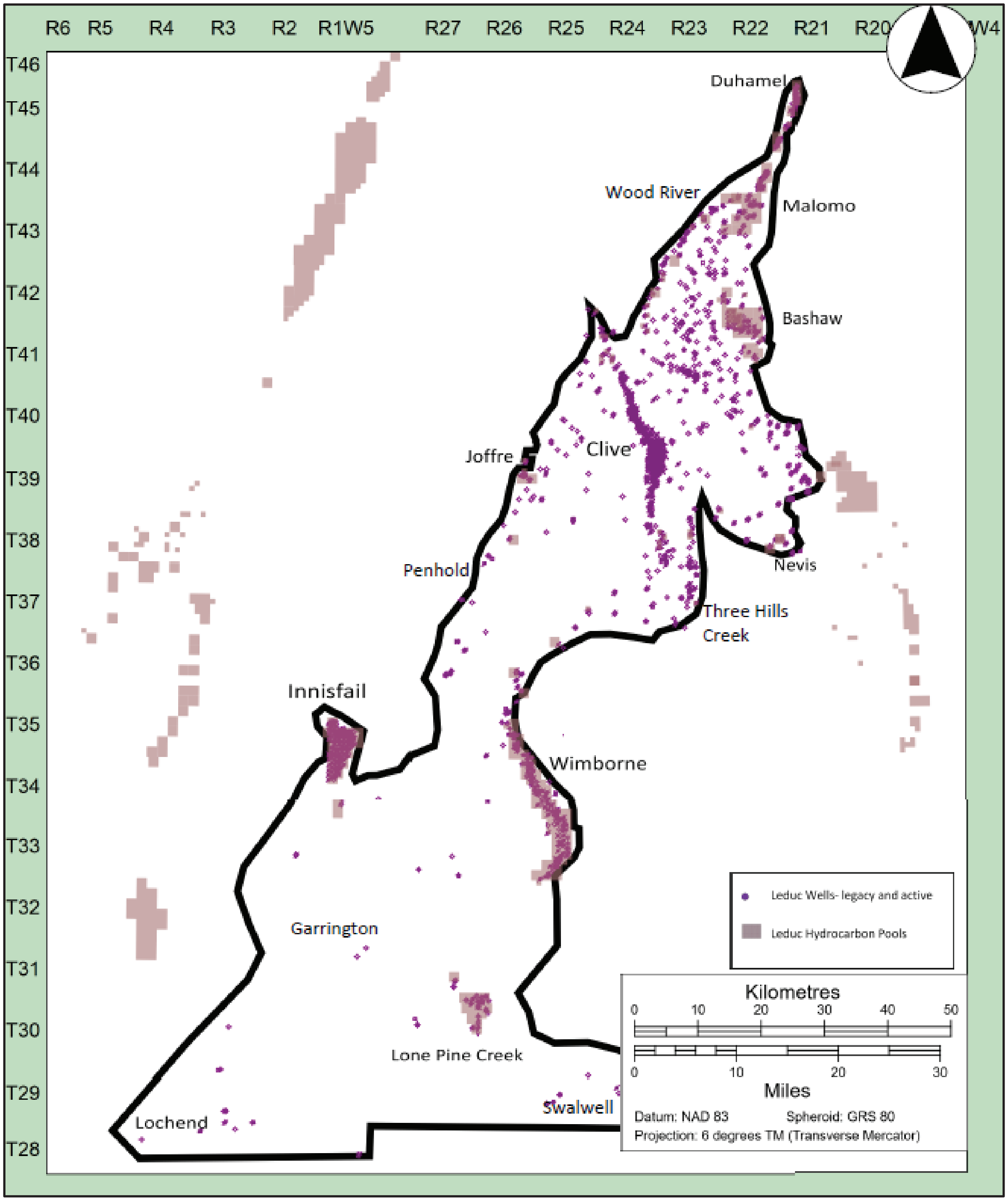

Figure 6: Location of Leduc Wells and Pools in the Bashaw District

6.2 Core Data and Historical Well Logs

Open hole wireline logging technology is an effective method for evaluating reservoir properties. Wireline logs (also called well logs) are a standard tool employed by the petroleum industry when drilling for and developing oil and gas pools. They provide physics-derived information about rock properties and fluid dynamics in the subsurface. This information is used to interpret the depths, lithology and fluid composition of subsurface rock formations.

A rich database of well log information exists in the area due to oil and gas development dating back to the 1950's, and this well log data can be leveraged for the purposes of brine-hosted lithium exploration. Wireline tool technology has advanced considerably over the last few decades, and data resolution and quality tended to improve significantly after the 1980's. Due to the variety of well vintage and depth, a wide range of type and quality of well log data exists.

The well logs available in the area are as follows:

- Gamma Ray Log: measures the radioactivity of rocks and helps determine lithology[xii]
- Induction Log: measures formation electrical conductivity, and helps determine lithology and fluid composition[xiii]
- Density and Neutron logs: measures hydrogen concentration and electron density[xiv], and helps determine lithology and pore space in the rock
- Photoelectric logs: measures atomic weight of the rocks, and helps determine lithology

Core analysis is also routinely completed by the oil and gas industry. Standard oil and gas core analysis includes measurements of porosity and permeability. Various approaches can be taken to make these measurements (API 1998[xv]). Typically, the porosity is determined by weighing the sample, then cleaning the sample and completely flushing all the liquid out of it. Sample is then dried in an oven and weighed again after. Then either air or helium is used to measure the pore volume and porosity is calculated based on the amount of total pore volume in the rock sample. Permeability is also typically measured using air and is measured in 2 directions. One is the direction that has the maximum permeability (Kmax) and the second is measured at 90 degrees to the maximum. Using core analysis and tying the measured analysis against the measurements obtained in the logs helps to validate whether the log data is reasonable. Publicly available core analysis data is available for 329 wells within the Bashaw Resource District. Distribution of the core analysis data is limited to existing hydrocarbon production wells that were drilled over the past 70 years and is mainly limited to the upper portion of the Leduc reservoir where hydrocarbons have accumulated.

6.3 Oil and Gas Industry Drill Stem Tests

A Drill Stem Test (DST) is an oilfield test that isolates a particular range of depths in a wellbore to measure the reservoir pressure, permeability (ability to flow fluid) and fluid types present at specified depths. DSTs have been run in the vicinity of the resource areas since the 1950's.

6.4 Existing Production, Injection and Disposal

Historical production volumes for the Cooking Lake and Leduc formations were exported from GeoLOGIC's GeoSCOUT software (GeoLOGIC Systems 2022). The reported production was queried for the BD and a buffer area around the BD, to include production from outside of the resource area that may directly affect pressures in the BD.

The BD historical production query included Townships 28 to 45 and Ranges 4W5M to 20W4M. A total of 593 production wells and 57 injection wells in the BD and buffer area had at least one day of reported rates from the Leduc formation, with no recorded data from the Cooking Lake. Within the BD, most of the liquid production is from the Innisfail, Wimborne, and Clive fields while most of the gas production is from the Nevis field (Figure 7). Most of the liquid injection is into the Wimborne, Innisfail, and Clive fields while most of the gas injection is in the Joffre field (Figure 8). The first year of reported production was 1961 and the last month of production data summarized below is April 2022 (Figure 9; Table 2).

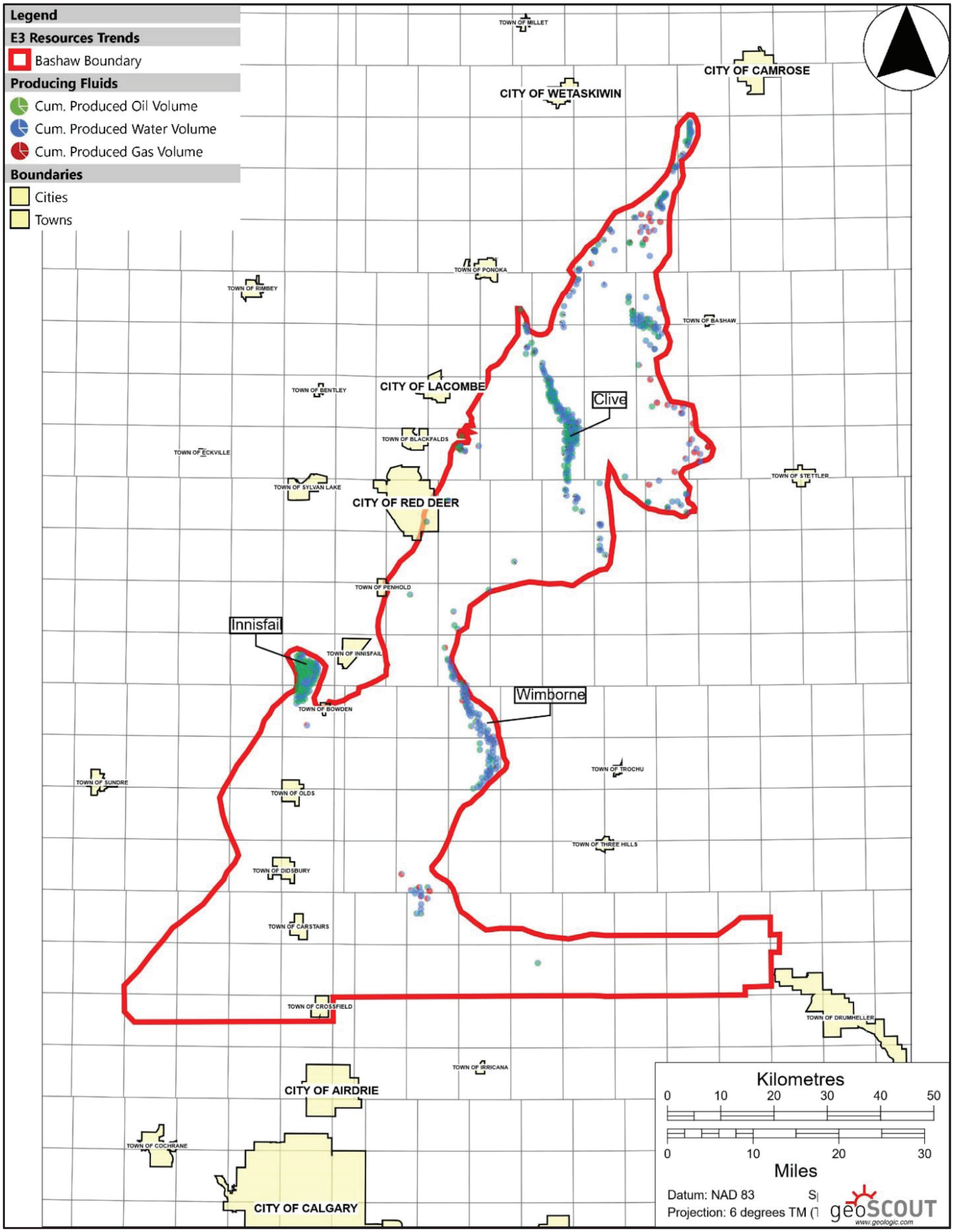

Figure 7: Production by Fluid Type from the Leduc Formation in the Bashaw District

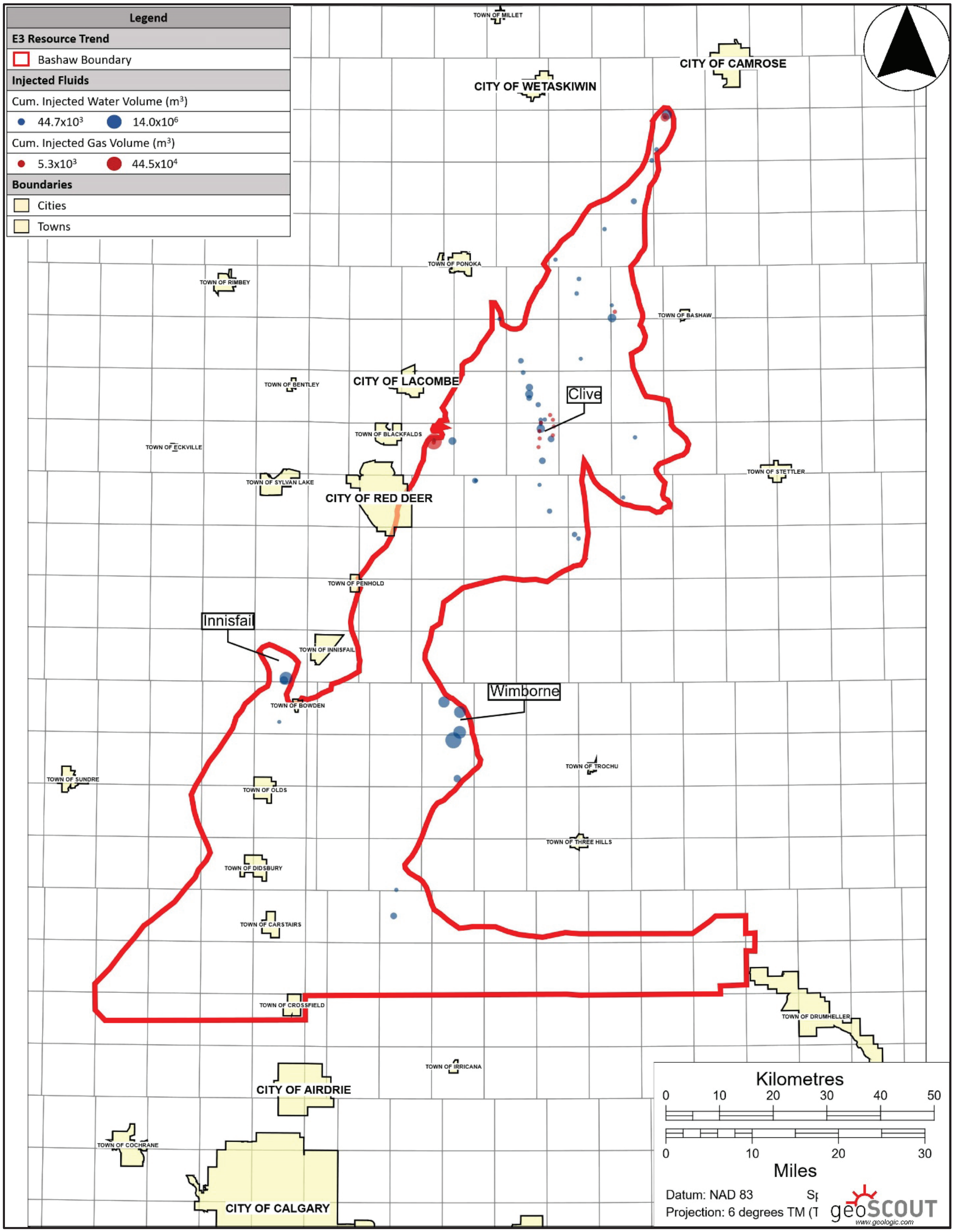

Figure 8: Cumulative Injection into the Leduc Formation in the Bashaw District

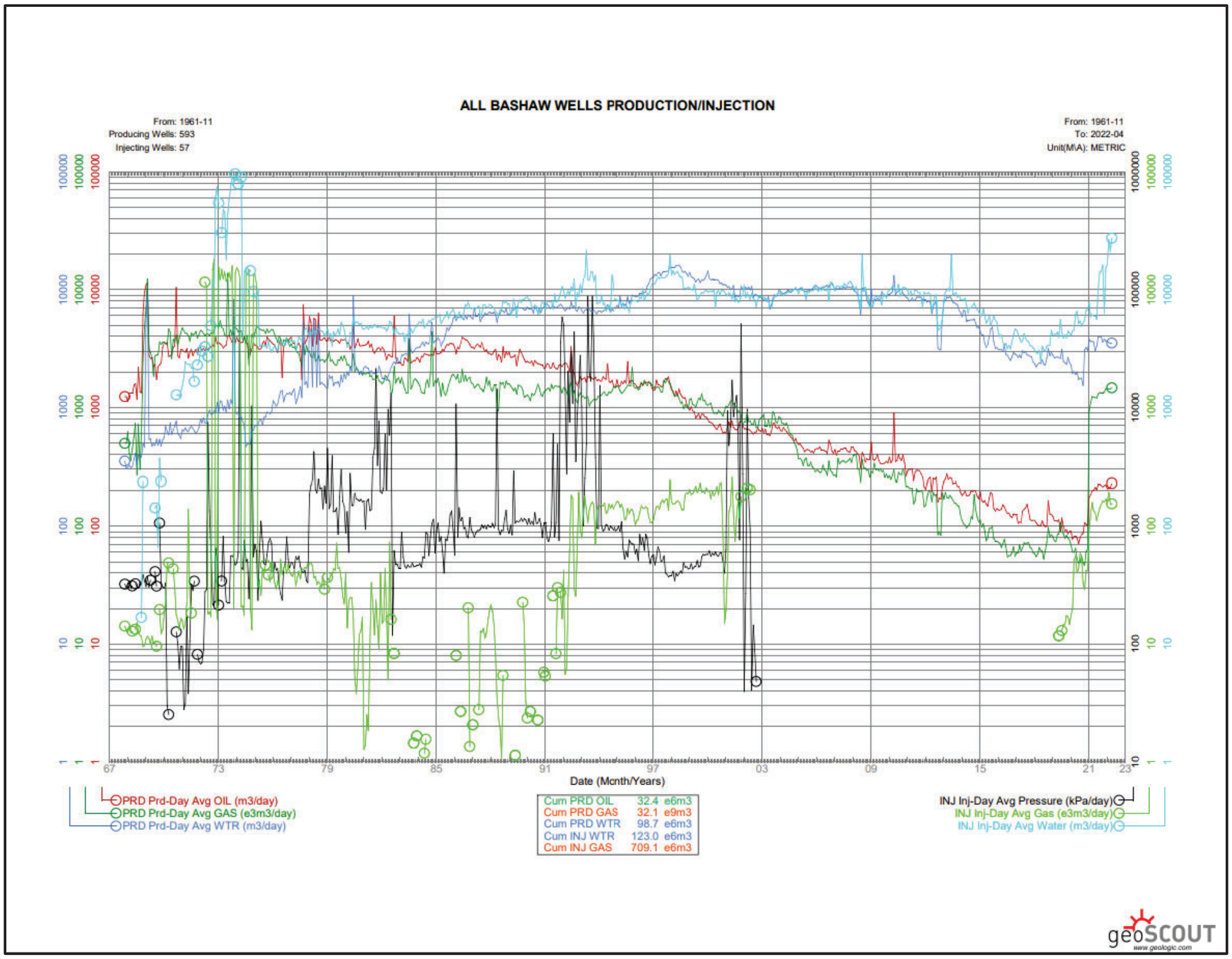

Figure 9: Production/Injection History of the Leduc Reservoir in the Bashaw District

Table 2: Cumulative Volumes in the Bashaw District

	Production [m³]	Injection [m³]
Gas	32,051,762,000	709,104,000
Condensate	179,736	-
Oil	32,411,042	-
Water	98,736,006	122,975,340

Historical volumes of gas and oil produced peaked in the 1970s and has decreased considerably since then as hydrocarbons have been depleted. By contrast, water production as a by-product increased considerably since the 1970s and plateaued in the mid-1990's and remained steady for ~ 25 years. Production plots broken down by pool can be found in Appendix B. It is important to note that the Leduc formation has sustained production and injection rates of ~1,000 m3/d for ~15 years. Peak rates reported across the BD are 2,618 m3/d for injection (100/06-02-034-26W4/00) and 2,569 m3/d for production (100/13-05-041-24W4/00). Using hydrocarbon production and injection data to show producibility/injectivity of the Leduc reservoir helps to validate that the Leduc is a reasonable prospect for eventual economic extraction of lithium brine using production wells. The long and sustained production history from the hydrocarbon window with a considerable amount of accompanying water shows that water can in fact be pumped to surface for use with DLE technology and re-injected back to where it was produced from.

6.5 Historical Lithium Data

This section was modified from Eccles (2017)[xvi] technical report prepared for E3.

The first comprehensive overview of the mineral potential of formation waters from across Alberta was compiled by the Government of Alberta (Hitchon et al., 1993[vii], 1995[viii]). 'Formation water' is used as a generic term to describe all water that naturally occurs in pores of a rock. Formation water is currently being produced as a waste by-product associated with petroleum and natural gas from existing wells. Pressure loss in the reservoir is being mitigated through re-injection of fluid from produced wells and possibly has included waters from other pools and other zones, as well as fresh water.

Hitchon et al. (1993[vii], 1995[viii]) compiled nearly 130,000 analyses of formation water from various stratigraphic ages across Alberta. The data was derived from numerous sources including Alberta Energy Regulator ("AER") submissions for drilling conducted by the petroleum industry and various Government of Alberta reports (e.g., Hitchon et al., 1971[xvii]; 1989[xviii]; Connolly et al., 1990 a,b and unpublished analytical data collected by the Government of Alberta[xix]) (Figure 10).

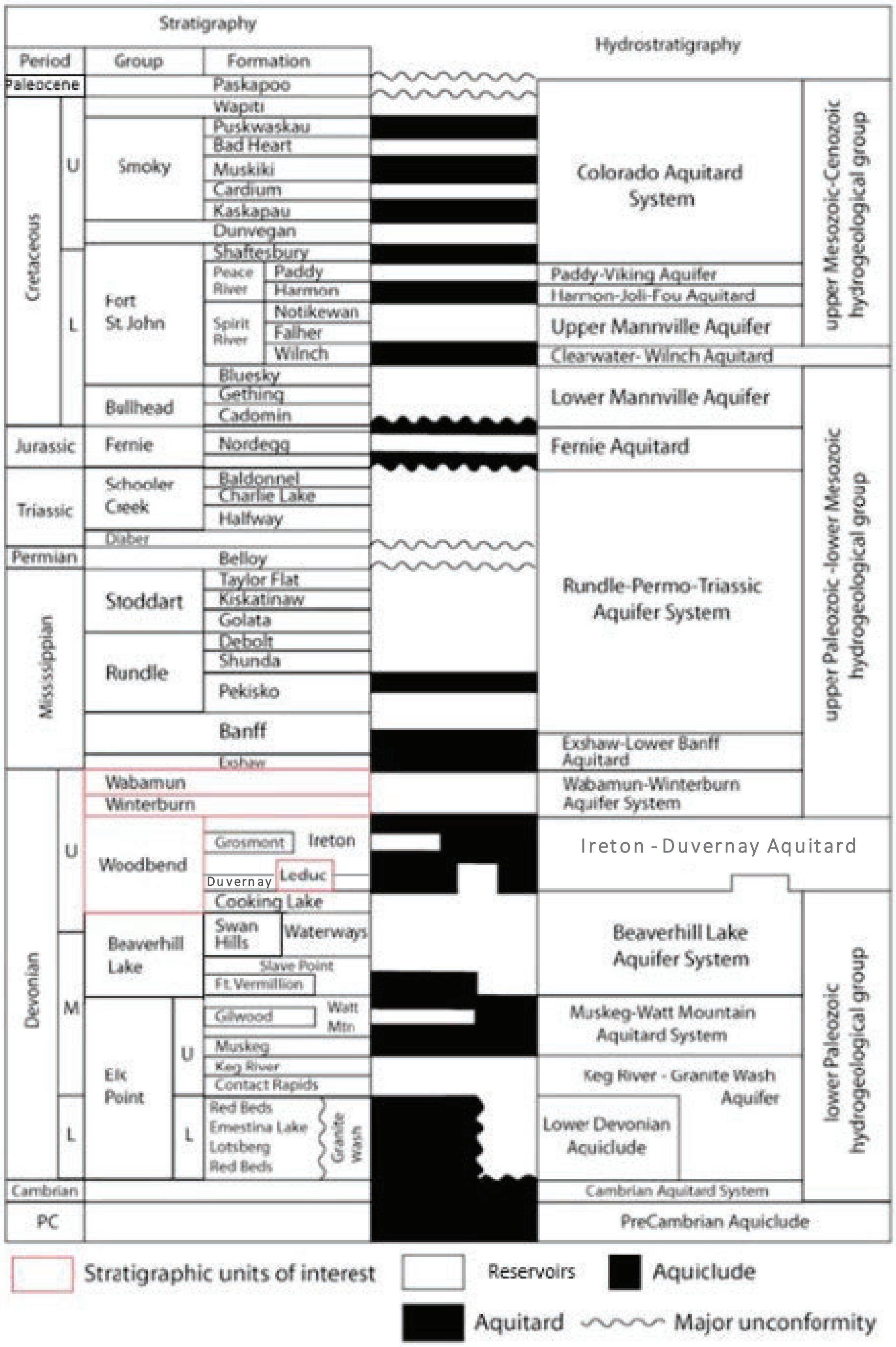

Figure 10: Regional Stratigraphy and Hydrostratigraphy of Alberta (Adapted from Hitchon et al., 1990[xx], and Bachu 1999[xxi]

The method for defining geographic areas with elements of possible economic interest in formation water was defined by Hitchon (1984)[xxii] and Hitchon et al. (1995)[xxiii]. For each element studied (e.g., calcium, magnesium, potassium, lithium, bromine and iodine), a 'detailed exploration threshold value' was determined by studying the concentrations in economically producing fields as defined in Hitchon (1984)[xix] and Hitchon et al. (1995)[xxii]. Additionally, a lower 'regional exploration threshold value' was defined to allow for contouring and extrapolation of data to undrilled areas. For example, the regional exploration threshold value for Li was considered to be 50 ppm and the detailed exploration threshold value was defined as 75 ppm (Hitchon et al., 1995)[xx]. At the provincial scale, Hitchon et al. (1995)[xxii] showed that lithium was analyzed and reported in 708 formation water analyses (out of the 130,000 total analyses examined). Of the 708 analyses: 96 analyses yielded Li concentrations above the 'regional threshold value' (greater than 50 ppm); and 47 analyses yielded Li concentrations above the 'detailed threshold value' of 75 ppm. Significantly, Hitchon et al. (1993[vii], 1995[viii]) showed the highest concentrations of Li in formation water – up to 140 mg/L Li – occurred within Middle to Late Devonian reservoirs associated with the Beaverhill Lake Group (Swan Hills Formation), Woodbend Group (Leduc Formation), Winterburn Group (Nisku Formation) and Wabamun Formation.

More recently, Eccles and Jean (2010)[ix] modelled 1,511 lithium-bearing formation water analyses from throughout Alberta; this compilation supported the previous government author's conclusions that resource brines associated with Devonian strata comprise elevated concentrations of lithium in reef systems throughout Alberta. Of the 1,511 analyses, 19 analyses/wells contained >100 mg/L Li (up to 140 mg/L), all of which were sampled from within the Middle to Late Devonian carbonate complexes.

From this historical reported dataset, 19 samples were taken from the BD, from the Winterburn Group (Nisku Formation) and Woodbend Group (Leduc Formation). The lithium concentrations range from 60 mg/L to 135 mg/L and have a mean of 77 mg/L. E3 was unable to return to these exact locations for resampling because they have since been suspended or abandoned. Therefore, this historical data has not explicitly utilized in E3's resource estimate but has been used to identify the prospect but are not physically utilized in this resource estimate.

7 Geological Setting and Mineralization

7.1 Data and Methods

Data sources to evaluate the geological setting and mineralization were mostly derived from historical, publicly available oil and gas datasets. As discussed in Section 6 above, these data sets are summarized in Table 3 as follows and were evaluated for quality:

Table 3: Summary of Oil and Gas Relevant Data Sources

<table>
<tr><th>Data Type</th><th>QA/QC Criteria</th><th>Data Utilization</th></tr>
<tr><td>Well logs</td><td>Sufficient depth
Legibility sufficient to determine formation tops and porosity within the Leduc</td><td>Geologic mapping (stratigraphic & structural)
Formation thickness (isopach)
Fluid contacts (oil/gas; oil/water)</td></tr>
<tr><td colspan="3">Well logs penetrating through both the Leduc and the Cooking Lake formations were used to determine the top and bottom of the formations and, the lateral extent of the Leduc over top of the Cooking Lake Platform. After formation tops were selected, well logs were then used to determine fluid contacts (oil/gas, oil/water) and reservoir parameters within the Leduc. Neutron-density logs were utilized where available, as they are a more reliable log type. In an effort to leverage all available data, sonic logs were utilized where they were the only logs available.
There are 2398 well logs in the BD which penetrate the Leduc reservoir, and 104 well logs that are drilled to the Cooking Lake platform (or deeper). Within this dataset, there are also 329 wells with core porosity and permeability measurements in the Leduc formation, and 72 wells where E3 did enhanced petrophysical modeling to normalize the porosity curves in the wireline logs and ensure that the data correctly correlates to the core porosity.</td></tr>
<tr><td>Petrophysical analysis [72 wells]</td><td>Complete wireline data set (3 wells with no Density but with Neutron/Sonic; 2 wells with no Resistivity)</td><td>Porosity [total and effective]
Permeability [vertical & horizontal]
Fracture identification
Evaporite identification
Fluid saturations</td></tr>
<tr><td colspan="3">A petrophysical model was generated using 72 Log ASCII Standard (LAS[xxiv]) curves over the Bashaw area. Flow Zone Indicator (FZI) was used to derive permeability (outlined in Section 14) as it can identify hydraulic flow units and correlates well with core permeability results. Effective porosity estimated from petrophysics was modelled using a shale volume approach.</td></tr>
<tr><td>Core data [336 wells]</td><td>Sufficient depth
Sufficient recovery to visibly interpret core
Public core analysis</td><td>Facies characterization (porosity [total]; permeability [vertical & horizontal])
Net to gross ratio
Guide log interpretation in areas without core</td></tr>
<tr><td colspan="3">Core was described and analyzed by E3. Publicly available core analysis was leveraged for connected porosity, which was measured using helium injection and Boyle's Law[xxv].</td></tr>
</table>

<table>
<tr><th>Data Type</th><th>QA/QC Criteria</th><th>Data Utilization</th></tr>
<tr><td>Drill Stem Tests</td><td>• Sufficient depth
• Copies of original DST available
• Liquid fluid inflow
• Minor amounts to no gas production
• Multiple build-ups (2nd Horner Extrapolation to cross-check validity)</td><td>• Reservoir pressure
• Formation permeability [horizontal]</td></tr>
<tr><td colspan="3">Data collected during DSTs are compiled by the Government of Alberta and were accessed through third party software (GeoSCOUT 2021). DST data was reviewed to determine representative Leduc reservoir pressure and permeability in the resource areas, following a quality assurance (QA) program that eliminated suspect or erroneous data.

After completing the QA program, a pressure data set of 33 DSTs within the BD with pressure measurements considered representative of the Leduc reservoir pressure. The resulting data set consisted of 30 pressure measurements in the Leduc Formation and 3 pressure measurements in the Cooking Lake Formation. These measurements were distributed throughout the resource area and were measured between 1957 and 1980. These pressure measurements were used to estimate the current day reservoir pressure and to contribute to the characterization of the hydraulic continuity of the resource brine.</td></tr>
<tr><td>Seismic (6 regional lines ~120 km)</td><td>• Data was of reasonable vintage to be useful for interpretation
• Data was high enough quality/resolution</td><td>• Qualitative porosity indicator
• Validates reservoir thickness over areas that have no wireline logs or other geological data</td></tr>
<tr><td colspan="3">Seismic data is data that is collected by measuring rock properties using physics principles. It is based on the theory of elasticity and tries to deduce elastic properties of materials by measuring their response to seismic waves. Use of seismic can help to measure rock properties (such as the thickness of the reservoir and the structure of the reservoir, and porosity). It is useful as the seismic lines are continuous over areas where there is no well data and can be used to interpret areas where the wireline and drilling data are sparse/not present.</td></tr>
</table>

7.2 Geological Setting

The BD is in the southwestern part of the Western Canada Sedimentary Basin (WCSB). In this area, the Upper Devonian (Frasnian) sediments of the Woodbend Group were deposited in a shallow inland sea. The sea was bounded by the emergent Peace River Arch to the northwest and by the West Alberta Ridge to the southwest, creating a barrier between the sea and the open ancestral Pacific to the west (Potma et al. 2001[ii]). It is here that the flooded carbonate platform of the Cooking Lake provided relative structural highs and a favorable environment for the growth of the prolific reefal buildups of the Leduc Formation.

The BD covers a portion of the Wimborne-Bashaw trend, comprising Townships 28 to 45 and Ranges 21 to 28 West of the 4th Meridian, to Range 5 West of the 5th (Figure 11).

A total of 220 wells in and around the resource areas penetrate the full stratigraphic section of the Leduc reservoir and Cooking Lake seal. 2398 wells penetrate the top of the Leduc reservoir and were not drilled deep enough to intersect the lower Cooking Lake seal. This is typical of wells drilled for the purpose of hydrocarbon production in the Leduc specifically.

The Leduc reef edge is defined as the point at which the Leduc Reef Margin slope is no longer distinguishable (zero-edge). This edge differentiates the high porosity reefal buildups of the Leduc from the surrounding low porosity carbonate muds and shales of the deep-water basin sediments occurring in the Ireton and Duvernay Formations. The zero-edge, the basis for the BD, was defined primarily using well data. In the absence of well data, existing industry-standard Leduc edge interpretations were consulted (Mossop et. al., 1994[xxxii]; GeoScout Devonian Subcrop, 2022[xxvi]). The local and regional geological context was also taken into consideration when making interpretations.

The Leduc sits atop the limestones and dolomites of the regionally extensive Cooking Lake, which is differentiated from the Leduc by the presence of a regional argillaceous (shale) zone. This argillaceous zone is not present in all wells, and in those cases the top of the Cooking Lake was defined based on offsetting wells using relative thicknesses and geological context. Generally, the Cooking Lake has a slightly higher gamma ray response than the Leduc. The base of the Cooking Lake was chosen where the more argillaceous Beaverhill Lake Group became evident.

The Leduc reef built upwards from the Cooking Lake platform and occurs today as a prominent feature in the stratigraphic column. There are numerous Devonian reef complexes across the Western Canadian Sedimentary Basin (WCSB). These reef complexes promoted growth over long periods of time and, in the permit, areas reach thicknesses of 300 m in places. In the BD, the most prominent reef complex is the Bashaw Reef Trend (Schlager, 1989[xxvii]). These reefs are overlain and encased laterally by the shales of the Ireton and Duvernay.

The top of Cooking Lake formation is the base of the Leduc and is considered a lower seal under the reservoir. The permeability of the Cooking Lake Formation was measured in core from two wells. Based on the core plug permeabilities the permeability of the Cooking Lake is in the range of 3 mD (Table 4). Table 4 also presents this permeability value as a hydraulic conductivity value assuming water properties of 1,150 kg/m^3 density and a dynamic viscosity of 4 x 10^{-4} Pa.S.

Table 4: Cooking Lake Permeability and Hydraulic Conductivity

Count of Cooking Lake Wells with Core Plugs	Count of Core Plugs with Permeabilities	Geometric Mean of Average Kmax in Each Well (mD)	Average of Harmonic Mean of Kmax in Each Well (mD)	Representative Permeability (mD)	Representative Hydraulic Conductivity (m/s)
2	46	3	0.13	3	9E-08

Well 100/04-10-033-28W4/00 (starred location on Figure 11), presents a type log suite of the interior lagoonal facies of the Leduc reef (Figure 12). The top and base of the Leduc formation are picked from wireline log suites across the BD. The Ireton formation which overlies the Leduc, is a mudstone to argillaceous dolostone, therefore having a much higher radioactivity than the Leduc, reflected on the higher response in the gamma ray log (+30 API), whereas both the Leduc and Cooking Lake Platform are carbonates with very low radioactivity, and have API's of less than 15. Other logs presented in Figure 12, showcase interpretations of rock properties, specific to the Leduc reservoir. The photoelectric factor log shows the shift close to the base of the Leduc, where limestone- which has a reading of ~5.08 Pe (Schlumberger 1989[xxviii]) is the more dominant lithology. The neutron density, spontaneous potential and resistivity logs, all show fluctuations that are indicative of the porosity and permeabilities across the reservoir, and as well the high saline conductive brine that occupies the pore space.

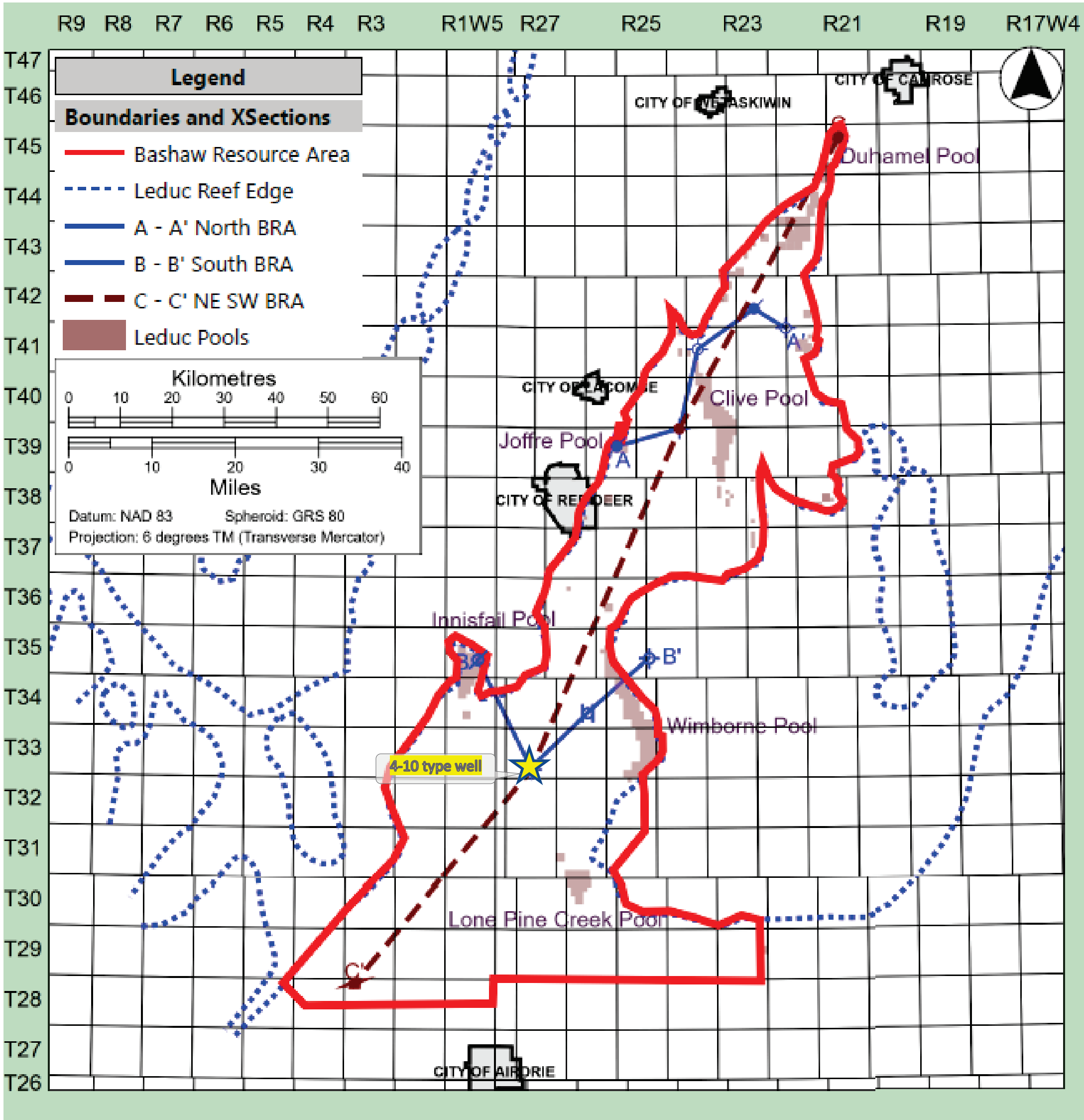

Figure 11: Area Map of Bashaw District and the Regional Leduc Edge (E3, 2022)
Cross Section Reference Lines A-A' (Figure 13), B-B' (Figure 14), and C-C' (Figure 15)

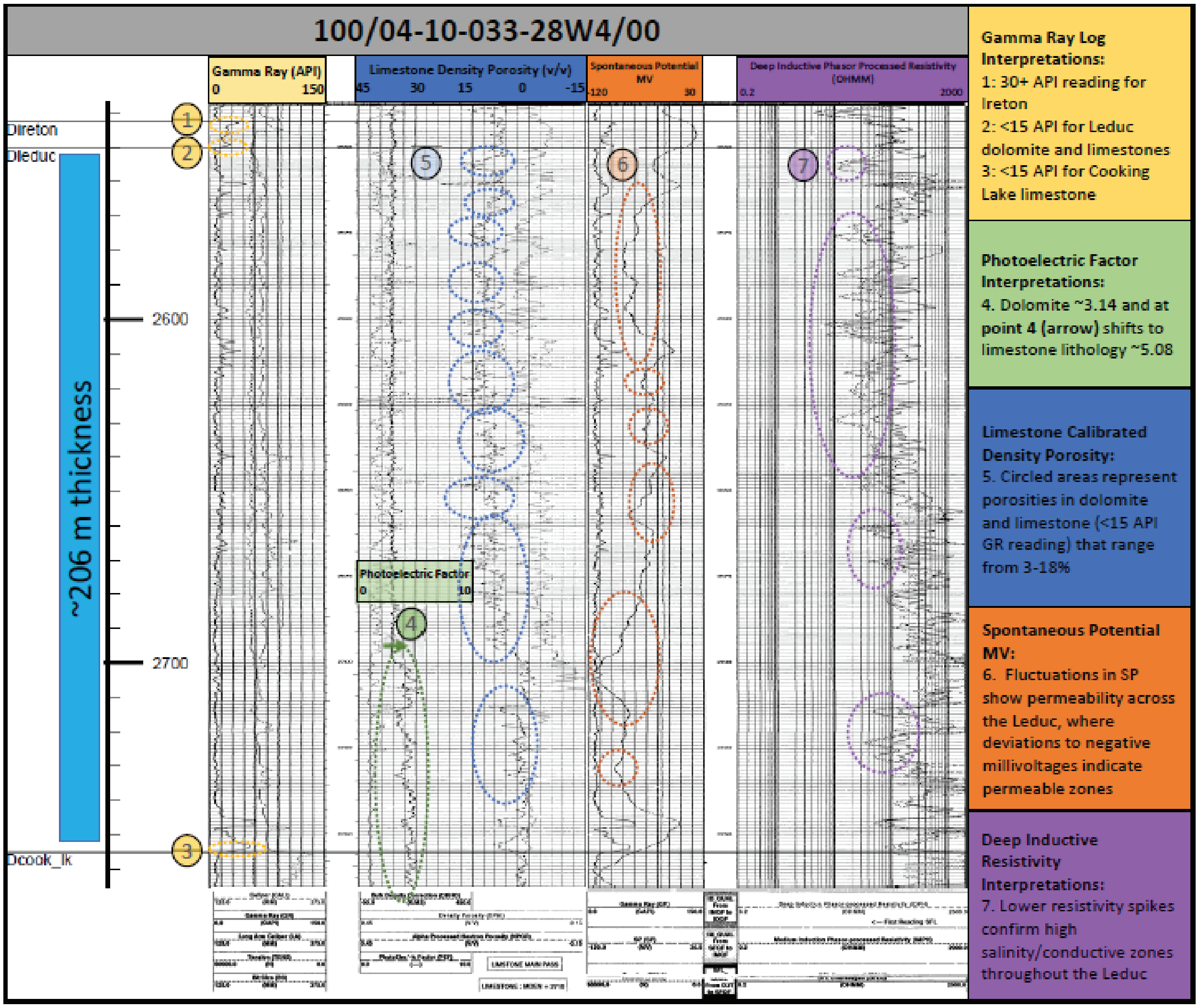

Figure 12: Interior Lagoonal Facies Type Well (100/04-10-033-28W4/00)
The type well shows a log suite representative of criteria and rock properties interpreted from the logs that are used for picking the top and base of the Leduc reservoir.

Cross-Section A-A' (Figure 13) in the Exshaw sub-project area demonstrates the reservoir continuity across the north BD area Leduc platform. It highlights the relative thickness of the Leduc reef flats interior as well as the corresponding hydrocarbon pools.

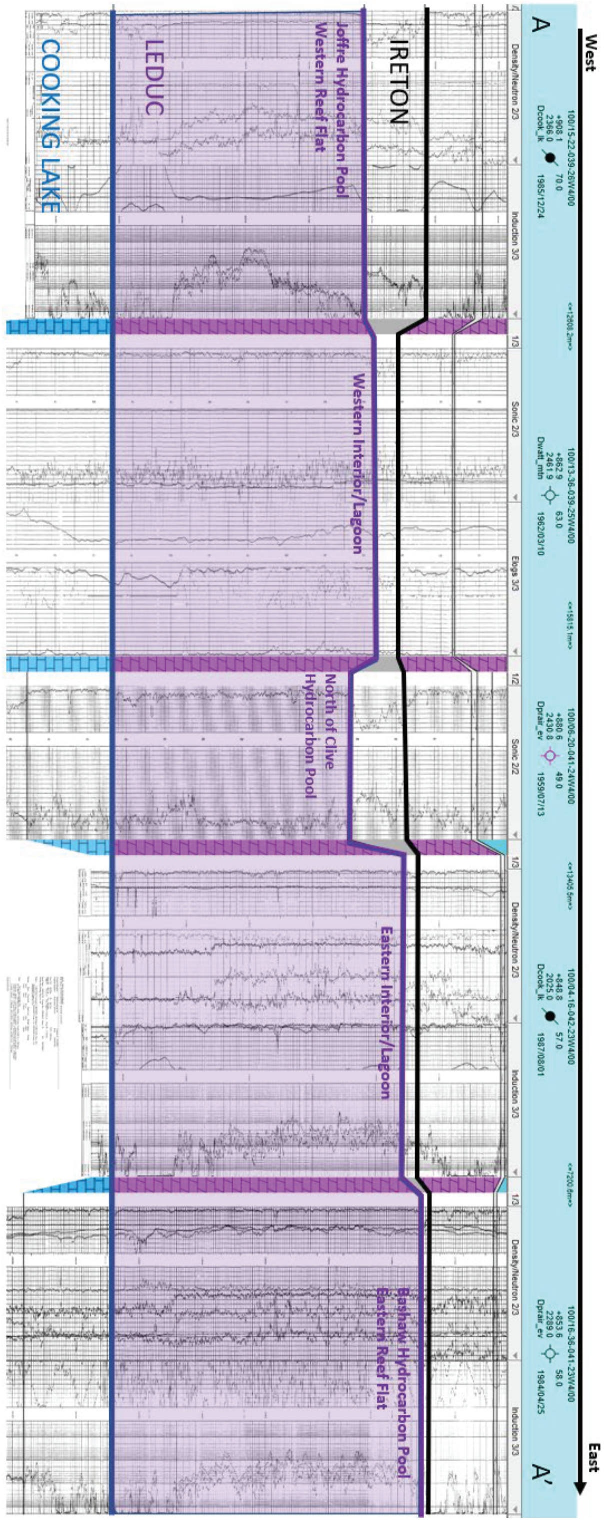

Figure 13: Stratigraphic Cross Section A-A', North Bashaw District, Cooking Lake Datum (E3, 2022)

Cross section B-B’ (Figure 14) in the Clearwater sub-project area demonstrates the resource brine continuity across the south BD Leduc platform. It highlights the relative thickness of the Leduc reef flat at Innisfail and Wimborne to the interior platform lagoon and the lower reef slope towards the basin on the east side.

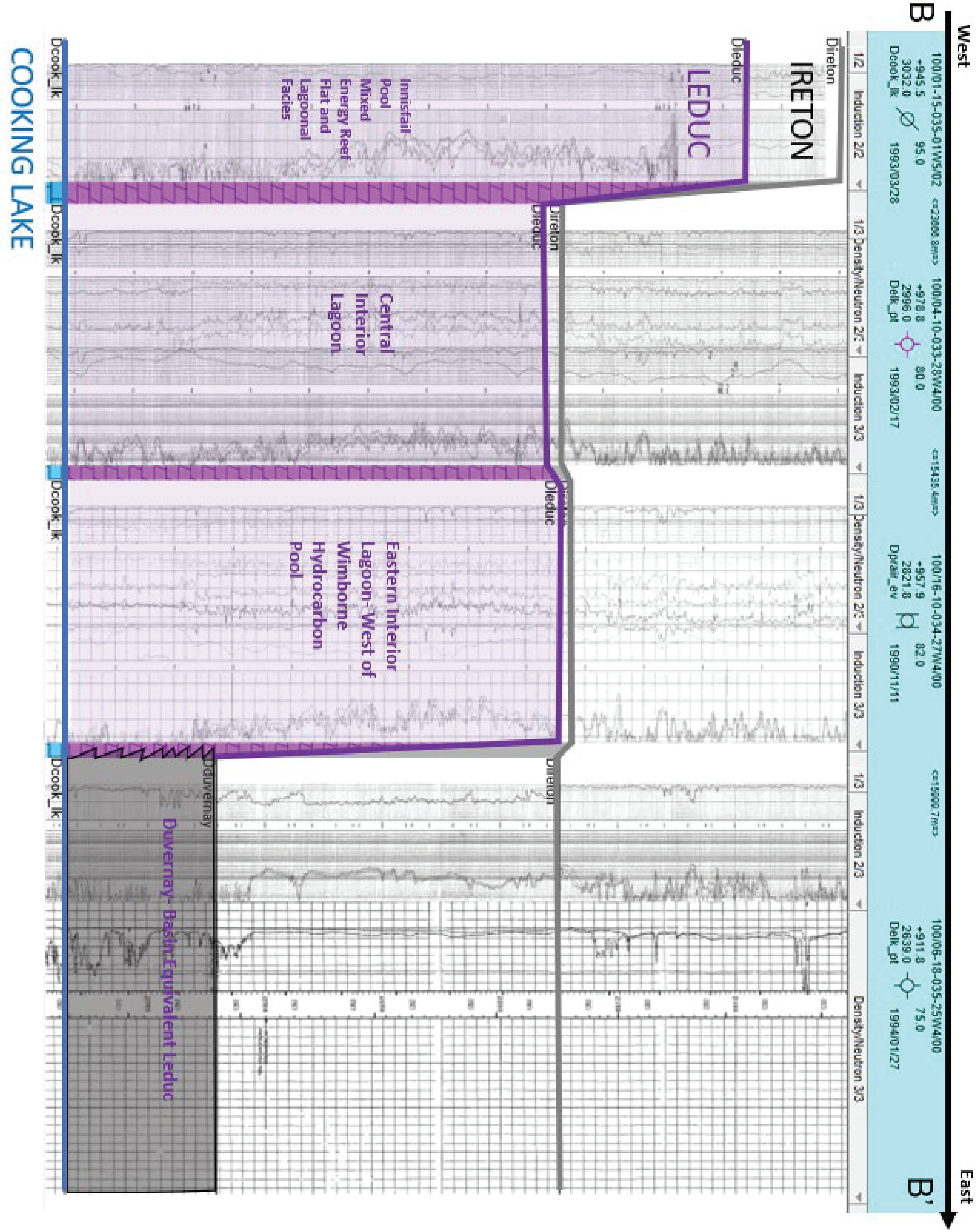

Figure 14: Stratigraphic Cross Section B-B’, South Bashaw District, Cooking Lake Datum (E3, 2022)

Cross section C-C’ (Figure 15) highlights the resource brine continuity across a northeast to southwest trend of the BD Leduc reef. It showcases a thicker Leduc reef flat at the northeastern tip, similar thicknesses of 200+metres in both reef interior wells (100/13-36-039-25W4/00 and 100/04-10-033-28W4/00), and a thickening of the reservoir in the southwest portion of the BD.

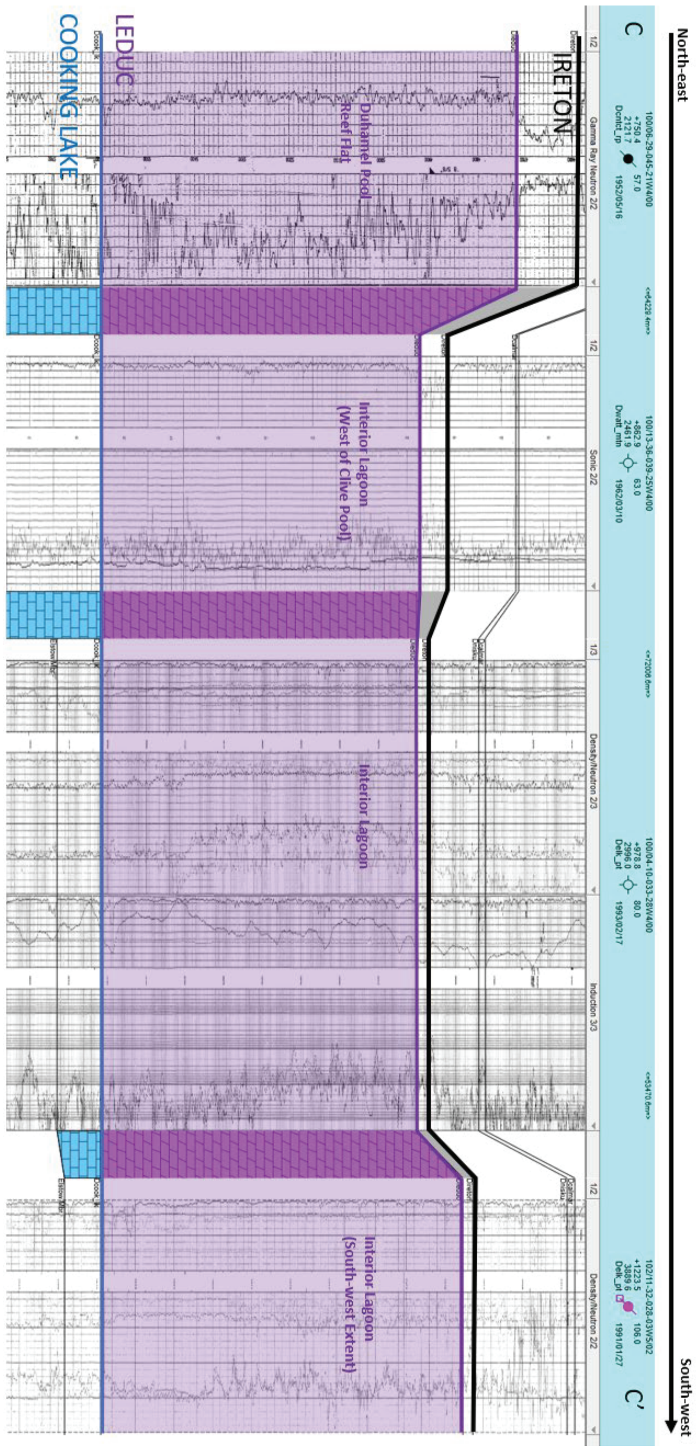

Figure 15: Stratigraphic Cross Section C-C’, Northeast to Southwest Trend Across the Bashaw District, Cooking Lake Datum (E3, 2022)

The low permeability basinal shales and carbonate muds of the Duvernay and Ireton conformably encase and overlay the Leduc buildups, creating traps and seals for hydrocarbon pools and lithium resource brine.

The Ireton shale drapes over top of the Duvernay, Leduc and Cooking Lake and forms the primary hydrocarbon trap and seal of the Leduc reservoir system. It is generally identified using the gamma ray well log. The presence of clays and associated minerals generally increases the radioactivity of rocks, and the Ireton can be distinguished from the Leduc by its higher radioactive signature on the gamma ray well log. The Ireton and Duvernay may be distinguished by subtleties in the radioactive gamma ray signature (Ireton has a higher gamma signature than the Duvernay). Duvernay and Ireton may also be distinguished from each other using the induction well log. At the pore level, the Ireton most often contains water, whereas the Duvernay most often contains hydrocarbons, which further decreases its formation conductivity, and increases the resistivity to an electrical current compared to a water wet formation when measured with resistivity logs.

Schematic representations of current relationship of the geology, structure and hydrocarbon pools in the BD can be seen in Figure 16 (to scale with vertical exaggeration).

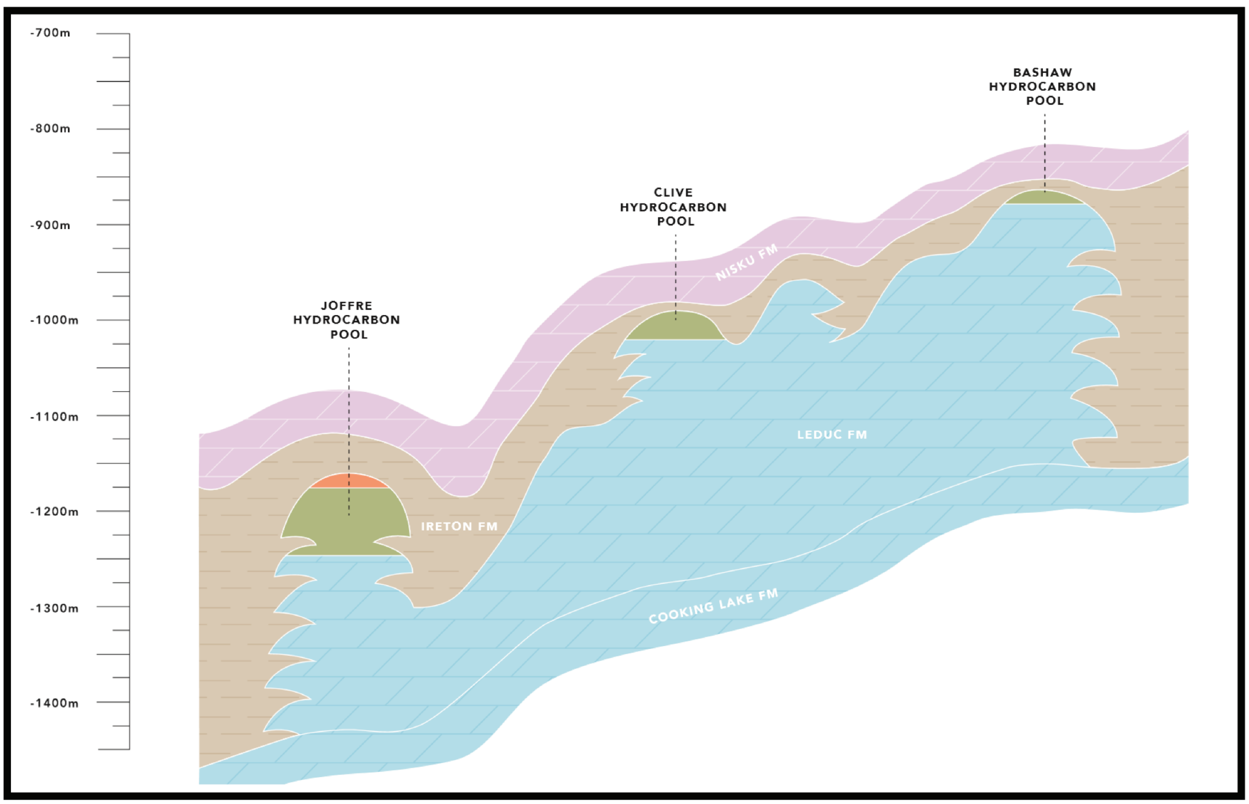

Figure 16: Schematic Representation of the Bashaw District (E3, 2018)

The Leduc and Cooking Lake at some post burial stage were partially to completely replaced by dolomite. Dolomitization is the chemical process by which limestone ($CaCO_3$) is converted to dolostone ($CaMg(CO_3)_2$) through the dissolution of calcium carbonate and the precipitation of dolomite (American Association of Petroleum Geologists, 2017[xxix]). The smaller ionic radius of magnesium, compared to calcium, creates a volume reduction when magnesium replaces a calcium to form dolomite. This volume reduction can create enhanced porosity and permeability in the reservoir (Reeder, 1983[xxx]).

There are many possible mechanisms theorized as to the source of dolomitizing Mg-rich fluids and the method for their transport into the Leduc reefs (Atchley et al. 2006[xxxi]; Amthor et al., 1993[xxxii]; Machel et. al., 2002[xxxiii]). Across the BD dolomitization of the Leduc generally enhances the porosity and permeability of the reservoir.

Speculation exists as to the source of the lithium, for the lithium-enriched brines of the Woodbend and Winterburn groups in WCSB, but the source is ultimately unknown (Eccles et. al, 2012[xxxiv]). For the Leduc and Nisku system in southern Alberta, Huff (2016)[xi] proposed a source involving lithium concentrated Devonian evaporates to the west and upward movement of Li-enriched brine into the Leduc and Nisku carbonates during later mountain building.

7.3 Precambrian Basement

This section was modified from previously published E3 reports[xvi].

The BD lies in the southern portion of the WCSB, which forms a wedge of Phanerozoic strata overlying the Precambrian basement. The basement underlying the BD is predominantly Lacombe Domain with the southeastern portion of the property on the Hearn Terrane (Pană, 2003[xxxv]). The Hearn Terrane is part of the Churchill Province and formed approximately 2.6 to 2.8 billion years ago (Ross et al., 1991[xxxvi]).

7.4 Phanerozoic Strata

This section was modified from previously published E3 reports[xvi]. Refer to the stratigraphic column (Figure 10) as a guide for understanding the rock units described below.

A thick sequence of Paleocene and Cretaceous clastic rocks and Mississippian to Devonian carbonate, sandstone and salt overlie the basement (e.g., Green et al., 1970[xxxvii]; Glass, 1990[xxxviii]; Mossop and Shetsen, 1994[xxxii]). At the base of the Beaverhill Lake Group, the Elk Point Group is comprised of restricted marine carbonate and evaporite that gradationally overlies the Watt Mountain Formation (Mossop and Shetsen, 1994[xxxii]). The Upper Elk Point, including the Ft. Vermillion, Muskeg and Watt Mountain formations represent a seal (Hitchon, 1990[xviii]).

The Upper Devonian Woodbend Group conformably overlies the Beaverhill Lake Group. The Woodbend Group is dominated by basin siltstone, shale and carbonate of the Majeau Lake, Cooking Lake, Duvernay and Ireton formations, which surround and cap the Leduc reef complexes. The Leduc reefs are characterized by multiple cycles of reef growth including backstepping reef complexes and isolated reefs (Mossop and Shetsen, 1994[xxxii]). The Duvernay Formation is composed of dark bituminous shale and limestone which contain and preserve a large accumulation of organic carbon thought to be the source for most of the conventional hydrocarbons in the upper Devonian in Alberta. The Ireton Formation caps the Leduc reefs and was deposited by increased fine grained sedimentation into the region (Mossop and Shetsen, 1994[xxxii]). The Ireton Formation is a seal that forms an impermeable cap rock over the Leduc reefs (Hitchon et al., 1995[viii]). The Camrose Member represents the only significant carbonate deposition during the Ireton cycles of basin-filling shale (Stoakes, 1980[xxxix]).

The Woodbend Group is conformably overlain by the Winterburn and Wabamun Groups of upper Devonian age. In the BD, the Winterburn thickness in south-central Alberta is available from the logs of holes drilled for petroleum and is composed of shale and argillaceous limestone. The Wabamun Group is composed of buff to brown massive limestone interbedded with finely crystalline dolomite at the base. These two Groups comprise the Wabamun-Winterburn reservoir system from which a few Li concentration analyses have been obtained (Hitchon et al., 1995 [viii]).

The Wabamun Group is unconformably overlain by the Lower Carboniferous Exshaw shale. The Exshaw shale is overlain by the Banff Group, which is composed of a medium to light olive grey limestone with subordinate fine-grained siliciclastics, marlstone and dolostone overlying a basal shale, siltstone and sandstone unit (Mossop and Shetsen, 1994[xxxii]). The Rundle Group conformably overlies the Banff Group and is composed of cyclic dolostone and limestone with subordinate shale. Permian strata in the area are thin. The Permian Belloy Group unconformably overlies the Rundle Group and is unconformably overlain by the Triassic Montney Formation. It is composed of shelf sand and carbonate (Mossop and Shetsen, 1994[xxxii]).

The overlying Mesozoic strata (mainly Cretaceous) are composed of alternating units of marine and nonmarine sandstone, shale, siltstone and mudstone. The Triassic includes fine-grained argillaceous siltstone and sandstone. The overlying Jurassic Fernie Group is composed of limestone of the Nordegg Formation that is overlain by interbedded sandstone, siltstone and shale (Mossop and Shetsen, 1994[xxxii]). The Lower Cretaceous strata are represented by the Bullhead, Fort St. John and Shaftesbury Groups which comprise a major clastic wedge on the Foreland basin.

The uppermost bedrock units underlying the BD include the late Cretaceous Horseshoe Canyon and Scollard formations and Paleocene Paskapoo Formation. Horseshoe Canyon strata consist of interbedded sandstone, siltstone, mudstone, carbonaceous shale and coal seams. The Scollard Formation consists primarily of sandstone and siltstone that is interbedded with mudstone. Coal seams in the upper portion of the Scollard are economically significant, particularly in western Alberta. Finally, the Paskapoo Formation marks the top of the stratigraphy across the BD, and much of southwestern Alberta. It consists of sandstone, siltstone and mudstone.

7.5 Quaternary Geology

This section was modified from previously published E3 reports[xvi].

During the Pleistocene, multiple southerly glacial advances of the Laurentide Ice Sheet across the region resulted in the deposition of ground moraine and associated sediments in south-central Alberta (Dufresne et al., 1996[xl]). The majority of the BD is covered by drift of variable thickness, ranging from a discontinuous veneer to just over 15 m (Pawlowicz and Fenton, 1995a, b[xli]). Bedrock may be exposed locally, in areas of higher topographic relief or in river and stream cuts. The advance of glacial ice may have resulted in the erosion of the underlying substrate and modification of bedrock topography. Limited general information regarding bedrock topography and drift thickness in south-central Alberta is available from the logs of holes drilled for petroleum, coal or groundwater exploration and from regional government (Alberta

Geological Survey) research compilations (Mossop and Shetsen, 1994[xxxii]; Pawlowicz and Fenton, 1995a, b[xxxix]). Glacial ice is believed to have receded from the area between 15,000 and 10,000 years ago.

7.6 Structural History

This section was modified from previously published E3 reports[xvi].

The BD permits are situated east of the Rocky Mountains and are not within the deformed area. An extensive study by Edwards et. al. (1998[xlii], 1999[xliii]) utilizing aeromagnetic data, gravity data, and lineament analysis indicates that deep-seated faulting related to the Precambrian basement and the Snowbird Tectonic Zone appear to have at least partial control on the distribution of reefs and some of the oil fields in the area. Many of the Devonian reef complexes in the permit area are underlain by or are proximal to basement faults. This would imply that these deep-seated faults were active around the time of reef deposition.

7.7 Reservoir Dynamics

Drill Stem Test data from 327 wells with Leduc or Cooking Lake extrapolated pressures passed Quality Control and were used in an area surrounding and including the resource area. DSTs are downhole tests that can yield pressure and permeability (flow capability) measurements from a specific depth interval.

Leveraging this publicly available pressure data, E3 graphed the data from the Bashaw Trend and the underlying Cooking Lake Platform. The pressure data was measured in wells distributed throughout the resource area. The data was graphed both as pressure vs. time and pressure vs. depth as both of these plots can be used to infer pressure continuity in the reservoir (Figure 17, Figure 18). The pressure vs. time is interpreted to show reservoir continuity if pressure decline in the reservoir during production follows a singular regional trend. The pressure vs. depth data can also be interpreted to support pressure continuity if the data follow a singular hydrostatic gradient (approximately 10 kPa/m), assuming static (i.e., non pumping) conditions. The pressure vs. time data shows that within the Bashaw trend, the Leduc is hydraulically connected across the high energy reef to flat open lagoon to low energy lagoon portions of the reef (Figure 18). The underlying Cooking Lake Platform can be considered a seal as the pressure regime appears independent of the overlying reservoir and suggests that the Cooking Lake has low permeability. This conclusion was also reached by Tsang & Springer, 1983 (Appendix C).

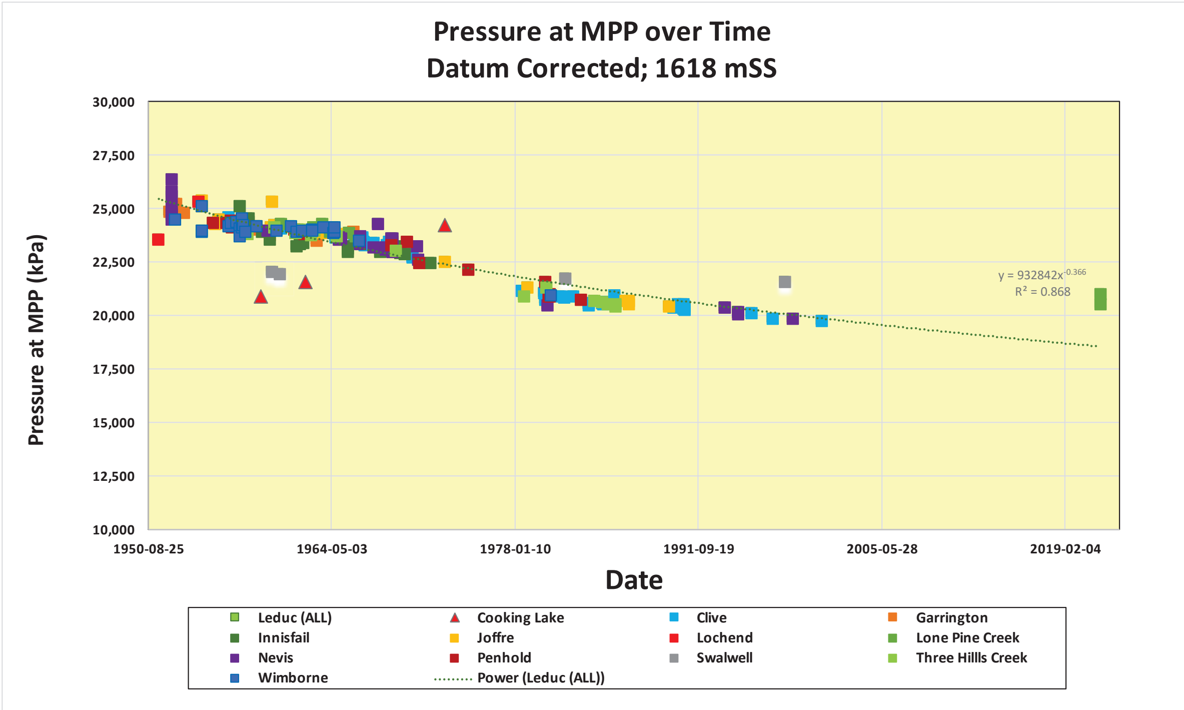

Figure 17: Leduc Regional Pressure vs. Time Data

The pressure vs. depth data indicates that generally the Leduc reservoir pressures follow a single hydrostatic pressure gradient over the BD area (Figure 18), despite the fact that this data was collected during non-static, time transient conditions across a significant areal extent. The data gas been grouped by hydrocarbon field, which are geographically distributed throughout the BD, encompassing all three facies types identified. This supports that the Leduc is hydraulically connected across the high energy reef flat to flat open lagoon to low energy/more restricted lagoon portions of the reef.

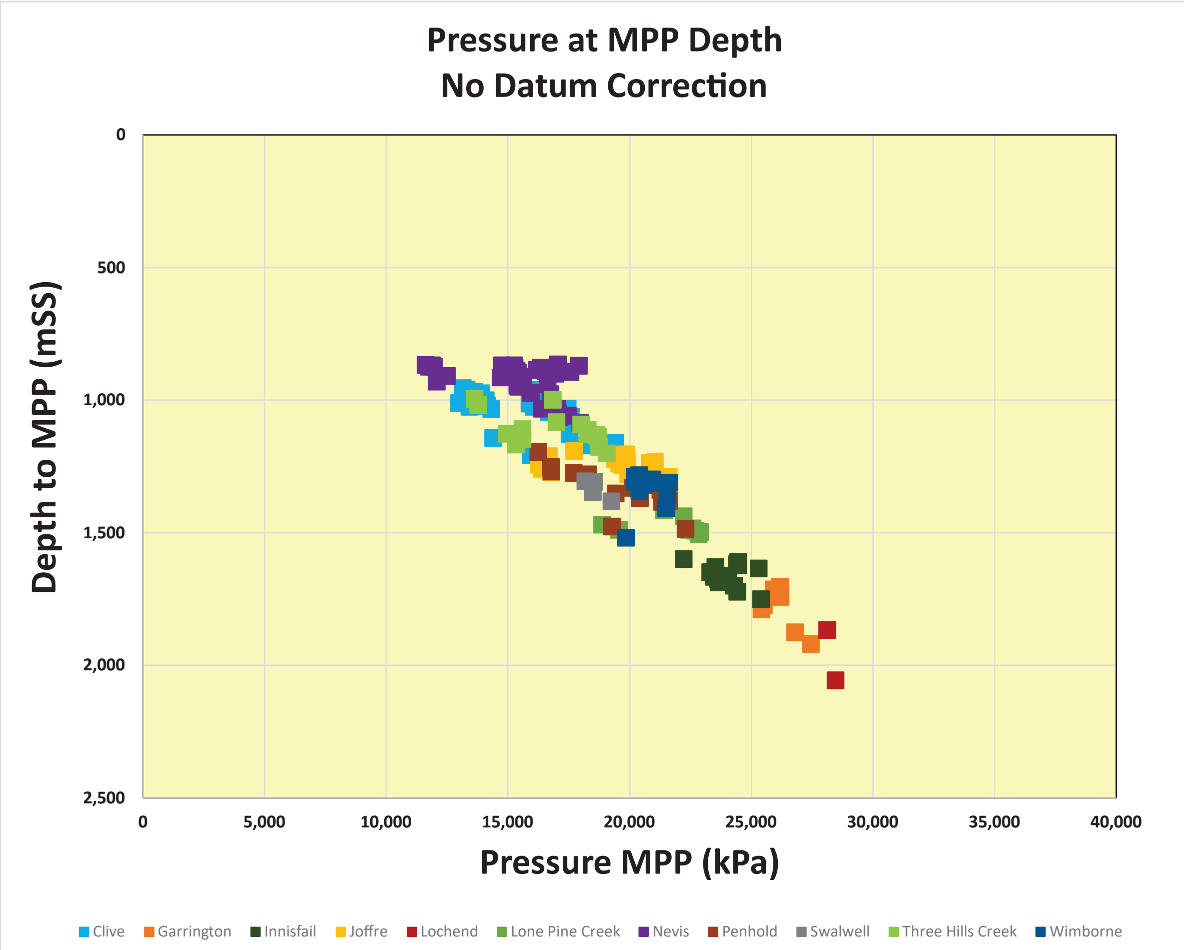

Figure 18: Leduc Regional Pressure vs. Depth Data

Based on the production and injection volumes, E3 calculated the overall void replacement ratio (VRR) for the BD (Figure 19). VRR is an oil and gas term describing the ratio of volumes of injected fluid to produced fluid at reservoir conditions, and a VRR of 1 is required to maintain reservoir pressure. The BD VRR is 0.39, which correlates with the decrease in reservoir pressure since the 1960's. Tabulated VRR for each pool can be found in Appendix D.

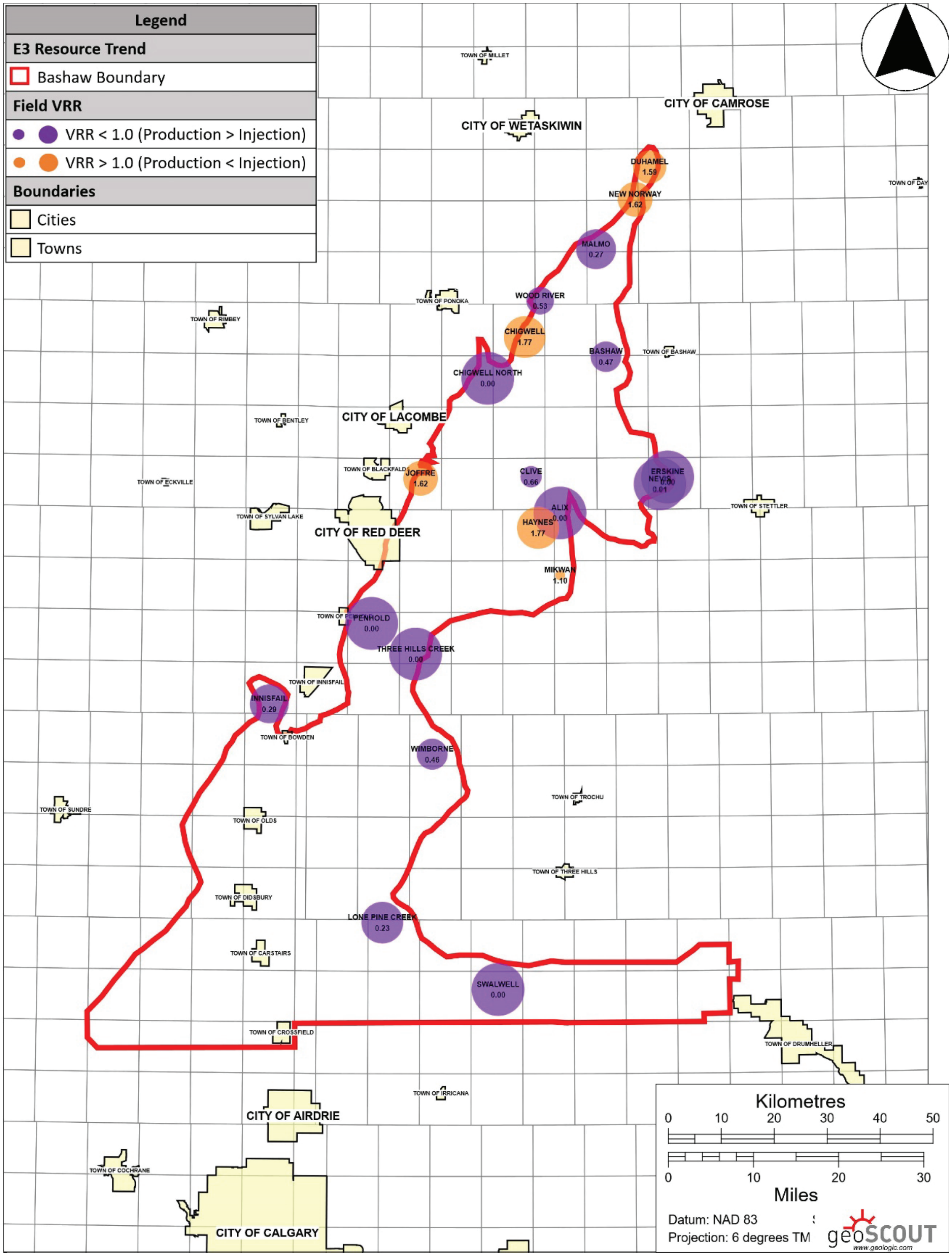

Figure 19: Voidage Replacement Ratio from Hydrocarbon Pools Across the Bashaw District

While the overall BD voidage replacement ratio is significantly under 1 at 0.39, injection of both water and gas does occur in some pools. The orange circles in the above map, found in the northern portion of the BD, show areas where the VRR > 1, meaning that cumulative injection volumes are greater than cumulative produced volumes. While injection does also occur in the southern portion of the BD, the VRR is < 1, meaning that cumulative injection volumes are less than the cumulative produced volumes. These conditions will influence the modern-day pressure distribution in the reservoir relative to its original static conditions.

7.8 Mineralization

This section was modified from previously published E3 reports[xvi].

Most saline reservoirs in Western Canada have little to no Lithium entrained within the brines. For the purposes of this report, “enriched” would refer to any brine reservoir that has more that 30 mg/L of Lithium. The potential for lithium-enriched brine in the Devonian petroleum system of Alberta was initially identified by Hitchon et al. (1995)[xxii]. Potential reservoirs were located in reef complexes of the Woodbend and Winterburn groups. Subsequent work by Eccles and Jean (2010)[ix], Huff et al. (2011[xliv], 2012[xlv]) and Huff (2016)[xi] confirmed the presence of elevated Li (e.g., >75 mg/L Li) in reservoirs associated with the Devonian reef complexes.

The main lithium accumulations in E3’s properties occur within brines contained within dolomitized reefs complexes of Devonian Leduc age, with a secondary accumulation occurring at a higher elevation in the biostromal development in the Nisku Formation of the Devonian Winterburn Group. Consequently, Li-brine mineralization in the project area consists of Li-enriched brines that are hosted in porous and permeable reservoirs associated with the Devonian carbonate reef complexes. As discussed in Section 7.2, the specific emplacement method for the Lithium in these reservoirs is currently unknown and is an active area of research. For the Leduc and Nisku system in southern Alberta, Huff (2016)[xi] proposed a source involving lithium concentrated Devonian evaporates to the west and upward movement of Li-enriched brine into the Leduc and Nisku carbonates during later mountain building. E3’s current conceptualization of the resource is that the lithium grade is relatively homogeneously distributed within the connected reservoir of the BD due to the relatively high permeability and connected nature of the reservoir. This is supported by available Lithium sampling results to date, which are described in Section 11.4. Additionally, major cation and anion geochemistry concentrations do not vary significantly across the BD which further supports the interpretation that the brine is continuous. A summary of this information is presented in Table 5.

Table 5: Major Ion Distribution Across the Bashaw District

	Bicarbonate (HCO_3) [mg/L]	Dissolved Chloride (Cl) [mg/L]	Dissolved Sulphate (SO_4) [mg/L]	Dissolved Calcium (Ca) [mg/L]	Dissolved Magnesium (Mg) [mg/L]	Dissolved Sodium (Na) [mg/L]	Dissolved Potassium (K) [mg/L]
P90	310	127,280	186.7	19,120	2,562	44,060	5,782
P50	506	134,000	392.6	21,500	2,920	49,000	6,185
P10	772	162,000	515.8	24,900	3,434	53,440	6,669

8 Deposit Types

Lithium deposits worldwide were ~80 million tonnes in 2020[xlvi], and fall into two broad categories: hard rock deposits (spodumene, hectorite, and pegmatites); and lithium-rich brines. Hard rock deposits are commercially mined in Australia and China, with developments at various stages elsewhere across the globe. Brine-hosted lithium deposits are accumulations of saline groundwater that are enriched in dissolved lithium and other elements that can occur at almost any depth between surface and the basement, and are commercially produced in Argentina, Chile, China, and the USA. Salars are lithium-rich brines that occur at or near surface and concentrate lithium (and other minerals) through solar evaporation.

Lithium brines associated with oil wells have been known for some time but are typically lower in grade when compared to the major lithium deposits of the world; Salar de Atacama, Chile (site of production facilities of the two major producers Albemarle and SQM), Salar de Hombre Muerto in Argentina (home of the third major producer FMC) and Clayton Valley, USA (Owned by Albemarle, and the only lithium production facility in North America). These existing sites use surface evaporation pools as part of the lithium concentration process. The recent advent of new dissolved metal recovery technologies and methods has made lower grade brines economically viable.

According to Eccles and Berhane (2011)[iii] "The source of lithium in oil-field waters remains subject to debate. Most explanations generally conform with models proposed for Li-rich brine solutions that include recycling of earlier deposits/salars, mixing with pre-existing subsurface brines, weathering of volcanic and/or basement rocks, and mobilizing fluids associated with hydrothermal volcanic activity (e.g., Garret, 2004[xlvii]). However, none of these hypotheses has identified the ultimate source for the anomalous values of Li in oil-field waters".

In a comprehensive investigation of Li-isotope and elemental data from Li-rich oil-field brines in Israel, Chan et al. (2002)[xlviii] suggested that these brines evolved from seawater through a process of mineral reactions, evaporation and dilution. In this case, brines that were isotopically lighter than seawater were associated with lithium mobilized from sediment. Huff (2016[xi]; 2019[xlix]) suggests that Li-brine in the Nisku and Leduc formations are the result of "preferential dissolution of Li-enriched late-stage evaporite minerals, likely from the middle Devonian Prairie Evaporite Formation, into evapo-concentrated late Devonian seawater", followed by downward brine migration into the Devonian Winnipegosis Formation and westward migration caused by Jurassic tilting. Finally, during the Laramide tectonics, the brine was diluted by meteoric water driven into the Devonian of the southwestern Alberta Basin by hydraulic gradients.

It has also been theorized that the source of lithium enriched brines is associated with the magnesium-rich fluids responsible for pervasive dolomitization in the Leduc Formation. Stacey (2020)[i] proposes these deep basinal brines migrated from the Prairie Evaporite into regional reservoirs and were emplaced in part via large faults. Alternatively, the "reflux" dolomitization model proposed by Potma et. al. (2001)[ii], in which evapo-concentrated Nisku-aged fluids are responsible for wide-spread dolomitization across the Leduc in Bashaw, would suggest the lithium is potentially sourced from the later Devonian Nisku sea.

9 Exploration

Hydrocarbon production by oil and gas operators in E3's permit area is often associated with co-produced brine water from the formation. Significant volumes of hydrocarbons and brine have been produced from the Leduc reservoir since the 1960's, and this has resulted in a rich database of data. Over time, the relative amount of water produced from the Leduc has increased in comparison to hydrocarbons. Water in some cases represents more than 98% of the total volume arriving at surface. Various oil and gas operators have allowed E3 access to oil and gas infrastructure for brine collection across the permit areas and this has enabled E3 to execute an exploration program without the costly requirement of drilling a well at the inferred resource stage.

E3's exploration activities to date have consisted of brine sampling from existing hydrocarbon wells. Samples were collected from existing Leduc Formation producing oil and gas wells by field technicians contracted from Bureau Veritas Labs (BV) in Red Deer, Alberta. All wells producing solely from the Leduc Formation, without any additional concurrent zone production (commingling from other formations), were earmarked for sampling, and were accessed based on availability. Oil and gas operators generally cycle wells, so several field programs were completed to collect samples. Samples were either collected directly at the wellhead, or at test separators, by BV employees wearing self-breathing apparatuses due to the presence of H_2S (hydrogen sulfide) gas. The following sampling procedure was followed such that samples were collected, sealed, and labeled to avoid contamination and tampering, and ensured proper chain of custody measures were in place.

9.1 Field Sampling

Samples were either collected directly at the wellhead, or at test separators. Where sampling was conducted at the wellhead, a 4L jug was used to collect the production fluid at the pump jack. This fluid typically formed an emulsion of oil, water and gas, which readily separated out into phases in the bottle within seconds to minutes. Once the separation was complete, a small hole was created in the bottom of the bottle to allow only water to flow out of the 4L bottle and into a 1L opaque amber glass bottle (Figure 20).

Figure 20: Sample Collection at Wellhead
Left: Bureau Veritas employee sampling from access port into 4 L plastic container.
Right: Decanting brine sample from bottom of 4 L container.

Samples were also collected at test separators. Test separators are used in the oil and gas industry to measure the flow rates of various wells and collect water and hydrocarbon samples from one or more wells at a satellite location (Figure 21). Test separators for this resource sampling program were either 2-phase or 3-phase. 2-phase means that oil and water are separated from gas, whereas 3-phase means that oil, water and gas are each separated. For both 3-phase and 2-phase, there is a valve on the tank that can be opened to produce a fluid sample. In all cases, the company ensured that the wells used went "into test" at least 24 hours prior to sample collection to flush the lines and minimize the risk of contamination from other wells.

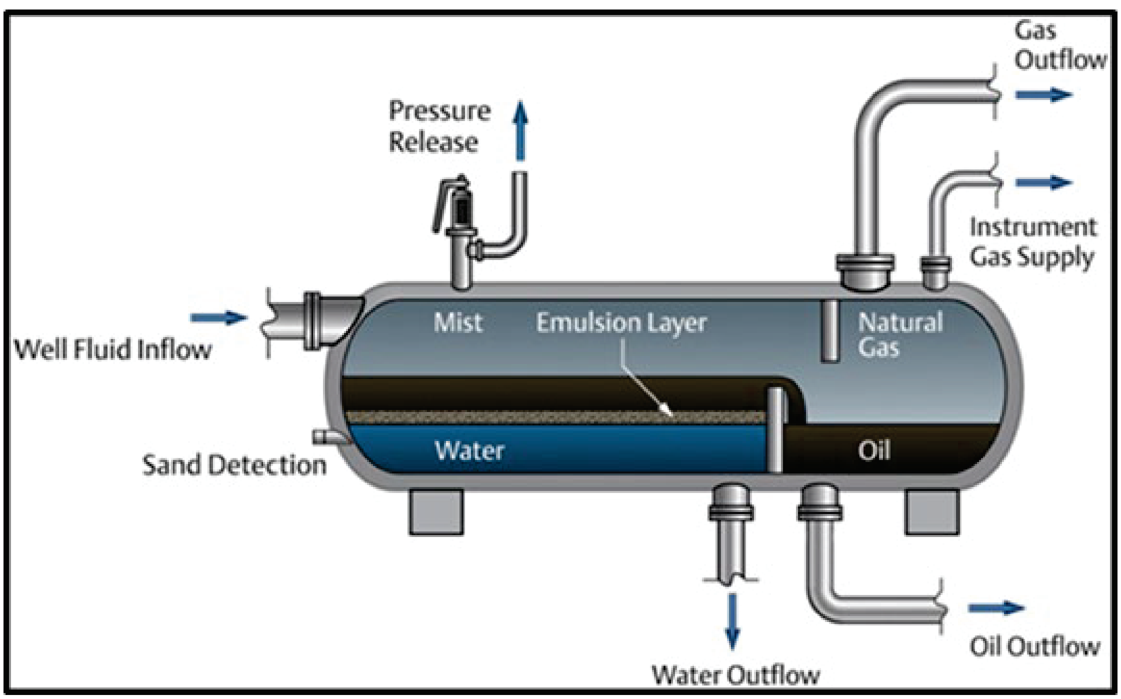

Figure 21: Schematic of Test Separator (Emerson[li], 2020)

On 2-phase separators, the valve was opened, and water was discharged into a test bottle to assess how much oil was in the separator before collecting directly into the opaque amber bottles. If there was a high volume of oil, sometimes the operator of the well was able to adjust on site to improve the amount of water flow. After adjustments were made, a mixture of oil and water was discharged into the 1L opaque amber bottles (Figure 22).

Figure 22: Sample Collection at Test Separator
Left: Bureau Veritas employee collecting sample from test separator access port. Right: Sealed well samples.

On 3-phase separators, a bottle of water can be collected with very little gas or oil. In this case, the valve was opened and water was discharged directly into the opaque amber 1L bottles.

In all cases, two 1L opaque amber bottles of sample were collected on each well. The bottles were filled up to the very top with reservoir water to ensure no air could get trapped in the top. A cap was then screwed on, and the cap was sealed with electrical tape. An E3 custody seal was affixed to the bottle and cap to ensure no sample tampering (Figure 22). These bottles were kept in a cooler with their chain of custody documents and delivered to the laboratory for testing once the sampling program was complete.

Sour gas (H_2S – hydrogen sulfide) was present at all the sites sampled. For this reason, safety precautions were taken by field samplers, including wearing H_2S sensors, and always having two personnel on site for sample collection. Where the H_2S content was high (above 10 ppm), Self Contained Breathing Apparatus (SCBA) with an oxygen tank was used to ensure the field samplers were safe.

A list of well additives, such as demulsifier, corrosion inhibitor and paraffin inhibitor, was obtained for each wellsite to rule out potential lithium contamination. No sources of lithium contamination were identified after a review of the Safety Data Sheets (SDS's).

A total of 43 samples from different Unique Well Identifier's (UWI's) were collected for analysis in the BD, collected from 2017 to 2022.

In addition, large volume samples (3 to 20 m^3) have also been collected using the same methods outlined above from 3-phase separators in 2018 and 2019. With large volume collections, Leduc brine was treated directly to remove H_2S using AMGAS proprietary CLEAR[lii] technology and stored in 1 m^3 totes.

10 Drilling

There has been no drilling completed by E3 in the BD. See Section 9 for details on brine collection from existing wells in the project area. Existing cores from historical oil and gas wells have been utilized for the geological characterization required for the inferred resource.

11 Sample Preparation, Analyses and Security

11.1 Sample Preparation and Security

Samples were collected from oil and gas infrastructure into 1L opaque amber bottles (for detail see Section 9). The bottles were filled to the top to ensure no air was trapped at the top. The cap was screwed on and then sealed with electrical tape. Each bottle was labeled with the Unique Well Identifier (UWI) and date, and an E3 custody seal was applied for security. These samples were kept secure in a cooler with their chain of custody information and delivered either to Bureau Veritas Laboratories (BV) Edmonton or AGAT Laboratories Calgary for processing. Both AGAT and BV are accredited by the Canadian Association of Laboratory Accreditation Inc.

11.2 Analyses

In the laboratory, samples from the same UWI were combined into a large beaker in a fume hood for H_2S degassing. A reference beaker of water was placed beside each sample to measure the degree of evaporation over the degassing period. This evaporation was found to be <1% for all samples and is reported along with the lithium result. After H_2S removal, the larger sample was stirred using a stir-bar for at least 1 minute prior to subsampling to ensure sample homogeneity. 100 ml or 125 ml of sample was discharged into two opaque amber glass or high-density polyethylene bottles for trace metals testing at AGAT Laboratories in Calgary, AB (assay lab) and BV in Burnaby, BC (duplicate lab). The samples were preserved with 2% by weight nitric acid, and then they were well packed and transported to their respective destinations with their chain of custody documents.

Samples received at the individual labs were mixed vigorously and a subset of sample was placed in a digestion tube. All samples taken prior to 2022 (present year) were first digested with hydrogen peroxide, and then digested again with a mixture of nitric acid and hydrochloric acid. The purpose of the hydrogen peroxide digestion is to break down humic acid and various organics in the sample that are believed to interfere with the lithium measurement. Samples taken in 2022, did not go under a double digestion and were only digested once with the nitric acid and hydrochloric acid step. Post digestion, samples were then diluted and run through an Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES) machine for trace metals analysis.

11.3 Certified Reference Material Verification

A round robin was completed in Q4 2021, as a process to get a certified reference material lithium concentration for resource brine from the 100/10-29-030-27W4/00 well. A total of 70 samples of produced Leduc brine were sent to a total of seven labs. Laboratories in this round robin included, BV Environmental Lab (Calgary); BV Mineral Lab (Vancouver); ALS Environmental (Vancouver); CARO Analytical Services (Vancouver); SGS Minerals (Vancouver); SGS Environmental (Vancouver); and AGAT Labs (Calgary). Ten samples were sent to each of these labs, and samples were processed using a double digestion- first digested with hydrogen peroxide, and then digested again with a mixture of nitric acid and hydrochloric acid; and standard single digestion for ICP with nitric acid and hydrochloric acid mixture (Figure 23).

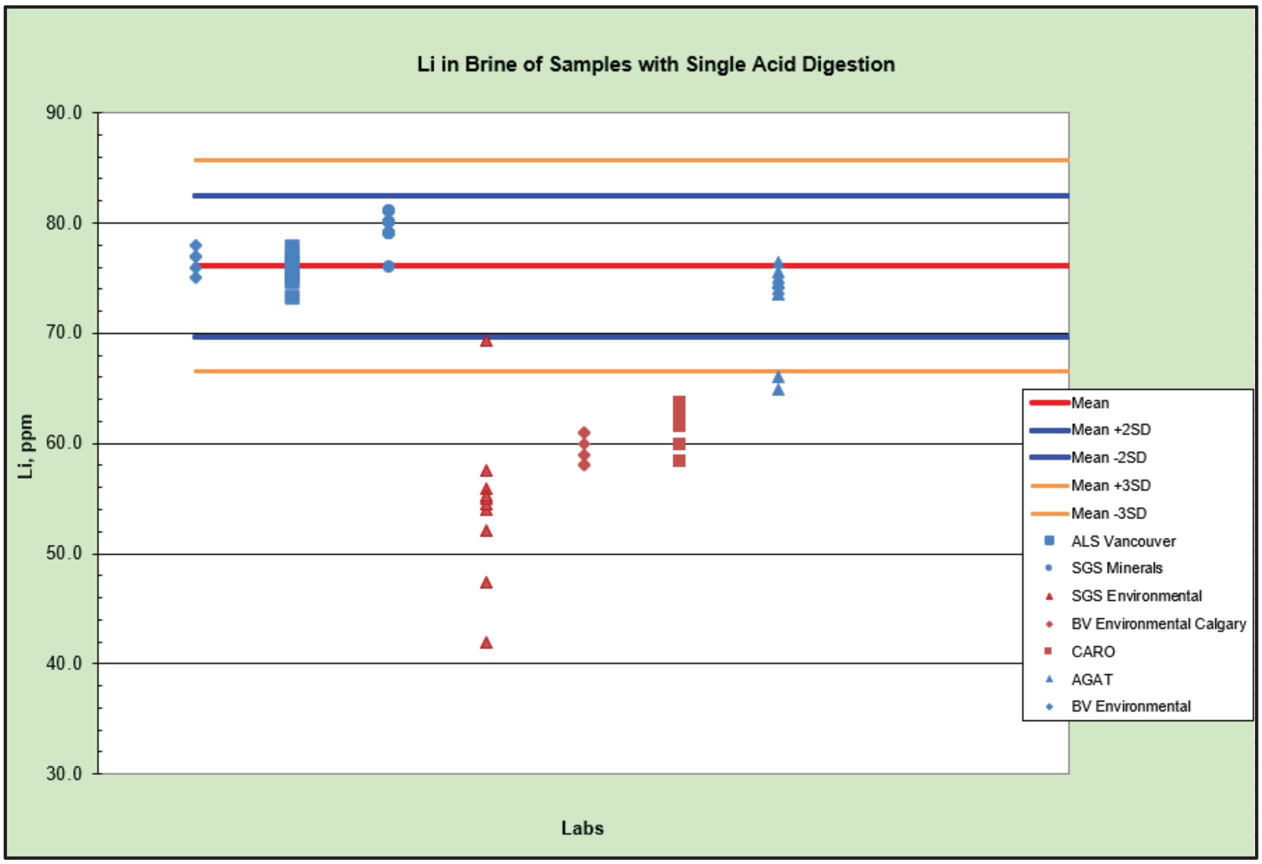

Figure 23: Lithium Concentrations from Lab Results Ran with a Single-standard Digestion

Of the seven labs used, three of these labs (SGS Environmental, BV Environmental and CARO) did not use ICP-OES, instead they used ICP-MS which does not accurately measure Lithium concentration. Due to this inconsistency, these labs lithium concentration results were not used to determine the certified reference material.

Out of the seven labs, only three were able to run samples with the double digestion (Figure 24). Of the three labs, only AGAT used the preferred method of analysis-direct aspiration of the brine into an ICP-OES. The little variation in lithium concentrations between the AGAT samples ran with a single standard digestion and those run with a double digestion showed this extra digestion step is unnecessary for the Leduc brine resource (sourced from well 100/10-29-030-27W4/00).

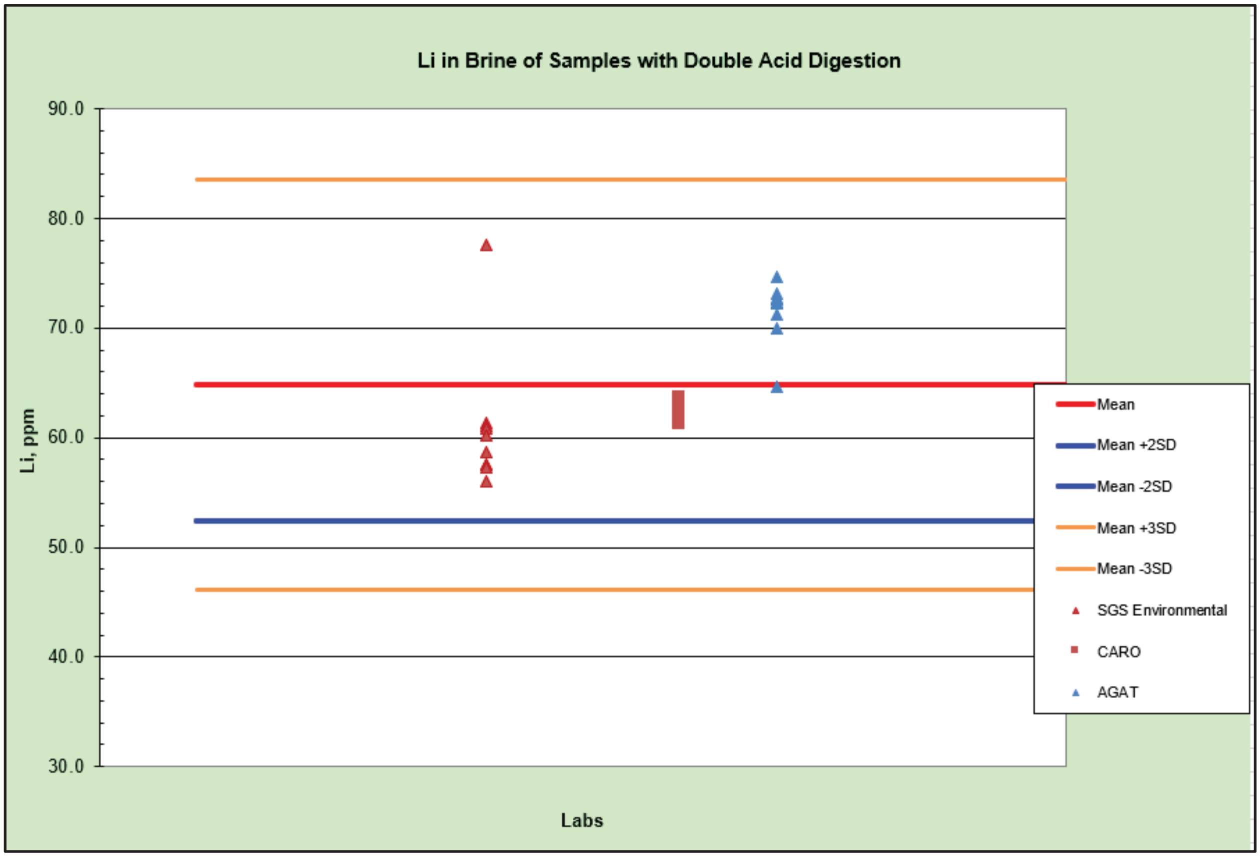

Figure 24: Lithium Concentrations from Lab Results Ran with a Double Acid Digestion

In summary, the certified mean of 76.1 mg/L was signed off and assigned, largely based on the single digestion sample subset, of the four labs that used the appropriate methods for analyses. This certificate was signed off by Barry W. Smee, P.Geo, PhD, FGC on March 2022 (Appendix E).

11.4 Sampling Program Results

To date 75 Leduc brine samples have been collected across the BD (Figure 25, Table 6). The Leduc is enriched in lithium in sampled wells across the BD, and the data demonstrates consistency throughout. The QP validated that the data presented in this section has resulted from adequate sample preparation, security and analytical procedures. Figure 26 shows the histogram of the sampling data.

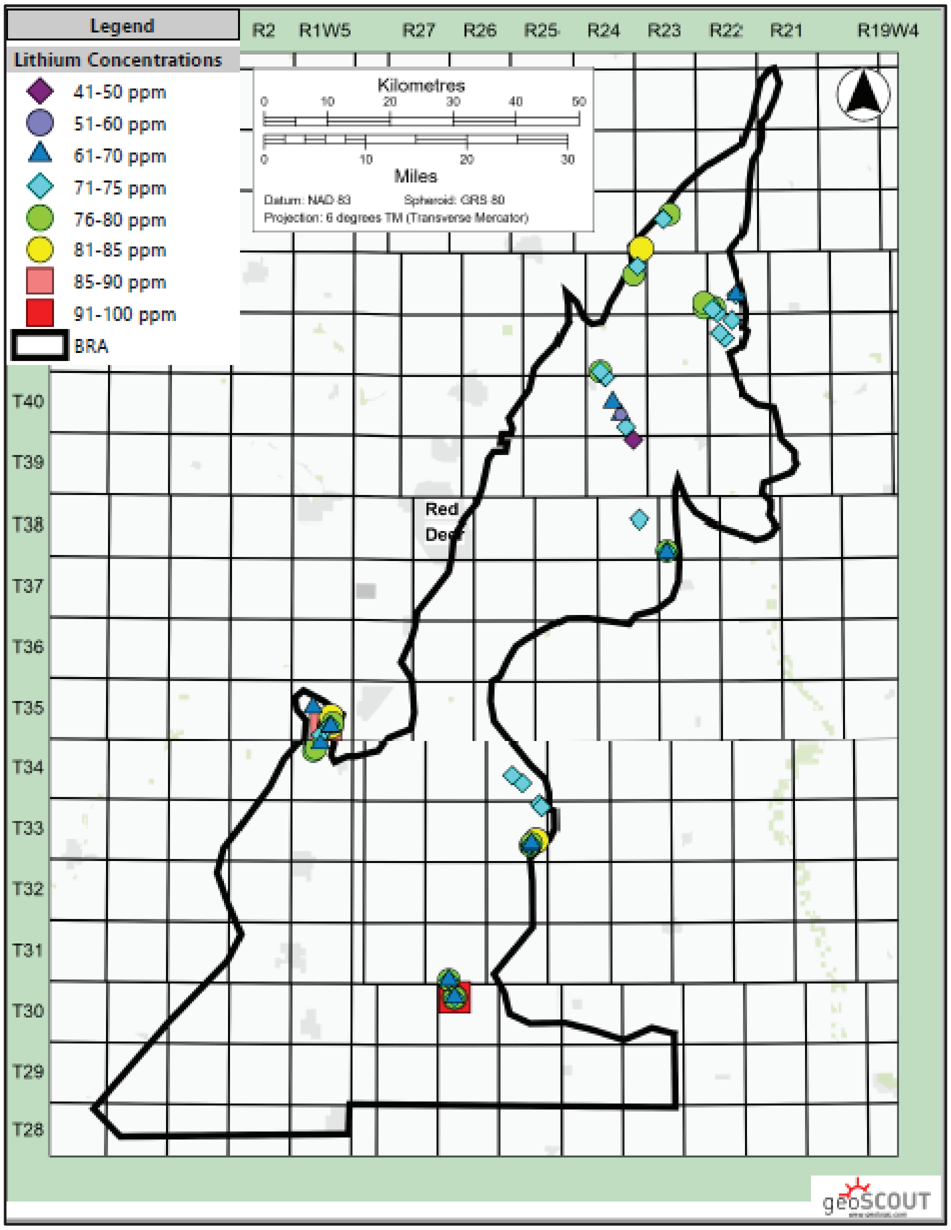

Figure 25: Lithium Results Across Bashaw District

Table 6: Aggregate Sampling Results from E3's Programs (2017-2022)

Resource Area	Min Li [mg/L]	P50 Li [mg/L]	Max Li [mg/L]	Individual wells sampled	Repeat samples collected
Bashaw	53.5	74.5	93.0	42	33

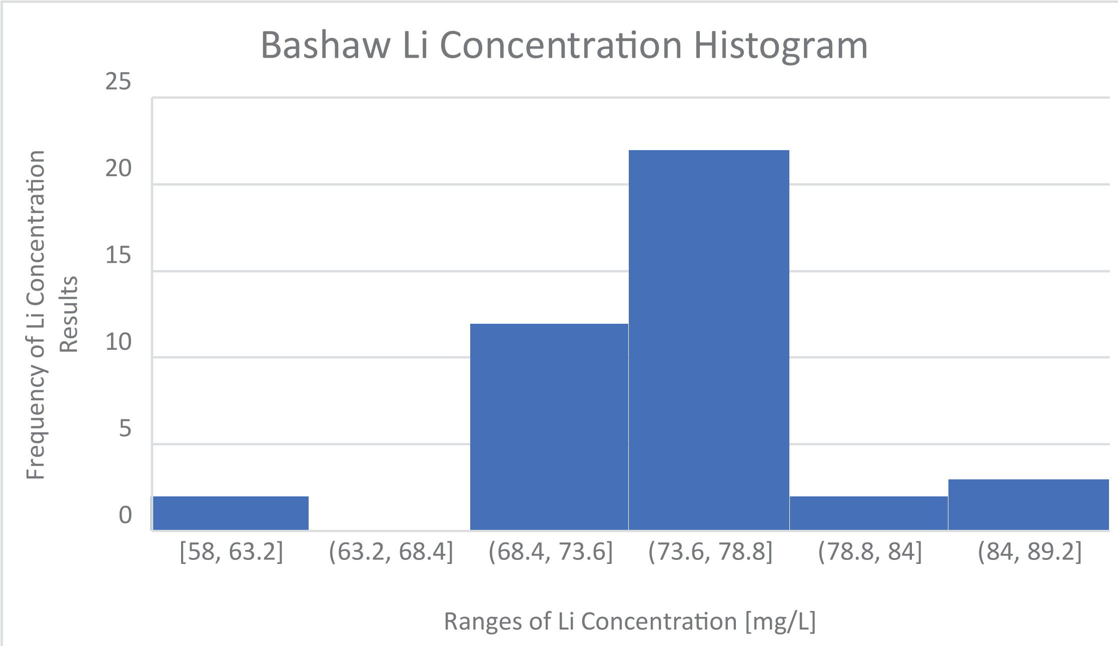

Figure 26: Bashaw District Lithium Concentration Histogram

Of the 75 samples, 74 have been deemed valid, based on a comparison between calculated total dissolved solids of the brine and lithium concentrations (Figure 27). The low outlier sample, containing 130,000 mg/L TDS, has a complicated completion history including comingled production with the Nisku. As such, the sample is excluded from the analysis as the TDS marks it as unrepresentative of the Leduc formation.

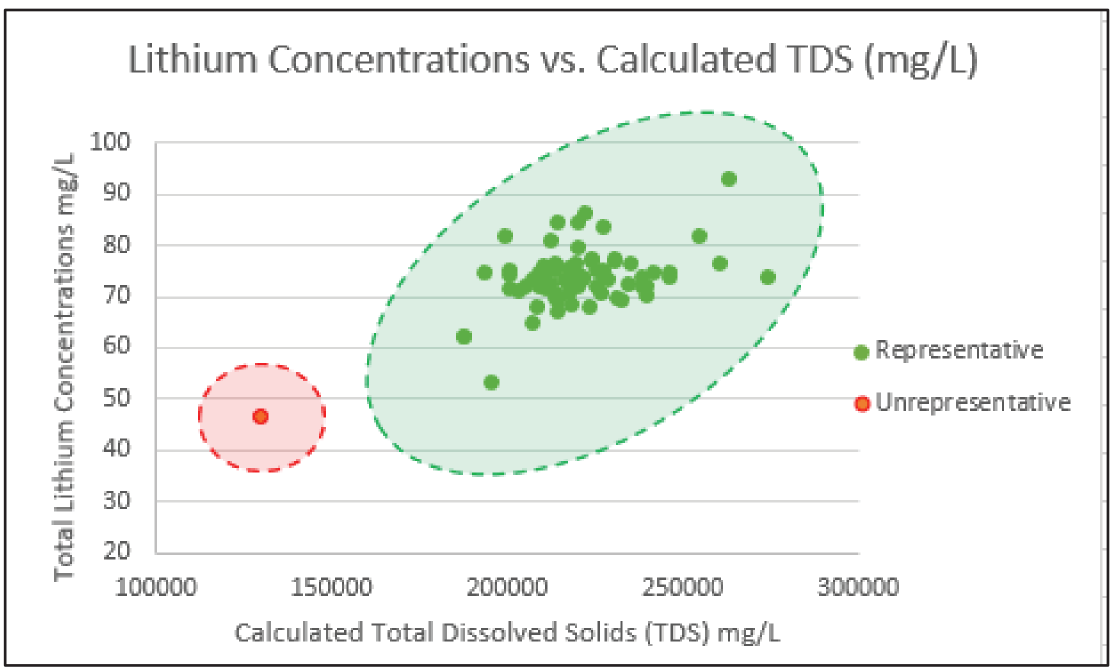

Figure 27: Sampled Lithium Concentrations Plotted Against TDS

Average brine chemistries from routine and trace metals scan analysis in the BD is presented in Table 7.

Table 7: Average Chemical Analyses Across the BD
List of major cations and anions samples and P50 Lithium concentration (mg/L)

Measurement	P50
Trace Metals Analysis	
Total Arsenic (mg/L)	2.5
Total Barium (mg/L)	2.1
Total Boron (mg/L)	287.6
Total Lithium (mg/L)	74.5
Total Manganese (mg/L)	0.17
Total Silicon (mg/L)	11.2
Total Strontium (mg/L)	916.2
Total Calcium (mg/L)	21,964
Total Magnesium (mg/L)	3,064
Total Sodium (mg/L)	49,461
Total Potassium (mg/L)	6,594
Routine Water Analysis	
pH	7
Alkalinity (Total as $CaCO_3$) (mg/L)	431
Bicarbonate (HCO_3) (mg/L)	522.3
Conductivity (µS/cm)	316,082
Dissolved Chloride (Cl) (mg/L)	139,369
Fluoride (F) (mg/L)	5.5
Dissolved Sulphate (SO_4) (mg/L)	384
Dissolved Calcium (Ca) (mg/L)	21,686
Dissolved Magnesium (Mg) (mg/L)	2,978
Dissolved Sodium (Na) (mg/L)	48,462
Dissolved Potassium (K) (mg/L)	6,178
Dissolved Iron (Fe) (mg/L)	0.3
Dissolved Manganese (Mn) (mg/L)	0.2
Calculated Total Dissolved Solids (mg/L)	220,188
Sodium Adsorption Ratio	82.1
Hardness (mg $CaCO_3$/L)	66,407
Total Suspended Solids (mg/L)	274

11.5 Temporal Variation

Since 2017, E3 has analyzed a total of 75 brine samples from the BD. This included samples from 42 individual wells, with 4 or more repeat samples collected at different locations. A graphical summary of lithium concentration measurements in 3 wells with repeat samples is shown in Figure 28. All analytical results fall within acceptable limits as prescribed by the laboratory. These graphs suggest lithium concentrations remain steady in a relatively narrow P90 to P10 distribution over time in the BD.

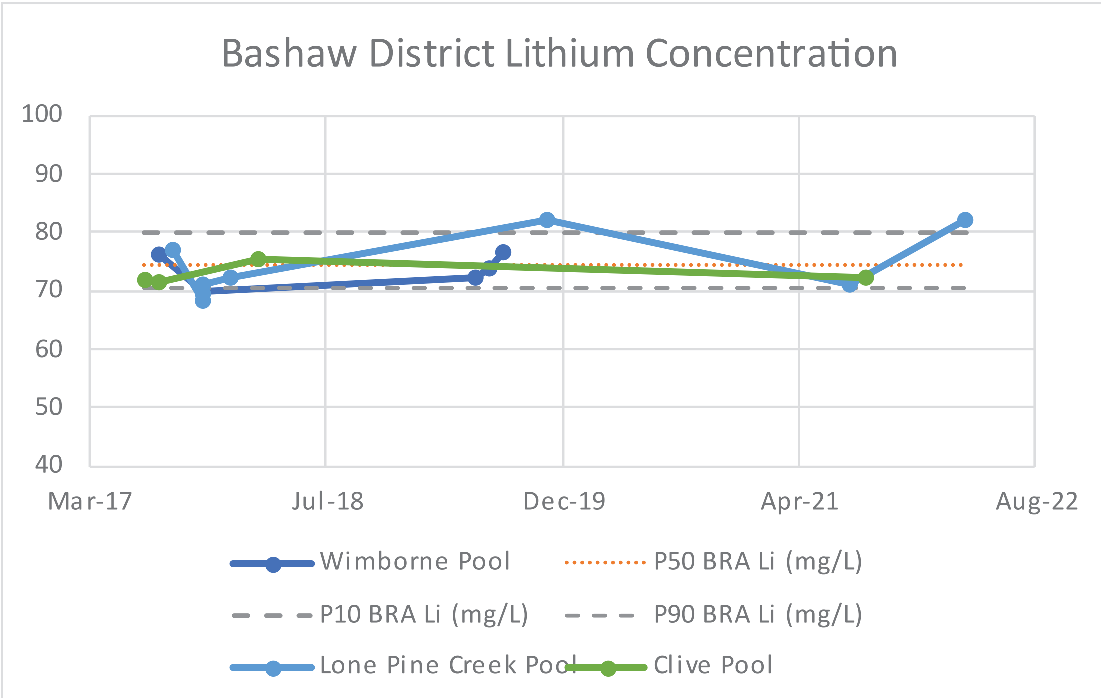

Figure 28: Lithium Concentrations in the Bashaw District Over Time

12 Data Verification

The QP has reviewed the field sampling Standard Operating Procedure (SOP) and the Laboratory Testing SOP (Appendix F) developed by E3 to ensure consistent and accurate sample collection and analysis. The QP has additionally reviewed the Quality Assurance/Quality Control results provided by E3 and reviewed the reports provided for each lithium sample by the laboratory. The QP is satisfied that data presented in this report is adequate for the purposes of calculating an Inferred Resource.

One component of the Quality Assurance program was for QP to witness sample collection in the field. Alex Haluszka, of Matrix Solutions Inc, witnessed the sampling and authenticated the SOP and COC, for the recent spring 2022 sampling program. BV employees collected samples as described in Section 9.1 from a 3-phase test separator facility on April 28th, 2022. During the observation, BV employees demonstrated a competency of the E3 SOP and executed sampling accordingly. The site was in the southern area of the BD, within the Lone Pine Creek hydrocarbon pool, and the produced water sampled flowed from the 100/10-29-030-27W4. Samples were delivered to AGAT for degassing, trace metal and routine water analyses by a courier (Rebel Hotshot Courier Services) upon the completion of the sampling program.

Figure 29: Chain of Custody by BV Labs

Starting in 2019, Maxxam Laboratories now operates as Bureau Veritas Laboratories and E3 continued to work with the same field staff for sampling programs in 2022 (Figure 29).

There are a series of historical sampling results scattered throughout the E3 Permit Area. This historical data is available through the Alberta Geological Survey[liii]. The specific circumstances under which the samples were taken are unknown and accordingly this data has not been included in the resource calculation. As expected, the historical data for across the trend are relatively consistent with the data presented in this report, aside from several outliers over 100 mg/L lithium.

13 Mineral Processing and Metallurgical Testing

Most of the Metallurgical Testing completed to date has focused on selectively recovering lithium from Leduc Reservoir brines with E3's DLE technology. E3's DLE is an ion exchange process that uses E3's proprietary ion exchange sorbent material with high selectivity for lithium above all other cations present in the brine.

The preliminary metallurgical information presented in this report is based on test results completed by E3 from 2016 to 2022. The initial test work was completed from 2016 to 2018 at the University of Alberta. Subsequent preliminary test work was completed from 2018 through 2020 at a bench scale by

GreenCentre Canada, an independent sustainable chemistry and advanced materials laboratory located in Kingston, Ontario. From Q1 2021 to the present (July 2022), all test work has been completed by E3 personnel at its lab facility in Calgary, Alberta.

E3 is also continuing evaluations for the lithium conversion process that follows the DLE. To this end, E3 is currently completing a desktop study with process simulations to evaluate various flowsheets to produce lithium hydroxide monohydrate. This extensive evaluation will be the basis for selecting the flowsheets upon which corresponding test work will be based. In addition, E3 started the lithium conversion flowsheet testing in early 2022.

13.1 Continued Development and Testing of the Proprietary Ion Exchange Sorbent Material

Since 2021, E3 has achieved the following advancements for the proprietary ion exchange sorbent material:

- There has been a 20-fold increase in E3's in-house laboratory scale capacity to produce the ion exchange sorbent. Additional programs are underway to further expand production capabilities and produce the material at a commercial scale.
- E3 has continued the program to identify, produce, and test different sorbent candidate forms. This program aims to maximize lithium recovery, selectivity, and loading capacity. Also, to maximize sorbent lifespan, losses and kinetics while minimizing water use and reagent consumption. The program has supported selecting the leading sorbent forms for further evaluation in subsequent test and optimization programs. Select results from this program will be released in a later NI-43101 report.
- E3 has completed performance tests to validate reagents for commercial scale production of the sorbents. Based on this work, E3 has identified multiple vendors who are capable of supplying feedstock materials at a commercial scale.

13.2 Direct Lithium Extraction Testing

All test work referenced in this Report was completed using brine sourced from the Leduc. A large brine sample (20 m^3) from the Leduc was collected from the water leg of a 3-phase separator on an operating oil and gas well in 2019 using the same methods described in Section 9. The 20 m^3 sample was treated by AMGAS using their proprietary CLEAR[iv] technology to remove H_2S without introducing chemicals to the brine. Treated samples were stored in 1 m^3 plastic totes and stored in Calgary, Alberta. Sample analysis has been conducted by both E3 and independent and quality-certified laboratories.

The ion exchange (i.e., DLE) test work is completed using elevated brine temperatures (70°C) consistent with the expected brine temperature upon delivery from the resource to the central processing facility.

The following are key outcomes of the DLE testing since 2021:

- E3 has tested a wider range of DLE operating conditions through which the ion exchange sorbents continue to exhibit high selectivity for lithium over other contaminant ions. These contaminant ions, which include sodium, potassium, calcium, magnesium, strontium and boron, are present in the Leduc brine at significantly higher concentrations than lithium.

- Throughout the batch testing, the sorbent has demonstrated long life and has consistently achieved lithium concentrations in the spent brine of less than 4 mg Li / L (corresponds to over 95% recovery for the Leduc Brine). Co-extraction of the impurities has been low and did not exceed 1% recovery to generate an eluant stream with low ratios of calcium, magnesium, strontium, sodium, potassium, and boron to lithium. In addition, the sorbent's performance has been consistent from batch testing to flow column testing.
- The absorption reaction kinetics of lithium extraction from brine onto sorbent and the subsequent lithium stripping from the sorbent into the eluate is rapid and occurs within minutes.

13.3 From Lab to Pilot Scale

In 2021, E3 designed, constructed, commissioned, and optimized the Development Column for initial flow-through testing of the leading sorbent candidate forms. The Development Column is used for single cycle tests and has a minimum size to reduce material quantities and testing durations while offering representative design data. Results from the Development Column tests provided the basis for designing and setting the initial operating parameters for the Prototype Column - a larger and automated system for continuous multicycle testing. E3 is currently optimizing the operation and performance of the Prototype Column to assist in the design and eventual operation of the field pilot and to generate a quantity of DLE concentrate solution (for testing of the downstream flowsheet). The field pilot unit, the next significant DLE technology development milestone, is scheduled to be deployed into the field for testing in early 2023.

A lithium concentrate sample generated using E3's ion exchange sorbent with brine sourced from the Leduc will be used for the next stage of post-DLE testing. All the process steps in the post-DLE flowsheet are standard, well-proven technologies to reduce risks.

14 Mineral Resource Estimates

The mineral resource estimate was completed by a multi-disciplinary team led by E3 and supervised by Daron Abbey and Alex Haluszka of Matrix Solutions Inc. acting as the QPs. The estimate was completed using volumetric analytics based on the geological parameters: reservoir geometry, porosity, permeability, specific storage, pressure, and lithium concentrations. The mineral resource estimate benefited from a considerable amount of data compiled by the oil and gas industry and made public by the Government of Alberta.

Key data sets used to determine reservoir brine parameters in the resource area are described in Section 07 and include drill stem tests (pressure, water quality, and permeability), core plug analyses (porosity and permeability), downhole wireline logs (lithology, porosity, effective porosity and permeability), and historical production volumes of hydrocarbons and water (context for reservoir pressure and continuity).

As discussed in Sections 6 and 7, hydrocarbon production has taken place in the vicinity of the resource area since 1961 resulting in a considerable amount of data to constrain reservoir parameters: 327 drill stem tests (DSTs) with pressure build-ups and extrapolated pressures; 330 cored wells; and historical water production from 593 wells from January 1961 to present.

14.1 Resource Area Geometry

Petroleum well data, described in Sections 6 and 7, was used to define the shape and extent of the Leduc reservoir. Defining the geometry of the Leduc reservoir was an iterative process which involved analysis of existing wells drilled for the exploration and production of hydrocarbons in the resource area. This geological mapping process using well data has been in practice in Alberta's petroleum industry for over 70 years to define geological formations. The Leduc base and top were determined from well logs and seismic interpretation (see Section 7).

The Leduc reef edge is defined as the point at which the Leduc Reef Margin slope is no longer distinguishable (zero-edge). This edge differentiates the high porosity reefal buildups of the Leduc from the surrounding low porosity carbonate muds and shales of the deep-water basin sediments occurring in the Ireton and Duvernay Formations. The zero-edge was defined primarily using well data. In the absence of well data, existing industry-standard Leduc edge interpretations were consulted (Mossop and Shetsen, 1994[xxxii]; GeoScout Devonian Subcrop, 2022[liv]). The local and regional geological context was also taken into consideration when making interpretations.

14.2 Lithostratigraphic Facies

The lithofacies were identified, interpreted and delineated based on sedimentary structures and textures observed in core, and can be related to trends of porosity (pore space in the rock) and permeability (ability for fluid to flow in the rock). Trends of porosity and permeability occur spatially and relate to depositional environments and diagenesis of the rock. These trends correlate to facies models which are established in the literature for the Leduc reservoir (Hearn, 1996[lv]; Potma et al., 2001[ii]; Atchley et al., 2006[xxx]) and formed the basis for stratigraphic definitions. The depositional model (Figure 30; modified by Eva Drivet after Watts, 2008[lvi]; Wendte and Stoakes 1982[lvii]; Wendte 1992[lviii]) showcases the three facies identified and differentiated across the BD.

These lithofacies were defined mostly by petrophysical logs and core descriptions across the BD (Figure 30), they are subdivided as follows:

1. Leduc High Energy Reef Facies: reef flat
2. Leduc Mixed Energy Reef Facies: reef flat to open lagoonal type facies
3. Lower Energy Lagoon Facies: open to restricted lagoonal type facies

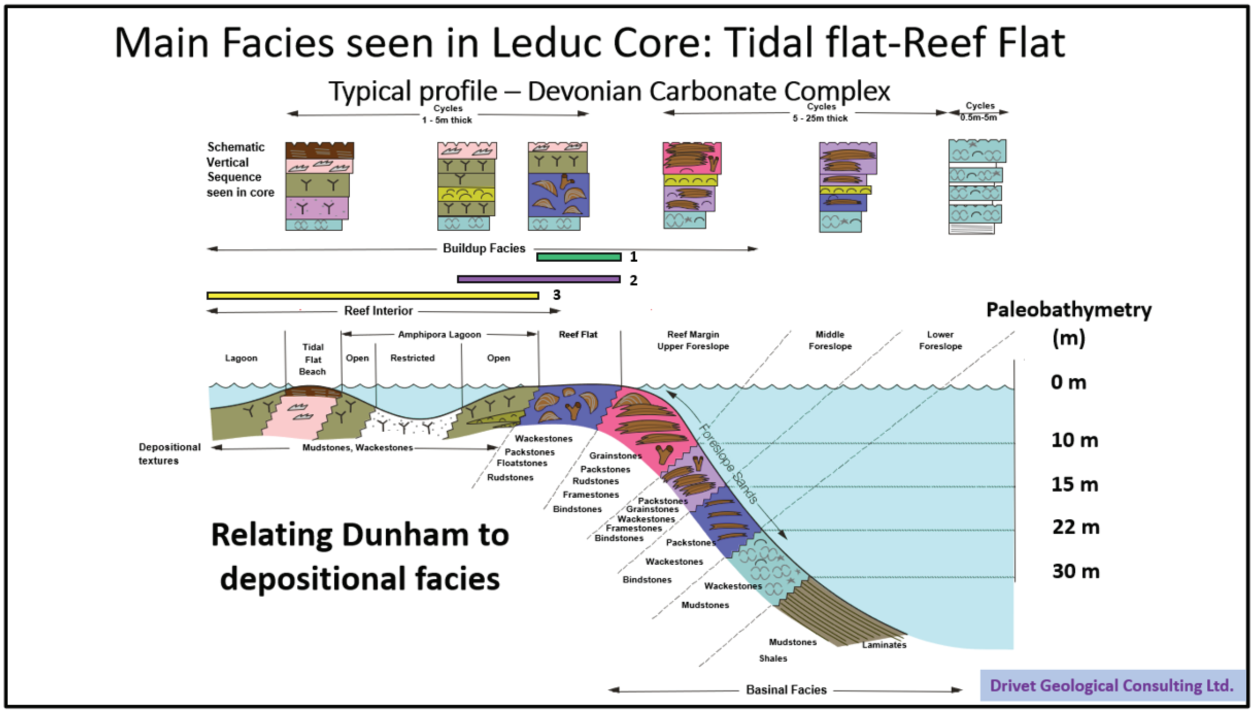

Figure 30: Depositional Model for Leduc Reef Buildups Identifying Facies
Credit: Eva Drivet Consulting, modified from Nigel Watts (unpublished) 2008; Wendte and Stoakes 1982; Wendte 1992

The first two lithofacies are typical of higher energy environments (packstones and floatstones) where most of the aggradation and reef growth occurred, and therefore is typically the best part of the primary reservoir with the highest porosity and permeability. The majority of the core logged contained primarily these 2 facies groups. Facies 3 (lower energy lagoonal facies) is on the back side of the reef flat. These lagoons are bounded by the higher and mixed energy Leduc facies (Figure 31). These depositional environments consist of carbonate muds, storm washover debris, shoal reef material, and occasional patch reefs. This facies is less represented in the core.

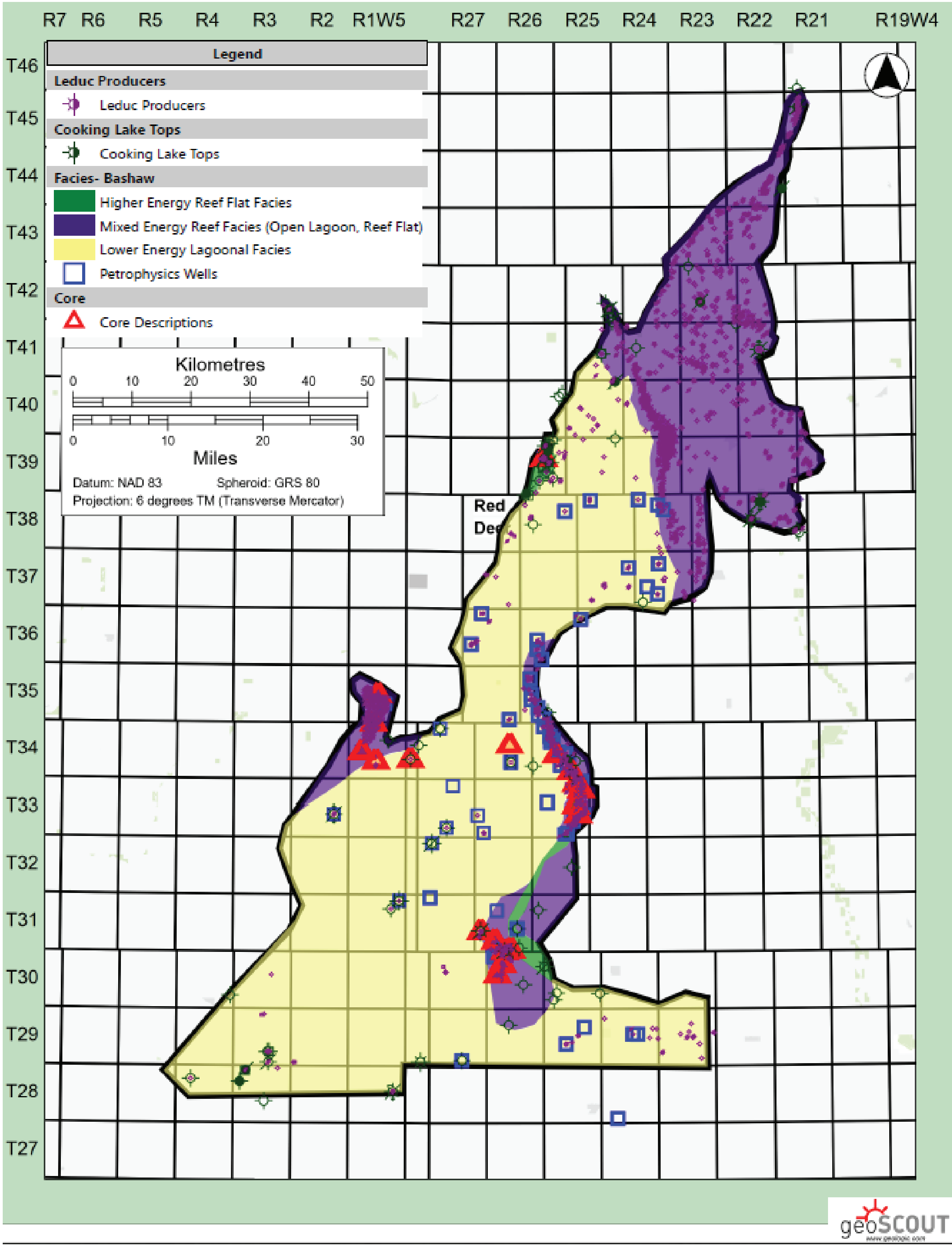

Figure 31: Leduc Facies Distribution in the Bashaw District
Based on Leduc hydrocarbon wells, Cooking Lake tops, cored wells, petrophysical wells (E3, 2022)

Figure 32: Map Showing Some Type Cores/Sections of Leduc Facies
Photos complements of Digit Core, taken in spring 2021

Based on the aggrading (vertical upwards growth) and in some cases backstepping (vertical backwards growth) nature of the Devonian Leduc reef buildups (Stoakes, 1992[lix]), the facies were assumed to be vertically continuous throughout the reef thickness.

The Cooking Lake Formation is a carbonate platform that sits beneath the Leduc. This formation encompasses the flow unit below the Leduc reservoir and above the Beaverhill Lake and is continuous beneath and beyond the BD.

Critically, although a variety of lithofacies were identified and mapped, the resource volumes were calculated using average reservoir properties for the combined Leduc reef complex volume within the BD (i.e., the entire reservoir is represented as a single unit represented by P50 properties). The information used to justify this assumption is discussed in the proceeding sub-sections.

14.3 Structure and Thickness

Geological mapping was completed by E3 for thickness (gross isopach) over the Leduc (Figure 33) and Cooking Lake (Figure 34) and structure for Leduc, Cooking Lake, and Beaverhill Lake formations. The geologic data set used to construct the maps was comprised of 837 wells with Leduc structure tops (Figure 35), 220 wells with Cooking Lake structure tops (Figure 36), and 201 wells with Beaverhill Lake structure tops (Figure 37). The top of the Beaverhill Lake reflects a regional dip to the southwest of approximately 1.6%. Based on the mapping, the P50 thickness (gross isopach) for the combined Leduc reservoir in the BD was 205 m, which is a direct input into the resource volume estimate.

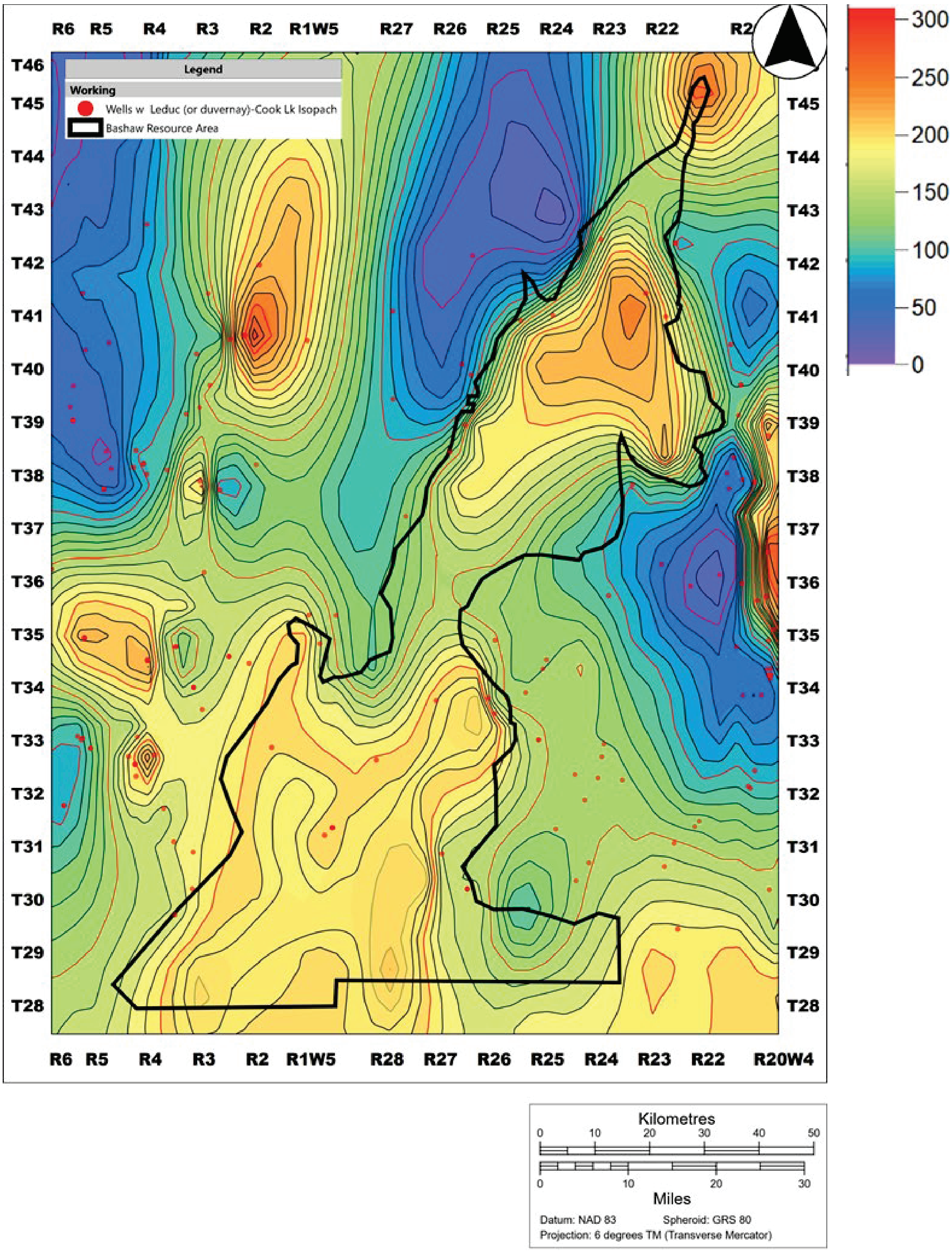

Figure 33: Gross Isopach Map of the Leduc

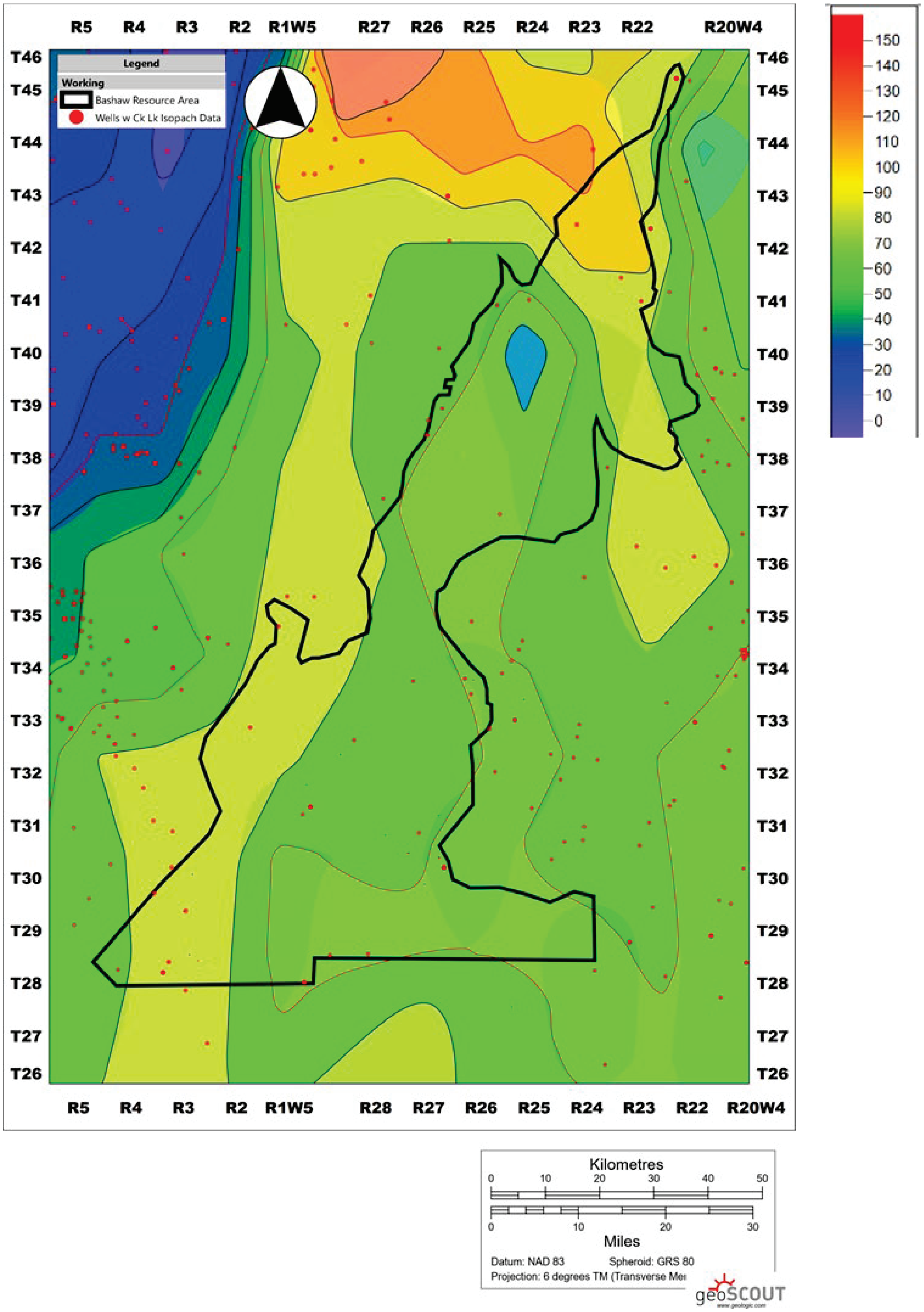

Figure 34: Gross Isopach Map of the Cooking Lake

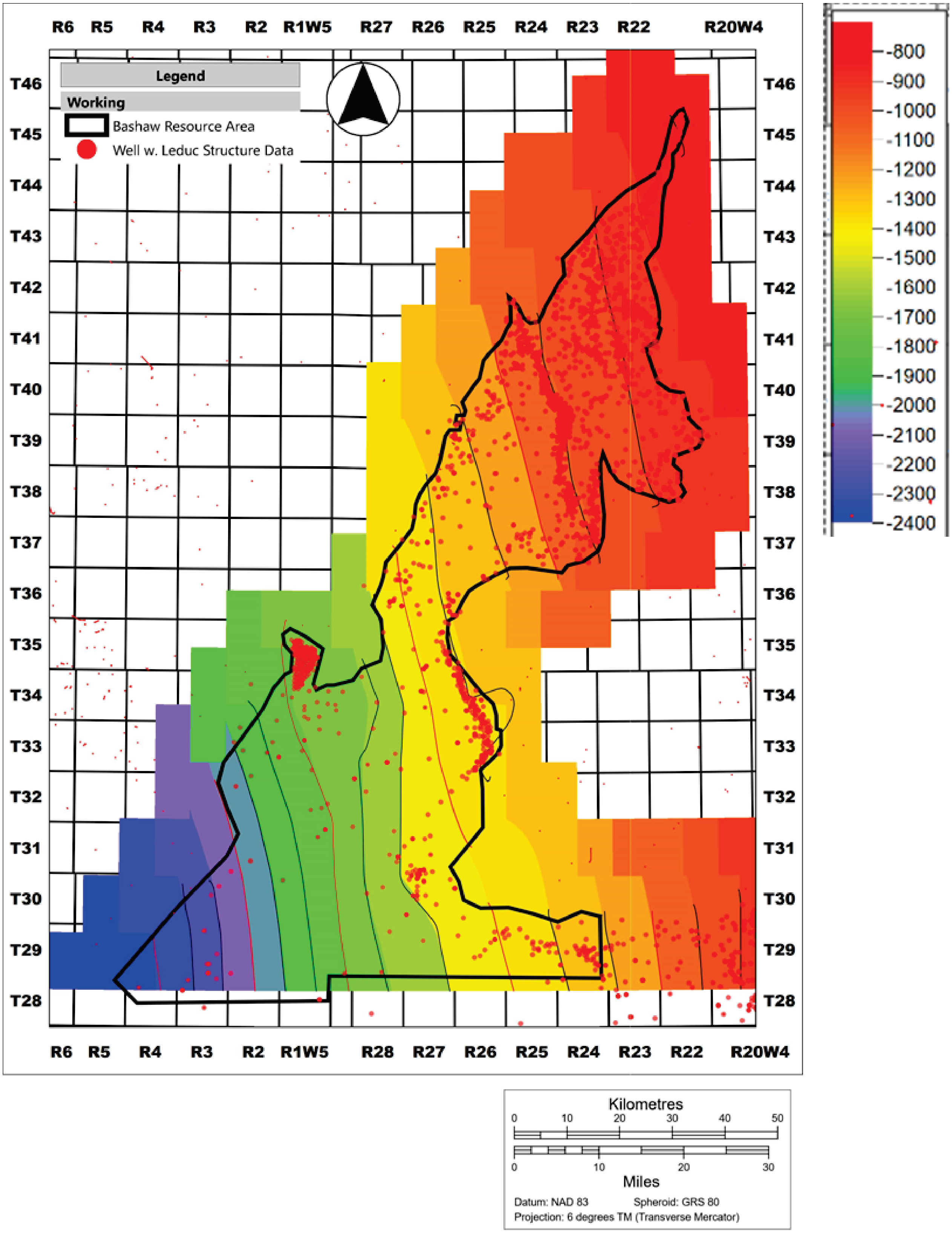

Figure 35: Structure Top of the Leduc

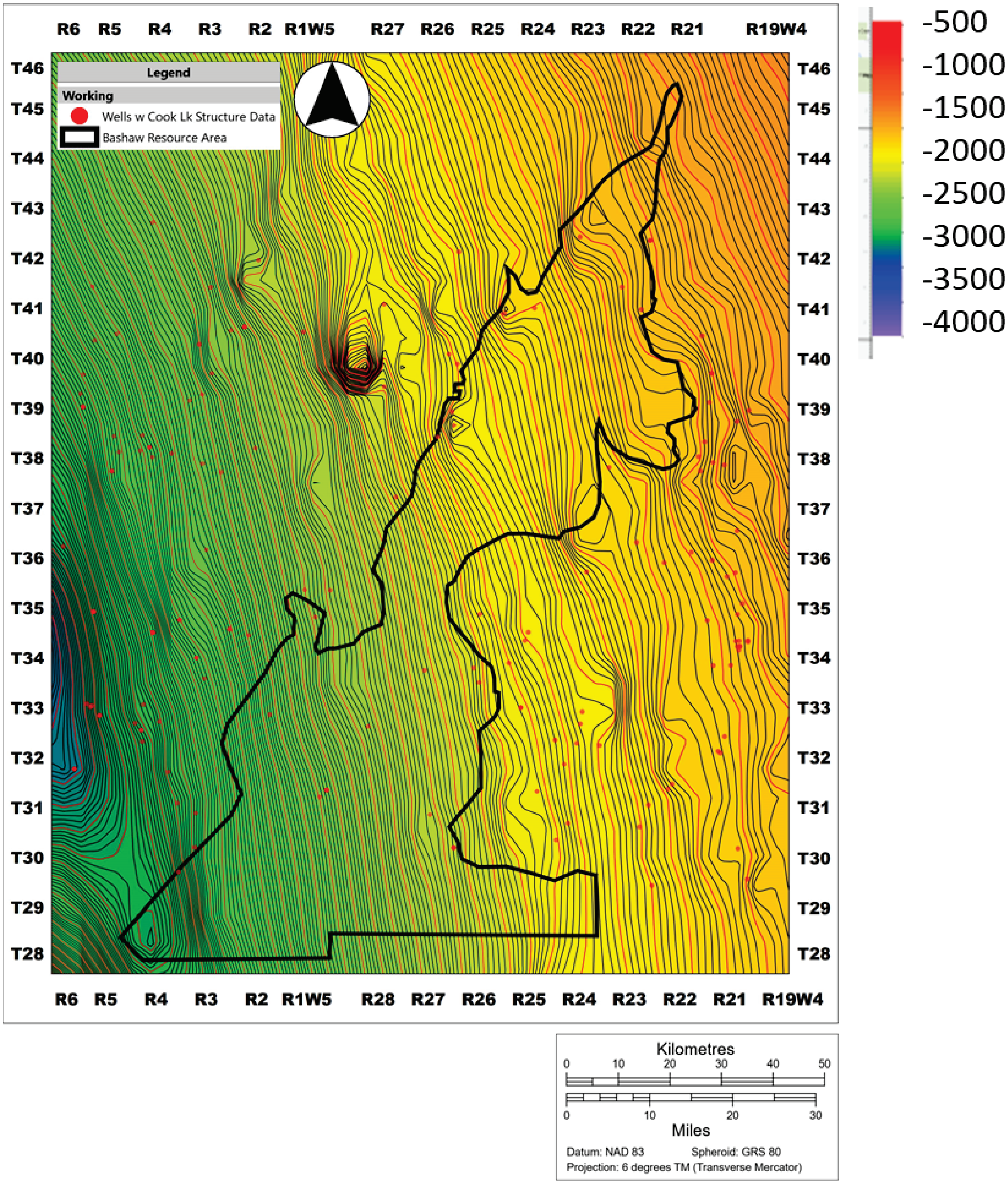

Figure 36: Structure Top of the Cooking Lake

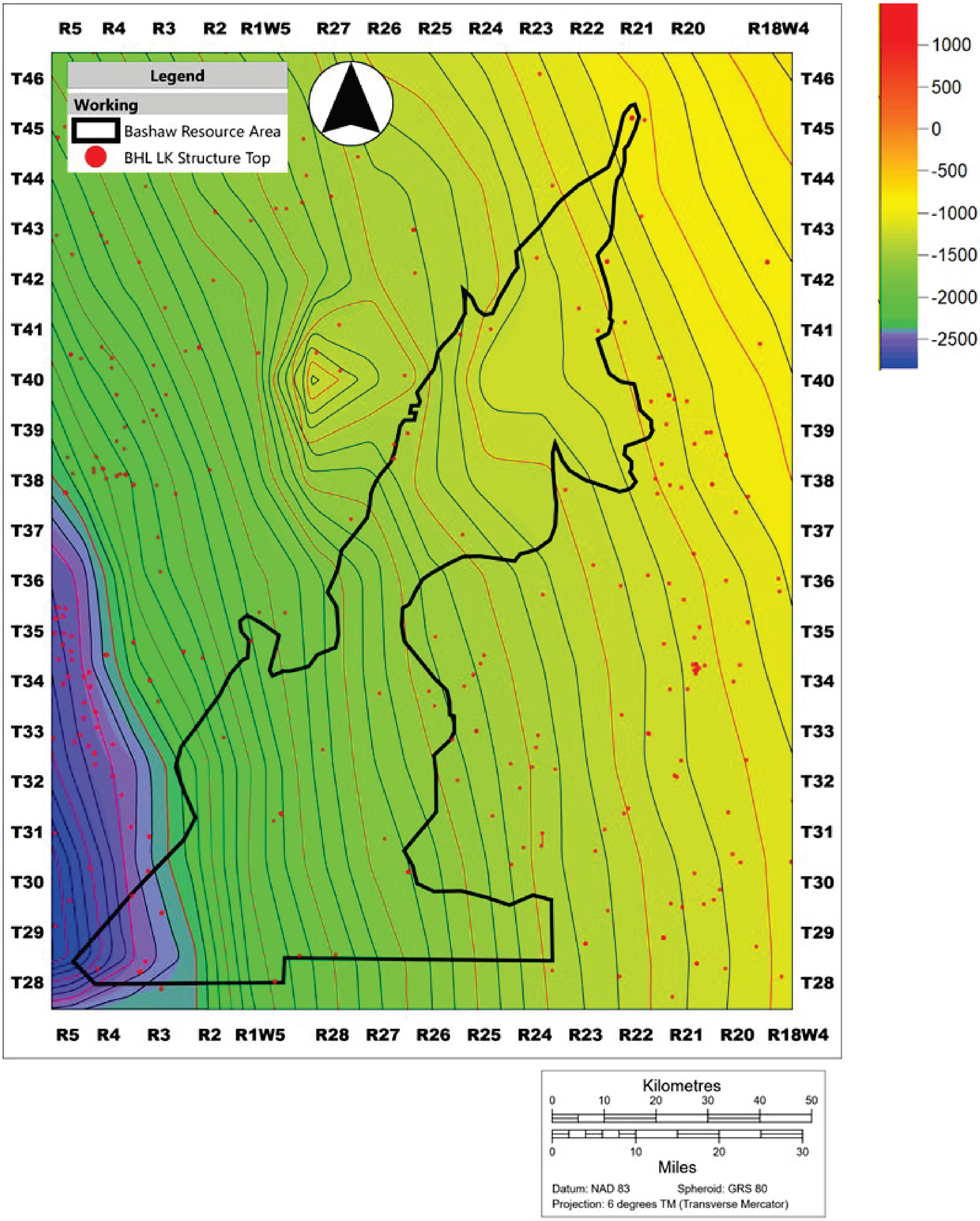

Figure 37: Structure Top of the Beaverhill Lake

14.5 Reservoir Permeability

Multiple techniques were used to determine the reservoir permeability. In addition to published permeability estimates of the Leduc and Cooking Lake reservoirs, the permeability of the three identified lithofacies units (Leduc High Energy Reef Facies: reef flat; Leduc Mixed Energy Reef Facies: reef flat to open lagoonal type facies; Lower Energy Lagoon Facies: open to restricted lagoonal type facies) in the resource area were further informed through three measurement techniques: core plug test analysis, DST analysis and petrophysical analysis (Flow Zone Indicator; FZI). It should be noted that core plugs are mainly confined to wells cored within the hydrocarbon producing pools, and they are confined to the upper part of the Leduc reservoir, which comprises predominantly the high and mixed energy reef facies.

DST analysis was completed by Melange Geoscience Inc. on a subset of what was considered high-quality DST data. Pressure build-up curves were analyzed on 5 DSTs in the Leduc Formation in the BD. DSTs were selected for analysis from both the high energy-mixed facies and the lower energy lagoon facies.

The core plug permeabilities reflect high quality estimates of permeability on a sub-wellbore-scale (cm-scale) and the DST derived permeabilities reflect high quality estimates of permeability on a near wellbore-scale (m-scale to 10s of m-scale). Both data sets also tend to be biased towards the "best reservoir" as they were done to analyze hydrocarbon potential within a reservoir, and as such will often yield the highest results for permeability measurements. Permeability derived using petrophysics (which was also validated using the core analysis data) covers 10' to 100's of meters over the interval and gave a less biased distribution of the permeability throughout the entire reservoir.

The petrophysical model was generated using 72 LAS curves over the Bashaw area. FZI (flow zone indicator) was used to derive permeability. FZI is used when the correlation between porosity and permeability data is not linear. It can identify hydraulic flow units and better correlates with core permeability results to verify the accuracy of the calculations. The FZI equation is as follows:

$$k = \emptyset \left[\frac{fzi}{0.314} \left(\frac{\emptyset}{1-\emptyset} \right) \right]^2$$

Using the above equation and the core porosity and permeability data, the individual FZI value is determined for each core point. Then an interpolation is applied to the FZI values and a one-dimensional array is created. This array is used along with the petrophysical log derived effective porosity to generate a permeability curve (horizontal and vertical). Once a good match between the core permeability and the FZI permeability is established the mean FZI value is applied to the remaining data above and below the core measured data to extrapolate the permeability values throughout the Leduc formation. This methodology allows for estimates of permeability over the entire vertical section of the Leduc, wherever geophysical logs were recorded, compared to the more local scale of the other measurements.

Table 8 provides a summary of the permeability data. Histograms showing the permeability distributions from these datasets are provide in Appendix G.

Table 8: Bashaw District Permeability from Core, Log, and DST Analysis

Formation	Stratagraphic Facies Unit	Core Analysis		E3 Log Analysis		Melange DST Analysis			
		Count	P50 Permeability [mD]	Count	P50 Permeability Petrophysics [mD]	Count	Min Permeability [mD]	Max Permeability [mD]	Geomean Permeability [mD]
Leduc	Mixed High Energy Reef Open Lagoon	276	360	27	392	3	2.5	4,646	891.7
	High Energy Reef Flat	12	219	4	219		--	--	--
	Lower Energy Lagoon	33	101	31	102	2	18.7	289	128.3
Cooking Lake	Regional	2	3			--	--	--	--
	Below Reef	0	--			--	--	--	--

The best estimates of representative horizontal permeability were selected to be the P50 of the log and core analysis (Table 8). Due to the small data set for the DST analysis, and the relatively larger data sets for both core and petrophysical data, the representative horizontal permeability was assumed to be an average of the core and petrophysics derived permeability (Table 8). Additionally, for the purposes of the geologic model, E3 decided to adopt a conservative approach and opted to use the lower values as the most accurate representation – in this case, the value for horizontal permeability utilized to support the resource assessment was 111 mD, the P50 value for the Lower Energy Lagoon facies. The lower P50 permeability was utilized in alignment with the concept of evaluating the resource as a single combined net pay unit as opposed to divided by lithofacies. This value was not used directly in the resource volume estimate but was utilized to estimate potential reservoir producibility which supports the evaluation of whether the resource has a reasonable prospect of economic extraction. This evaluation is discussed further in Section 16.

Vertical permeability (k_v) is a measure of how easily fluid will flow vertically within the reservoir. Typically, fluids will move more easily in a horizontal direction in sedimentary rocks. Vertical permeability is not captured by DST analysis and was therefore determined using core plug analysis. Based on the range of measured core plug permeabilities encountered at each well, this layered heterogeneity may be encountered in the Leduc Formation. In a flow unit with layered heterogeneity, Leonards (1962)[lx] suggest an effective vertical hydraulic conductivity can be determined using the harmonic mean of the contributing layers. Based on the core plug analyses available for the Leduc and Cooking Lake formations the vertical permeability in each flow unit likely ranges from less than 1 mD to 31 mD. Overall, it appears that the vertical permeability is less than the horizontal permeability in the Leduc reservoir.

14.6 Reservoir Porosity

Multiple techniques were used to evaluate the porosity of the reservoirs. Porosity estimates of lithofacies units in the BD were informed by facies-based porosity estimates published by Atchley et al. (2006)[xxx] and further constrained by core plug measurements and wireline data. Wireline Photoelectric (PE) curve data was used to determine lithology, specifically in this case between limestone and dolomite (Kennedy M.C., 2002)[lxi]. This distinction is important to the characterization of porosity as dolomite typically has a higher porosity than limestone.

Current CIM guidance for lithium brines indicates that specific yield, which is a hydrogeological term, should be utilized for resource estimates (CIM 2012)[lxii]. Specific yield is defined as the amount of water that drains from the connected pores under gravitational forces (Woessner and Poeter 2020[lxiii]) and an analogous petroleum geological term would be drainable porosity. Factors which result in porosity not being accessible for fluid flow typically include 1) disconnected pores, and 2) fluid adherence to grains, typically clays (i.e., irreducible connate water). Effective porosity is an additional term used both in hydrogeology and the oil and gas industry to represent connected pores, although there is some inconsistency in oil and gas as to whether effective porosity does or does not include irreducible connate water (API 1998[xv]). Wireline logs estimate total porosity (all fluid saturated pore space) based on specific physical measurements further described below. Standard oil and gas industry core analysis approaches are completed on dried samples and utilize injection of helium gas to estimate the connected porosity using Boyle's Law. Therefore, core porosity measurements are closer to an effective porosity measurements than wireline log derived porosities, but still do not account for the potential for irreducible connate water to further reduce the drainable porosity. For the purposes of this resource estimate, both wireline log and core porosity datasets were treated as measurements of total porosity. The approaches used to estimate effective porosity are further described below. Effective porosity was used as opposed to specific yield for the resource estimate for the following reasons:

- The reservoir pressure will be maintained during production and the fluid level will not drop below the top of the reservoir (i.e., the formation will not be dewatered)
- In the fractured porous Leduc Reef reservoir, there is limited clay content and it is comprised predominantly of limestone and dolostone, and therefore the relative proportion of irreducible connate water can be assumed to be minor

Therefore, we believe that for deep, confined, carbonate reservoirs using effective porosity in place of specific yield for the inferred resource estimate is a justified simplification. Additional discussion on the CIM 2012 guidance, which was developed based on the salar reservoir model, is provided in Section 14.10.

Average total porosity for each lithofacies was determined using good quality porosity log data as discussed in Section 7. The majority of the porosity measurements were determined using petroleum industry standard neutron/density open hole logs, which measure hydrogen concentration and electron density, respectively (American Association of Petroleum Geologists, 2017[xiii]). Where available, porosity measurements from core and core plugs were also used to estimate total porosity. Additionally, from the petrophysical data set, some sonic logs were converted to porosity and used where there was no core or neutron-density porosity logs. P50 porosity by facies is shown in Table 9.

The most available data due to the drilling density from oil and gas development is in the hydrocarbon pools. This data tends to be mainly focused in the high energy reef flat and mixed high energy reef flat/open lagoon facies, with a smaller subset within the lower energy lagoon facies. This is an acknowledged source of uncertainty in the resource estimate. Porosity log data was preferentially used in the absence of core data where wells penetrate the full depth and when each individual log is of good enough quality to derive porosities. Reservoir properties for areas of poor well control rely on well control from analogous areas with good well control. In addition, regional context is applied to interpret porosity, including depositional setting, cross sections and general knowledge of reef architecture. Each of these elements contribute to the estimation of average porosity for the lower energy lagoon units.

Table 9: Porosity by Facies in Bashaw District from Core and Log Analysis

Formation	Stratigraphic Facies Unit	E3 Core Analysis		E3 Log Analysis			E3 Combined Analysis (Core & Petrophysics)	
		Count	P50 Porosity [%]	Count	P50 Permeability Petrophysics	Ratio of Net/Gross	Count	Combined P50 Porosity
Leduc	Mixed High Energy Reef Open Lagoon	274	6.47%	39	7.50%	0.93	301	6.58%
	High Energy Reef Flat	11	6.86%	4	7.66%	0.96	15	7.23%
	Lower Energy Lagoon	29	5.56%	32	4.77%	0.8	58	5.23%
	TOTAL	329	6.73%	75	6.13%	0.93	404	**6.63%**
Cooking Lake	Regional	0	--			--		
	Below Reef	0	--			0		

The P50 total porosity for all the facies combined is 6.63%. Figure 38 illustrates the porosity distributions individually for the combination of high energy facies (reef flat/open lagoon) and low energy facies (lower energy lagoon). These data illustrate that the lower energy lagoon facies may have a slightly lower P50 porosity than the high energy facies (also seen in Table 9). However, there are fewer data points within the lower energy facies and the porosity distribution is contained almost entirely within the higher energy porosity distribution. Based on this information, a total population P50 porosity value of this combined dataset is deemed justified to represent the reservoir for this inferred resource estimate. The lower energy lagoon facies represents a volumetrically large portion of the reservoir and that there is a potential for using a combined P50 value to overestimate the porosity for this facies. Currently available data would indicate that this could potentially be on the order of 21% (5.23% vs 6.63% porosity, Appendix G). Future drilling has been planned to specifically target these facies to reduce this level of uncertainty and inform future resource estimates.

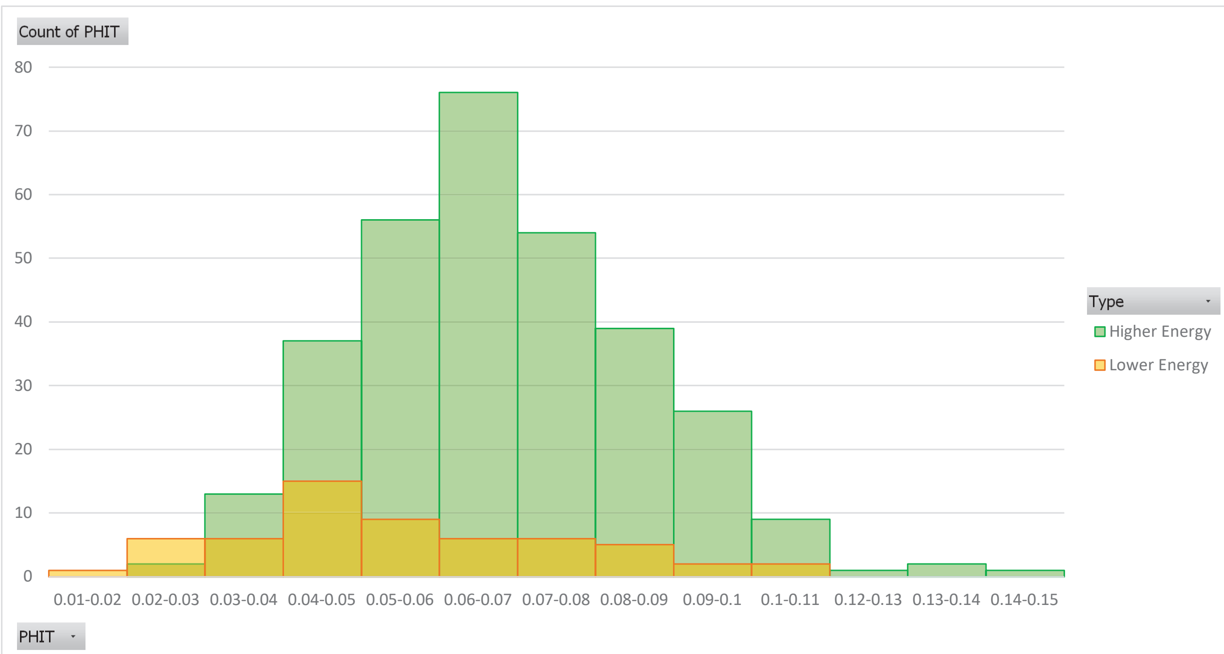

Figure 38: Porosity Histogram Comparing Higher Energy Facies to Lower Energy Facies

Net total porosity thickness is the total thickness of the reservoir with total porosity above a 2% porosity cut-off. A porosity cut-off is the lower productive limit of a formation, below which the rock is not expected to materially contribute to fluid production. Previously, a 3% porosity cut-off was used, a value typical in hydrocarbon fields hosted in carbonate reservoirs. E3 has completed additional work evaluation porosity and permeability in the reservoir. Specifically, a petrophysical approach (FZI) was used to develop a porosity/permeability relationship. Using this approach, a 2% porosity cut-off is associated with bulk reservoir permeabilities on the order of 10 mD which is determined to be sufficiently permeable to produce the brine. Additionally, water, even highly saline brine, has a significantly lower viscosity than oil, indicating that it is reasonable to use a lower cut-off for brine (Figure 39).

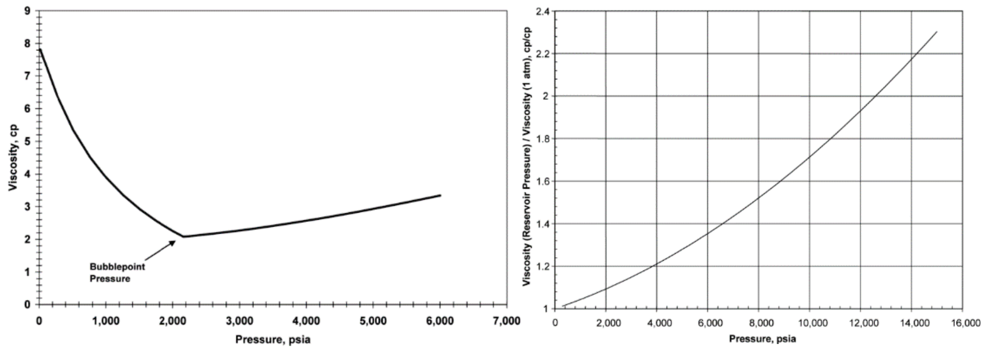

Figure 39: Comparison of Oil (left) and Water (right) Viscosity[lxiv]

A net total porosity thickness map represents the rock thickness with measured total porosity above 2%. A net to gross ratio is then calculated by dividing the net total porosity thickness by the gross thickness of the reservoir. This value represents the relative proportion of the reservoir above the total porosity cut-off. Hydrocarbon filled pore space within the oil and gas fields in the BD were excluded from the calculations and a net total porosity was not calculated within the oil leg of those areas. The P50 net to gross ratio for the BD is 0.93, with a P90-P10 range of 0.53-1.

In the BD, the Cooking Lake is a lower-porosity (tight) limestone. Average porosity in the Cooking Lake at the BD is approximately 2% or less and there were no intervals mapped to have porosity above this value, resulting in a net/gross ratio of zero (Table 9). Few wells penetrate to the top of the underlying Beaverhill Lake Group. Wells that did not penetrate the Beaverhill Lake Group were not used because the thickness of the Cooking Lake could not be determined, and net/gross numbers could not be calculated. Instead, wells in the greater surrounding area, including those in the area of interest, were used to estimate the average value for total porosity for the Cooking Lake. Although the rock properties of the Cooking Lake fall below the porosity cut-off, and therefore do not have a net flow unit value, the Cooking Lake still holds some water in the available pore space and has low (but non-zero) permeability, and therefore very little flow capability.

As discussed above, effective porosity was one of the key inputs for the resource volume estimation. To date, effective porosity has not been directly measured in the BD and has been estimated using two independent approaches. The net to gross ratio represents the proportion of high porosity to low porosity rock in the reservoir on the bulk reservoir scale, and it was utilized to estimate the average regional effective porosity for the Leduc reservoir. The P50 total porosity estimate of 6.63% was multiplied by the P50 net to gross ratio of 0.93 to generate an assumed effective porosity estimate for the reservoir of 6.17%. This approach is analogous to how E3 has estimated effective porosity in previous resource estimates. Additionally, the effective porosity for the Leduc reservoir was also independently estimated using a petrophysical approach based on shale volume. This estimate yielded a P50 effective porosity estimate of 6.25%.

For the resource volumetric calculation described in Section 14.8 below, the net-to-gross ratio derived P50 effective porosity value of 6.17% was used.

14.8 Estimate of Brine Resource Volume

As demonstrated by various lines of evidence including pressure, chemistry and reservoir properties described in the preceding sections, representing the resource as a single continuous reservoir with average reservoir properties is justified at the inferred resource stage. Additionally, E3 has revised the resource estimation approach to account for the presence of hydrocarbons in the reservoir. The hydrocarbon pore volumes from Leduc oil & gas fields were pulled from public data (Appendix H) and sum of the original oil in place (OOIP) and original gas in place (OGIP) from Leduc pools in the BD were removed from the total pore volume. As OOIP and OGIP volumes are reported at surface conditions and both fluids are significantly more compressible than water, the appropriate formation volume factors were applied to calculate the pore volume impact at reservoir conditions. Additionally, while dissolved gases have been non detectible to date in E3's analytical samples, an additional safety factor of 1% was applied to the calculated brine volume to account for potential dissolved gases; this factor is described as a brine saturation percentage with a value of 99%.

Based on this simplification, the following calculation of the brine resource volume is provided:

- Step 1: Calculate rock volume (area x P50 gross thickness)
- Step 2: Calculate total pore volume (gross rock volume x estimated effective porosity)
- Sept 3: Calculate brine resource volume ((total effective pore volume – hydrocarbon pore volume) x brine saturation percentage).

The total pore volume in the BD is calculated to be ~59 km^3 of resource brine in high permeability zones (Table 10).

Table 10: Bashaw District Brine Volume

Data & Inputs	**Bashaw Area [ha]**	**Porosity (PhiT)**	**Bashaw OOIP [m^3]**
	593,116	6.63%	54,299,410
	Bashaw Area [m^2]	**Thickness Gross [m]**	**Bashaw OGIP [m^3]**
	5,931,155,000	205	15,036,100,000
	Li-Rich Brine Saturation	**NTG Ratio**	**Brine Volume [km^2]**
	99%	0.93	59

Note: significant digits were used for table formatting purposes, but no rounding occurred until the final step of the resource estimate (mass calculation of OLIP in LI tonnes)

14.9 Estimate of Lithium Volume

The interpolated lithium concentrations in the BD have a P90-P10 range of 70.4 to 79.9mg/L with a P50 of 74.5 mg/L.

The mass of lithium in the BD was calculated by multiplying the brine volume (Section 14.8) by the P50 concentration. E3 has termed this value the Original Lithium In Place (OLIP).

Table 11: Original Lithium in Place, Bashaw District

Data & Inputs	**Bashaw Area [ha]**	**Porosity (PhiT)**	**Bashaw OOIP [m^3]**	**P50 Li Concentration [mg/L]**	
	593,116	6.63%	54,299,410	74.5	
	Bashaw Area [m^2]	**Thickness Gross [m]**	**Bashaw OGIP [m^3]**		
	5,931,155,000	205	15,036,100,000		
	Li-Rich Brin Saturation	**NTG Ratio**	**Brine Volume [km^2]**		
	99%	0.93	59		
Total Porosity x Net Thickness	**Rock Volume [m^3]**	**Pore Volume [m3]**	**Brine Volume [m3]**	**OLIP [Li tonnes]**	**OLIP Li [LCE tonnes]**
	1,212,921,197,500	74,732,322,306	59,045,503,667	4,398,890	23,415,292
Methodology Notes	Rock Volume = area x thickness Pore volume = rock volume x porosity Brine volume = (Total pore volume - hydrocarbon pore volume) x brine saturation OLIP [Li tonnes] = (Brine volume [m^3] x 1,000 [L/m^3]) x Li concentration [mg/L] / one billion [mg/tonne] LCE tonnes = Li tonnes x 5.323				

Note: significant digits were used for table formatting purposes, but no rounding occurred until the final step of the resource estimate (mass calculation of OLIP in LI tonnes)

14.10 Inferred Resource Estimate

The inferred mineral resource estimate has been prepared to be consistent with the NI 43-101 Standards of Disclosure for Mineral Projects (National Instrument, 2016[lxv]); Form 43-101F1 (National Instrument, 2011[lxvi]); CIM Definition Standards (CIM 2014[lxvii]); and the CIM Best Practice Guidelines for Reporting of Lithium Brine Resource and Reserves (CIM 2012[lxii]).

The technical guidance provided in CIM (2012)[lxii] is focused on the production of lithium brines in salars which is a very different hydrogeologic setting than the deep, confined, fractured and vuggy carbonate reservoir in the BD. Although parts of the CIM (2012)[lxii] guidelines are not applicable to the BD, the spirit and intent of the guidelines were applied.

Examples of the CIM (2012)[lxii] technical guidance that are not applicable to the BD includes:

- A focus on draining the basin (salar) infill which can be unconfined, semi-confined, or confined. Much of the guidance is focused on water released from pore spaces when a water table is lowered (specific yield). The reservoir in the BD is approximately -1,500 masl and is confined with approximately 1,800 m of hydraulic head above the top of the reservoir. Because of the depth and the high pressure, and E3's intent to maintain voidage, the reservoir will not be drained during the recovery of lithium.

- As described in the guideline (CIM 2012[lxii], page 2) salars "tend to be deposited in a typical concentric shell-like sequence from gravel outside, through sand, silt, clay, followed by carbonate, gypsum, and finally halite in the center." The setting results in: "a relatively rapid gradient from near-fresh water to brine" (CIM 2012[lxii], page 2); the potential for density driven convection currents; and brine chemistry that can be variable over time based on the water balance. By comparison, the reservoir in the BD has a very low salinity gradient, and the water in the reservoir is stagnant (very little flow in or out) because it is approximately 3,000 m below ground surface where the dynamic forces of precipitation, and evapotranspiration at surface do not influence flow in the reservoir.
- "Salar brines are contained within a matrix in which the porosity, permeability, brine composition, and hydrostratigraphic characteristics such as conductivity, transmissivity, anisotropy, and resistance may vary with the passage of time." (CIM 2012[lxii], page 4). The reservoir properties of the Leduc reservoir are not time variant in CCRA. This is because the water density and the reservoir saturation will not change during lithium recovery.

Because of the low lithium concentration gradients and the confined nature of the reservoir, little to no change in brine chemistry over time is expected due to "external (catchment basin) effects" (CIM 2012[lxii], page 6). There will, however, be temporal changes due to "internal (extraction induced) effects" (CIM 2012[lxii], page 6). Lithium rich water will be pumped to the surface with production well networks comprised of production wells and injection wells. The injected water will be void, or nearly void, of lithium. This will mix with the lithium rich water still in the reservoir as it propagates towards the production well. Over time the production wells may begin to pump some of the injected water. This will be a key consideration for future indicated and measured resource and reserve volumes and will be addressed using Modifying Factor(s). Additionally, because the reservoir is confined and will be produced while maintaining reservoir pressure, the total system compressibility product will be an important parameter to constrain as this parameter will strongly influence how pressure propagation occurs in the reservoir during production. This will influence the long term producibility and pressure interference between production and injection wells in the well network.

14.11 Resource Statement

The data sources used for the mineral resource include historical well data logs, core logs developed by E3, and brine samples collected by E3 from currently operating Leduc wells.

The two key findings of this assessment include:

1. The determination that lithium concentrations between 50 and 80 mg/L or higher are likely to be produced from the reservoir
2. The estimation of the mass of lithium in the net porosity intervals effective porosity (OLIP)

The mineral resource estimate for the BD is 4,398,000 tonnes of Li, which equates to 23,400,000 tonnes of lithium carbonate equivalent (LCE)[ii]. The Mineral Resource figures have been rounded to reflect that they are estimates. This resource estimate is classified as inferred due to the geological evidence being sufficient to imply but not verify geological, grade or quality continuity. Inferred mineral resource estimates can be upgraded to indicated and measured mineral resource with continued exploration. At that time, modifying factors can be applied to indicated and measures mineral resources, enabling them to be categorized as mineral reserves.

15 Mineral Reserve Estimates

The Project is in an early stage and a mineral reserve estimate is not applicable.

16 Mining Methods

To produce lithium, the reservoir water will be pumped to the surface from a production well as produced brine. The produced brine will be processed at the surface to remove the lithium, leveraging E3's proprietary DLE technology). The lithium-depleted brine will be injected into the reservoir using injection wells for pressure support and to maintain the reservoir voidage replacement ratio (VRR).

A high-level estimate of well deliverability for produced brine of ~24,000 m^3/d was calculated using the Farvolden[lxviii] equation:

$$Q_{20} = 0.68 * T * H_a * 0.7$$

Where:

Q_{20} = brine production rate sustained for 20 years
T = transmissivity (m^3/d)
H_α = available hydraulic head (m)

Hydraulic conductivity of the reservoir was determined from the reservoir permeability (assumed P50 value from lower energy lagoonal type facies, 111 mD) and the assumed representative bulk properties of the water at reservoir salinity, temperature and pressure conditions (viscosity of 4 x 10^{-4} Pa s and a density of 1,150 kg/m^3). Transmissivity of the reservoir was determined by multiplying the mapped average reservoir net thickness (average gross thickness x average net to gross ratio) by the hydraulic conductivity.

This estimate significantly exceeds the 3,300 m^3/d rate proposed for individual extraction wells as evaluated in E3's PEA[xv]. Taken in conjunction with the 60+ years of brine production from the Leduc reservoir from wells, the BD is a reasonable prospect for eventual economic extraction.

17 Recovery Methods

No work has been completed for this section for the BD resource area. A PEA was previously completed for the Clearwater Lithium Project, which is a sub area of the BD[xv].

18 Project Infrastructure

No work has been completed for this section for the BD resource area. A PEA was previously completed for the Clearwater Lithium Project, which is a sub area of the BD[xv].

19 Market Studies and Contracts

No work has been completed for this section for the BD resource area. A PEA was previously completed for the Clearwater Lithium Project, which is a sub area of the BD[xv].

20 Environmental Studies, Permitting and Social or Community Impact

No work has been completed for this section for the BD resource area. A PEA was previously completed for the Clearwater Lithium Project, which is a sub area of the BD[xv].

21 Capital and Operating Costs

No work has been completed for this section for the BD resource area. A PEA was previously completed for the Clearwater Lithium Project, which is a sub area of the BD[xv].

22 Economic Analysis

No work has been completed for this section for the BD resource area. A PEA was previously completed for the Clearwater Lithium Project, which is a sub area of the BD[xv].

23 Adjacent Properties

An adjacent property is defined as a reasonably proximate property in which the issuer does not have an interest and has similar geological characteristics to those of the subject of this Report. Alberta is currently experiencing an increased level of industry interest in its Li-brine potential. A variety of exploration companies have staked permits throughout Alberta; this includes areas with historical instances of lithium-in-brine enrichment in addition to areas with equivalent or associated Devonian Formations present.

The BD claims are interspersed in a checkerboard configuration between permits held from the provincial government and those privately-owned, freehold land. On freehold lands, metallic and industrial minerals are owned by private individuals or corporations. Production from within the permit area is to be governed by the AER with similar regulations that govern oil and gas production in the province. Outside of the permit areas (large white areas on Figure 40), the lands are held by a combination of Freehold and Crown ownership.

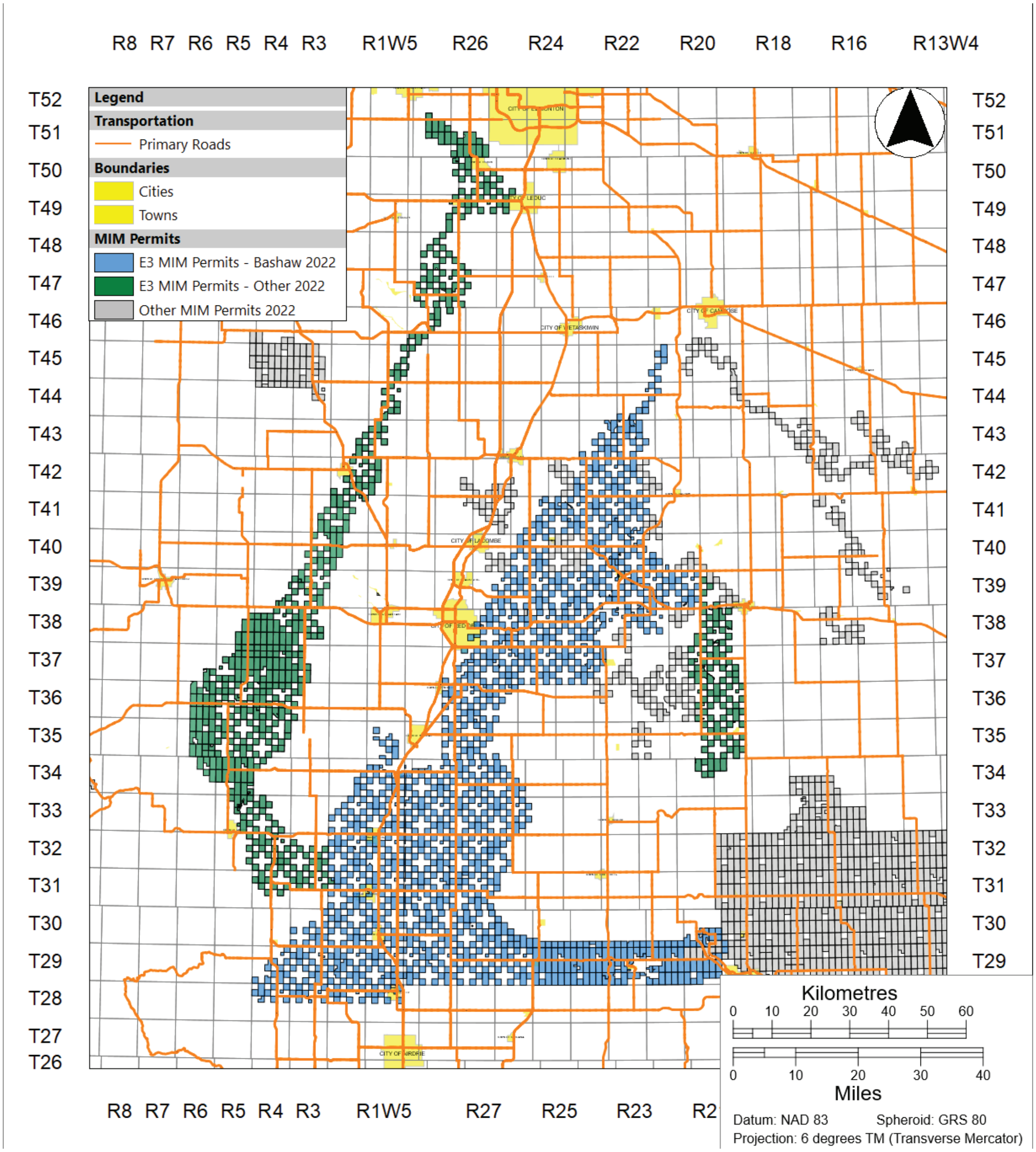

Figure 40: Adjacent Properties Map

24 Other Relevant Data and Information

24.1 Lithium Regulation in Alberta

The current policy regulation for the production of lithium in Alberta is being defined. E3 assumes that current oil and gas regulations and Directives would be applicable and may potentially guide the operational aspects of lithium resource production.

E3 has received guidance from the AER with a path forward for how to apply for licenses to drill exploration wells for Lithium in brine. As such, there is a path forward for Lithium exploration in Alberta, and a timeline on when it can be expected to have a finalized and robust set of directives for commercial Lithium production wells and facilities. Many of the directives for Lithium (and other brine hosted minerals) are expected to mirror current oil and gas regulatory frameworks that are well established and have been in place for several years.

E3 expects that pooling agreements (which dictate sharing costs and revenue associated drilling & producing a well in a drilling spacing unit with different owners) would apply for the extraction of lithium as they do for oil and gas under the Oil and Gas Conservation Act[lxix]. This is because lithium occurs dissolved in the brine and must be produced as a fluid over a relatively large area, beyond traditional Drill Spacing Units (DSU). In this circumstance, E3 would apply under Directive 65[lxx] to accommodate possible amendments to the spacing of well configurations and/or well placement that may be required to produce water at volumes required to extract lithium.

Existing synergies between lithium brine production and oil and gas, including the re-injection of lithium disposal water for strategic pressure support beneath oil and gas fields, could provide a mutual benefit for both lithium extraction and oil and gas production. Co-located operations could evolve in a symbiotic approach that ideally would contribute to each industry's success. This may involve the limitation of re-injection or disposal of oilfield wastewater in an area near to E3's unproduced mineral permit area to limit the dilution of the lithium resource. It is expected that MRLs (maximum rate limitations), designed to optimize oil production, could be avoided or negotiated through collaborative effort and industry partnerships.

24.2 Health, Safety and Environment

There are inherent health and safety considerations associated with lithium project development in Alberta, including well development and all field activities (construction, drilling, completions, workovers and operations) in the presence or potential presence of hydrogen sulphide gas (H_2S).

E3's employee handbook contains Health Safety and Environment protocols consistent with the Company's current stage of development. H_2S Alive training is required for all field activities. As the project develops further, the Company plans to ensure all aspects of the development and operation conduct and follow safe work practices across all activities with particular focus on the field. Design considerations will be made to protect safety of people and the environment. This includes implementing a corrosion inhibition program and safety protocols for sour services. These programs are well defined for oil and gas operators in the area.

25 Interpretation and Conclusions

25.1 Reasonable Prospect for Eventual Economic Extraction

The Bashaw District is a reasonable prospect for eventual economic extraction[lxxi] on the basis of realistically assumed and justifiable technical and economic conditions.

- The reservoir is regionally contiguous with lithium grade and reservoir properties consistent with producibility.
- Theoretical production rates based on average reservoir properties are in excess of what is required by E3's preliminary economic assessment evaluation.
- E3 has a DLE process that is in advanced stages of development that they are confident will be able to refine lithium at reservoir concentration thresholds at or below the average concentration in this reservoir.
- Lithium has been recognized as a "critical mineral" by Natural Resources Canada[lxxii].
- Global demand for lithium is expected to exceed supply based on electric vehicle sales and battery capacity growth[lxxiii].

25.2 Lithium Resource Estimate

The inferred mineral resource estimate for the Bashaw District is 4,398,000 tonnes of elemental lithium (23,400,000 LCE tonnes[ii]). This volume is not directly comparable to previously published NI 43-101 reports[xv], as the Central Clearwater and Exshaw resource areas are entirely encompassed within the significantly larger areal extent of the BD.

Key changes driving the BD estimate include:

1. An expansion of the resource area by ~3,033 km^2 to encompass E3's permits within the BD
2. New and repeated sampling within the resource area resulted in an updated P50 lithium concentration of 74.5 mg/L
3. Updated reservoir volumetrics supported by additional core data review, 2D seismic data review, and petrophysical evaluation of reservoir properties. Specific properties updated include:

    a. Average estimated bulk reservoir effective porosity of 6.17% (P50 total porosity of 6.63% x NTG of 0.93) applied to full water saturated volume of reef
    b. Applied gross reservoir thickness of 205 m to entire BD area

4. The explicit removal of hydrocarbon OOIP/OGIP volumes from the total pore volume available
5. Addition of a brine saturation percentage factor of 1% to account for potential dissolved gases within the water saturated portion of the reservoir
6. The removal of the production factor of 50% to 80%, as resource volumes should not be constrained by recovery factors. When applicable, Modifying Factors will be applied to indicated and measured resource volumes to convert them to reserve volumes.

25.3 Lithium Processing / Production

E3 will apply a DLE technology that includes a proprietary ion exchange sorbent material that offers high selectivity for lithium above all other cations in the brine. E3 is continuing to develop its DLE technology.

E3 is also further identifying, developing, and evaluating flowsheets to produce lithium hydroxide from the DLE eluate. This work aims to select the optimum flowsheets (as it relates to cost, performance, environmental impact, and risks) for continued development and testing. To support this, E3 has completed a desktop study with process simulations of circuits that include the purification, concentration, and lithium hydroxide production steps and reflect the range of DLE eluate characteristics.

For purification and concentration, E3 is evaluating nanofiltration, reverse osmosis, chemical softening, solvent extraction, and evaporation. E3 is evaluating membrane electrolysis, chemical reactions, and crystallization for lithium hydroxide production.

25.4 Significant Risks & Uncertainties

To progress from an inferred resource estimate to indicated resource, measured resource, and reserves, the following risks and uncertainties have been identified:

1. Technical Risks: Lithium resource
    a. Effective porosity has been estimated for the reservoir and has not been directly measured for the reservoir in the BD.
    b. Existing porosity and permeability measurements are concentrated in the hydrocarbon pools within the BD, which are predominantly the higher energy lithofacies.
    c. Lithium concentration sampling data is also concentrated in the hydrocarbon pools, which tend to be in the upper portion of the Leduc reservoir and may not be representative of the full vertical section of the reservoir.
    d. Dissolved gas content in the brine window (below the hydrocarbon window) is currently an assumption.
2. Technical Risks: Ability to produce
    a. Potential production and injection rates for full Leduc perforations are currently a calculated value based on discrete interval permeability measurements, and deliverability for the full formation thickness has not yet been physically confirmed by well testing.
    b. Hydraulic continuity between interior and margin areas has been inferred from regional data, not physically confirmed by long term pressure transient data.
    c. Processing rates for the DLE process are currently a scaled value from lab-scale testing
        i. Final DLE flowsheet is still under development.
        ii. Downstream processing of the eluate is under development.
3. Regulatory Risks:
    a. Regulatory framework still under development.

b. Freehold land ownership and crown ownership for mineral permits not held by E3 will require agreements to equitably produce.

26 Recommendations

E3 is progressing the resource upgrade and lithium processing in parallel as work continues to support planned commercial development. As such, the work and costs recommended below are not contingent on each other.

26.1 Resource Upgrade(s)

Characterization of the Leduc resource brine geology and properties benefits from an abundance of data compiled by the oil and gas industry. To better characterize the potential brine production from this project, additional data and further characterization of existing data is required to further characterize the reservoir and upgrade the resource to a measured or indicated mineral resource. Further upgrading the resource to a reserve category requires analysis and application of Modifying Factors, such as refining well networks and evaluation of commercial DLE facility options. Recommended activities to upgrade the resource include:

- Continued sampling of produced water from oil and gas wells
- Drill dedicated lithium brine exploration wells in lagoonal facies
    - Complete vertical profiling of lithium concentration to reduce uncertainty in vertical grade distribution
    - Collect additional porosity and permeability data, targeted to address current data gaps such as the lower energy lagoon facies, lower portion of the Leduc reservoir, and interior areas of the BD
- Complete porosity measurements on full diameter core so that larger scale pores (i.e., fractures and vugs) can be adequately characterized and evaluate effective versus total porosity
- Compare new data to previous porosity distributions and petrophysical models so that they can be validated
- Complete well tests (pressure build-up and injection fall-off) over the entire reservoir thickness to better characterize reservoir properties on a spatial scale more representative of the design for future well networks
- Complete statistical analysis on grade distribution to quantify spatial uncertainty in the grade and utilize this information to improve the classification of confidence level in grade
- Complete geostatistical analysis on reservoir properties to quantify uncertainty in porosity and permeability distribution, to further quantify the degree of confidence in the resource volume and producibility

E3 has communicated their intent to complete aspects of the above work to the QPs. The QPs have not independently verified the costs associated with these activities. Ongoing sampling work is estimated at $100,000/year for ~3 years, until commercial development commences. The drilling, completion, and well testing work is estimated to cost ~CAD$6,500,000. This work is currently underway.

26.2 Lithium Processing

The following need confirmation through additional test work and pilot scale testing:

- Confirm the sorbent performance, kinetic and equilibrium data
- Optimization of the current IX system envisaged; compare the current “sorbent-in-brine” IX circuit with a fixed bed system
- Quantify the removal efficiencies and species formed for secondary contaminants such as boron, strontium, and manganese removed in the secondary purification stage where impurities (largely calcium and magnesium) are removed via precipitation; simulate the system at lab scale
- Demonstrate the feasibility of the IX process at pilot scale using Leduc brine
- Demonstrate feasibility of downstream processing included electrolysis using Leduc brine

The estimated cost associated with this work ~CAD$5,500,000.

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