

ALBERTA TRANSPORTATION AND
ECONOMIC CORRIDORS GRMP
NORTH CENTRAL (ATHABASCA AND FORT
McMURRAY DISTRICTS)
2025 SITE INSPECTION



Site Number	Location	Name	Hwy	km
NC110	Hamlet of Wabasca	Wabasca Lake Slip 'N Slide	754:06	30.9
Legal Description		UTM Co-ordinates (NAD 83)		
NW 27-80-25-W4		12U N6206042	E323067	

	Date	PF	CF	Total
Previous Inspection:	June 3, 2024	13	10	130
Current Inspection:	May 13, 2025	13	10	130
Road WAADT:	2,000		Year:	2024
Inspected By:	José Pineda, Bruce Nestor (Thurber) Arthur Kavulok, Rishi Adhikari (TEC)			
Report Attachments:	☒ Photographs ☒ Plans ☒ Maintenance Items			

Primary Site Issue:	A landslide causing a severe distress on the southbound lane, and possibly impacting the integrity of nearby utility lines.
Dimensions:	Landslide is about 100 m wide (parallel to the highway alignment) and 22 m long (perpendicular to the highway alignment).
Site History:	This portion of the highway is a two-lane, undivided road with a maximum posted speed limit of 60 km/hr. Based on information provided by TEC, highway surface distress, dips and large cracks have been noted on this site since 2020, and the maintenance crew have been patching this portion of the highway on a yearly basis. A geotechnical investigation, consisting of drilling four test holes along with the installation of slope inclinometers and piezometers, was completed by Thurber in January 2024. The test holes showed the soil conditions mainly consist of medium to high plastic clay fill over high plastic clay over clay till.
Maintenance:	Multiples ACP patches have been placed by TEC since the slide was first noted; with the most recent ACP patch placed to seal/smoothen the wider cracks and fill in the dip within the northern section of the landslide in the fall of 2024.

Observations:	Description	Worse?
☒ Pavement Distress	30 mm drop within the SBL bounded by landslide scarp cracks for a distance of about 50 m within the northern section of the landslide; Drop of 60 mm in pavement near the southern flank of the slide. Overall dip in pavement has reduced since previous inspection due to recent ACP patch.	☐
☒ Slope Movement	Cracks in pavement area are less pronounced since last inspection due to ACP patch. Sharp highway shoulder drop off between TH24-1 and TH24-3 has increased to 600 mm.	☒
☐ Erosion		☐

☒ Seepage	Water ponding at the toe of the landslide in a low-lying area.	☐
☐ Bridge/Culvert Distress		☐
☒ Other	Multiple underground utilities within the sliding mass; including fiber optics, Telus, gas, and overhead ATCO cables. Gas and fibre optic lines appear to have been relocated to the east of the highway around the landslide area after the 2024 inspection. The anchor power pole and guide wire connected to power pole were removed since the previous inspection – tilt in power pole no. 2 is significantly reduced as a result.	☐

Instrumentation Readings (One SI, Three VW Piezometers, and Two SP piezometers; May 30, 2025):

SI24-2 sheared at 2.0 m below ground surface since the spring of 2024 readings.

SI24-3 showed a rate of movement of 22.4 mm/yr over 0.6 m to 3.7 m depth during the spring of 2025 readings. This corresponds to a decrease in the rate of movement by 194.1 mm/yr compared to the fall of 2024 readings.

Groundwater levels in SP24-1 and SP24-4 were measured at 1.8 m and 4.0 m below ground surface, respectively, during the spring of 2025 readings.

The groundwater levels in the vibrating wire piezometers ranged between 2.0 m and 9.5 m below ground surface during the spring of 2025 readings.

Assessment (Refer to attached Figure):

The severe distress observed along the highway southbound lane surface and the instrumentation monitoring results to date, indicate an actively moving landslide. This movement is likely due the presence of weak high plastic clay foundation soils and high groundwater levels.

The recent ACP patch improved the highway surface condition.

The landslide is very active, moving at high rates, and significant movement of the landslide mass may occur abruptly. An accelerated landslide movement may result in the complete loss of the southbound lane and potential distress of any utility lines that may remain within the landslide mass.

We have no records to confirm the relocation of all utility lines away from the landslide area. TEC should confirm if all utility relocations have been conducted and if so, the risk rating at this site may be reduced to 65 (PF of 13 x CF of 5).

Recommendations:

The site should be visited again in 2026.

The following recommendations should be considered in the short-term:

- The MCI should monitor the highway condition on a regular basis and seal all open cracks as they re-appear on the highway surface.
- ACP patches should be placed if further drop of the pavement is observed.
- A landslide warning sign should be placed off the highway surface to warn motorists of the existing hazard.

At TEC's request, Thurber has completed a detailed design of a driven steel pile wall to mitigate the landslide. The ballpark cost to complete the repair is in the order of \$2.5 to \$3.0 million (including engineering and contingencies).

Closure

It is a condition of this letter report that Thurber's performance of its professional services will be subject to the attached Statement for Use and Interpretation of Report.

José Pineda, M.Eng., P.Eng.
Associate | Senior Geotechnical Engineer

Bruce Nestor, M.Eng., P.Eng.
Geotechnical Engineer

STATEMENT FOR USE AND INTERPRETATION OF REPORT

1. STANDARD OF CARE

This Report has been prepared in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances at the same time and in the same or similar locality and in compliance with all applicable laws.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment, including this Statement For Use and Interpretation of Report, are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT, AS DESCRIBED ABOVE. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE OF THE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives, and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client for the development, design objectives, and/or purposes described to Thurber by the Client. **NO OTHER PARTY MAY USE OR RELY ON THE REPORT OR ANY PORTION THEREOF FOR OTHER THAN THE CLIENT'S BENEFIT IN CONNECTION WITH THE PURPOSES DESCRIBED IN THE REPORT.** Any use which a third party makes of the Report is the sole responsibility of such third party and is always subject to this Statement for Use and Interpretation of Report. Thurber accepts no liability or responsibility for damages suffered by any third party resulting from use of the Report for purposes outside the reasonable contemplation of Thurber at the time it was prepared or in any manner unintended by Thurber.

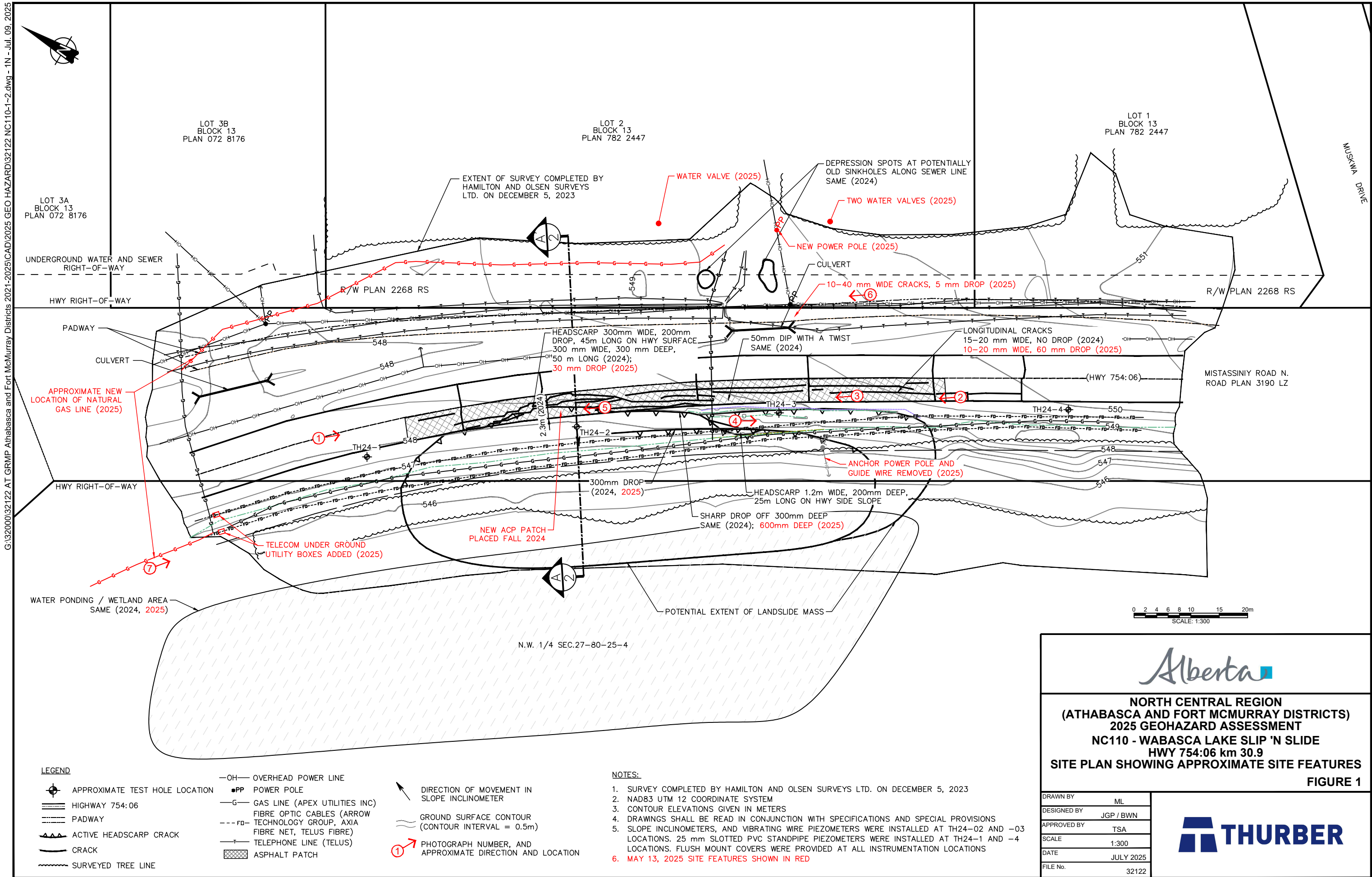
5. INTERPRETATION OF THE REPORT

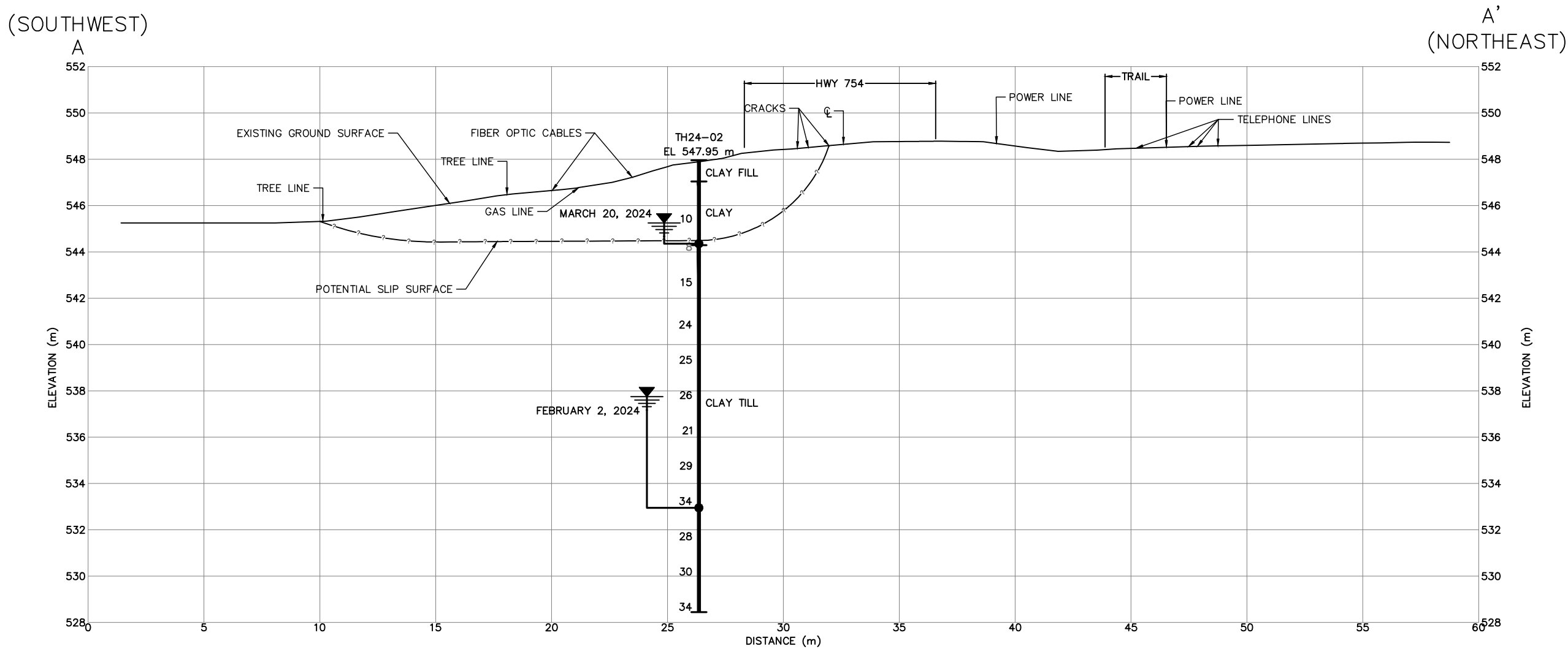
- a) **Nature and Exactness of Soil and Contaminant Description:** Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors is inherently judgement-based. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other parties making use of such documents or records with or without our express written consent need to be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other parties. Some conditions are subject to change over time and those making use of the Report need to be aware of this possibility and understand that the Report only presents the interpreted conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client must disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.
- b) **Reliance on Provided Information:** The evaluation and conclusions contained in the Report have been prepared based on conditions in evidence at the time of site inspections and based on information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report resulting from misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other parties providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
- c) **Design Services:** The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber is recommended to be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design need to be reported to Thurber immediately so that Thurber can address potential conflicts.
- d) **Construction Services:** During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions to confirm and document that the site conditions do not materially differ from those conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or other parties who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes, but is not limited to, decisions made to develop, purchase, or sell land, unless such decisions expressly form part of the stated purpose of the Report as described in Paragraph 3.

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LEGEND

- 15 SPT N VALUE
- WATER LEVEL IN PIEZOMETER
- VIBRATING WIRE PIEZOMETER TIP
- STANDPIPE PIEZOMETER SCREENED INTERVAL
- ZONE OF MOVEMENT IN SLOPE INCLINOMETER

NOTES:

- DATA CONCERNING THE VARIOUS STRATA HAVE BEEN OBTAINED AT THE TEST HOLE LOCATIONS ONLY. THE SOIL STRATIGRAPHY BETWEEN TEST HOLES HAS BEEN INFERRED FROM GEOLOGICAL EVIDENCE AND SO MAY VARY FROM THAT SHOWN.
- GROUND SURFACE PROFILE IS BASED ON THE SURVEY DATA COLLECTED BY HAMILTON AND OLSEN ON DEC 5, 2023



NORTH CENTRAL REGION
(ATHABASCA AND FORT MCMURRAY DISTRICTS)
2025 GEOHAZARD ASSESSMENT
NC110 - WABASCA LAKE SLIP 'N SLIDE
HWY 754:06 km 30.9
SITE PLAN SHOWING APPROXIMATE SITE FEATURES

FIGURE 2

DRAWN BY	ML
DESIGNED BY	JGP
APPROVED BY	TSA
SCALE	1:100
DATE	JULY 2025
FILE No.	32122





Photo 1. Northern flank of landslide. Head scarp open cracks were filled with ACP in early Spring 2024.



Photo 2. Looking north at the landslide area. Note that Anchor Power Pole No. 3 on the west side of the highway has been removed since the 2024 inspection.



Photo 3. Longitudinal cracks (10-20 mm wide, 60 mm drop) within the previously patched area.



Photo 4. Southern flank of the landslide (looking south); 600 mm drop visible from the highway. Note the topsoil patch at the right-hand side of the photo where Anchor Power Pole No. 3 was removed after the 2024 inspection.



Photo 5. Looking north at the severely impacted section of the highway by the landslide movement. Area was patched after the 2024 inspection.



Photo 6. Looking north from the east side of the highway at Power Pole No. 2, which has a much less pronounced tilt since the anchor pole has been removed. Note the new power pole installed after the 2024 inspection.



Photo 7. Looking south from the west side of the highway. Two utility boxes are visible where the fibre optic lines have been rerouted to the west side of the highway. The Apex Utilities gas line has also appear to have been rerouted across the highway at this location. |