

# **Laboratory Analytical Results for Sampling of Eight Wells in the Northwest Territories**

Report for SR 2019-003

Submitted: June, 2021

## Introduction

The Southwestern Northwest Territories has an elevated geothermal gradient, which has resulted in recent interest in the area for research of its geothermal energy potential. Geological data characterizing the reservoir properties of target rocks for geothermal energy development are scarce. This well sampling program has the main objective to fill this knowledge gap and gather baseline geological data of the prospective reservoir rocks in the southwestern NWT. In order to fulfill this objective, the Northwest Territories Geological Survey (NTGS) and the Department of Infrastructure – Energy Division (INF-Energy) initiated a collaborative research program in 2019. In the first phase of the study, eight wells from the Liard area (Figure 1) were sampled and analysed for porosity, permeability, mineralogy, and pore space characterization; the data resulting from this study are shown in this report. Phase two of the project will commence in the summer of 2021 and will target field sampling and analysis of the same formations that were sampled from core for phase one. The field work will be conducted in the Fort Liard area of the NWT.

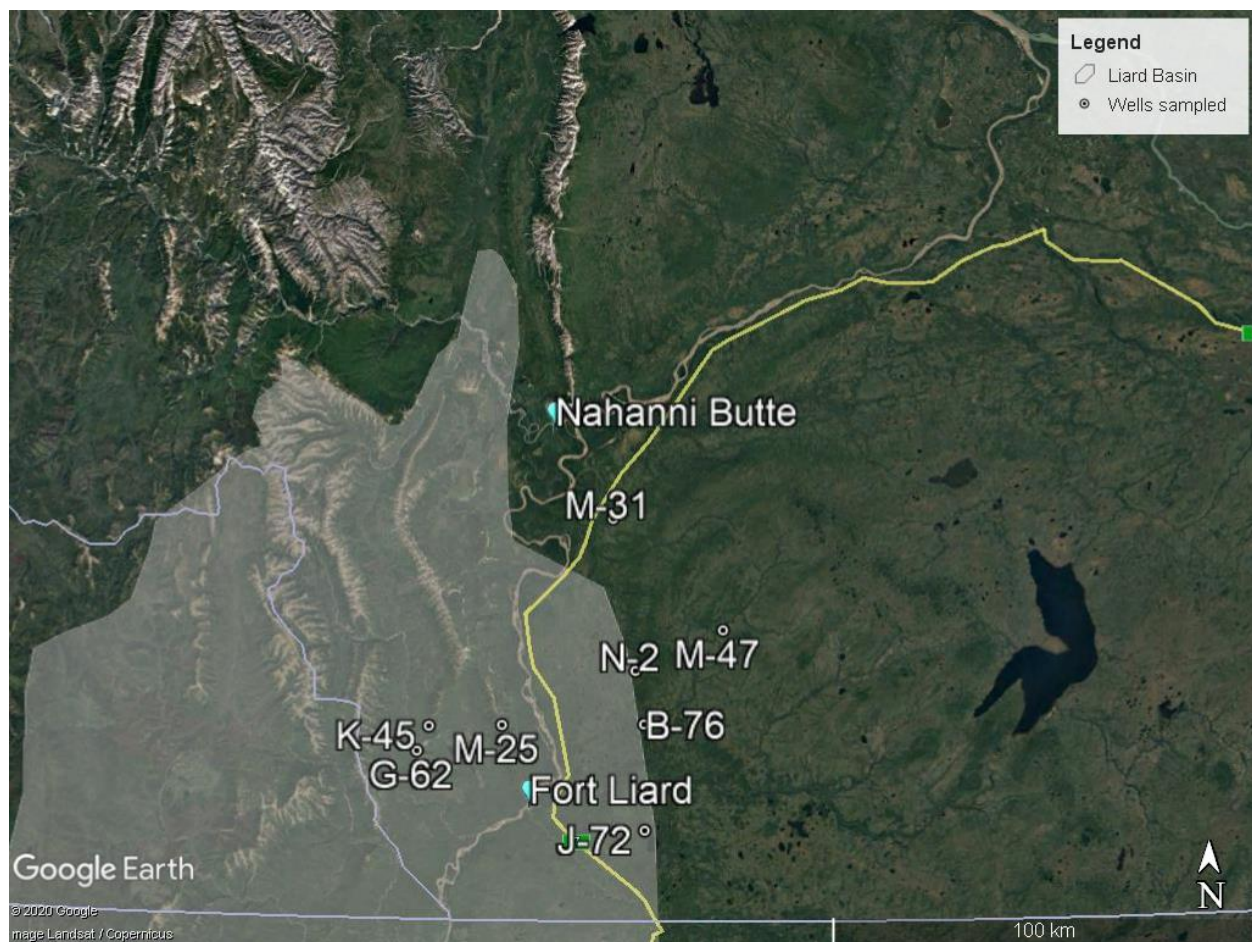


Figure 1: Locations of wells sampled in this study.

## Testing/Analysis Procedures

Well cores are stored at the Core and Sample Repository, Geological Survey of Canada (GSC) in Calgary, Alberta. For this study, eight wells were selected, and sampling intervals were defined and approved by OROGO for SR 2019-003. Cores were photographed and described. Samples were chosen based on available core and the nature of the rocks in each core. Samples for analysis were collected by AGAT Laboratories (Calgary, AB) under supervision of the Core and Sample Repository, GSC, Calgary. Table 1 highlights the analyses that were carried out:

The following analyses were carried out:

Well	SEM Petrography	Thin section analysis	XRD mineralogy	Core analysis (Perm/Por)
Texaco Bovie Lake J-72	11	11	31	
Paramount et al Liard M-25	3	3	3	6
B.A. Tex. Arrowhead B-76	7	7	5	5
B.A. Tex. Arrowhead N-2	4	4	4	4
Imp Sun Aurora M-47	11	11	6	11
Pan Am A-2 Pointed Mtn K-45	12	12	14	
Apache Pointed Mtn G-62	8	8	7	4
Murphy et al Netla M-31	5	5	4	5

## Data and Interpreted Results

Data and preliminary interpretations are included in the appendices. A full report will be published by NTGS after conclusion of phase two of the study.

## Appendices

Appendices are organized by well name under the “Appendices” folder included in this report.

All well folders contain a PDF file with whole core box photos, and an analytical report prepared by AGAT Laboratories in PDF format detailing results and interpretations of petrographic (thin section), SEM, and XRD analysis.

Wells that also include routine core analysis (permeability and porosity) have these reports included in separate PDF reports prepared by AGAT Laboratories.

The files and reports include:

- Amoco CDA PANAM Pointed Mountain K-45
  - Core box photos K-45
  - Petrographic, SEM, and XRD Report and Data Tables K-45
- Apache Pointed Mountain G-62
  - Core box photos G-62
  - Petrographic, SEM, and XRD Report and Data Tables G-62
  - Routine Core Analysis G-62
- B.A. Texaco Arrowhead B-76
  - Core box photos B-76
  - Petrographic, SEM, and XRD Report and Data Tables B-76
  - Routine Core Analysis B-76
- B.A. Texaco Arrowhead N-02
  - Core box photos N-02
  - Petrographic, SEM, and XRD Report and Data Tables N-02
  - Routine Core Analysis N-02
- Imperial Sun Arrowhead Aurora M-47
  - Core box photos M-47
  - Petrographic, SEM, and XRD Report and Data Tables M-47
  - Routine Core Analysis M-47
- Murphy et al Netla M-31
  - Core box photos M-31
  - Petrographic, SEM, and XRD Report and Data Tables M-31
  - Routine Core Analysis M-31
- Paramount et al. Liard M-25
  - Core box photos M-25
  - Petrographic, SEM, and XRD Report and Data Tables M-25
  - Routine Core Analysis M-25
- Texaco Bovie Lake J-72
  - Core box photos J-72
  - Petrographic, SEM, and XRD Report and Data Tables J-72