TETRA TECH

TECHNICAL MEMO

ISSUED FOR USE

To:	Mladen Vukovic – Senior Tailings PM	**Date:**	February 20, 2026
cc:	Aaron Marsh, P.E. – Director, Tailings Capital Projects	**Memo No.:**	2025-P2W-MEM-003 Revision 1
From:	Yawu Liang, Ph.D., E.I.T. Hongwei Xia, Ph.D., P.Eng. Ian MacIntyre, P.Eng.	**File:**	704-ENG.WARC04673-04
Subject:	Updated Slope Stability Assessment – Phase 2 West Dry Stack Tailings Facility Keno Hill District Mill Site, Yukon		

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Alexco Keno Hill Mining Corporation (AKHM) to conduct a detailed design for the Phase 2 West (P2W) expansion of the existing Dry Stacked Tailings Facility (DSTF) at the Keno Hill District Mill Site, Yukon Territory.

In 2024, Tetra Tech completed the detailed engineering design of the DSTF Phase 2 East (P2E). Slope stability analyses of the P2E were conducted based on the information available at that time and documented in the Tetra Tech's Design Summary Report – Phase 2 Expansion Detailed Design – Revision 2 (Tetra Tech 2024b), and in the technical memorandum titled Slope Stability Assessment – Phase II East Dry Stack Tailings Facility (Tetra Tech 2024c).

To support the expansion of mine operations, AKHM is proposing to increase the storage capacity of the DSTF through raising and westward expansion of the P2E geometry. Tetra Tech is currently undertaking the detailed engineering design of the P2W which incorporates this expansion. As part of the detailed engineering design work, the slope stability assessment of P2E were revised and updated to reflect and incorporate:

- DSTF design expansion geometry;
- Updated topographical datasets for the existing ground surface;
- The maximum geometric limit of the DSTF;
- Input from AKHM's Independent Tailings Review Board (ITRB);
- Recent laboratory testing results (liner interface and tailings); and
- Findings from the 2024 DSTF P1 Site Investigation Program.

This technical memorandum summarizes the methodology, design criteria, input parameters, and adopted assumptions used in the updated stability analyses of the DSTF P2W. Key findings from the stability analyses are presented, along with recommendations for additional studies to verify the design assumptions.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.0 SCOPE OF WORK

The proposed scope of work for the DSTF slope stability assessment was detailed in a Service Order dated December 13, 2024. Work completed as part of the updated slope stability assessment includes the following:

- Data Review and Compilation:
  - Review available documents and drawings pertaining to the project site;
  - Compile topographical data using available ground surface from Propeller; and
  - Review and summarize key data from 2024 P1 geotechnical investigations (Cone Penetration Testing (CPT)), borehole information, and standard and advanced laboratory testing.
- Data Analysis:
  - Update previously developed stability models based on the available geotechnical data (i.e., stratigraphy, ground surface profile, and phreatic surface), and considering the following:
    - Re-sloping of the Phase 1B (P1B) buttress and stabilization berm, and partial removal of the P2E buttress as a local material source and increase to tailings capacity;
    - Use of a contained tailings toe structure downstream of the west and south slopes in place of granular material where possible;
    - Increase tailings slopes along the eastern and southern sides of the facility where the sloping foundation topography has less of an impact on stability; and
    - Increase the stack height to maximum geometric limits.
  - Revise geotechnical input parameters based on key findings from P1 site investigation, if applicable;
  - Analyze the slope stability of the revised configuration of the DSTF P2 using limit equilibrium analysis; and
  - Evaluate the impact of key model inputs by sensitivity analysis.
- Conclusion and Recommendation:
  - Assess the results and summarize key findings of the slope stability evaluation.

3.0 GENERAL SITE CONDITIONS

3.1 Permafrost

The site is located within the extensive discontinuous permafrost zone in the Yukon, where permafrost can be expected under 50% to 90% of the ground surface. Permafrost within the DSTF P2 footprint is generally warm (generally observed between -0.2°C to -0.4°C), discontinuous, and can contain ice-rich soil (Tetra Tech 2024b).

3.2 Groundwater

Groundwater was not observed during the P2 drilling program in October 2022. During construction of P2E in fall/winter of 2024, two vibrating wire piezometers (VWP-P2E-01 and VWP-P2E-02) were installed. The data from vibrating wire piezometers (VWPs) P2 indicate piezometric elevation is below the liner elevation, indicating that the tailings in this area are in unsaturated conditions (Tetra Tech 2025c).

Groundwater was not observed during the P1 characterization drilling program completed in November to December 2024. During this program, two nested VWPs were installed in BH24-P1-01 and BH24-P1-06, each with sensors positioned slightly above the liner, slightly below the liner, and near the bottom of the borehole in the foundation material. P1-01 is located in the lower bench of P1. The first year of data collected indicates piezometric elevation is slightly above or at liner elevation and therefore near-saturated conditions may be possible near the base of the tailings in this area. P1-06 is located on the upper bench of P1, and measurements indicate piezometric elevation is below the liner elevation, which implies that tailings in this area are in unsaturated conditions to date.

VWP data collected was used to inform sensitivity analyses (Section 6.8.1) related to the phreatic surface in the stability models.

3.3 Seismic Zone

Based on the determined ground conditions, the site classification for seismic responses is “Class D.” The Peak Ground Acceleration (PGA) for a reference “Class D” site, corresponding to the Annual Exceedance Probabilities (AEP) based on 1 in 2,475-year return period, was estimated to be 0.278 (1 in 2,475-year return period) based on the sixth-generation seismic hazard model (C6SHM) used in the 2020 edition of the National Building Code of Canada (NBCC) (NRC 2022).

However, considering a boundary issue in this model related to the Alaska Coastal areal source which allows synthetic ruptures to propagate inland in a way that is not considered physically relevant, and given that the NRC plans to address this issue in a future generation of its seismic hazard model, Tetra Tech reassessed the seismic hazard deaggregation values using an amended model referred to as C6.1SHM. A PGA of 0.248 g was obtained for a 'Class D' site under a 1 in 2,475-year return period.

Tetra Tech understands future analyses will include evaluating the maximum credible earthquake (MCE) and closure design requirements.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Conditions in the DSTF P2 Area

Ten geotechnical boreholes were drilled within or close to the DSTF P2 footprint during the 2022 site investigation program (Tetra Tech 2024b), eight test pits were excavated in 2013 (EBA 2015). Based on the information from the boreholes and test pits, the subsurface of the DSTF P2 generally consists of a thin layer of organic underlain by various layers of silt/sand till, sand and gravel, and bedrock. Ice-rich silt zones may be present in various localized areas, typically focused in the northern and western area of the P2W footprint. Foundation preparation for P2W will include the removal of ice-rich foundation soils under critical structures, as practical.

The locations of the boreholes and test pits are presented in Figure 1 (Tetra Tech 2024b).

4.2 Bedrock

Bedrock in the Keno City area typically consists of quartzite or schist. Bedrock was not encountered in every borehole as the contact was deeper than the termination depth, and/or the subsurface conditions made for difficult drilling. A summary of bedrock encounters and estimated elevations during the drilling program is listed in Table 1.

Table 1: Summary of Bedrock Encounters

Tailings Facility	Borehole ID	Termination Depth (m)	Termination Elevation (m)	Bedrock Encountered/Comments
DSTF P2	BH22-01	15.2	902.5	Quartzite 12.2 m / 905.5 m
	BH22-02	30.5	885.1	No, target depth reached
	BH22-03	18.2	901.3	Refusal / core barrel damage
	BH22-04	20.4	910.4	Refusal on suspected quartzite bedrock
	BH22-05	26.8	904.9	Refusal on suspected quartzite bedrock
	BH22-06	30.5	902.5	No, target depth
	BH22-07	27.4	897	Refusal on suspected quartzite bedrock
	BH22-08	30.5	896.0	No, target depth reached
	BH22-09	28.3	895.8	Refusal on suspected quartzite bedrock
	BH22-10	23.2	895.0	Refusal on suspected quartzite bedrock
DSTF P1	BH24-P1-01	17.0	903.9	Quartzite 13.7 m / 907.2 m
	BH24-P1-02	21.5	899.7	Mudstone 16.8 m / 907.4 m
	BH24-P1-03	8.9	918.1	Phyllite and Quartzite 6.7 m / 920.3 m
	BH24-P1-04	9.1	907.9	Mudstone 6.6 m / 910.4 m
	BH24-P1-05	15.4	930.0	Quartzite 12.8 m / 932.6 m
	BH24-P1-06	13.1	930.5	No, target depth reached
	BH24-P1-07	14.0	924.9	Quartzite 12.6 m / 926.3 m
	BH24-P1-08	7.4	924.0	Quartzite 4.9 m / 926.5 m
	BH24-P1-09	6.0	917.7	Refusal

5.0 DESIGN CRITERIA

5.1 General

The stability of the DSTF P2W was evaluated using GeoStudio 2025 Slope/W limit equilibrium slope stability software, commercially available from Seequent Limited. The limit equilibrium method was utilized with Slope/W to calculate the Factor of Safety (FoS) against the slope failure of the tailings facilities. The Morgenstern-Price method with a half-sine interslice force assumption was used throughout the analyses to evaluate the potential slip surface failures. The optimization function with default parameter setting was employed in the analyses to determine the critical slip surface (lowest FoS) for each failure scenario.

The principles underlying the method of limit equilibrium for slope stability analyses are as follows:

- A slip mechanism is postulated.
- The analysis accounts for both force and moment equilibrium.

- The shear stresses required to equilibrate the postulated slip mechanism are calculated by means of statics.
- The FoS is defined as the ratio of the available shear strength to the calculated shear stresses required for equilibrium.
- The slip surface with the lowest FoS is determined through iteration.

5.2 Acceptance Criteria

The acceptance criteria for the stability analyses were selected from Table 5-2 of the Department of Energy, Mines and Resources (EMR) Guidelines (EMR 2023) based on a Class II facility and Hecla's Dry Stack Tailings Disposal Facility Project Design Basis dated December 14, 2024. The minimum FoS values for different scenarios are summarized in Table 2.

Note the EMR guidelines only provide minimum FoS for static operations, static closure scenarios, and for pseudo-static conditions. AKHM's Design Basis includes these conditions, as well as a post-seismic scenario.

Table 2: Target Factors of Safety for Slope Stability Analysis

Scenario	Factor of Safety	Source Document
Short-term static loading condition during initial construction (with no risk of breach or flow failure)	1.3	AKHM Design Basis
Long-term static loading condition (operation and after closure)	1.5	
Post-seismic	1.2	
Pseudo-static[2]	1.0	AKHM Design Basis & EMR Guidelines
Static during Operations for external slopes	1.5	EMR Guidelines[1] (Note no post-seismic requirements)
Static during closure	1.5	

Notes:
(1) Table 5-2 (EMR 2023).
(2) The design seismic event selected was a 1 in 2,475-year return period based on 2023 EMR Guidelines.

6.0 FAILURE MODES AND MATERIAL PARAMETERS

6.1 Model Geometry

The location and geometry of the DSTF P2 (P2E and P2W), and the five representative typical sections used for slope stability assessment are shown in Figure 2.

The critical cross-sections for analyses were selected based on:

- Location relative to existing downstream infrastructure;
- Final height of tailings placement; and
- Existing topographic grades (as-built survey data).

The DSTF P2W design proposed the following modifications relative to the P2E design:

- Overall, the P2W final tailings slopes are 3:1, and final exposed P2E tailings slopes (i.e., along the south and east facing slopes) remain at 3.25:1. These slopes have been selected based on stability and closure requirements;
- Increase the stack height to approximate Elevation 950 m (i.e., maximum geometric limits allowing for a minimum crest width of approximately 20 m);
- Partial removal of the P2E toe buttress and P1B stabilization berm, including sub-excavation at a slope of 3H:1V. This allows for generation of some borrow material, as well as an increase to tailings capacity;
- Replacement of a portion of the Geosynthetic Clay Liner (GCL) with a textured Linear Low-Density Polyethylene (LLDPE) to optimize geometry while achieving minimum required FoS. Note existing P2E tailings excavated to allow for liner replacement are expected to be used for the contained tailings toe structure to minimize rehandling; and
- Construct a contained tailings toe structure downstream of the west and south slopes with 2.5H:1V slopes on both the upstream and downstream faces. This structure will be wrapped by LLDEP and form the facility perimeter allowing for management and conveyance of contact water runoff.

Surface topography information was interpreted from snow free Propeller survey exports and as-built surveys during the P2E construction activities. P2W geometry is based on current 95% design models. The geometry and configuration of the selected five critical cross-sections are presented in Figures 3 to 5.

6.2 Loading Conditions Analyzed and Material Properties Adopted

Tetra Tech carried out slope stability analysis at selected cross-section locations to evaluate the slope stability of DSTF P2W under the following loading conditions:

- Stability under short-term static loading conditions (partially thawed during construction);
- Stability under long-term static loading after construction;
- Stability under seismic loading condition (pseudo-static) after construction; and
- Stability under post-seismic conditions.

The following sub-sections outline the analysis methodology for each condition and summarize the material parameters used in the stability analysis.

6.2.1 Static Loading Conditions

Material parameters used in the static slope stability analyses were estimated based on the subsurface conditions identified in the borehole logs, completed laboratory testing, and Tetra Tech's experience with similar soil strata and site conditions. Peak drained shear strength parameters were adopted for each material type in the static slope stability analyses.

In the previous DSTF P2E slope stability assessment, the liner system consisted of non-woven geotextile, geonet, and GCL. The minimum peak shear strength for liner system was observed at the interface between the non-woven

geotextile and geonet from direct shear tests. The interpreted peak shear strength at the interface between the non-woven geotextile and geonet has a friction angle of 20° and a cohesion of 0 kPa (Table 3 and Appendix B).

To reduce P2W fill requirements, an evaluation of alternative liner materials was conducted in January 2025 (Tetra Tech 2025a). Based on the liner type evaluation and preliminary slope stability analysis results, LLDPE was selected for P2W design due to significantly higher residual strength than GCL. Interface direct shear tests were conducted between the interface of various soil types and LLDPE to confirm the interface shear strength of the LLDPE liner for slope stability assessment. The results are presented in Table 3 and included in Appendix B.

As built survey data for liner system was used to inform the GCL layer underlying the P2E portion of the slope stability models. A select area of GCL (approximately 15 m along the western boundary of P2E) has been identified to be replaced by LLDPE to meet the minimum FoS requirement. The entirety of P2W is to be underlain by LLDPE.

Table 3: Shear Strength Characteristics of Soil-Geosynthetic Interface from Direct Shear Testing

Soil-Geosynthetic Interface		ASTM Specification	Peak		Residual (Large Strain)	
			Cohesion (kPa)	Interface Friction Angle (°)	Cohesion (kPa)	Interface Friction Angle (°)
Tailings	Non-Woven Geotextile	ASTM D5321	3.4	37	0	30
Non-Woven Geotextile	Geonet Hydranet (220)	ASTM D5321	0	20	1.8	12
Geonet Hydranet (220)	GCL	ASTM D5321	0	23	7.1	18
GCL	Drainage Blanket Material	ASTM D5321	16.7	26	18.3	3
Non-woven Geotextile (LP8)	80 mil Textured LLDPE (EL 6280)	ASTM D5321	15	22	13	9.4
20 mm Bedding Material	80 mil Textured LLDPE (EL 6280)	ASTM D5321	6	32.1	4	31.6
5 mm Bedding Material	80 mil Textured LLDPE (EL 6280)	ASTM D5321	13	32.2	24	26.6
20 mm Bedding Material	Non-woven Geotextile (LP8)	ASTM D5321	23	28.7	30	27.3

Composite 20 mm samples were collected during P2E construction activities and combined and blended for interface testing. The sand was produced in the laboratory by screening and removing particles over 5 mm. The 20 mm source material was generally sub-angular. Representative results are included in Appendix B. It is expected that 5 mm minus bedding material will be used in contact with the liner for the construction of the DSTF P2W, therefore, the interface shear strength between 5 mm bedding material and 80 mil textured LLDPE was used in the slope stability analyses. The shear strength parameters used in the stability analyses under static loading conditions are summarized in Table 3.

For the shear strength parameters of tailings, the following test results and references were taken into consideration:

- The peak friction angles from drained and undrained triaxial tests conducted on the tailings samples collected in P1 site investigation (Tetra Tech 2025d) are 41.8° and 36.6°, respectively.
- The peak friction angle from CPT (P1 site investigation) interpretation ranges from 32° to 45° (Tetra Tech 2025d).

- Direct shear testing completed under Tetra Tech's EOR laboratory scope during 2025 indicated a peak friction angle of 34.2° with a cohesion of 19 kPa, and a residual friction angle 28.7° with zero cohesion (Tetra Tech 2025c).

The EMR guidelines recommend using the lower-bound shear strength properties; therefore, 32° was adopted as the peak friction angle and 28° as the residual friction angle for DSTF tailings. The contained tailings for the toe structure will be placed under more stringent moisture conditioning and compaction requirements and, therefore, were assigned slightly increased shear strength parameters, with a peak friction angle of 35° and a residual friction angle of 30°.

Table 4: Material Properties for Slope Stability Analysis – Static Conditions

Material	Unit Weight, γ (kN/m^3)	Friction Angle, φ (°)	Cohesion, c (kPa)
Bedrock[1]	25.0	-	-
Frozen Ice-Poor Silt Till[2]	17.0	36	0
Thawed Silt Till[2]	19.1	36	0
DSTF Tailings	22.5	32	0
Contained Tailings (toe structure)	22.5	35	0
Drainage Blanket Gravel	22.5	35	0
Buttress Gravel/Cover	22.5	35	0
5 mm Bedding Material and LLDPE Liner Interface[3]	16.0	32	13
Non-woven Geotextile and Geonet Interface[4]	16.0	20	0

Notes:
(1) Bedrock was considered impenetrable.
(2) Adopted from direct shear tests conducted on foundation till in the Flame and Moth Waste Rock Storage Area (WRSA) (Tetra Tech 2025b). Unit weights for the ice-poor till were adjusted based on ground ice content, as ground ice results in lower unit weights. Note ice rich soils are expected to be removed during P2W foundation preparation.
(3) Appendix B. Interface between 5 mm Bedding Material and LLDPE Liner.
(4) Appendix B. The most critical peak strength parameter of liner system is derived from the interface strength between the non-woven geotextile and geonet.

6.2.2 Seismic Loading Conditions

Pseudo-static stability analyses were conducted to calculate the minimum FoS against slope failure under designed seismic loading conditions. In accordance with a Class II facility under the 2023 EMR Guidelines, the design seismic event was selected based on a return period of 1 in 2,475 years. Hynes-Griffin and Franklin (1984) recommend using one half of the horizontal seismic coefficient when conducting pseudo-static analyses. This allows for damping and attenuation of the bedrock acceleration within a slope or embankment and to account for the rigid body pseudo-static model. Hynes-Griffin and Franklin (1984) concluded that structures should not develop deformations greater than 1 m if this criterion is satisfied. In this study, the horizontal seismic load coefficient adopted for the pseudo-static stability analyses is 0.124 g, which corresponds to 50% of the PGA.

The same material parameters presented in Table 4 were used for the pseudo-static stability analyses.

6.2.3 Post-Seismic Loading Conditions

For the slope stability assessment under post-seismic loading conditions, residual (or large strain) shear strength parameters of the foundation soils and liner materials were used. The minimum residual parameters for the GCL

used in the P2E design (Tetra Tech 2024c) were a friction angle of 3° and a cohesion of 18 kPa, as obtained from direct shear testing of the interface between the GCL and the drainage blanket material (Table 3 and Appendix B).

Tetra Tech conducted a site investigation program in 2024 within DSTF P1 to characterize the tailings and foundation materials through a series of laboratory testing, CPT with pore pressure dissipation, and standard penetration test (SPT). Based on the CPT data interpretation performed by Tetra Tech and supported by Dr. Peter K. Robertson (Tetra Tech 2025d), it can be concluded that the majority of the tailings placed in the DSTF P1 exhibited dilative behavior and behaved in a drained and partially drained manner during CPT soundings. Some exceptions were noted where a thin layer (or layers, thickness ranging from 0.2 m to 0.5 m), exhibited contractive behavior, possibly due to inconsistent quality control during the P1 tailings placement.

Tetra Tech understands that AKHM is adhering to much more controlled tailings placement protocols and quality control/quality assurance procedures for the construction of the DSTF P2 when compared to that of P1. Under the improved protocol on site, it is expected that the tailings placed in P2 will exhibit similar dilative behavior to that observed in the majority of the P1 tailings. Accordingly, it is reasonably assumed that the tailings placed in the DSTF P2 will also exhibit dilative behavior. For dense tailings exhibiting dilative behavior, the undrained shear strength is generally greater than the drained shear strength due to the generation of negative pore pressure under undrained loading. To reasonably present post-seismic performance, the residual drained shear strength of tailings was used in the post-seismic stability analyses.

The material parameters used in the post-seismic slope stability analyses are summarized in Table 5.

Table 5: Material Properties for Slope Stability Analysis – Post-Seismic Conditions

Material	Unit Weight, γ (kN/m^3)	Friction Angle, φ (°)	Cohesion, c (kPa)
Bedrock[1]	25	-	0
Frozen Ice-Poor Silt Till[2]	17	32	0
Thawed Silt Till[2]	19.1	32	0
DSTF Tailings[3]	22.5	28	0
Contained Tailings (toe structure) [3]	22.5	30	0
Drainage Blanket Gravel	22.5	35	0
Buttress Gravel/Cover	22.5	35	0
5 mm Bedding Material and LLDPE Liner Interface[4]	16.0	26.6	0
Drainage Blanket Material and GCL Liner Interface[5]	16.0	3	18

Notes:
(1) Bedrock was considered impenetrable and did not have an effective friction angle.
(2) Adopted from direct shear tests conducted on foundation till in the Flame and Moth WRSA (Tetra Tech 2025b). Unit weights for the ice-poor till were adjusted based on ground ice content, as ground ice results in lower unit weights.
(3) See Section 6.2.1.
(4) Appendix B. For the residual strength parameters, it was assumed that textured LLDPE materials are predominantly frictional.
(5) Appendix B. The most critical residual strength parameter of liner system is the interface strength between the GCL and the drainage blanket material.

6.2.4 Other Considerations

6.2.4.1 Excess Pore Water Pressure

Excess pore-water pressure generated due to the tailings placement above the original ground is not expected when the foundation soils are in a frozen condition. Excess pore-water pressure may be generated when the foundation soils are in the process of thawing due to the tailings placement in the summer period or long-term climate change, if thawing occurs at a faster rate than that the excess pore-water pressure is produced. To consider the potential excess pore-water pressure generation in the short-term, an assumed piezometric line (at the original ground surface), together with a pore pressure coefficient ($\overline{B)}$ or pore-pressure ratio (Ru) can be used in the short-term analyses. It is assumed that excess pore-water pressure in the foundation soils can only be generated during thawing, and the initial pore-water pressure at shallow depth is considered very low and therefore negligible as thawing begins. Consequently, the change in pore-water pressure (Δu_w) is equal to the total pore-water pressure (u_w) after thaw. Under this condition, the pore-water pressure coefficient ($\bar{B}$) is equivalent to the pore-water pressure ratio (Ru).

Morgenstern and Nixon studied the consolidation of thawing soils and concluded that the excess pore-water pressures and the degree of consolidation in thawing soils depend primarily on the thawing consolidation ratio (R) (Morgenstern and Nixon 1971). Closed form solutions were introduced to calculate the normalized pore pressure distribution in the thawing layer under different thawing consolidation ratios. The thaw consolidation ratio, R, can be calculated using the following equation:

$$R = \frac{\alpha}{2\sqrt{C_v}}$$

where:

α denotes a constant, which can be determined through thermal analysis or measured ground temperature data; and

C_v denotes the coefficient of consolidation of the thawing soil.

Based on data from the GTC installed in borehole BH22-40B on the lower bench of DSTF P1 (Tetra Tech 2025c), historical GTC data from this location, and thermal analysis from the Phase 2 Expansion Detailed Design – Revision 2 (Tetra Tech 2024b), the maximum thawing rate was estimated at 0.7 m/year. Using an average coefficient of consolidation (Cv) of 0.0014 cm²/s, determined from thaw-consolidation tests on ice-rich permafrost samples from P1 (EBA 2011), the anticipated excess pore water pressure ratio was calculated as $R_u = 0.15$ based on the published design chart by Morgenstern and Nixon (1971).

For the short-term loading condition, the pore-water pressure ratio, Ru =0.15 was used in the slope stability analysis. In the long term, the till is expected to become fully thawed, and the excess pore-water pressure will dissipate completely, leaving only hydrostatic pore-water pressure under static loading. Pseudo-static analysis was used to simulate the seismic loading, and this method typically applies a horizontal acceleration coefficient without considering seismic-induced excess pore-water pressures.

6.2.4.2 Groundwater Table

Two sets of three nested VWPs were installed in the 2024 investigation within the P1 footprint. Monitoring data within P1 indicates that the local piezometric elevation at the lower bench, near the bottom of the tailings, is within 0.5 m above the liner. This observation is consistent with the interpretation of CPT soundings (CPT24-P1-04)

performed by Dr. Peter K. Robertson (Tetra tech 2025d), which indicates that the thin bottom layer of tailings is saturated. Considering the piezometer data, the CPT investigation results, topography condition (P2 situated on 5% to 15% slope), and foundation configuration (liner system underlain by drainage blanket and overlain by gravel material), it is reasonable to assume that the groundwater table corresponds to, or near the original ground level (below the liner system) for the purpose of the slope stability analyses. A sensitivity analysis considering a saturated bottom zone of tailings with different phreatic surfaces (0.5 m, 1 m, 2 m, and 3.5 m) above the liner was conducted and is summarized in Section 6.8.

During P2E construction, one VWP was installed immediately above and one immediately below the liner at the topographical low point within the P2E footprint. The VWP data at P2E indicates negative pore-water pressure measurements, which suggest that the tailings remain in unsaturated conditions in this area.

6.2.4.3 Traffic Loading

A uniformly distributed traffic load of 20 kN/m was applied along the driving lane of the toe structure. The applied load was derived from an operational haul truck weight of 152,593 lbs and an assumed contact area of 36.3 m² for a 740-class haul truck.

6.3 Failure Modes Evaluated

The potential consequences of slope failure vary between shallow and deep failure mechanisms. For the purpose of this assessment, deep failures are defined as slip surfaces extending from the crest of the tailings to the downstream side of the foundation. Shallow failures are defined as the slip surface that enters from the crest of the tailings to the toe of the tailings slope. Shallow failures are generally less critical. In addition, a key failure mechanism identified for the P2 detailed design is translational failure along the liner interface.

Accordingly, stability analyses were conducted on the representative cross-sections shown in Figures 3 to 5 under the following failure scenarios:

- Scenario One (S1): Local shallow rotational failure with the slip surface entering at the final design elevation of the tailings and exiting at the toe of the tailings. This failure mechanism would not produce a large failing mass.
- Scenario Two (S2): Global deep-seated failure with the slip surface entering at the crest of the tailings at approximately elevation 950 m (assumed maximum geometric limit) and exiting downstream through unfrozen till, above the underlying bedrock surface. These are typically rotational or non-circular failures where the failure surface passes through the foundation soil materials.
- Scenario Three (S3): Translational failure involving the slip surface sliding through the liner interface and exiting near the toe of the tailings.

These failure modes are shown on Figure 6. Each scenario was analyzed to assess potential failure mechanisms and their corresponding impacts on slope stability.

6.4 Cases Analyzed

Three cases were analyzed under several loading conditions, including short-term (construction and operation) in static loading condition, and long-term (operation and closure) in static, pseudo-static, and post-seismic loading conditions. These three cases are explained as follows:

- Case One – **Partially Thawed** – to model the short-term stability assuming that excess pore water pressure generation associated with permafrost thawing occurs. Note with the removal of ice rich materials, the likelihood of this case influencing global stability is remote.
- Case Two – **Fully Thawed** – to model the long-term stability assuming that permafrost is fully thawed.
- Case Three – **Failure along the Liner Interface** – to evaluate translational failure along the liner interface.

At Sections A, B, and C, the P2E toe buttress will be fully removed. Following buttress removal, the existing GCL above the toe buttress will be replaced with LLDPE. Replacement of the GCL with LLDPE along the P2E western perimeter is required to meet the minimum FoS requirement. The minimum liner replacement length is assumed to be 15 m.

6.5 Case One – Partially Thawed

Case one represents the anticipated short-term condition following the initial tailings placement, and excess pore water pressure is generated in thawed foundation till layer during the construction. The bedrock was not modeled in this case, as it does not influence the results. The entire foundation was modeled as till, consistent with the P2E design (Tetra Tech 2024c). A summary of the calculated FoS from the slope stability analyses for each design cross sections is provided in Table 6. The complete set of Slope/W stability analysis outputs Case One is provided in Figures C1 to C20 (Appendix C).

Table 6: Summary of Minimum Calculated Factors of Safety under Partially Thawed Scenarios

Tailings Facility	Design Cross Sections	Design Scenarios	Required Minimum FoS	Failure Modes	Calculated Minimum FoS	Figure No.	Calculated Minimum FoS	Figure No.
					East Face		West Face	
Dry Stacked Tailings Facility (DSTF) Phase 2	A	Static	1.3	S1 - Local failure	2.1	C1	1.9	C3
				S2 - Global failure	2.5	C2	1.9	C4
	B	Static	1.3	S1 - Local failure	2.8	C5	1.9	C7
				S2 - Global failure	3.0	C6	1.9	C8
	C	Static	1.3	S1 - Local failure	3.2	C9	1.9	C11
				S2 - Global failure	3.0	C10	1.9	C12
	D	Static	1.3	S1 - Local failure	2.0	C13	2.5	C15
				S2 - Global failure	2.2	C14	2.7	C16
					South Face		North Face	
	E	Static	1.3	S1 - Local failure	2.0	C17	2.8	C19
				S2 - Global failure	2.1	C18	2.6	C20

6.6 Case Two – Fully Thawed

Case two represents the anticipated long-term condition after the completion of the P2, and the underlying soils have fully thawed. The bedrock was not modeled in this case, as it does not influence the results. The entire foundation was modeled as till, consistent with the P2E design (Tetra Tech 2024c). A summary of the calculated FoS from the slope stability analyses under each loading condition for design cross sections is provided in Table 7. The complete set of Slope/W stability analysis outputs for Case Two is included in Figures C21 to C80 (Appendix C).

Table 7: Summary of Minimum Calculated Factors of Safety under Fully Thawed Scenarios

Tailings Facility	Design Cross Sections	Design Scenarios	Required Minimum FoS	Failure Modes	Calculated Minimum FoS	Figure No.	Calculated Minimum FoS	Figure No.
					East Face		West Face	
Dry Stacked Tailings Facility (DSTF) Phase 2	A	Static	1.5	S1 - Local failure	2.1	C.21	1.9	C.27
				S2 - Global failure	2.6	C.22	2.0	C.28
		Post-Seismic	1.2	S1 - Local failure	1.8	C.23	1.6	C.29
				S2 - Global failure	2.3	C.24	1.4	C.30
		Pseudo-static	1.0	S1 - Local failure	1.4	C.25	1.3	C.31
				S2 - Global failure	1.7	C.26	1.4	C.32
	B	Static	1.5	S1 - Local failure	2.7	C.33	1.9	C.39
				S2 - Global failure	2.9	C.34	2.1	C.40
		Post-Seismic	1.2	S1 - Local failure	2.3	C.35	1.6	C.41
				S2 - Global failure	2.6	C.36	1.8	C.42
		Pseudo-static	1.0	S1 - Local failure	1.7	C.37	1.3	C.43
				S2 - Global failure	1.9	C.38	1.4	C.44
	C	Static	1.5	S1 - Local failure	3.1	C.45	1.9	C.51
				S2 - Global failure	3.4	C.46	2.0	C.52
		Post-Seismic	1.2	S1 - Local failure	2.7	C.47	1.6	C.53
				S2 - Global failure	3.0	C.48	1.8	C.54
		Pseudo-static	1.0	S1 - Local failure	1.8	C.49	1.3	C.55
				S2 - Global failure	2.0	C.50	1.4	C.56
	D	Static	1.5	S1 - Local failure	2.0	C.57	2.5	C.63
				S2 - Global failure	2.3	C.58	2.8	C.64
		Post-Seismic	1.2	S1 - Local failure	1.7	C.59	2.1	C.65
				S2 - Global failure	2.0	C.60	2.4	C.66
		Pseudo-static	1.0	S1 - Local failure	1.4	C.61	1.6	C.67
				S2 - Global failure	1.6	C.62	1.7	C.68
					South Face		North Face	
	E	Static	1.5	S1 - Local failure	2.0	C.69	2.8	C.75
				S2 - Global failure	2.2	C.70	2.9	C.76
		Post-Seismic	1.2	S1 - Local failure	1.7	C.71	2.4	C.77
				S2 - Global failure	1.9	C.72	2.5	C.78
		Pseudo-static	1.0	S1 - Local failure	1.4	C.73	1.8	C.79
				S2 - Global failure	1.4	C.74	1.9	C.80

6.7 Case Three – Failure Along the Liner

This scenario assumes the liner system is a weak layer with critical slip surface to slide along the liner system, and the soils below the liner system are impenetrable. Table 8 summarizes the FoS results of the stability analyses evaluated under the static, pseudo-static, and post-seismic conditions. The complete set of Slope/W stability analysis outputs of Case Three is included in Figures C81 to C110 (Appendix C).

Table 8: Summary of Minimum Calculated Factors of Safety under Slip Surfaces Along the Liner Scenarios

Tailings Facility	Design Cross Sections	Design Scenarios	Required Minimum FoS	Failure Modes	Calculated Minimum FoS	Figure No.	Calculated Minimum FoS	Figure No.
					East Face		West Face	
Dry Stacked Tailings Facility (DSTF) Phase 2	A	Static	1.5	S3 - Failure along the liner	2.0	C81	2.1	C84
		Post-Seismic	1.2	S3 - Failure along the liner	1.3	C82	1.2	C85
		Pseudo-static	1.0	S3 - Failure along the liner	1.4	C83	1.4	C86
	B	Static	1.5	S3 - Failure along the liner	2.7	C87	2.0	C90
		Post-Seismic	1.2	S3 - Failure along the liner	1.8	C88	1.2	C91
		Pseudo-static	1.0	S3 - Failure along the liner	1.7	C89	1.4	C92
	C	Static	1.5	S3 - Failure along the liner	2.6	C93	2.0	C96
		Post-Seismic	1.2	S3 - Failure along the liner	1.5	C94	1.2	C97
		Pseudo-static	1.0	S3 - Failure along the liner	1.6	C95	1.4	C98
	D	Static	1.5	S3 - Failure along the liner	2.0	C99	2.2	C102
		Post-Seismic	1.2	S3 - Failure along the liner	1.2	C100	1.2	C103
		Pseudo-static	1.0	S3 - Failure along the liner	1.4	C101	1.4	C104
					South Face		North Face	
	E	Static	1.5	S3 - Failure along the liner	1.9	C105	2.5	C108
		Post-Seismic	1.2	S3 - Failure along the liner	1.3	C106	1.4	C109
		Pseudo-static	1.0	S3 - Failure along the liner	1.3	C107	1.6	C110

6.8 Additional Analysis

In addition to the analyses summarized above, several models were completed to support the sensitivity analysis and evaluate the stability of the P1B buttress, the toe structure, and existing tailings excavation backslope during construction.

6.8.1 Sensitive Analysis

To assess the impact of the phreatic surface elevation above the liner on slope stability, and to evaluate the potential for additional capacity by steepening the uphill slopes (east and north sides), a sensitivity analysis was conducted on critical Sections A and D, respectively, under post-seismic (worst-case considering the presence of GCL liner and associated low residual shear strength) conditions.

- Section A: The phreatic surface at 0.5 m, 1 m, 2 m, and 3.5m above the liner, assuming saturated tailings exhibit dilative behavior.

- Section D: Steepening the east slope from 3.25H:1V to 2.75H:1V.

The Slope/W stability analysis outputs for the sensitivity analysis is provided in Figures D1 to D5 (Appendix D). The results at Section A indicate that the calculated minimum FoS meet acceptance criteria except for the case with the phreatic surface at 3.5 m above the liner (the calculated FoS = 1.1). For the case with steepening the east slope to 2.75H:1V at Section D, the calculated minimum FoS is 1.1 which is slightly lower than the acceptance criteria of 1.2.

6.8.2 Stability of Phase 1B Buttress

The short-term stability of the partially subexcavated P1B buttress was evaluated using Section F, considering Case One (partially thawed). For Case One, partially thawed foundation till was assumed only in the P2W area.

The calculated minimum FoS for subexcavated P1B buttress with Case One is 1.3, which meets the acceptance criteria. The Slope/W stability analysis outputs are provided in Figure D6 (Appendix D).

6.8.3 Stability of Toe Structure

The stability of the toe structure was evaluated using critical Section A. A summary of the calculated FoS from the slope stability analyses under each loading condition is provided in Table 9. The results indicate the calculated minimum FoS exceed the acceptance criteria. The Slope/W stability analysis outputs are included in Figures D7 to D13 (Appendix D).

Table 9: Summary of Minimum Calculated Factors of Safe for Toe Structure

Section	Design Cases	Design Scenarios	Required Minimum FoS	Failure Modes	Calculated Minimum FoS	Figure No.
					Downstream	
A	Case 1	Static	1.3	S2 - Global failure	2.0	D7
	Case 2	Static	1.5	S2 - Global failure	2.1	D8
		Post-Seismic	1.2	S2 - Global failure	1.7	D9
		Pseudo-static	1.0	S2 - Global failure	1.6	D10
	Case 3	Static	1.5	S3 - Failure along the liner	2.3	D11
		Post-Seismic	1.2	S3 - Failure along the liner	1.8	D12
		Pseudo-static	1.0	S3 - Failure along the liner	1.8	D13

6.8.4 Stability During Construction

During the construction of P2W, the P2E tailings will be re-handled, and a portion of the GCL will be replaced with LLDPE. It is therefore necessary to assess slope stability during this construction stage. The construction-stage slope stability was evaluated using critical Section A under short-term conditions, considering Case One (partially thawed) and Case Three (failure along the liner).

The calculated minimum FoS for Case One and Case Three are 2.2 and 2.0, respectively, which exceed the acceptance criterion. The Slope/W stability analysis outputs are provided in Figures D14 and D15 (Appendix D).

7.0 CONCLUSIONS AND RECOMMENDATION

In this updated slope stability assessment, a series of slope stability analyses were carried out to evaluate the stability of the representative design cross-sections and geometry configuration of the DSTF P2W. Based on calculated FoS under each failure mechanism and loading condition as presented in Tables 6 to 8, all sections meet or exceed the acceptance criteria under the evaluated loading conditions and failure mechanisms. Therefore, the proposed P2W design (with a crest elevation at 950 m and side slopes of 3H:1V) is considered acceptable from a stability perspective relative to the chosen acceptance criteria.

Tetra Tech has evaluated the partial removal of the P2E buttress to facilitate above-liner drainage, provide a local source of borrow material, and increase tailings capacity. Replacement of the GCL with LLDPE along the P2E western perimeter at Sections A, B, and C is required to satisfy the minimum FoS. The extents for liner replacement will be delineated in the design package. Considering constructability, overlap requirements, and calculated minimum FoS, Tetra Tech recommends that the minimum required liner replacement length be 16.5 m.

Steepening of the east and south facing slopes (from 3.25H:1V to 2.75H:1V) within the P2E footprint was evaluated, and minimum required FoS were not achieved. Therefore design slopes for P2E and P2W have been maintained at 3.25H:1V and 3H:1V, respectively.

It is recommended material parameter assumptions included herein be verified during the operations through in situ and laboratory testing programs as well as operational QA/QC monitoring requirements such as dynamic cone penetration testing (DCPT), density measurements, and controls on placement and compaction (lift thicknesses, number of passes etc.) as detailed in the facility Operations, Maintenance, and Surveillance (OMS) manual. The P2 design should be reassessed if newly collected data indicate significant deviations from the assumptions used in this slope stability analyses.

This memo focuses on the slope stability assessment required for facility design; the detailed monitoring program will be addressed in the detailed design and reporting.

8.0 LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Alexco Keno Hill Mining Corporation (AKHM) and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Alexco Keno Hill Mining Corporation (AKHM), or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

9.0 CLOSURE

We trust this technical memo meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

FILE: 704-ENG.WARC04673-04

Prepared by:
Yawu Liang, Ph.D., E.I.T.
Geotechnical Engineer, Arctic Group
Engineering Practice
Direct Line: 587.460.3451
Yawu.Liang@tetratech.com

FILE: 704-ENG.WARC04673-04

Reviewed by:
Hongwei Xia, Ph.D., P.Eng.
Principal Consultant, Arctic Group
Engineering Practice
Direct Line: 587.460.3646
Hongwei.Xia@tetratech.com

PROFESSIONAL ENGINEER
YUKON TERRITORY
IAN MACINTYRE
2026-02-20

FILE: 704-ENG.WARC04673-04

PERMIT TO PRACTICE
TETRA TECH CANADA INC.
SIGNATURE
Date 2026-02-20
PERMIT NUMBER PP003
Association of Professional Engineers of Yukon

Reviewed by:
Ian MacIntyre, P.Eng.
Geotechnical Engineer, Team Lead – Arctic Group
Engineering Practice
Direct Line: 867.668.9240
Ian.MacIntyre@tetratech.com

/jf

REFERENCES

AKHM, 2024. Dry Stack Tailings Disposal Facility – Phase 2 Project Design Basis – Revision. December 14, 2024.

CDA, 2013. Dam Safety Guidelines 2007 (2013 Edition). Guidelines published by the Canadian Dam Association. 2013. ISBN 978-1-7770223-4-1.

EBA, 2011. Detailed Design Dry-Stacked Tailing Facility Keno Hill District Mill Site, Yukon. Report Prepared for Alexco Resources Group. EBA File No. W14101178.011. May 2011.

EBA, 2015. Dry Stacked Tailings Facility Phase II Expansion Preliminary Design, Keno Hill Silver District, YT. EBA File No. W14103548-01 dated June 2, 2015.

EMR, 2023. Guidelines for Mine Waste Facilities, issued in February 2023.

Hynes-Griffin and Franklin, 1984. Rationalizing the Seismic Coefficient Method. Department of the Army Waterways Experiment Station, Vicksburg, Mississippi.

N.R. Morgenstern and J.F. Nixon, 1971. One-Dimensional Consolidation of Thawing Soil. Can. Geotech., J., 8(4), pp. 558-565.

PK Robertson Inc., 2025. Keno Hill, DSTF Independent Tailings Characterization. Report issued June 23, 2025.

Tetra Tech Canada Inc., 2024a. Proposal for DSTF Phase 2 Detailed Design Updates and Engineering Support and Services, Keno Hill Mine, YT. File No. 704-ENG.WARC04571-01 dated June 28, 2024.

Tetra Tech Canada Inc., 2024b. Phase II Expansion Detailed Design – Revision 2 Dry Stack Tailings Facility, Keno Hill District Mill Site, Yukon. File No. 704-ENG.WARC04307-01 dated September 18, 2024.

Tetra Tech Canada Inc., 2024c. Slope Stability Assessment – Phase II East Dry Stack Tailings Facility, Keno Hill District Mill Site, Yukon. File No. 704-ENG.WARC04415-10 dated September 30, 2024.

Tetra Tech Canada Inc., 2024d. Deformation and Thaw Settlement Analysis DSTF Phase II East, Keno Hill District Mill Site, Yukon Territory, Canada. File No. 704-ENG.WARC04415-10 dated November 20, 2024.

Tetra Tech Canada Inc., 2025a. Liner Type Change Evaluation (DT411012) Phase 2 West, Dry Stack Tailings Facility, Keno Hill Mine, YT. File No. 704-ENG.WARC04673-04 dated February 3, 2025.

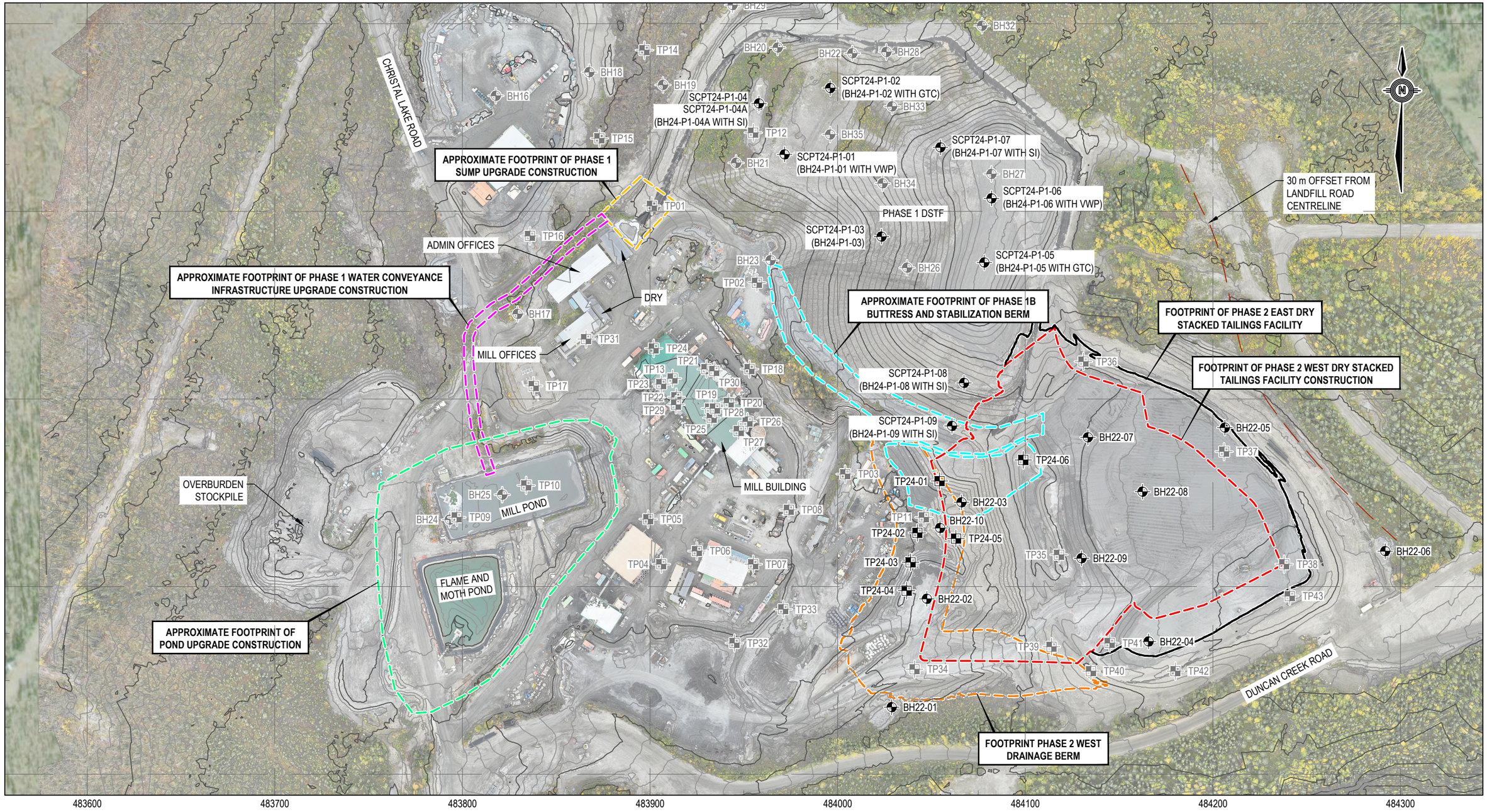
Tetra Tech Canada Inc, 2025b. Flame & Moth Mine Waste Rock Storage Area – Geotechnical and Geophysical Data Report. Data report prepared for Alexco Keno Hill Mining Corp. by Tetra Tech Canada Inc. Tetra File No. 704-ENG.WARC04673-07.200. July 11, 2025.

Tetra Tech Canada Inc., 2025c. Quarterly Engineer of Record Inspection, Instrumentation, and Tailings Lab Testing Summary Q2 2025 – Dry Stack Tailings Facility, Keno Hill Mine, YT. File No. 704-ENG.WARC04673-05.002. August 27,2025.

Tetra Tech Canada Inc., 2025d. Tailings and Foundation Soil Characterization Report Dry Stack Tailings Facility Phase 1, Alexco Keno Hill Mine, Yukon. FILE: 704-ENG.WARC04673-02. Issued for Review, dated December 12, 2025.

FIGURES

Figure 1 Borehole and Testpit Locations
Figure 2 Site Plan Showing Sections Used in Stability Analyses
Figure 3 Cross-Sections A-A’ and B-B’ (1 of 3)
Figure 4 Cross-Sections C-C’ and D-D’ (2 of 3)
Figure 5 Cross-Section E-E’ (3 of 3)
Figure 6 Cross-Section with Critical Slip Surfaces for Three Failure Modes



NOTES:
1. UTM WITH NAD83 DATUM, ZONE 8, METER; CENTRAL MERIDIAN 135D W.
2. DRONE IMAGERY AND LiDAR COLLECTED BY ALEXCO KENO HILL MINING, DATED SEPTEMBER 7, 2025.

0 100m

Scale: 1:2,000 @ 11"x17"

CLIENT

Hecla MINING COMPANY

TETRA TECH

DRY STACKED TAILINGS FACILITY PHASE 2 DESIGN
KENO HILL DISTRICT MILL SITE, YUKON

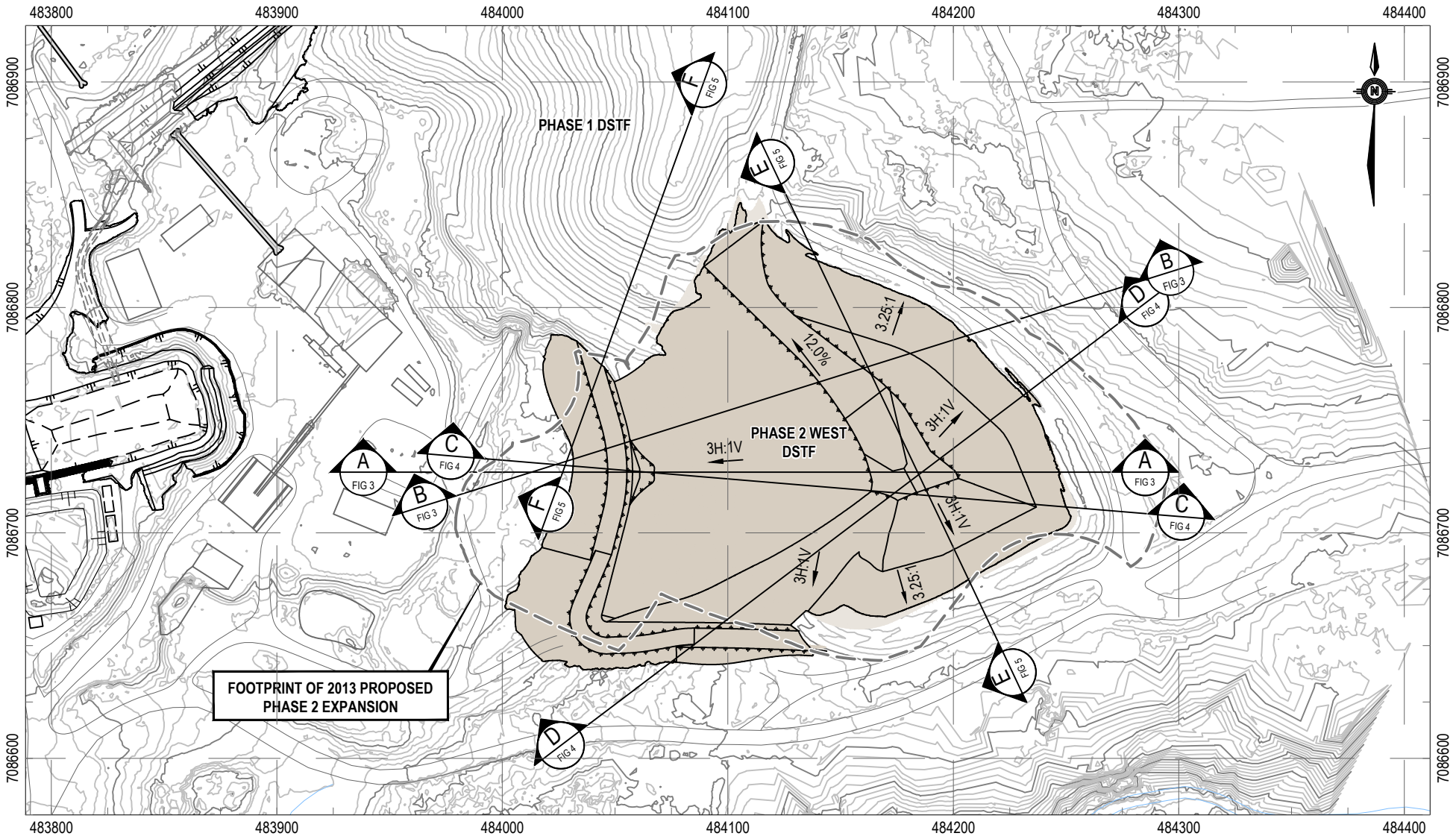
BOREHOLE AND TESTPIT LOCATIONS

PROJECT NO.	DWN	CKD	REV
ENG.WARC04673-02	EL	YL	1
OFFICE	DATE		
EDMONTON	JANUARY 23, 2026		

FIGURE 1

C:\Users\elvin.lee\OneDrive - Tetra Tech, Inc\HECLA - Keno Hill_Elsa - CAD\Production Drawings\Slope Stability Memo\ENG.WARC04673-02_Figure 1.dwg [FIGURE 1] January 26, 2026 - 11:05:24 am (BY: LEE, ELVIN)

C:\Users\elvin.lee\OneDrive - Tetra Tech, Inc\HECLA - Keno Hill_Elsa - CAD\Production Drawings\Slope Stability Memo\ENG.WARC04673-02_Figure 2-5.dwg [FIGURE 2] January 26, 2026 - 11:01:46 am (BY: LEE, ELVIN)



LEGEND

PHASE 2 WEST FOOTPRINT

0 100m

Scale: 1:2,500 @ 8.5"x11"

CLIENT

Hecla MINING COMPANY

TETRA TECH

DRY STACKED TAILINGS FACILITY PHASE 2 DESIGN
KENO HILL DISTRICT MILL SITE, YUKON

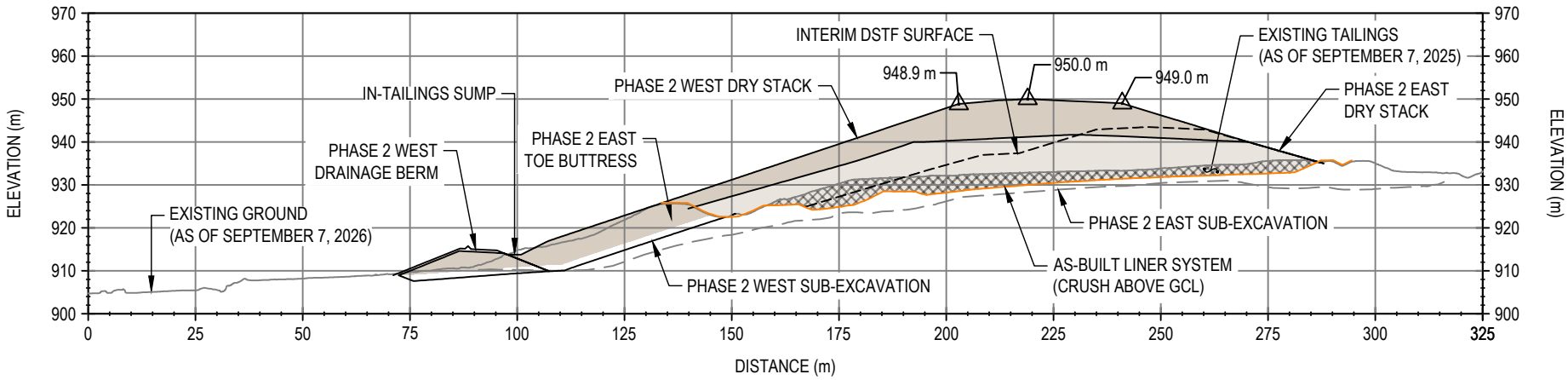
SITE PLAN SHOWING SECTIONS USED IN STABILITY ANALYSES

PROJECT NO.	DWN	CKD	REV
ENG.WARC04673-02	EL	YL	1

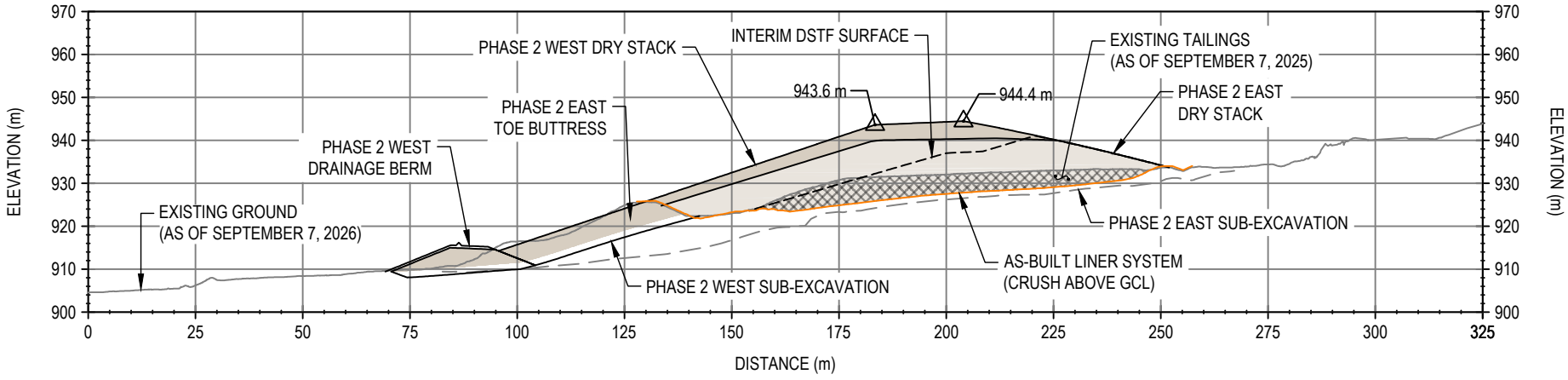
OFFICE	DATE
EDMONTON	JANUARY 23, 2026

FIGURE 2

C:\Users\elvin.lee\OneDrive - Tetra Tech, Inc\HECLA - Keno Hill_Elsa - CAD\Production Drawings\Slope Stability Memo\ENG.WARC04673-02_Figure 2-5.dwg [FIGURE 3] January 26, 2026 - 10:50:07 am (BY: LEE, ELVIN)



A FIG 1 CROSS-SECTION
SCALE: 1:1500



B FIG 1 CROSS-SECTION
SCALE: 1:1500

LEGEND

- PHASE 2 WEST DSTF
- PHASE 2 EAST DSTF

0 50m

Scale: 1:1,500 @ 8.5"x11"

CLIENT

Hecla MINING COMPANY

TETRA TECH

DRY STACKED TAILINGS FACILITY PHASE 2 DESIGN
KENO HILL DISTRICT MILL SITE, YUKON

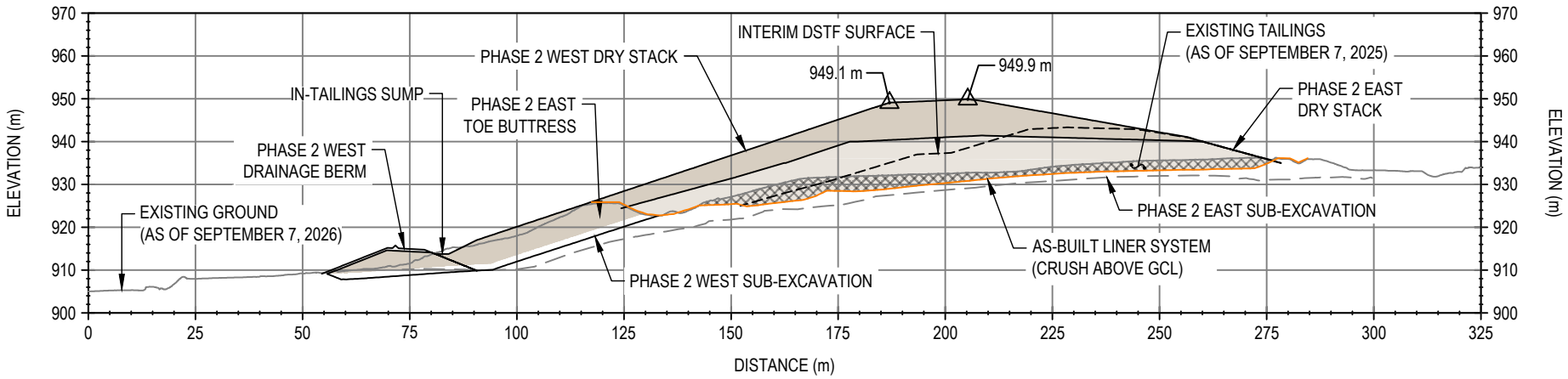
CROSS-SECTIONS A-A' AND B-B'
(1 of 3)

PROJECT NO.	DWN	CKD	REV
ENG.WARC04673-02	EL	YL	1

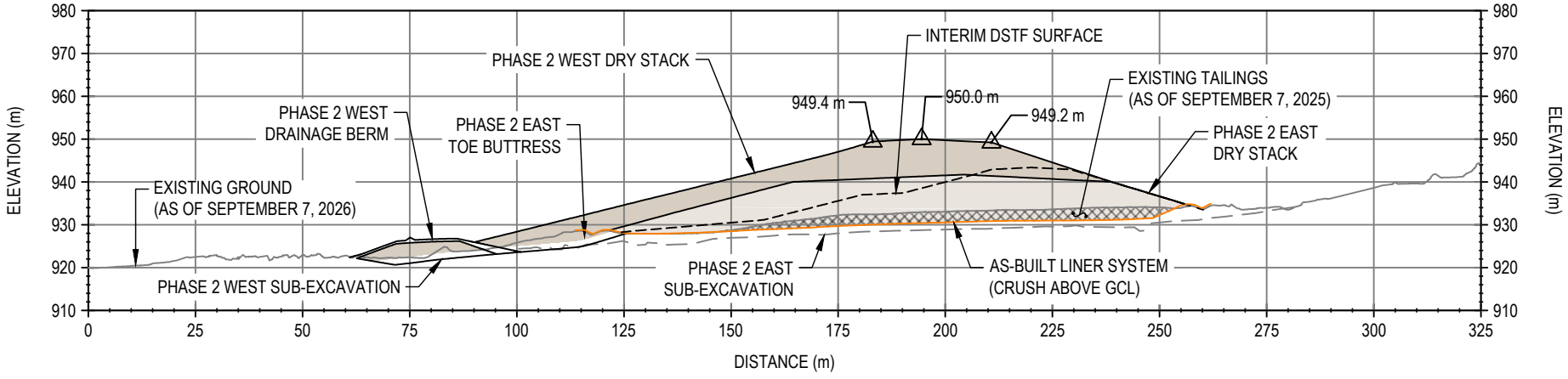
OFFICE	DATE
EDMONTON	JANUARY 23, 2026

FIGURE 3

C:\Users\elvin.lee\OneDrive - Tetra Tech, Inc\HECLA - Keno Hill_Elsa - CAD\Production Drawings\Slope Stability Memo\ENG.WARC04673-02_Figure 2-5.dwg [FIGURE 4] January 26, 2026 - 10:50:12 am (BY: LEE, ELVIN)



C FIG 1 CROSS-SECTION
SCALE: 1:1500



D FIG 1 CROSS-SECTION
SCALE: 1:1500

LEGEND

- PHASE 2 WEST DSTF
- PHASE 2 EAST DSTF

0 50m

Scale: 1:1,500 @ 8.5"x11"

CLIENT

Hecla MINING COMPANY

TETRA TECH

DRY STACKED TAILINGS FACILITY PHASE 2 DESIGN
KENO HILL DISTRICT MILL SITE, YUKON

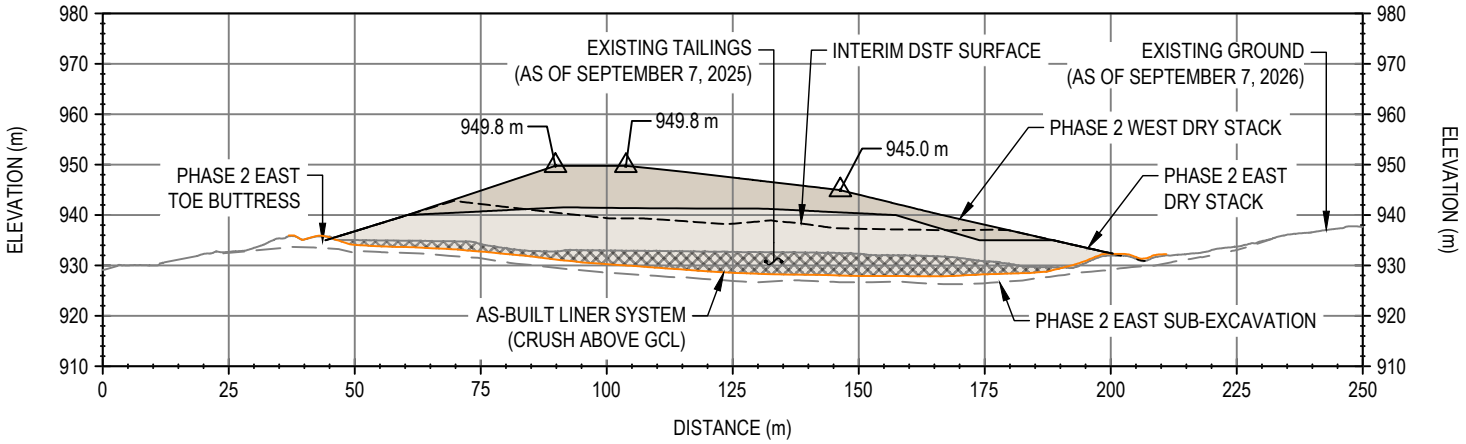
CROSS-SECTIONS C-C' AND D-D'
(2 of 3)

PROJECT NO.	DWN	CKD	REV
ENG.WARC04673-02	EL	YL	1

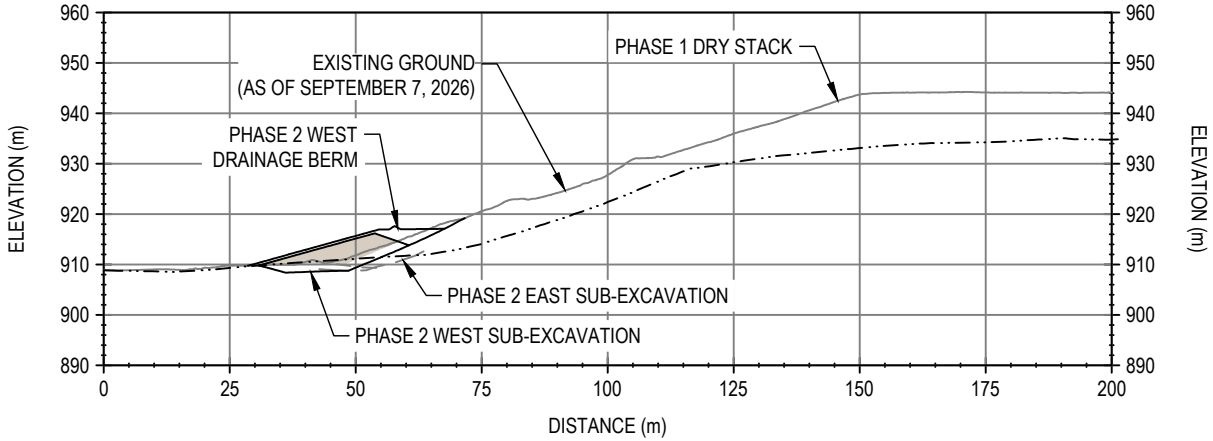
OFFICE	DATE
EDMONTON	JANUARY 23, 2026

FIGURE 4

C:\Users\elvin.lee\OneDrive - Tetra Tech, Inc\HECLA - Keno Hill_Elsa - CAD\Production Drawings\Slope Stability Memo\ENG.WARC04673-02_Figure 2-5.dwg [FIGURE 5] January 26, 2026 - 10:50:16 am (BY: LEE, ELVIN)



E FIG 1 CROSS-SECTION
SCALE: 1:1500



F FIG 1 CROSS-SECTION
SCALE: 1:1500

LEGEND

- PHASE 2 WEST DSTF
- PHASE 2 EAST DSTF

0 50m

Scale: 1:1,500 @ 8.5"x11"

CLIENT

Hecla MINING COMPANY

TETRA TECH

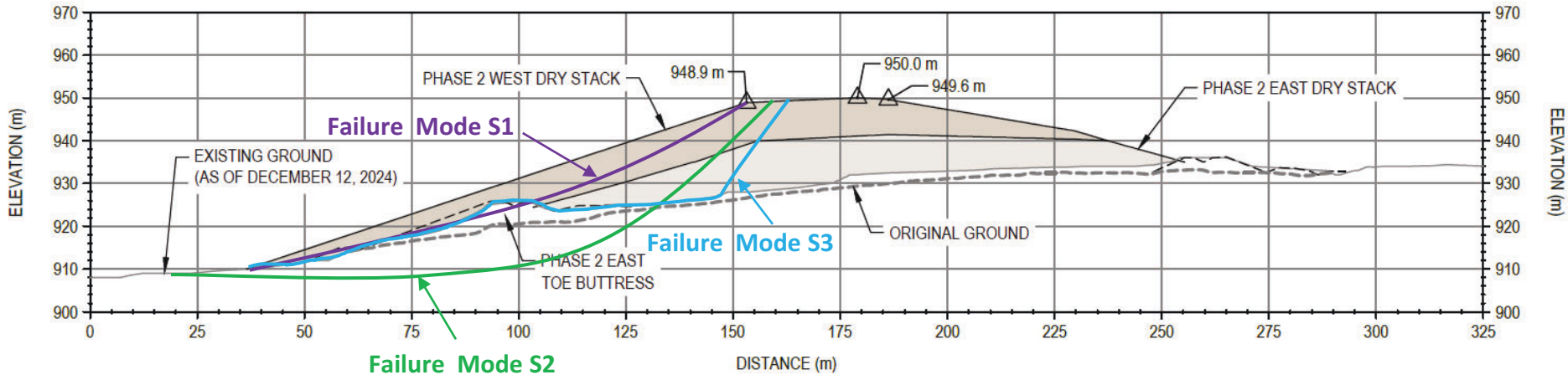
DRY STACKED TAILINGS FACILITY PHASE 2 DESIGN
KENO HILL DISTRICT MILL SITE, YUKON

CROSS-SECTIONS E-E'
(3 of 3)

PROJECT NO.	DWN	CKD	REV
ENG.WARC04673-02	EL	YL	1

OFFICE	DATE
EDMONTON	JANUARY 23, 2026

FIGURE 5



LEGEND

- Failure Mode S1 - Local failure with the slip surface exiting at the toe of the tailings;
- Failure Mode S2 - Global failure with the slip surface entering at the crest of the tailings and exiting downstream through till;
- Failure Mode S3 - Slip surface sliding through the liner interface and exiting near the toe of the tailings.

NOTES

STATUS
ISSUED FOR REVIEW-V1

CLIENT
Hecla MINING COMPANY

TETRA TECH

DRY STACKED TAILINGS FACILITY PHASE 2 DESIGN KENO HILL DISTRICT MILL SITE, YUKON

Cross-Section with Critical Slip Surfaces for Three Failure Modes

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG. WARC04673-04	YL	-	-	1

OFFICE	DATE
EDMONTON	JANUARY 23, 2026

FIGURE 6

APPENDIX A

TETRA TECH'S LIMITATIONS ON USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

The Professional Document is intended for the sole use of TETRA TECH's Client (the "Client") as specifically identified in the TETRA TECH Services Agreement or other Contractual Agreement entered into with the Client (either of which is termed the "Contract" herein). TETRA TECH does not accept any responsibility for the accuracy of any of the data, analyses, recommendations or other contents of the Professional Document when it is used or relied upon by any party other than the Client, unless authorized in writing by TETRA TECH.

Any unauthorized use of the Professional Document is at the sole risk of the user. TETRA TECH accepts no responsibility whatsoever for any loss or damage where such loss or damage is alleged to be or, is in fact, caused by the unauthorized use of the Professional Document.

Where TETRA TECH has expressly authorized the use of the Professional Document by a third party (an "Authorized Party"), consideration for such authorization is the Authorized Party's acceptance of these Limitations on Use of this Document as well as any limitations on liability contained in the Contract with the Client (all of which is collectively termed the "Limitations on Liability"). The Authorized Party should carefully review both these Limitations on Use of this Document and the Contract prior to making any use of the Professional Document. Any use made of the Professional Document by an Authorized Party constitutes the Authorized Party's express acceptance of, and agreement to, the Limitations on Liability.

The Professional Document and any other form or type of data or documents generated by TETRA TECH during the performance of the work are TETRA TECH's professional work product and shall remain the copyright property of TETRA TECH.

The Professional Document is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of TETRA TECH. Additional copies of the Document, if required, may be obtained upon request.

1.2 ALTERNATIVE DOCUMENT FORMAT

Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by persons other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary investigation and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, TETRA TECH has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

1.8 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. TETRA TECH does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

1.9 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.10 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. TETRA TECH does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

1.11 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

1.12 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

1.13 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

1.14 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

1.15 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

1.16 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

1.17 SAMPLES

TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

APPENDIX B

LINER INTERFACE DIRECT SHEAR LAB RESULTS

ANALYSIS REPORT
SCC Accreditation No.: 40‡

Mr. Ian MacIntyre
Tetra Tech

Date: February 19, 2024
Report: 6710-001S-4A-en

IDENTIFICATION: Interface test #4: GCL Bentomat ST #10 Vs Drainage blanket (Gravel, coarse soil "Dmax 16mm")
Project: 704-ENV.WARC 04415-09
Gravel received on January 03, 2024
Received: January 19, 2024

STANDARD:

TEST: Internal and Interface Shear Resistance of Geosynthetic Clay Liner by the Direct Shear Method — ASTM D6243/D6243M-20 Proc. C

TEST CONDITIONS:
Shear surface 304 x 304 mm;
Data acquisition period (seconds): 1.20
Hydratation of the GCL: 24 hours under 10 kPa, prior to consolidation ;
Flat surfaces grips fixed with 4 bolts + rasp surface in lower box and upper box ;
Normal load: Micro-Stepper Motor
Rate of horizontal displacement(mm/min): 1
Tested in machine direction ;
Submerged interface ;
Testing configuration - Upper box / Lower box: Drainage Blanket (Gravel) / GCL Bentomat ST #10 (woven side)
Date of test: from February 14 to 16, 2024

RESULTS:	Individual Data			Avg.	S.D.	% CV
Normal Compressive Pressure (kPa):	102.5	203.7	402.3			
PROPERTIES OF THE SOIL	:					
Water content of compaction (%):	6.3	6.5	6.2			
Dry unit weight after compaction (kg/m³):	2050	2060	2050			
Duration of the consolidation (hours):	4	4	4			
TESTS RESULTS	:					
Maximum Shear Stress (kPa):	58.5	131.8	212.0			
Residual Shear Stress (kPa):	23.7	34.8	45.1			
Estimated Maximum angle of friction (°):	26					
Estimated Maximum adhesion (kPa):	16.7					
Estimated Residual angle of friction (°):	3					
Estimated Residual adhesion (kPa):	18.3					

Prepared by:
Marlon Bustos, M.Eng.
Technician

Approved by:
Omar Kamla, Eng.
Project Leader

Date: February 19, 2024

**** Any question regarding this report or its authenticity? Please contact Omar Kamla ****

The reports are identified by an alphanumeric code, the letter preceding "-en" refers to the revision number, emitted in ascending order. The electronic copy sent by CTT Group is the official report. The reported identification is based on what was observed on the received sample and /or information provided by the customer. The samples in relation to this report are retained for a period of 30 days following transmission of the report. The above reported results refer exclusively to the samples submitted for evaluation. This analysis report cannot be partly used or reproduced, unless in whole, without CTT Group prior written consent. ‡ The ISO/IEC 17025 Scope of Accreditation of CTT Group is available at www.gcttg.com. In this report, the tests which number is followed by the symbol ¤ are not covered by this accreditation. For customer's complete address, please refer to the email.

ANALYSIS REPORT
SCC Accreditation No.: 40‡

Mr. Ian MacIntyre
Tetra Tech

Date: February 19, 2024
Report: 6710-001S-4A-en

REMARKS:

- See graphs and pictures in Appendix.

- Consolidation:
100 kPa: 1 hour at 50 kPa, 4 hours at 100 kPa.
200 kPa: 1 hour at 50 kPa, 1 hour at 100 kPa, 4 hours at 200 kPa.
400 kPa: 1 hour at 50 kPa, 1 hour at 100 kPa, 1 hour at 200 kPa, 4 hours at 400 kPa.

Prepared by:
Marlon Bustos, M.Eng.
Technician

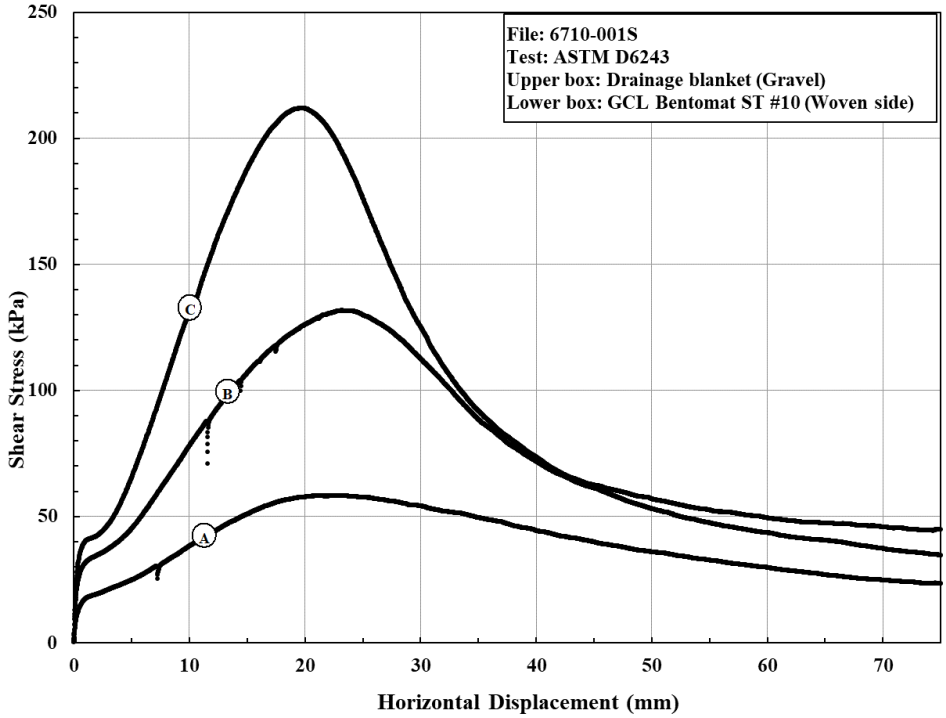
Approved by:
Omar Kamla, Eng.
Project Leader

Date: February 19, 2024

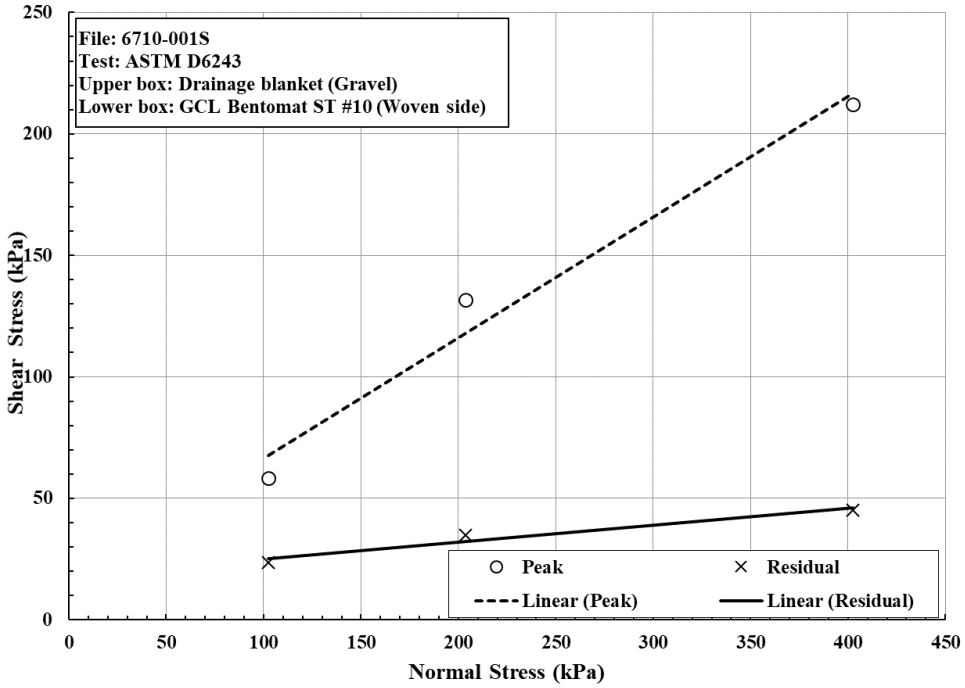
***** Any question regarding this report or its authenticity? Please contact Omar Kamla *****

The reports are identified by an alphanumeric code, the letter preceding "-en" refers to the revision number, emitted in ascending order. The electronic copy sent by CTT Group is the official report. The reported identification is based on what was observed on the received sample and/or information provided by the customer. The samples in relation to this report are retained for a period of 30 days following transmission of the report. The above reported results refer exclusively to the samples submitted for evaluation. This analysis report cannot be partly used or reproduced, unless in whole, without CTT Group prior written consent. ‡ The ISO/IEC 17025 Scope of Accreditation of CTT Group is available at www.gcttg.com. In this report, the tests which number is followed by the symbol ¤ are not covered by this accreditation. For customer's complete address, please refer to the email.

APPENDIX
Graphs



Shear Stress *vs* Horizontal Displacement



Shear Stress *vs* Normal Stress

Pictures

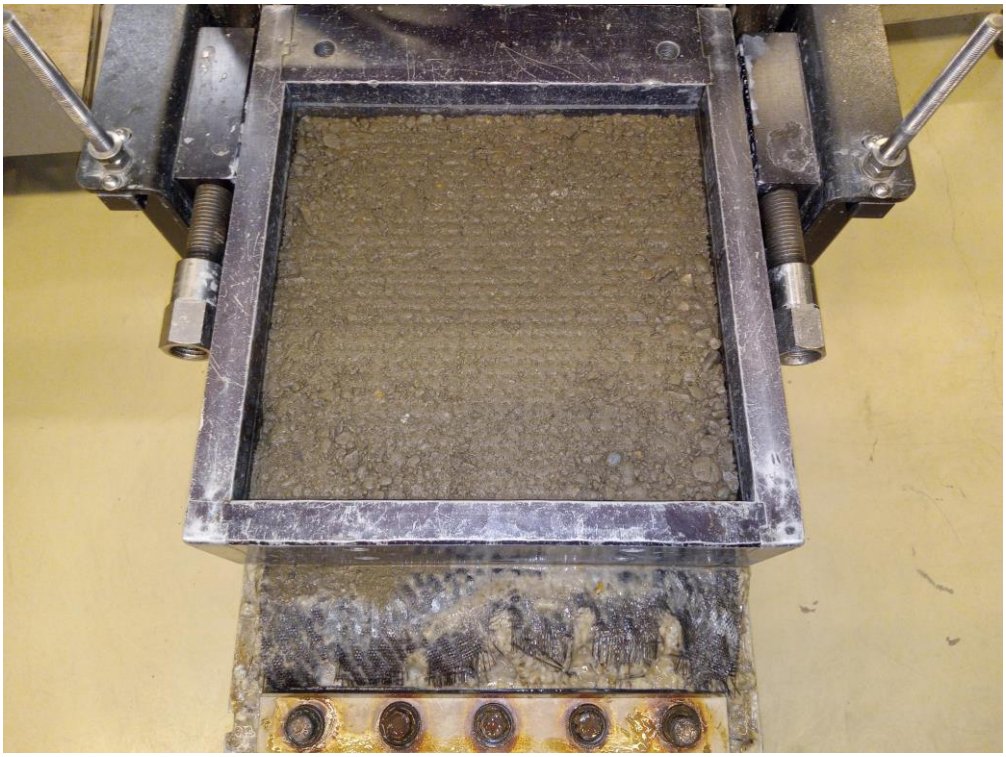


Interface #4 - Test at 100kPa



GCL Bentomat ST#10 (woven side) after the test – Test at 100kPa

Groupe CTT Inc.
3000, avenue Boullé, St-Hyacinthe, QC, Canada, J2S 1H9
T.:(+1) 877 288-8378



Interface #4 - Test at 200kPa

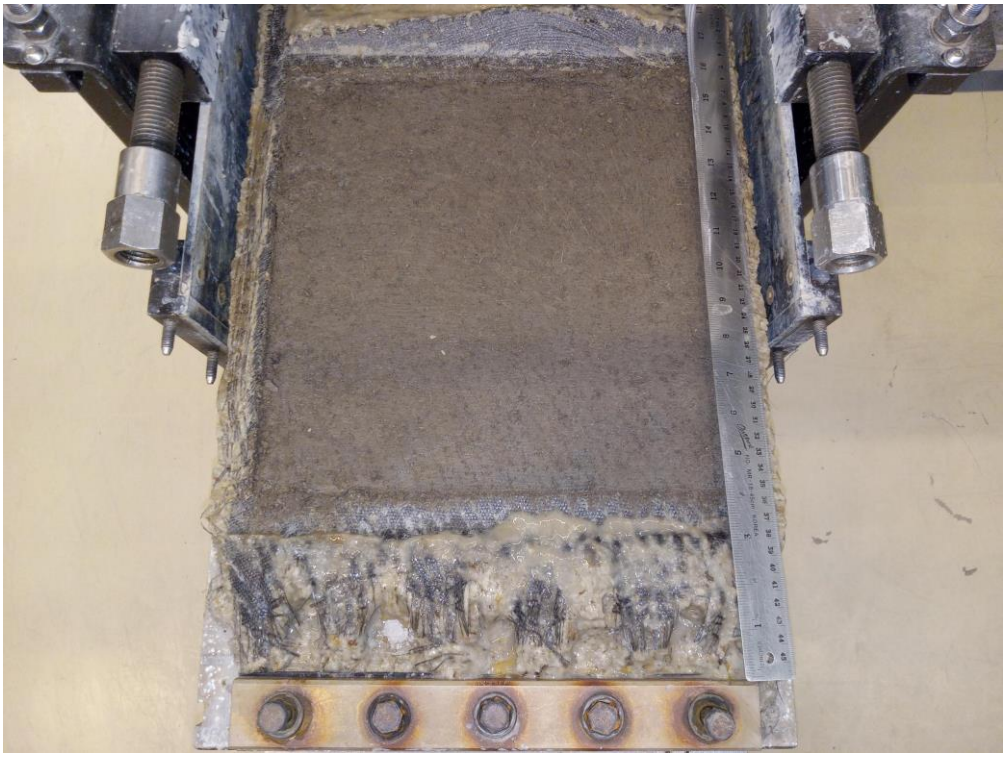


GCL Bentomat ST#10 (woven side) after the test – Test at 200kPa

Groupe CTT Inc.
3000, avenue Boullé, St-Hyacinthe, QC, Canada, J2S 1H9
T.:(+1) 877 288-8378



Interface #4 - Test at 400kPa



GCL Bentomat ST#10 (woven side) after the test – Test at 400kPa

Groupe CTT Inc.
3000, avenue Boullé, St-Hyacinthe, QC, Canada, J2S 1H9
T.:(+1) 877 288-8378

ANALYSIS REPORT
SCC Accreditation No.: 40‡

Mr. Ian MacIntyre
Tetra Tech

Date: February 14, 2024
Report: 6710-001S-2A-en

IDENTIFICATION: Interface test #2: GTX Non-woven Vs Geonet Hydranet 220 # GN000131
Project: 704-ENV.WARC 04415-09
Received: January 9, 2024

STANDARD:

TEST: Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear — ASTM D5321/D5321M-21

TEST CONDITIONS:
Shear surface 304 x 304 mm;
Data acquisition period (seconds): 0.24
Flat surfaces grips fixed with 4 bolts + rasp surface in lower box and upper box ;
Normal load: Micro-Stepper Motor
Rate of horizontal displacement(mm/min); 5
Tested in machine direction ;
Submerged interface ;
Thickness: 5 measurements per specimen according to ASTM D5199 (Non-woven Geotextile and Geonet);
Mass per unit area: 1 measurement per specimen according to ASTM D5261 (Non-woven Geotextile);
Testing configuration - Upper box / Lower box: Non-woven Geotextile / Geonet
Date of test: January 19, 2024

RESULTS:

	Individual Data		
Normal Compressive Pressure (kPa):	101.9	198.9	397.6
GEOTEXTILE PROPERTIES :			
Mass per unit area of the geosynthetic estimated basing on the weight of the specimen (g/m²):	261	293	301
Specimen thickness (mils):	71	73	74
GEONET PROPERTIES :			
Specimen thickness (mils):	197	196	195
Duration of the consolidation (hours):	1	1	1
TEST RESULTS :			
Peak shear stress (kPa):	31.2	65.3	154.6
Shear stress at large displacement (kPa):	23.5	49.8	92.1

Prepared by:
Marlon Bustos, M.Eng.
Technician

Approved by:
Omar Kamla, Eng.
Project Leader
Date: February 14, 2024

***** Any question regarding this report or its authenticity? Please contact Omar Kamla *****

The reports are identified by an alphanumeric code, the letter preceding "-en" refers to the revision number, emitted in ascending order. The electronic copy sent by CTT Group is the official report. The reported identification is based on what was observed on the received sample and /or information provided by the customer. The samples in relation to this report are retained for a period of 30 days following transmission of the report. The above reported results refer exclusively to the samples submitted for evaluation. This analysis report cannot be partly used or reproduced, unless in whole, without CTT Group prior written consent. ‡ The ISO/IEC 17025 Scope of Accreditation of CTT Group is available at www.gcttg.com. In this report, the tests which number is followed by the symbol ¤ are not covered by this accreditation. For customer's complete address, please refer to the email.

ANALYSIS REPORT
SCC Accreditation No.: 40‡

Mr. Ian MacIntyre
Tetra Tech

Date: February 14, 2024
Report: 6710-001S-2A-en

IDENTIFICATION: Interface test #2: GTX Non-woven Vs Geonet Hydranet 220 # GN000131
Project: 704-ENV.WARC 04415-09
Received: January 9, 2024

STANDARD:

TEST: Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear — ASTM D5321/D5321M-21

RESULTS (CONT):

	Individual Data
Estimated peak angle of friction (°):	20
Estimated peak adhesion (kPa):	0.0
Estimated angle of friction at large displacement (°):	12
Estimated adhesion at large displacement (kPa):	1.8

REMARKS: - See graphs and pictures in Appendix.

Prepared by:
Marlon Bustos, M.Eng.
Technician

Approved by:
Omar Kamla, Eng.
Project Leader

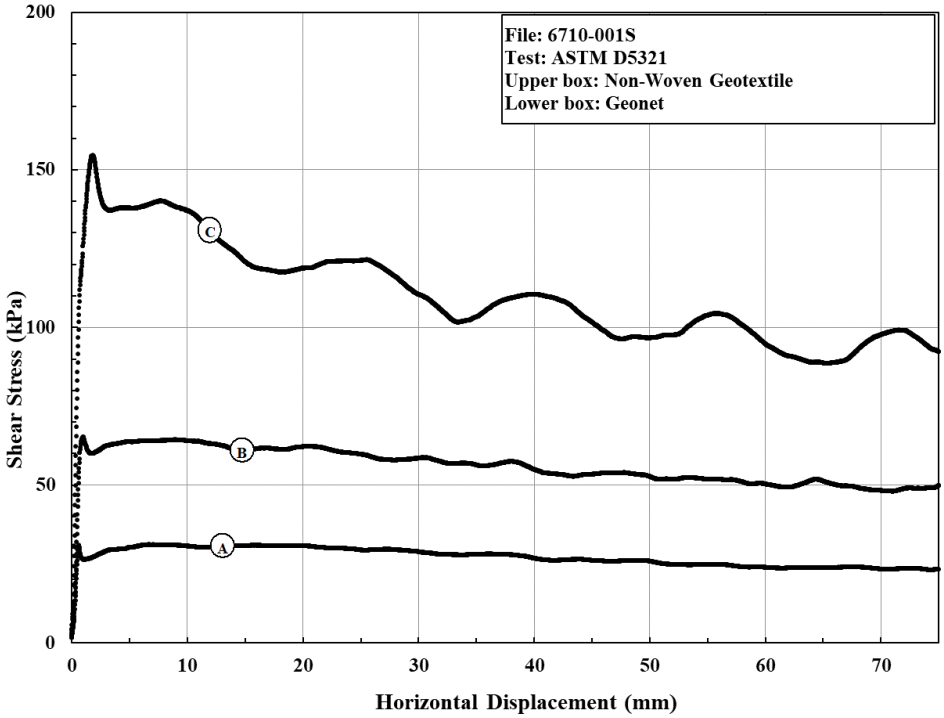
Date: February 14, 2024

***** Any question regarding this report or its authenticity? Please contact Omar Kamla *****

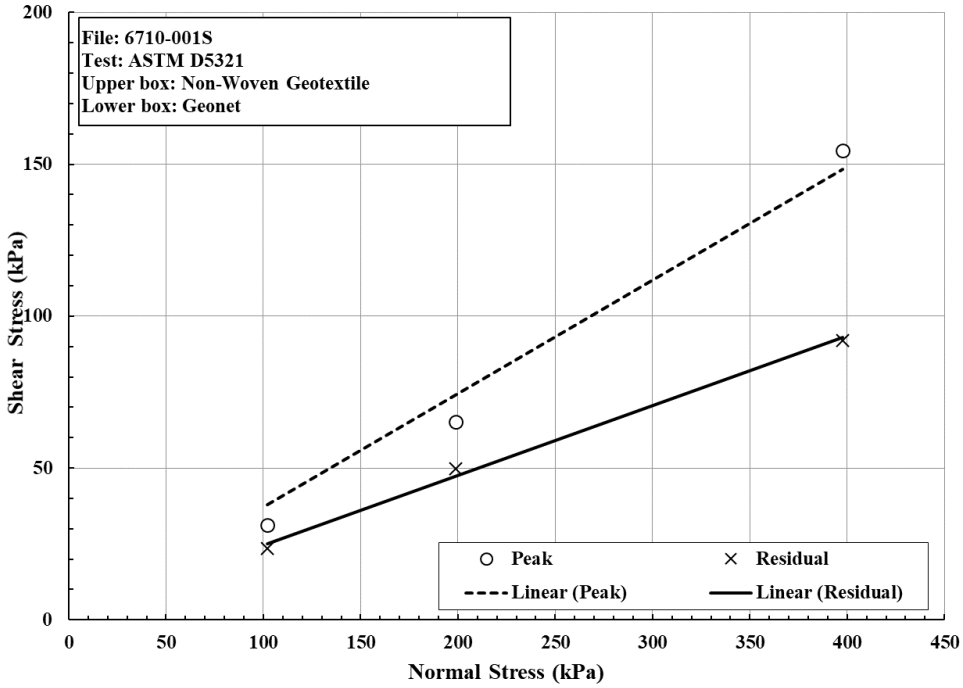
The reports are identified by an alphanumeric code, the letter preceding "-en" refers to the revision number, emitted in ascending order. The electronic copy sent by CTT Group is the official report. The reported identification is based on what was observed on the received sample and/or information provided by the customer. The samples in relation to this report are retained for a period of 30 days following transmission of the report. The above reported results refer exclusively to the samples submitted for evaluation. This analysis report cannot be partly used or reproduced, unless in whole, without CTT Group prior written consent. ‡ The ISO/IEC 17025 Scope of Accreditation of CTT Group is available at www.gcttg.com. In this report, the tests which number is followed by the symbol ¤ are not covered by this accreditation. For customer's complete address, please refer to the email.

APPENDIX

Graphs

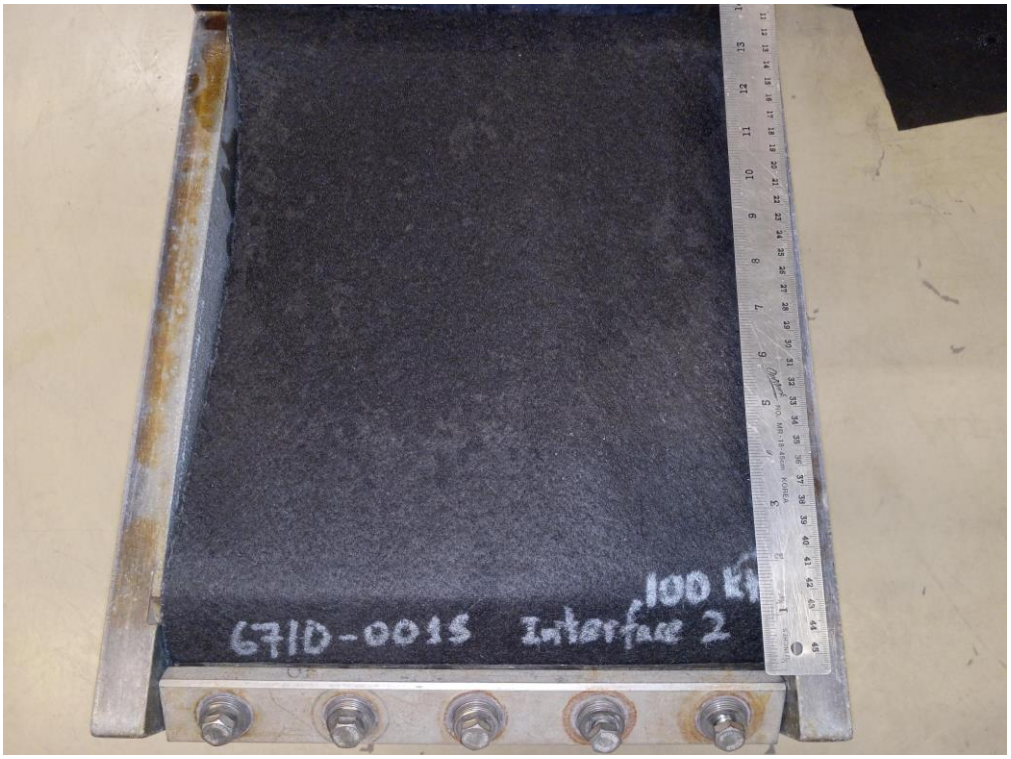


Shear Stress *vs* Horizontal Displacement

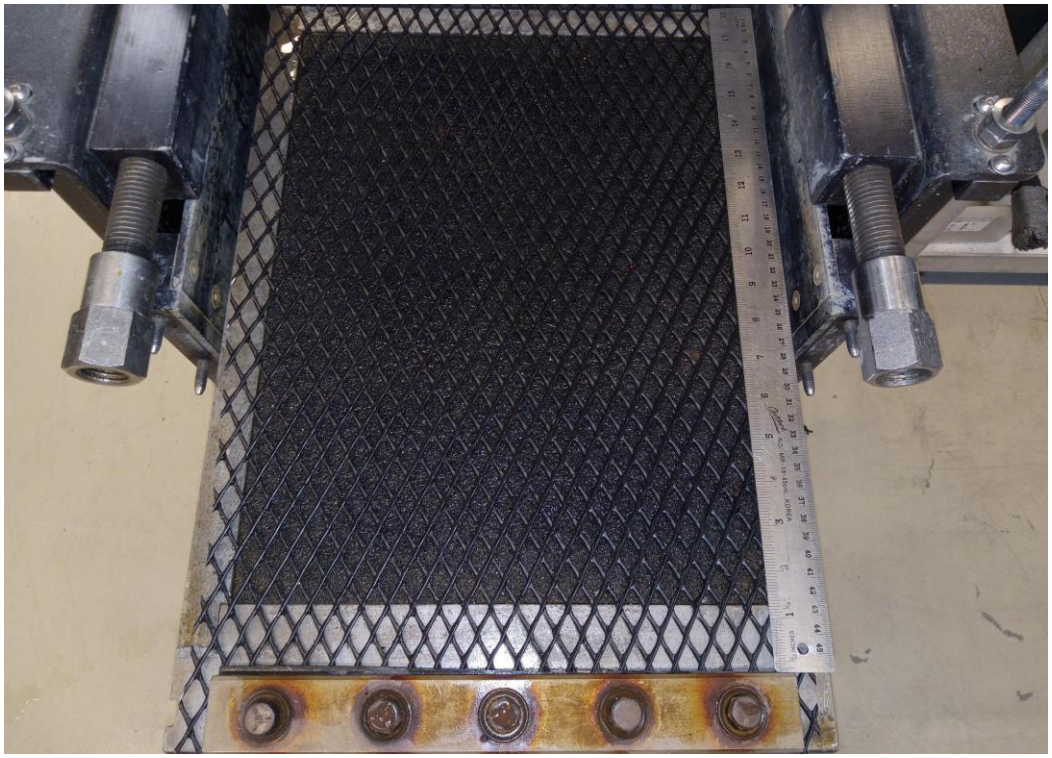


Shear Stress *vs* Normal Stress

Pictures

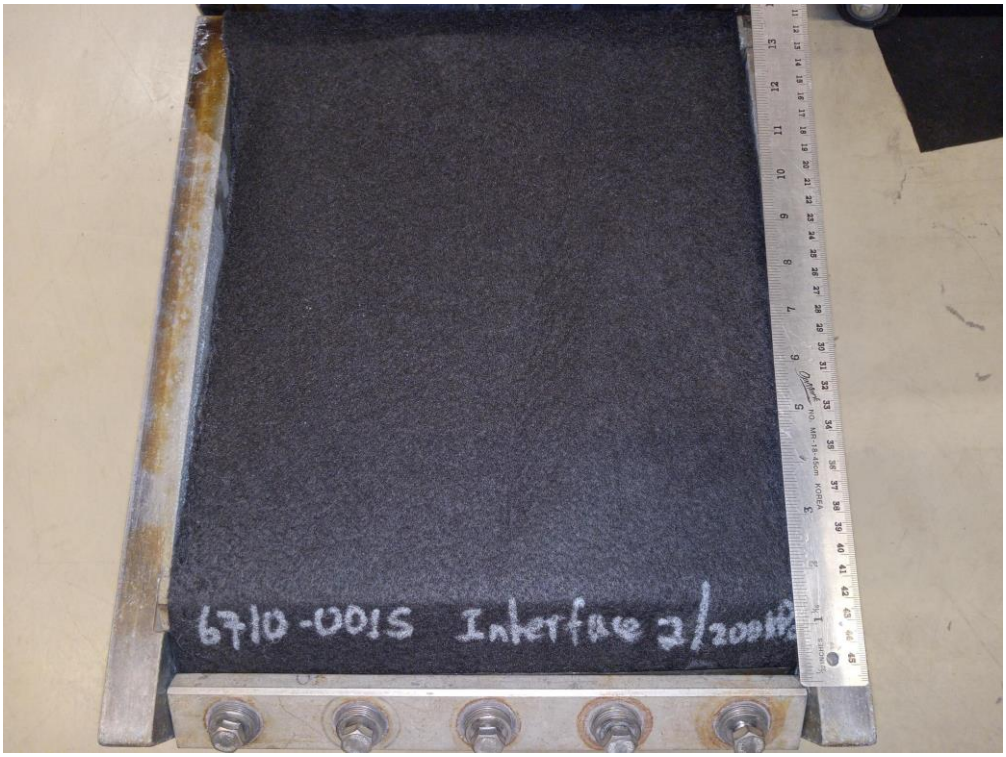


Non-woven Geotextile after the test – Test at 100kPa

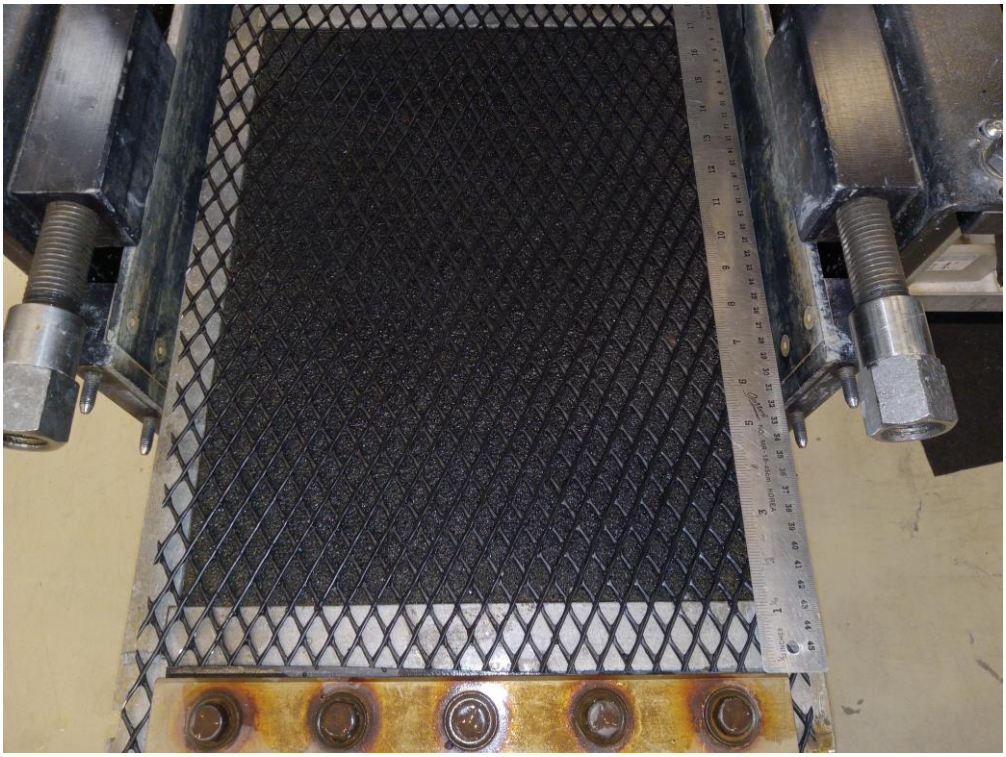


Geonet after the test – Test at 100kPa

Groupe CTT Inc.
3000, avenue Boullé, St-Hyacinthe, QC, Canada, J2S 1H9
T.:(+1) 877 288-8378



Non-woven Geotextile after the test – Test at 200kPa

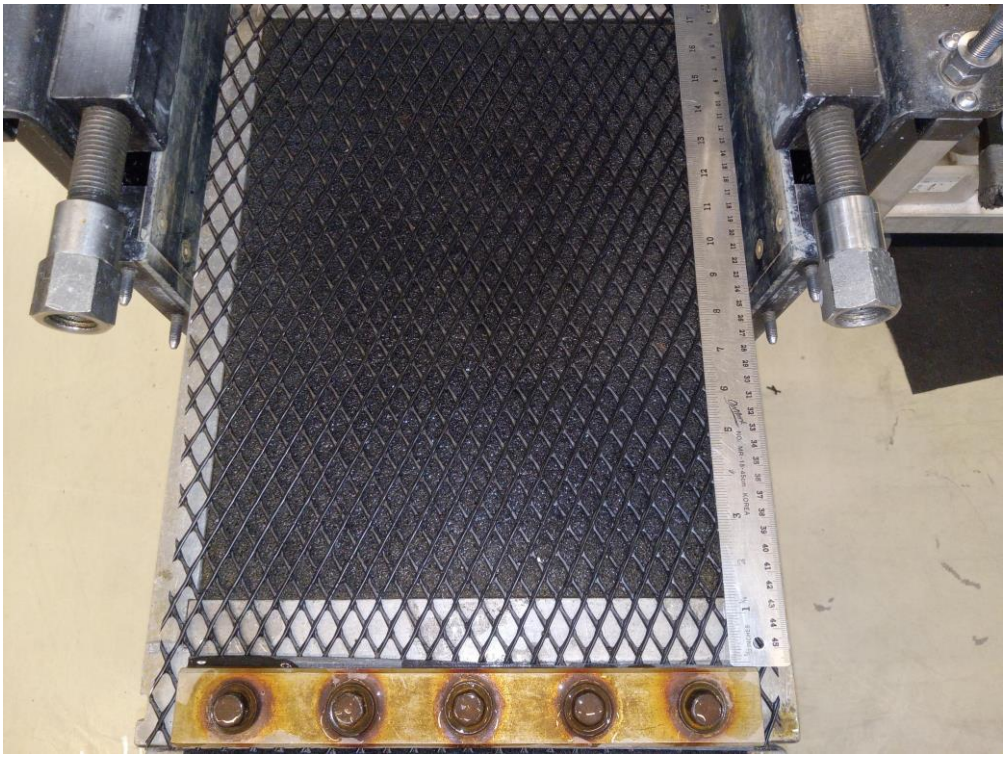


Geonet after the test – Test at 200kPa

Groupe CTT Inc.
3000, avenue Boullé, St-Hyacinthe, QC, Canada, J2S 1H9
T.:(+1) 877 288-8378



Non-woven Geotextile after the test – Test at 400kPa



Geonet after the test – Test at 400kPa

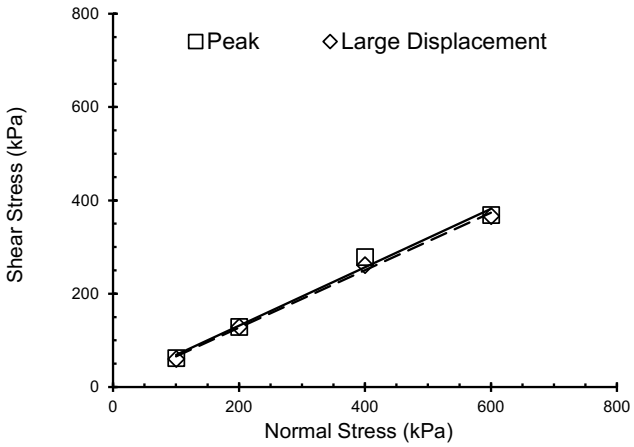
Groupe CTT Inc.
3000, avenue Boullé, St-Hyacinthe, QC, Canada, J2S 1H9
T.:(+1) 877 288-8378

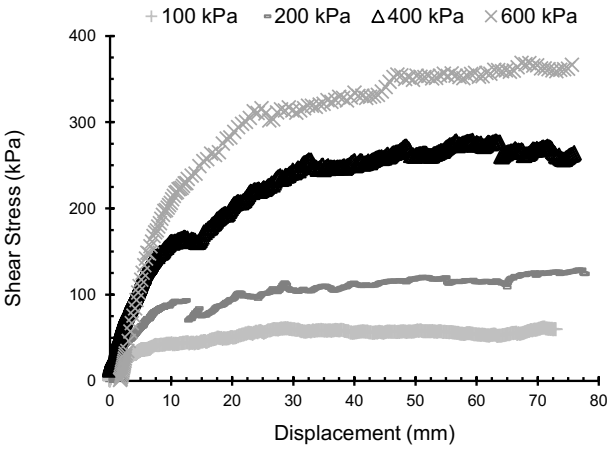
Shear Strength of Soil-Geosynthetic Interface by Direct Shear (ASTM D5321)

Client: Hecla Limited
Project: KH DSTF P2 West

TRI Log #: 25-00107-1
Richard S. Lacey, P.E. 2/5/2025
Analysis & Quality Review/Date

20 mm Bedding Material (P2W-20mm) vs. 80 mil Textured LLDPE GM (EL6280)





Test Results, Linear Regression			
Mohr-Coulomb Parameters		Peak	Large Displacement
Friction Angle	Degrees	32.1	31.6
Y-intercept or Adhesion	kPa	6	4
Minimum Secant Angle	Degrees	31.6	30.9

Note - Large Displacement Values Reported for 76.2 mm of Displacement

Test Conditions		
Upper Box	20 mm Bedding Material (P2W-20mm) Tamped in place	
Lower Box	80 mil Textured LLDPE GM (EL6280)	
Conditioning	Wet - Loading applied and Interface flooded for a minimum of 15 minutes prior to shear.	
Shearing Rate	mm/minute	0.10

Test Notes

Shearing occurred at the interface at all stresses.

Specimen No.		-	1	2	3	4
Normal Stress		kPa	100	200	400	600
Box Edge Dimension		mm	305	305	305	305
Bearing Slide Resistance		N	124	212	388	565
Peak	Shear Stress	kPa	62	129	279	369
	Secant Angle	deg.	31.7	32.8	34.9	31.6
Large Displacement	Shear Stress	kPa	60	129	261	367
	Secant Angle	deg.	30.9	32.8	33.2	31.4
Asperity Height, Avg. of 5 Meas.		mm	0.650	0.675	0.625	0.650

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

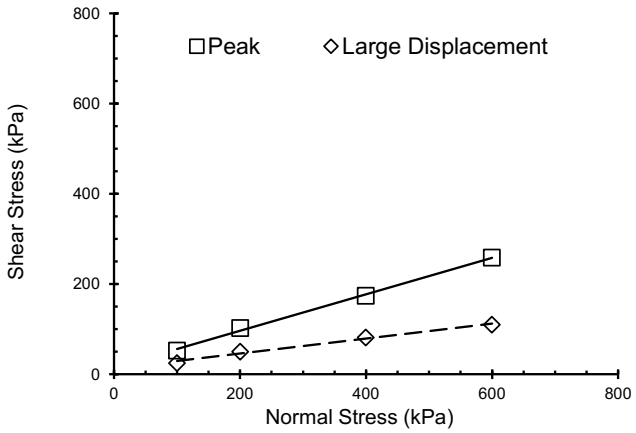
TRI Environmental, Inc.
9063 Bee Caves Rd. – Austin, TX 78733 – USA | Ph: 800.880.TEST or 512.263.2101

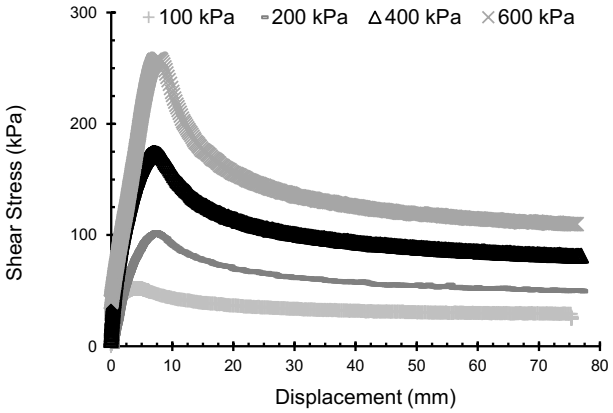
Shear Strength of Geosynthetic-Geosynthetic Interface by Direct Shear (ASTM D5321)

Client: Hecla Limited
Project: KH DSTF P2 West

TRI Log #: 25-00107-2
Richard S. Lacey, P.E. 2/4/2025
Analysis & Quality Review/Date

Non Woven Geotextile (LP8) vs. 80 mil Textured LLDPE GM (EL6280)





Test Results, Linear Regression			
Mohr-Coulomb Parameters		Peak	Large Displacement
Friction Angle	Degrees	22.0	9.4
Y-intercept or Adhesion	kPa	15	13
Minimum Secant Angle	Degrees	23.3	10.4

Note - Large Displacement Values Reported for 76.2 mm of Displacement

Test Conditions		
Upper Box	Non Woven Geotextile (LP8)	
Lower Box	80 mil Textured LLDPE GM (EL6280)	
Conditioning	Wet - Interface soaked and loading applied for a minimum of 15 minutes prior to shear.	
Shearing Rate	mm/minute	0.10

Test Notes

Shearing occurred at the interface at all stresses.

Specimen No.		-	1	2	3	4
Normal Stress		kPa	100	200	400	600
Box Edge Dimension		mm	305	305	305	305
Bearing Slide Resistance		N	124	212	388	565
Peak	Shear Stress	kPa	52	102	174	259
	Secant Angle	deg.	27.6	27.0	23.5	23.3
Large Displacement	Shear Stress	kPa	25	50	81	110
	Secant Angle	deg.	14.0	14.1	11.5	10.4
Asperity Height, Avg. of 5 Meas.		mm	0.525	0.475	0.575	0.500

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

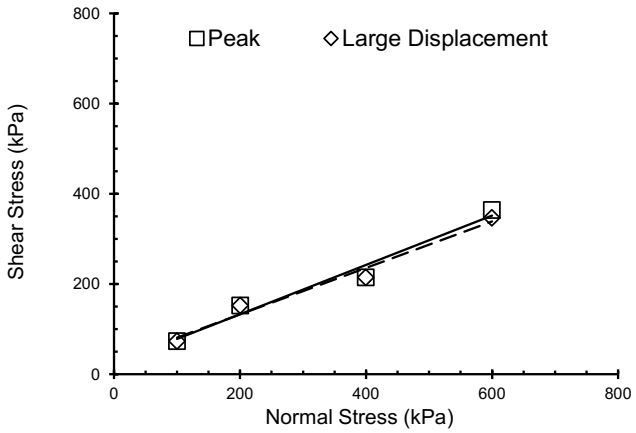
TRI Environmental, Inc.
9063 Bee Caves Rd. – Austin, TX 78733 – USA | Ph: 800.880.TEST or 512.263.2101

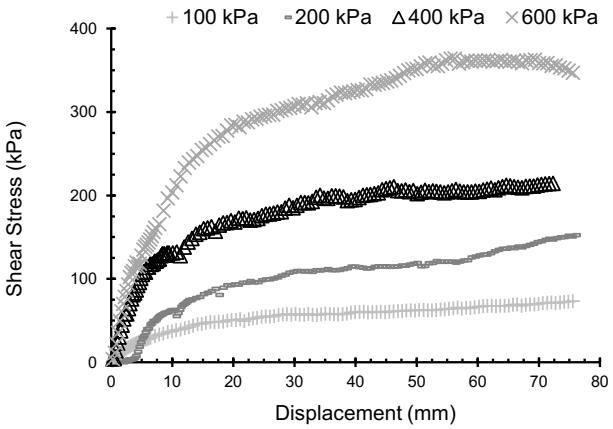
Shear Strength of Soil-Geosynthetic Interface by Direct Shear (ASTM D5321)

Client: Hecla Limited
Project: KH DSTF P2 West

TRI Log #: 25-00107-3
Richard S. Lacey, P.E. 2/4/2025
Analysis & Quality Review/Date

20 mm Bedding Material (P2W-20mm) vs. Non Woven Geotextile (LP8)





Test Results, Linear Regression			
Mohr-Coulomb Parameters		Peak	Large Displacement
Friction Angle	Degrees	28.7	27.3
Y-intercept or Adhesion	kPa	23	30
Minimum Secant Angle	Degrees	28.2	28.2

Note - Large Displacement Values Reported for 76.2 mm of Displacement

Test Conditions		
Upper Box	20 mm Bedding Material (P2W-20mm) Tamped in place	
Lower Box	Non Woven Geotextile (LP8)	
Conditioning	Wet - Interface soaked and loading applied for a minimum of 15 minutes prior to shear.	
Shearing Rate	mm/minute	0.10

Test Notes

Shearing occurred at the interface at all stresses.

Specimen No.		-	1	2	3	4
Normal Stress		kPa	100	200	400	600
Box Edge Dimension		mm	305	305	305	305
Bearing Slide Resistance		N	124	212	388	565
Peak	Shear Stress	kPa	73	153	215	364
	Secant Angle	deg.	36.3	37.3	28.2	31.3
Large Displacement	Shear Stress	kPa	73	153	215	347
	Secant Angle	deg.	36.3	37.3	28.2	30.1

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

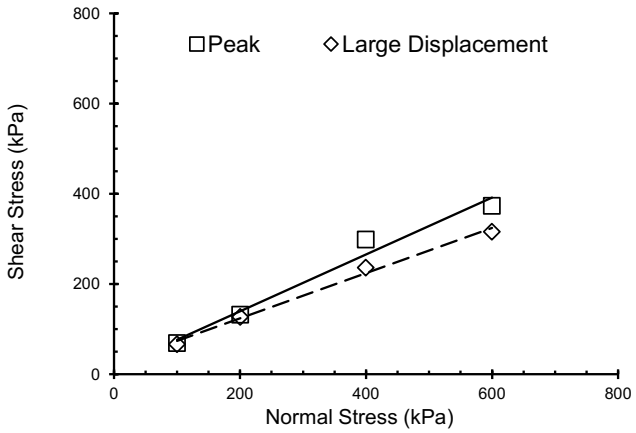
TRI Environmental, Inc.
9063 Bee Caves Rd. – Austin, TX 78733 – USA | Ph: 800.880.TEST or 512.263.2101

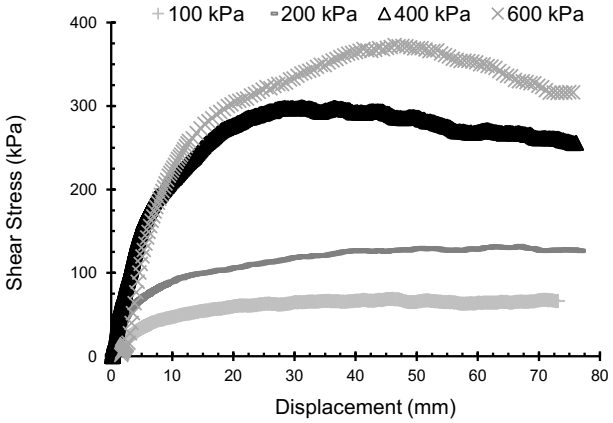
Shear Strength of Soil-Geosynthetic Interface by Direct Shear (ASTM D5321)

Client: Hecla Limited
Project: KH DSTF P2 West

TRI Log #: 25-00107-4
Richard S. Lacey, P.E. 2/4/2025
Analysis & Quality Review/Date

5 mm Bedding Material (P2W-5mm) vs. 80 mil Textured LLDPE GM (EL6280)





Test Results, Linear Regression			
Mohr-Coulomb Parameters		Peak	Large Displacement
Friction Angle	Degrees	32.2	26.6
Y-intercept or Adhesion	kPa	13	24
Minimum Secant Angle	Degrees	31.9	27.8

Note - Large Displacement Values Reported for 76.2 mm of Displacement

Test Conditions		
Upper Box	5 mm Bedding Material (P2W-5mm) Tamped in place	
Lower Box	80 mil Textured LLDPE GM (EL6280)	
Conditioning	Wet - Interface soaked and loading applied for a minimum of 15 minutes prior to shear.	
Shearing Rate	mm/minute	0.10

Test Notes

Shearing occurred at the interface at all stresses.

Specimen No.		-	1	2	3	4
Normal Stress		kPa	100	200	400	600
Box Edge Dimension		mm	305	305	305	305
Bearing Slide Resistance		N	124	212	388	565
Peak	Shear Stress	kPa	69	132	299	373
	Secant Angle	deg.	34.6	33.4	36.8	31.9
Large Displacement	Shear Stress	kPa	66	127	236	316
	Secant Angle	deg.	33.6	32.4	30.6	27.8
Asperity Height, Avg. of 5 Meas.		mm	0.750	0.600	0.600	0.625

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

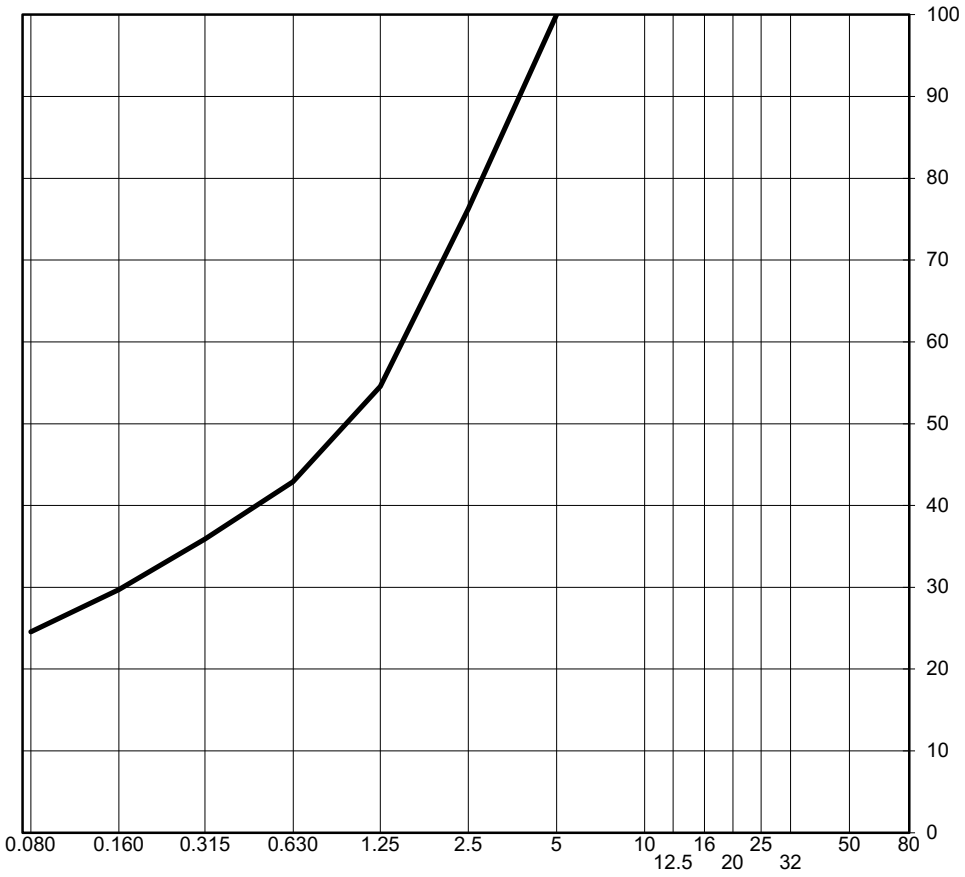
TRI Environmental, Inc.
9063 Bee Caves Rd. – Austin, TX 78733 – USA | Ph: 800.880.TEST or 512.263.2101

SIEVE ANALYSIS REPORT

Washed Sieve: ASTM C136 and C117

Project No.:	704-ENG.WARC04415-11	Sample No.:	Composite 5mm Sample for Interface Testing
Project:	AKHM DSTF P2E	Date Received:	January, 2025
Client:	AKHM	Sampled by:	MLD
Attention:	Aaron Marsh	Date Tested:	January, 2025
Email:		Tested by:	MLD/SD Office: Whitehorse
Description:	5mm Minus Granular Fill	Moisture Content (as received):	
		% Fractured Faces:	
Source:	Lightning Creek		
Supplier:	Nuway		
Sample Location:	Belt		
Specification:			

Sieve Size	Percent Passing
5	100
2.5	76
1.25	55
0.63	43
0.315	36
0.16	30



Remarks:

Theoretical PSD based on screening > 5 mm material, due to limited sample size.

Reviewed By: _____ P.Eng.

Data presented hereon is for the sole use of the stipulated client. Tetra Tech EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of Tetra Tech EBA. The testing services reported herein have been performed to recognized industry standards, unless noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, Tetra tech EBA will provide it upon written request.

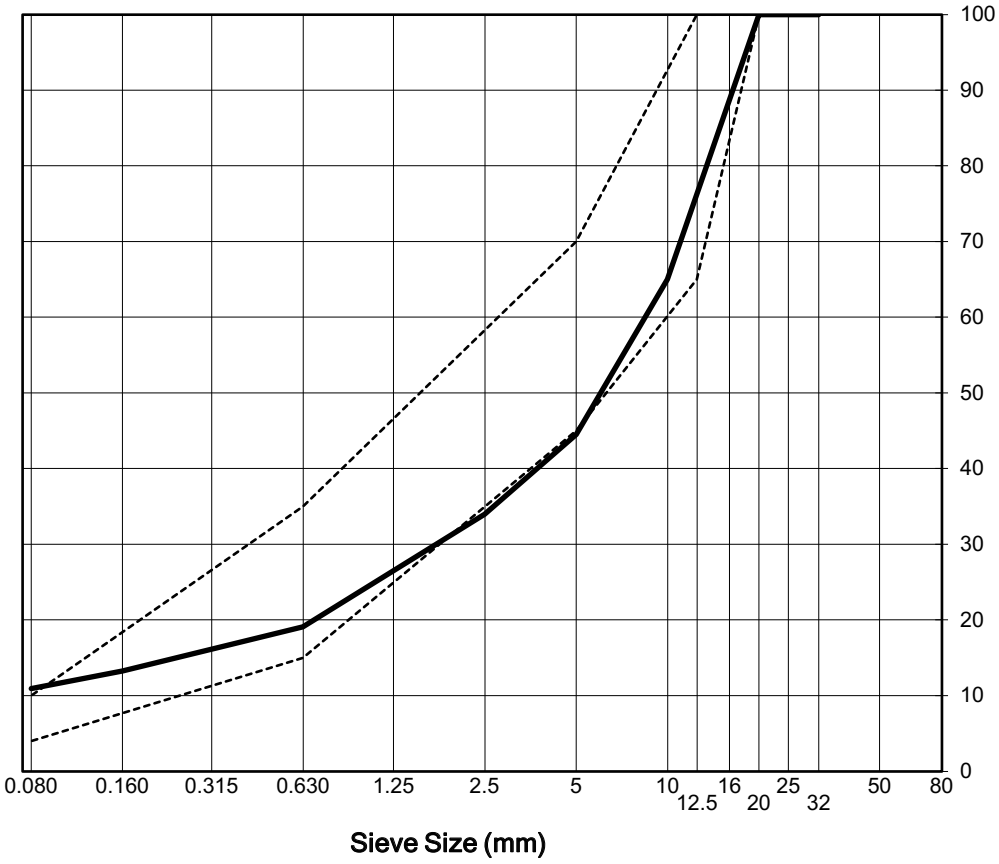
TETRA TECH

SIEVE ANALYSIS REPORT

Washed Sieve: ASTM C136 and C117

Project No.:	704-ENG.WARC04415-11	Sample No.:	Composite 20mm Sample for Interface Testing
Project:	AKHM DSTF P2E	Date Received:	January, 2025
Client:	AKHM	Sampled by:	MLD
Attention:	Aaron Marsh	Date Tested:	January, 2025
Email:		Tested by:	MLD/SD Office: Whitehorse
Description:	20mm Minus Granular Fill	Moisture Content (as received):	
		% Fractured Faces:	
Source:	Lightning Creek		
Supplier:	Nuway		
Sample Location:	Belt		
Specification:	20mm Minus Granular Fill		

Sieve Size	Percent Passing
20	100
10	45
5	45
0.63	19
0.08	11



Remarks:

Reviewed By: _____ P.Eng.

Data presented hereon is for the sole use of the stipulated client. Tetra Tech EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of Tetra Tech EBA. The testing services reported herein have been performed to recognized industry standards, unless noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, Tetra tech EBA will provide it upon written request.

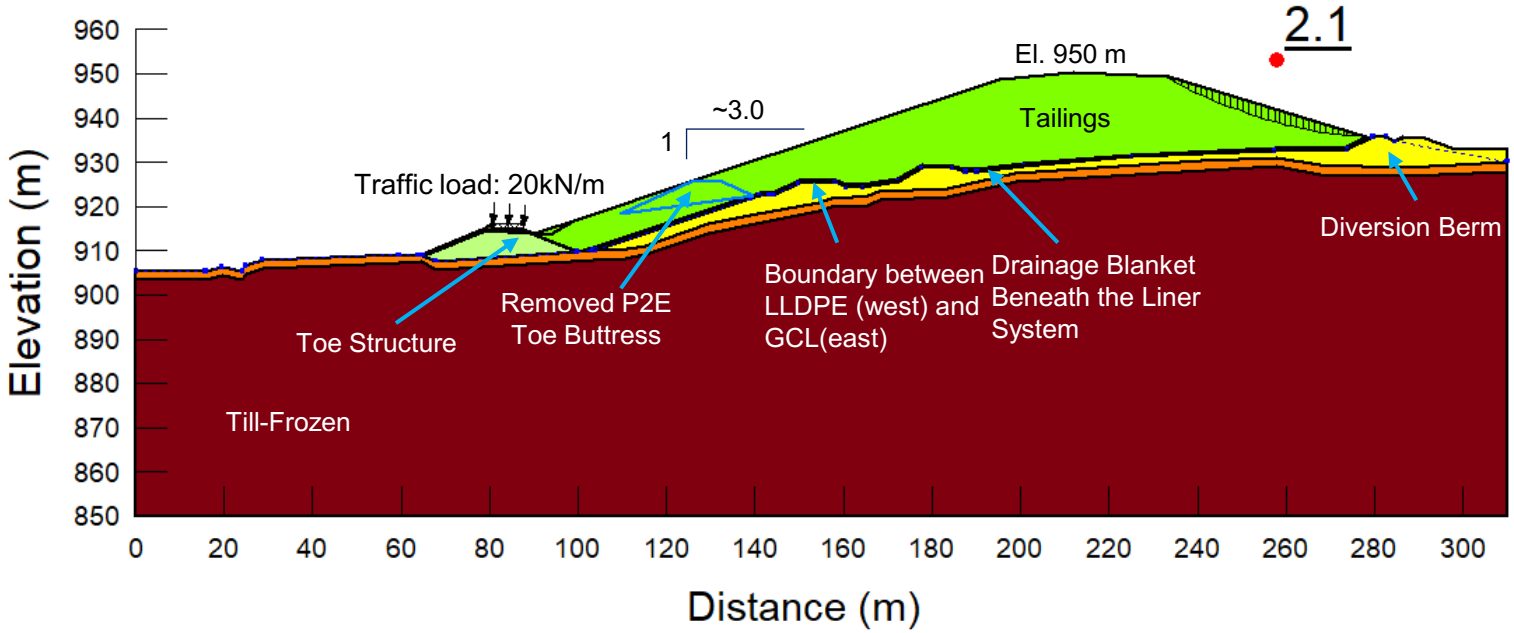
TETRA TECH

APPENDIX C

SLOPE STABILITY RESULTS (SLOPE/ W OUTPUT)

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Partially thawed)
Static – S1 - Exit Tailings Toe

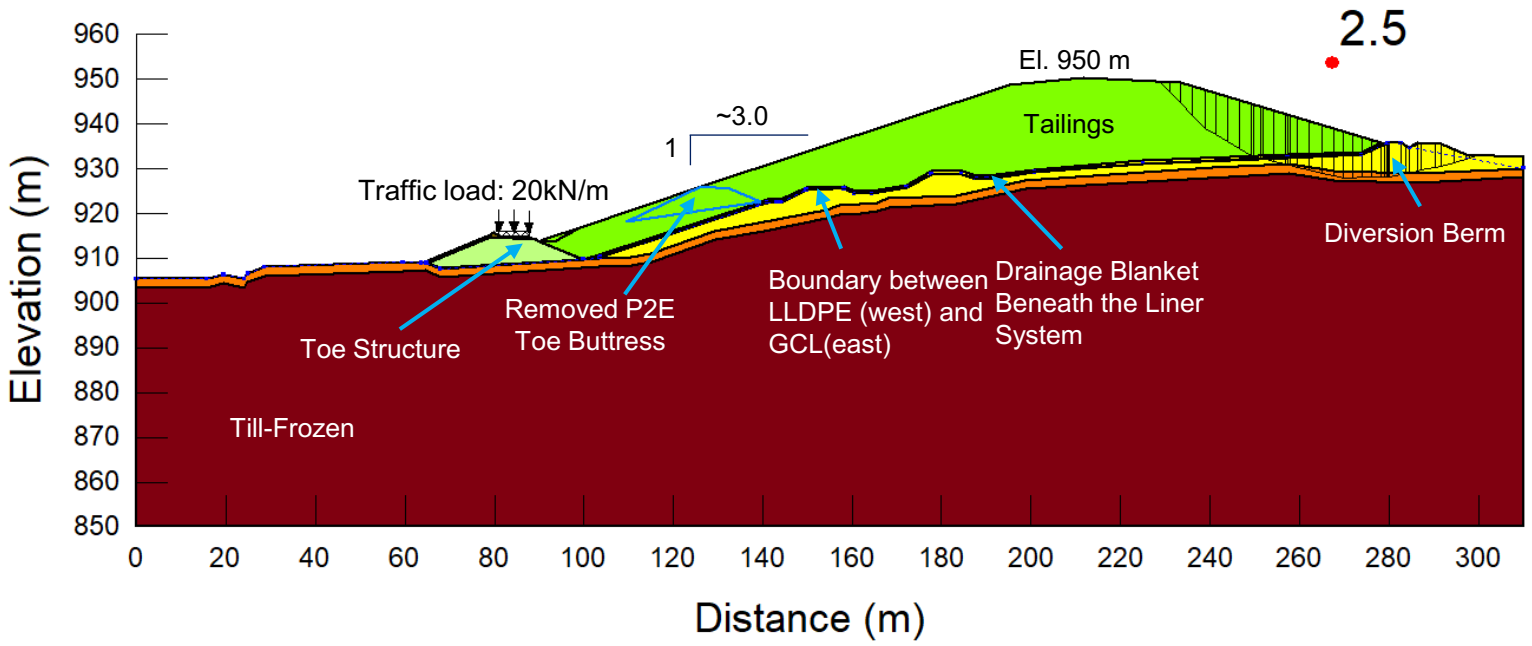
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C1

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Partially thawed) Static – S2 -Global

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

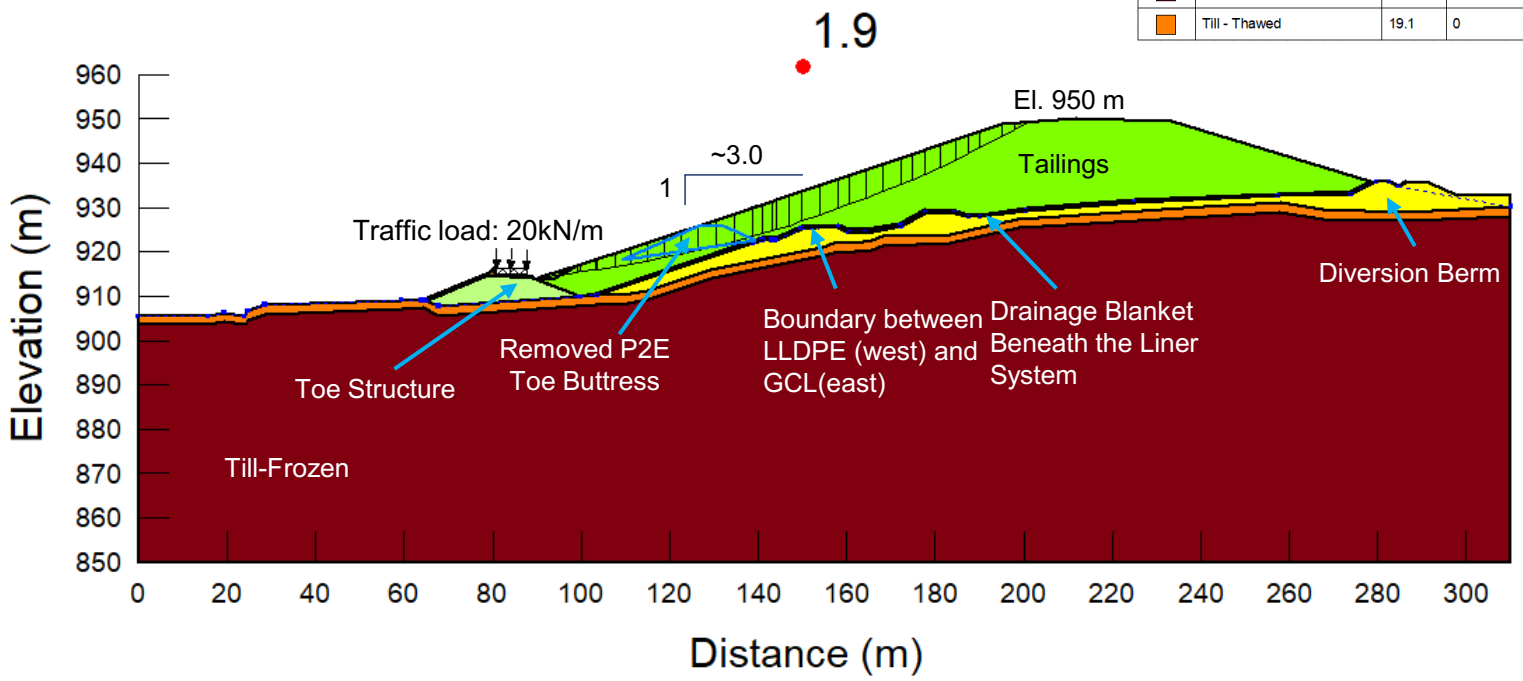
OFFICE
EDMONTON

DATE
February 2026

Appendix C2

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Partially thawed)
Static – S1 - Exit Tailings Toe

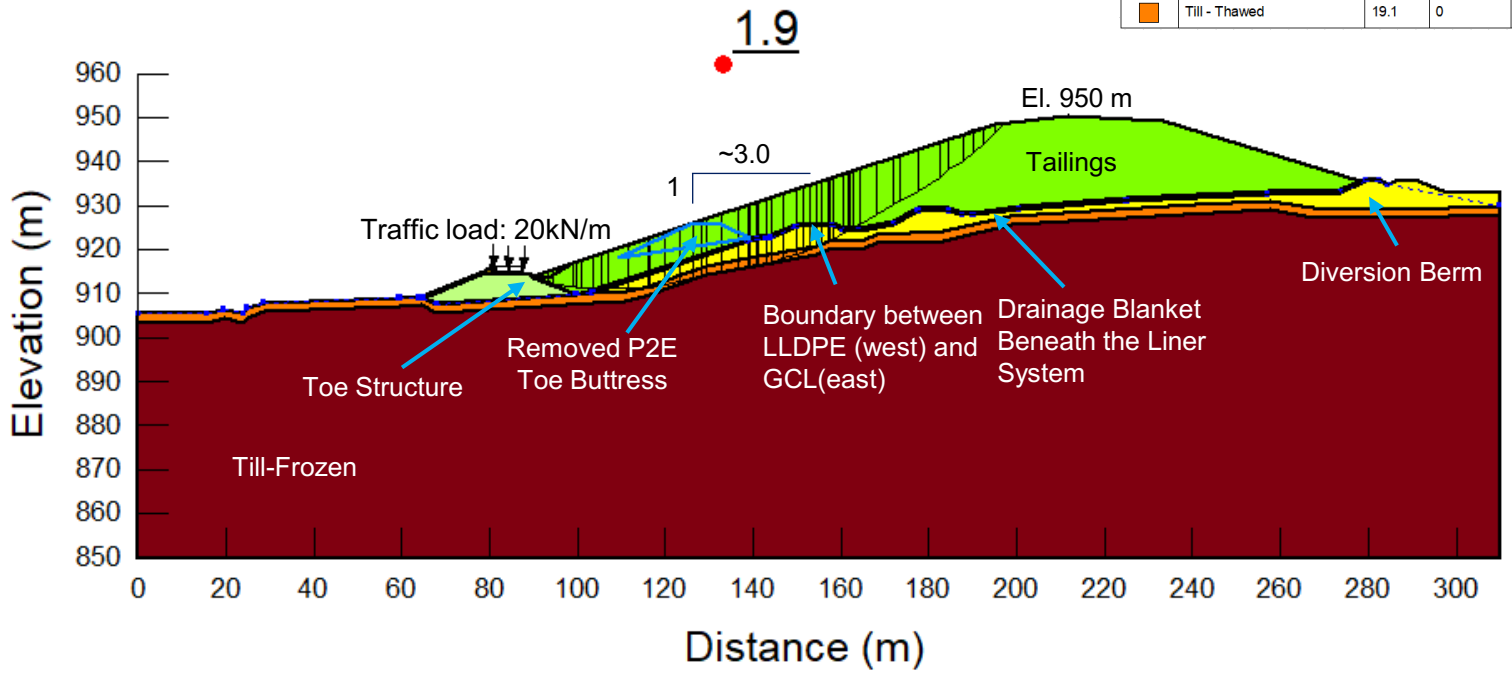
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C3

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL in Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Partially thawed)
Static – S2 -Global

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

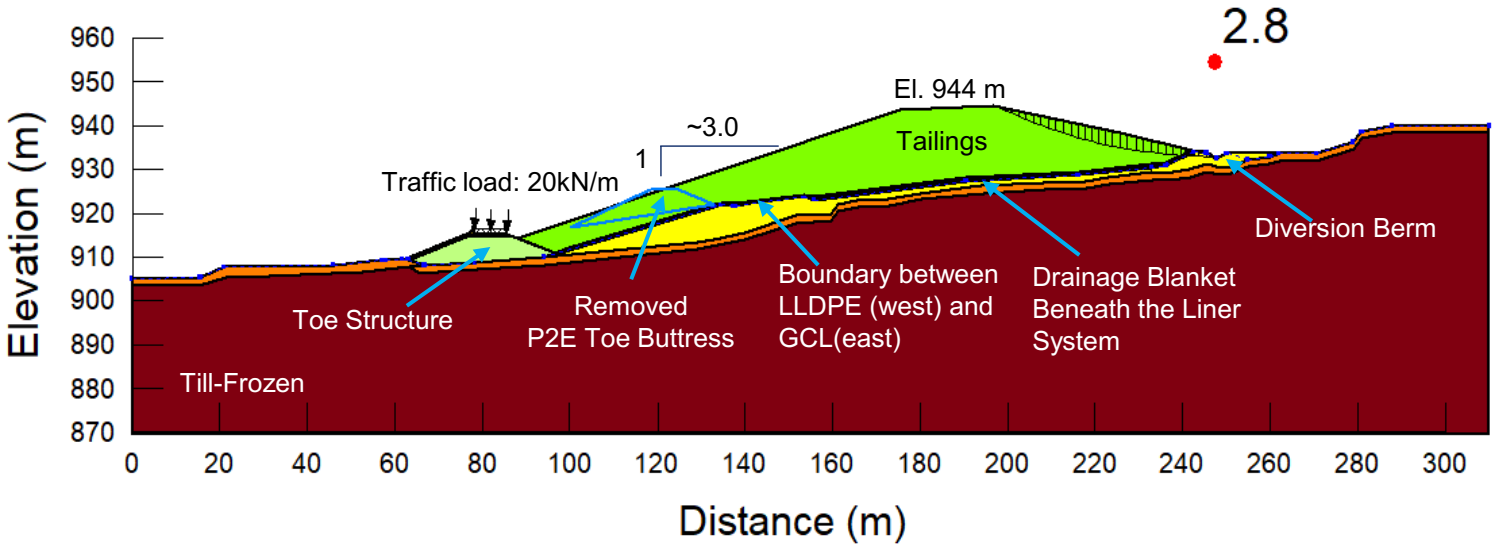
OFFICE
EDMONTON

DATE
February 2026

Appendix C4

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Partially thawed)
Static – S1 - Exit Tailings Toe

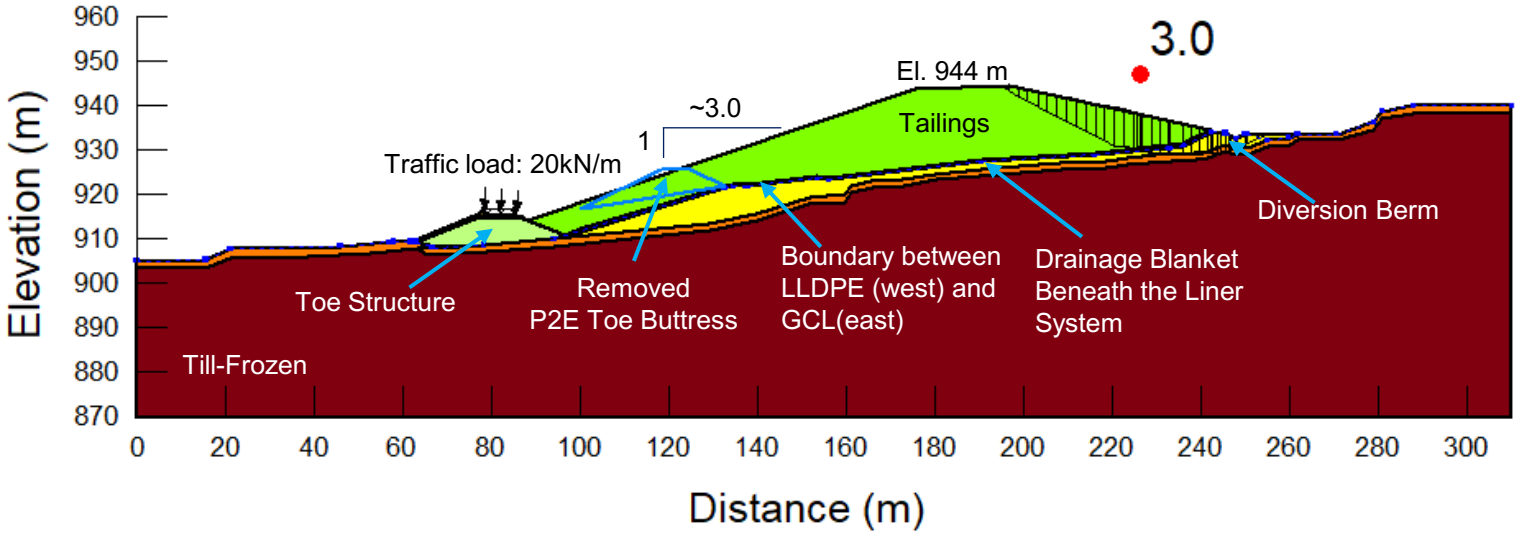
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C5

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Partially thawed)
Static – S2 - Global

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

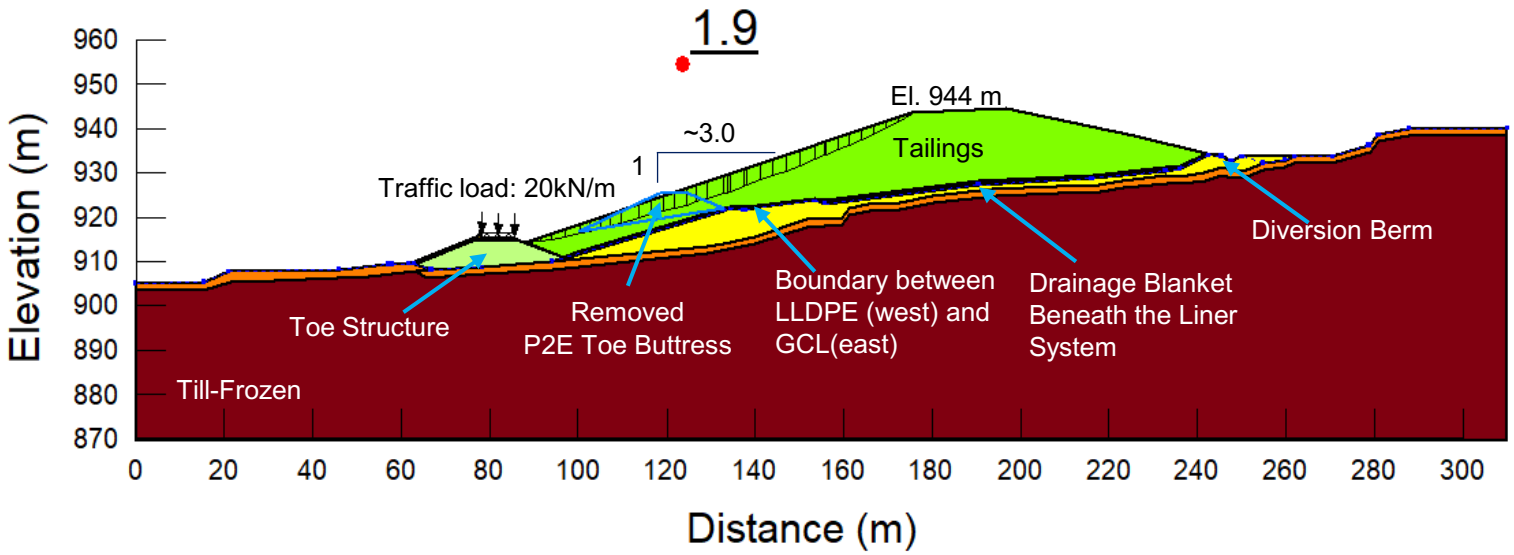
OFFICE
EDMONTON

DATE
February 2026

Appendix C6

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Partially thawed)
Static – S1 - Exit Tailings Toe

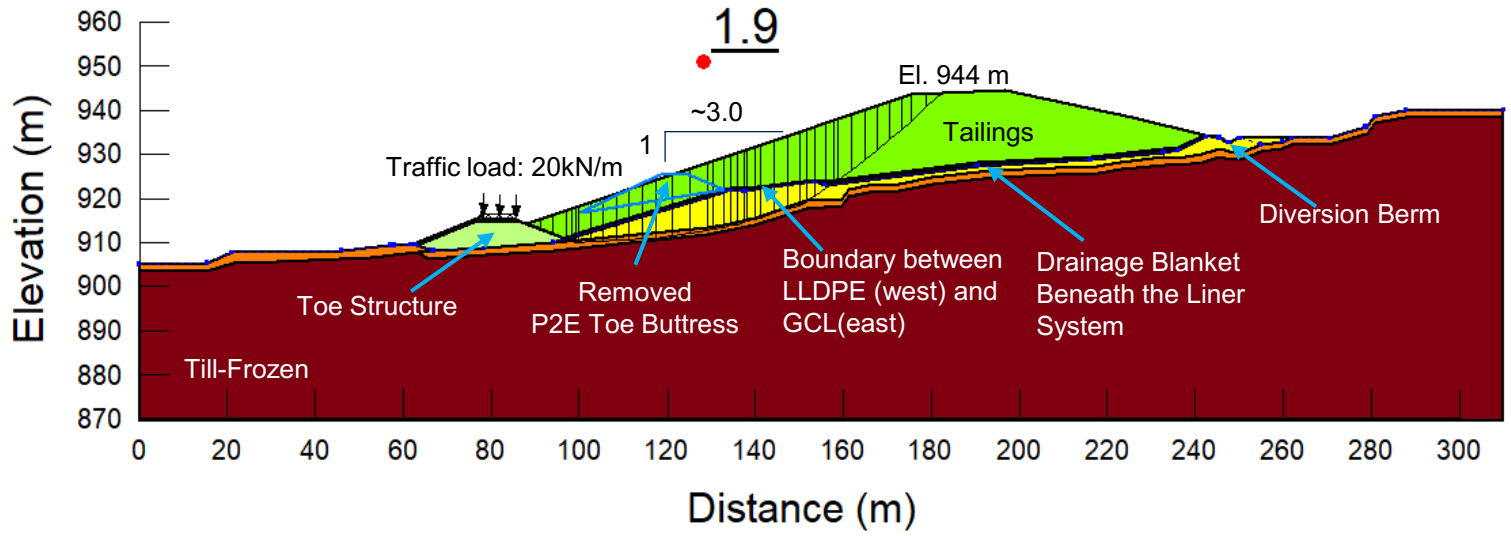
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C7

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Partially thawed)
Static – S2 - Global

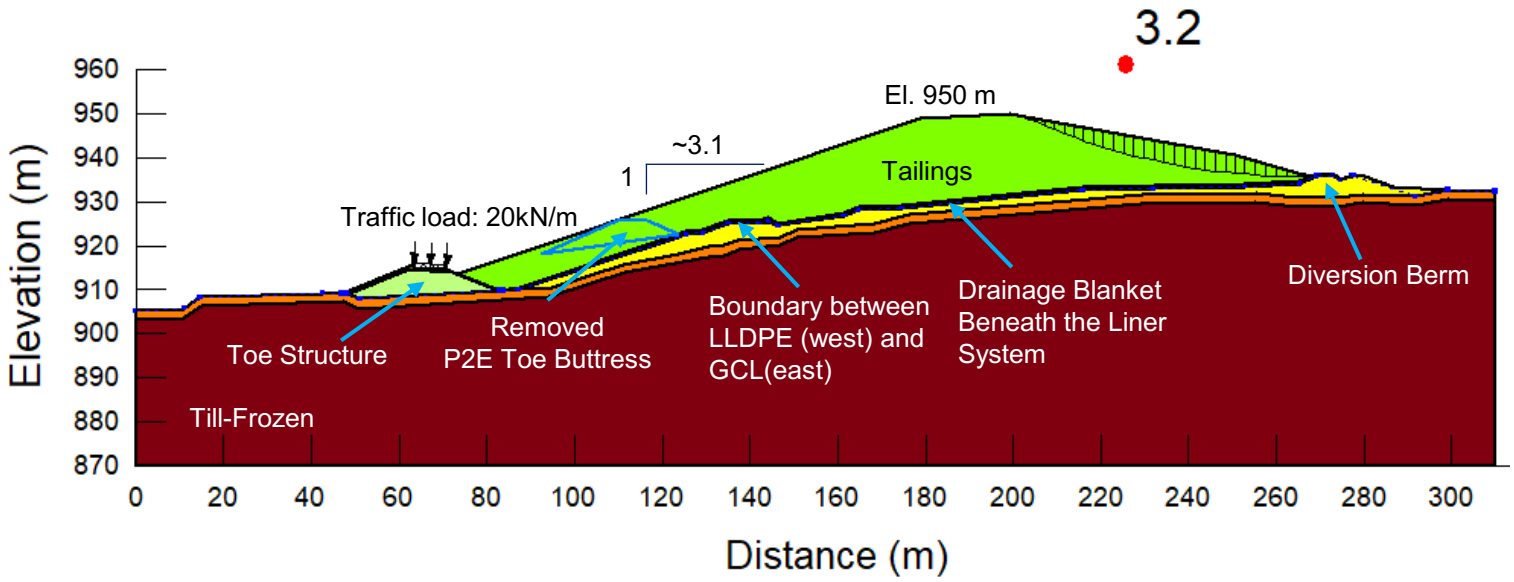
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C8

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Partially Thawed)
Static – S1 - Exit Tailings Toe

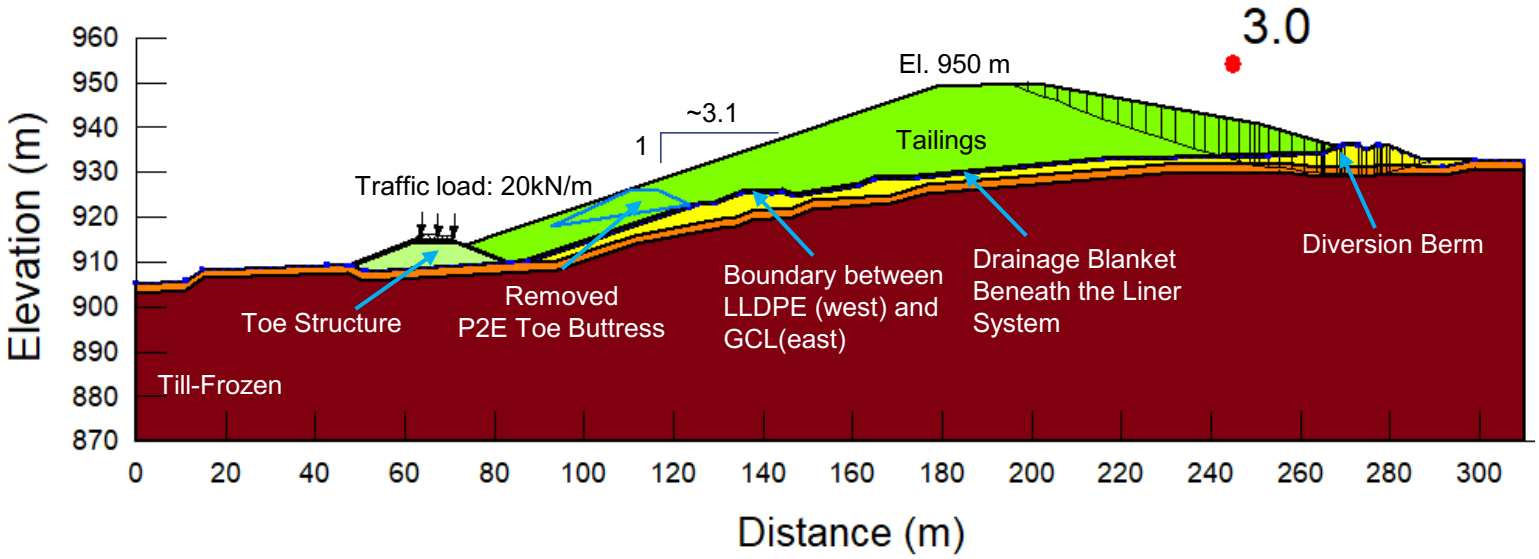
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C9

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Fully Thawed)
Static – S2 - Global

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

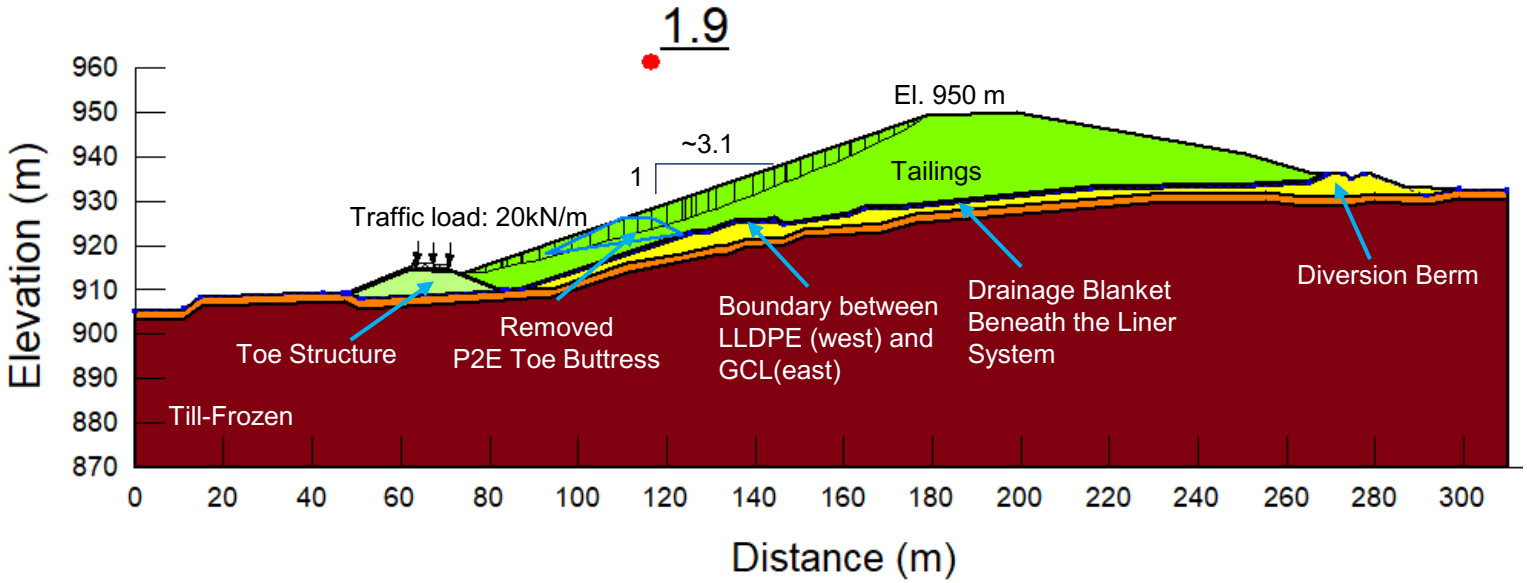
OFFICE
EDMONTON

DATE
February 2026

Appendix C10

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Partially Thawed)
Static – S1 - Exit Tailings Toe

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

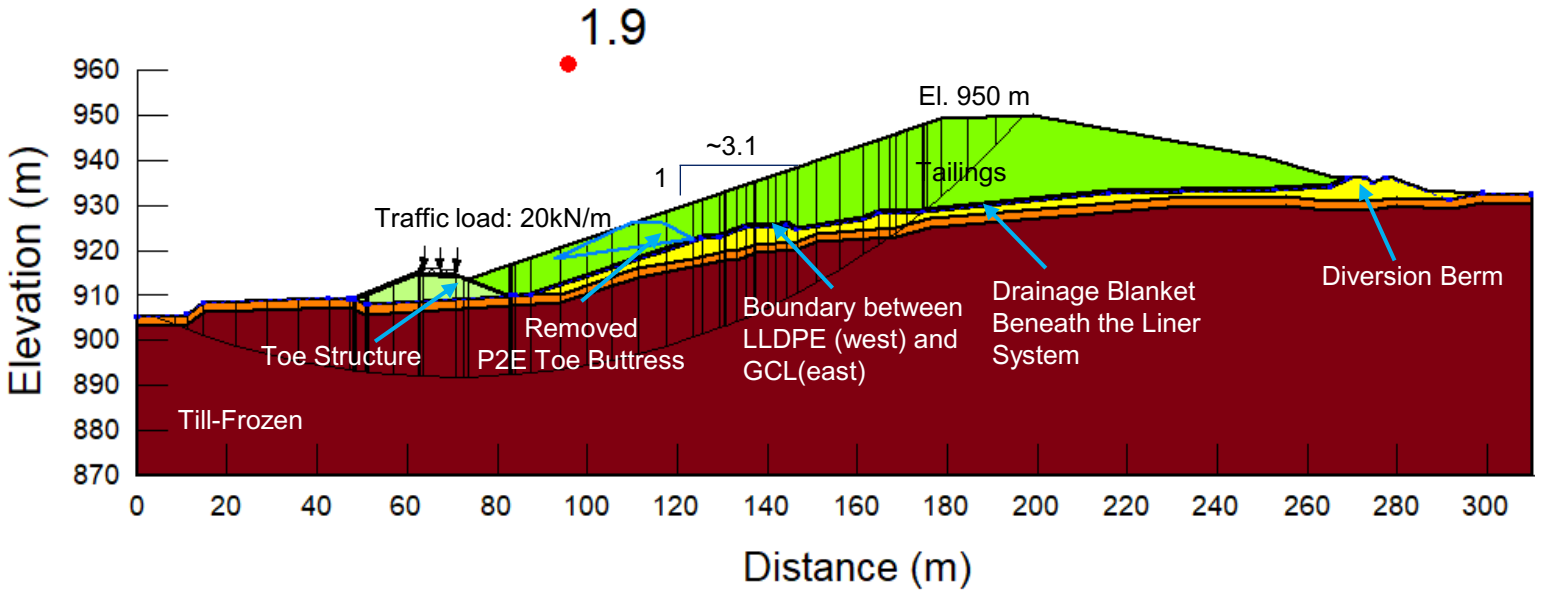
OFFICE
EDMONTON

DATE
February 2026

Appendix C11

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Partially Thawed)
Static – S2 - Global

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

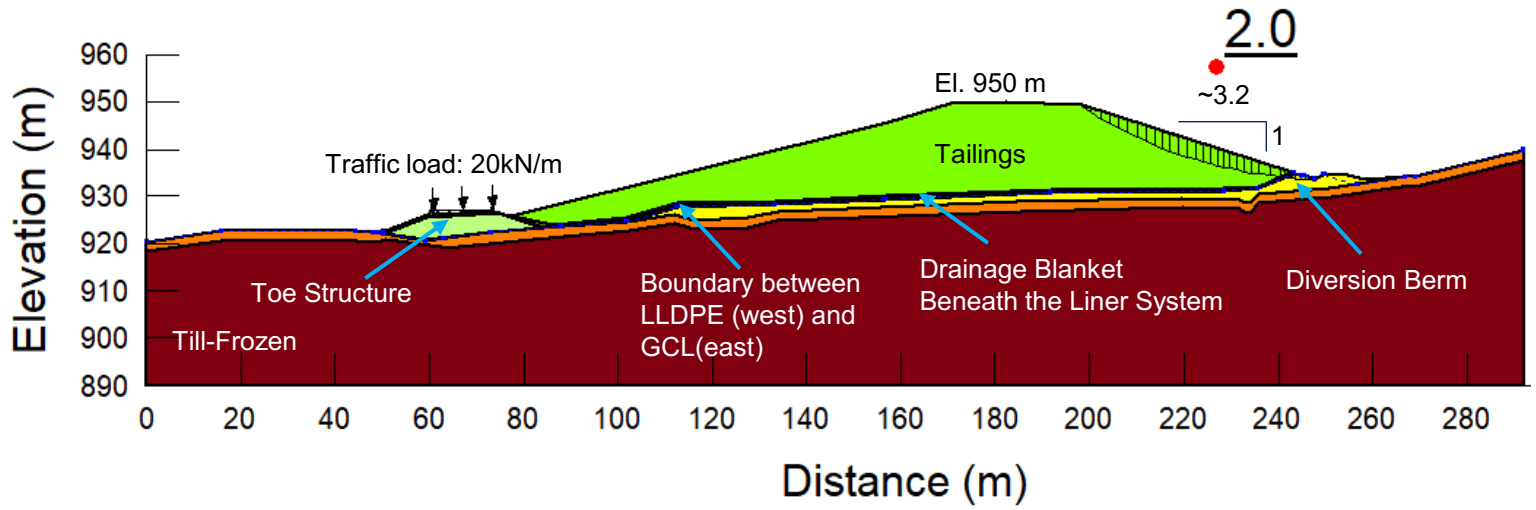
OFFICE
EDMONTON

DATE
February 2026

Appendix C12

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Partially Thawed)
Static – S1 - Exit Tailings Toe

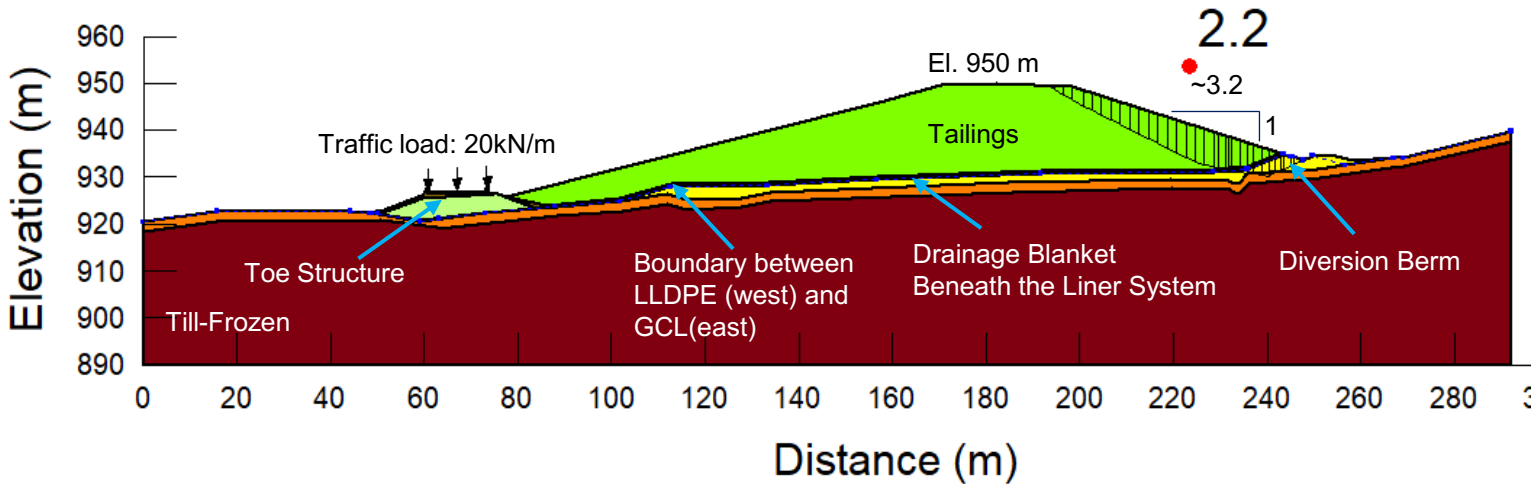
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C13

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Partially Thawed)
Static – S2 - Global

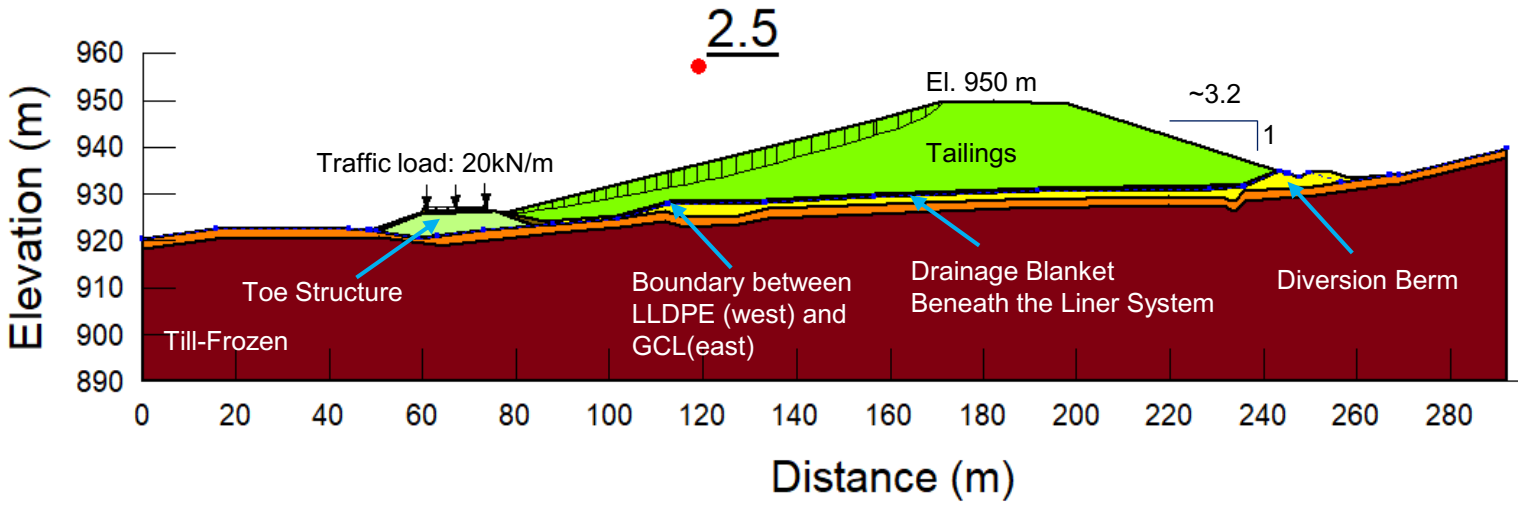
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C14

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Partially Thawed)
Static – S1 - Exit Tailings Toe

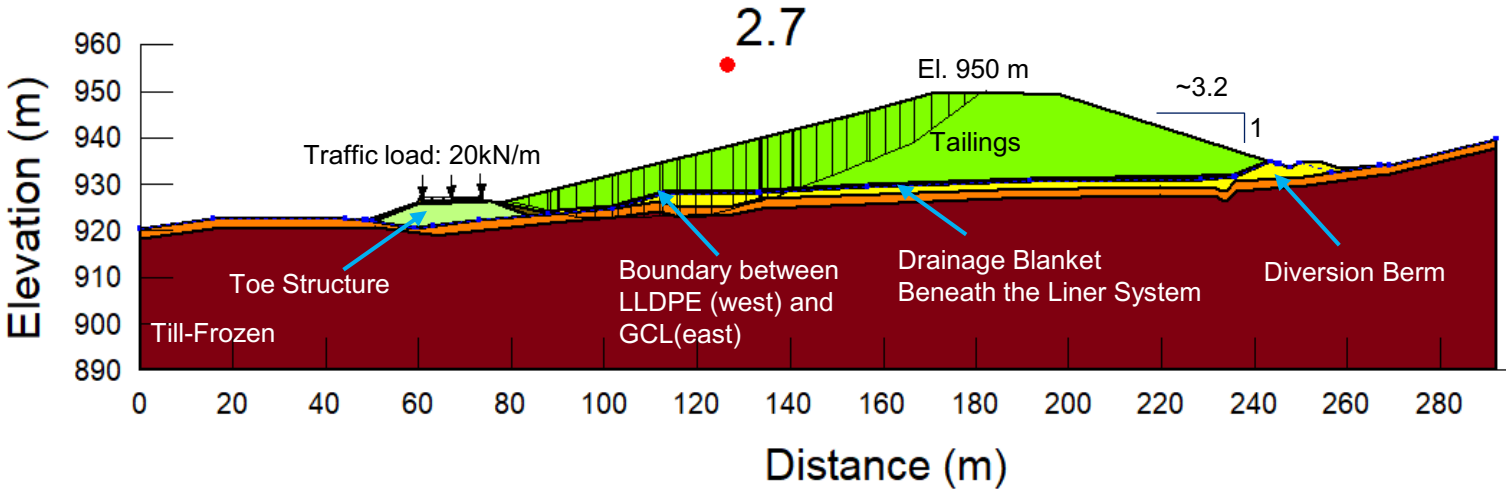
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C15

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru	Exclude if unsaturated
	DSTF Tailings	22.5	0	32	No			
	Gravel Drainage Blanket	22.5	0	35	No	1		
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1		
	Till - Ice Poor	17	0	36	No			
	Till - Thawed	19.1	0	36	Yes	1	0.15	No



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Partially Thawed)
Static – S2 - Global

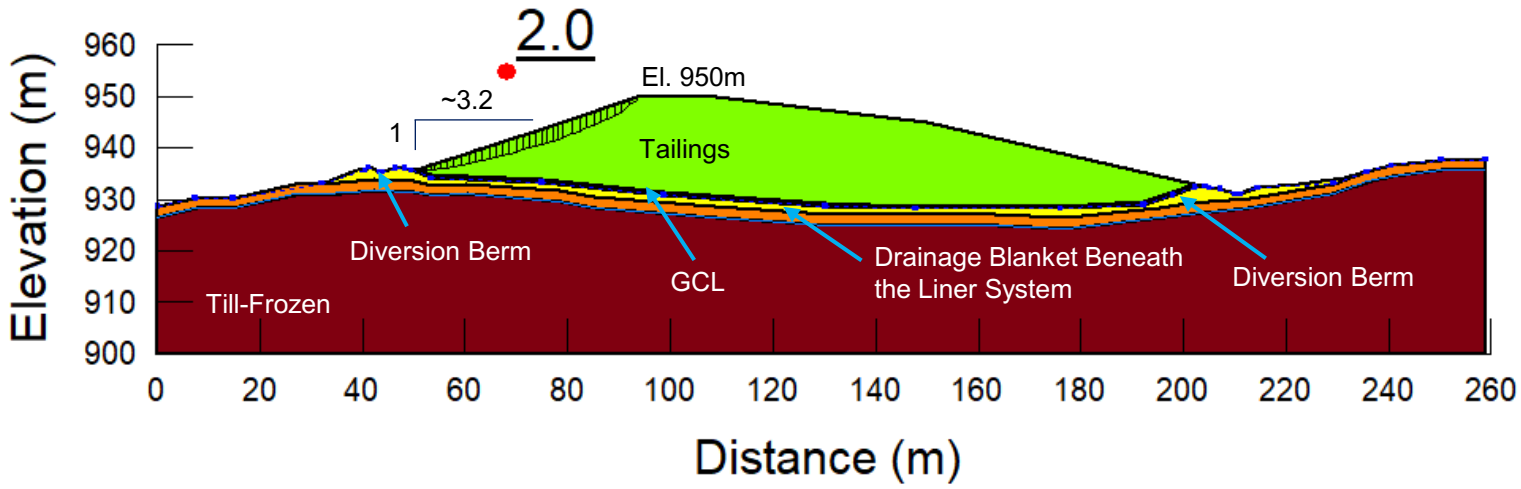
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C16

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru	Exclude if unsaturated
	DSTF Tailings	22.5	0	32	No			
	Gravel Drainage Blanket	22.5	0	35	No	1		
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1		
	Till - Ice Poor	17	0	36	No			
	Till - Thawed	19.1	0	36	Yes	1	0.15	No



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Partially Thawed)
Static – S1 - Exit Tailings Toe

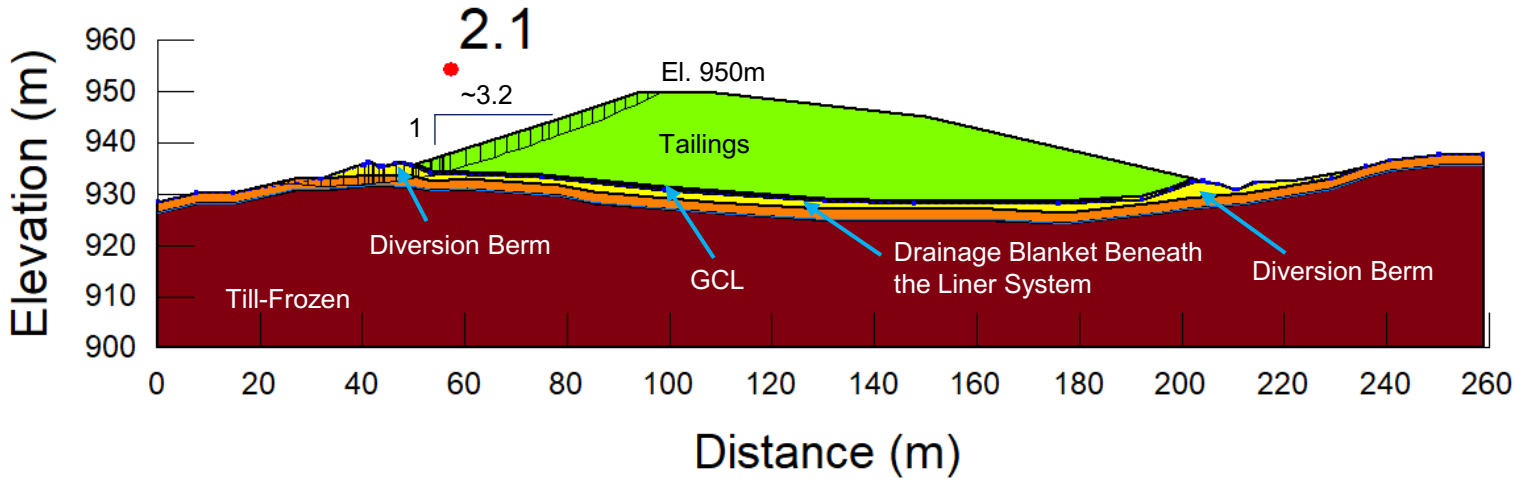
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C17

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru	Exclude if unsaturated
	DSTF Tailings	22.5	0	32	No			
	Gravel Drainage Blanket	22.5	0	35	No	1		
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1		
	Till - Ice Poor	17	0	36	No			
	Till - Thawed	19.1	0	36	Yes	1	0.15	No



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Partially Thawed)
Static – S2 - Global

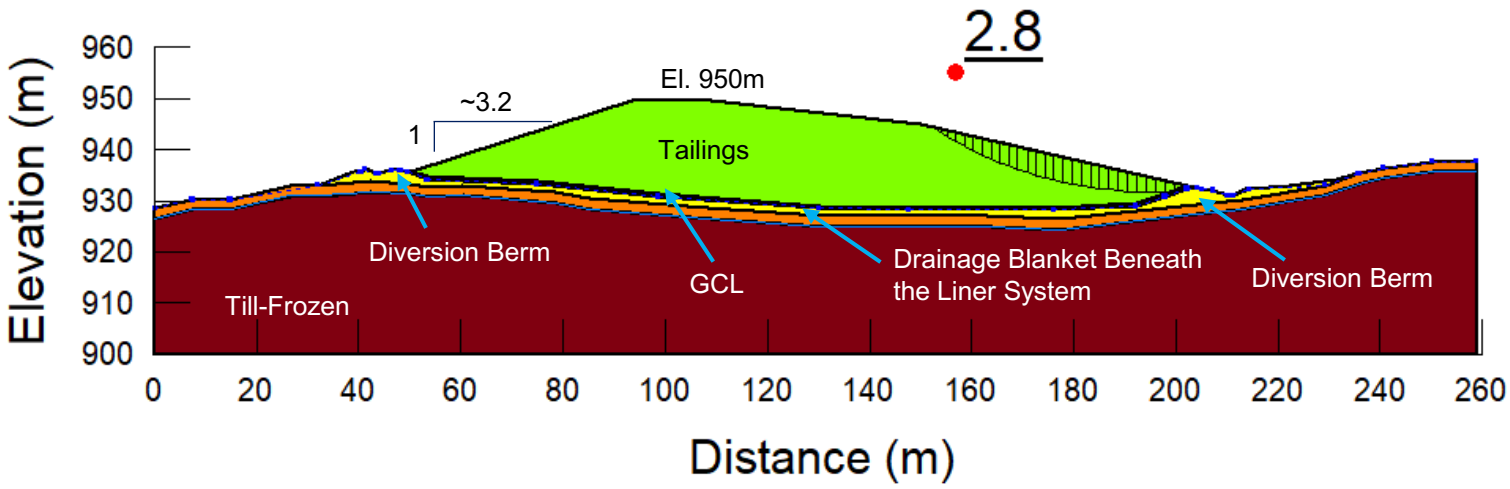
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C18

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru	Exclude if unsaturated
	DSTF Tailings	22.5	0	32	No			
	Gravel Drainage Blanket	22.5	0	35	No	1		
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1		
	Till - Ice Poor	17	0	36	No			
	Till - Thawed	19.1	0	36	Yes	1	0.15	No



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Partially Thawed)
Static – S1 - Exit Tailings Toe

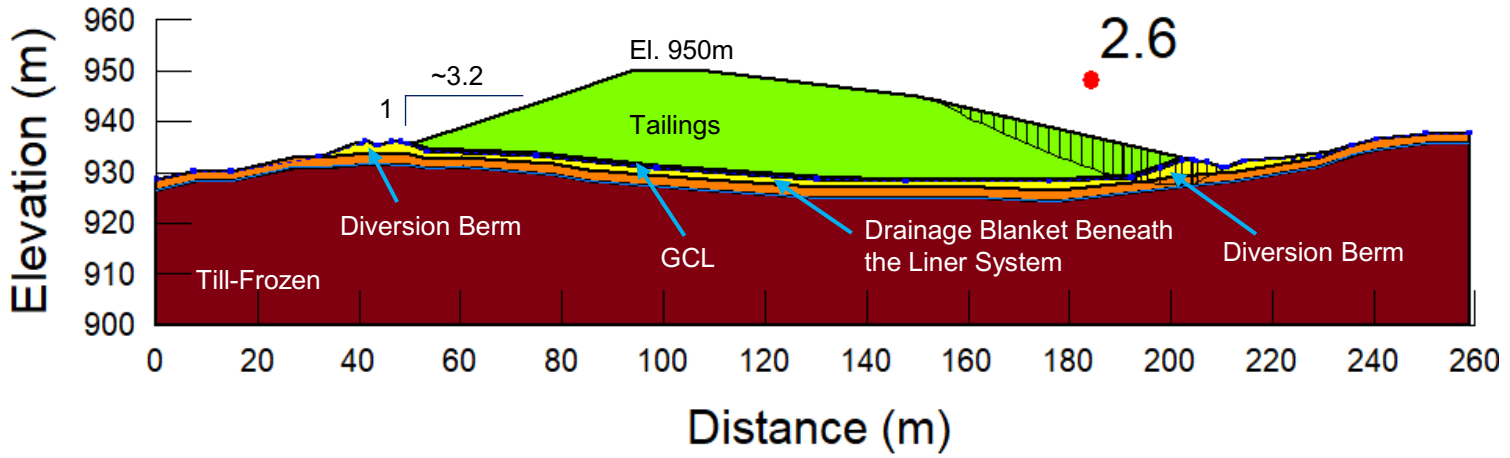
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C19

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru	Exclude if unsaturated
	DSTF Tailings	22.5	0	32	No			
	Gravel Drainage Blanket	22.5	0	35	No	1		
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1		
	Till - Ice Poor	17	0	36	No			
	Till - Thawed	19.1	0	36	Yes	1	0.15	No



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Partially Thawed) Static – S2 - Global

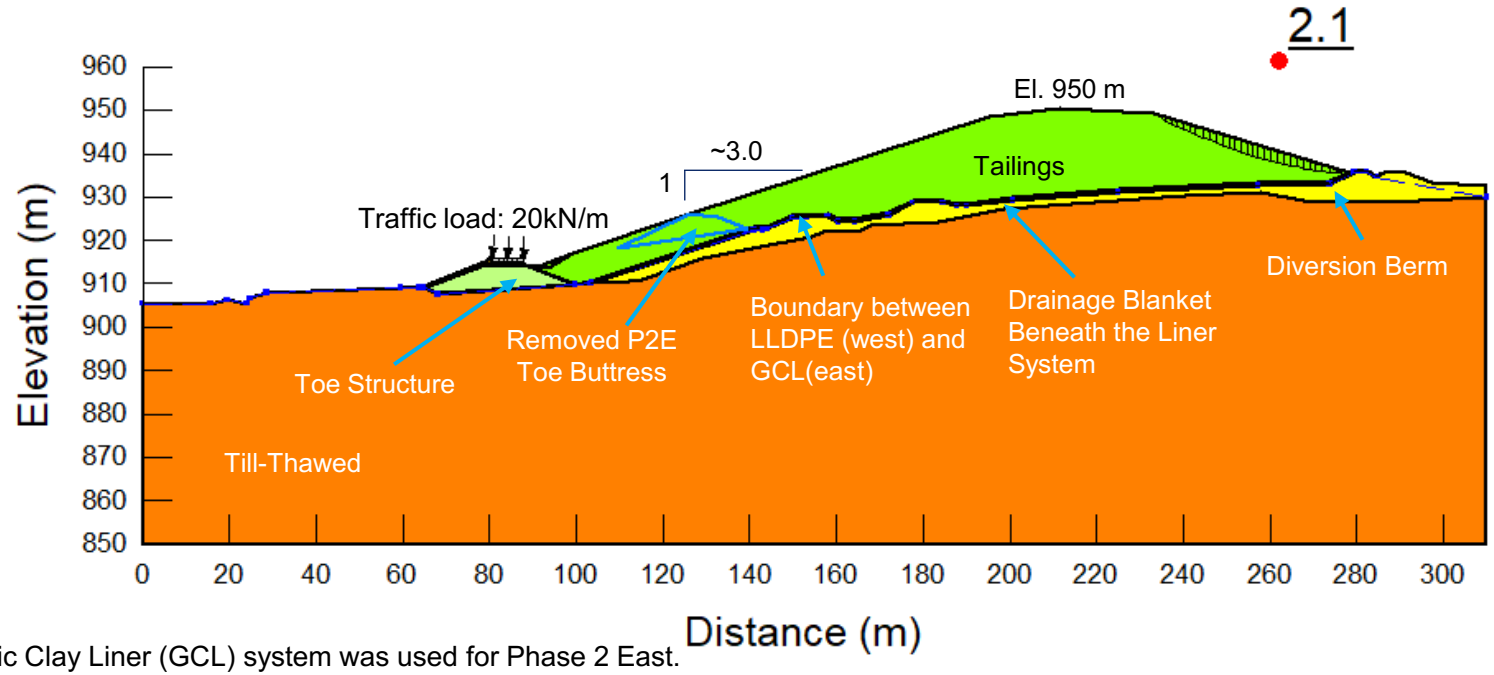
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C20

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Fully thawed)
Static – S1 - Exit Tailings Toe

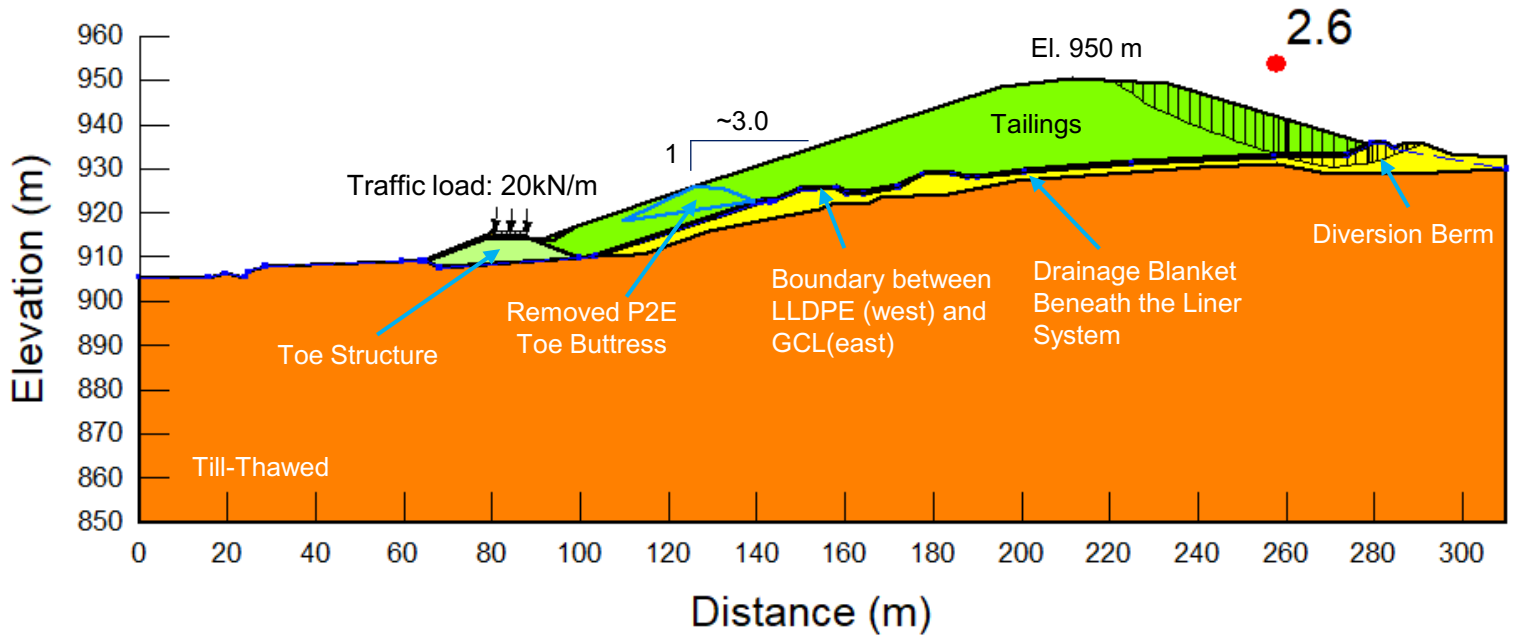
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C21

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Fully thawed)
Static – S2 -Global

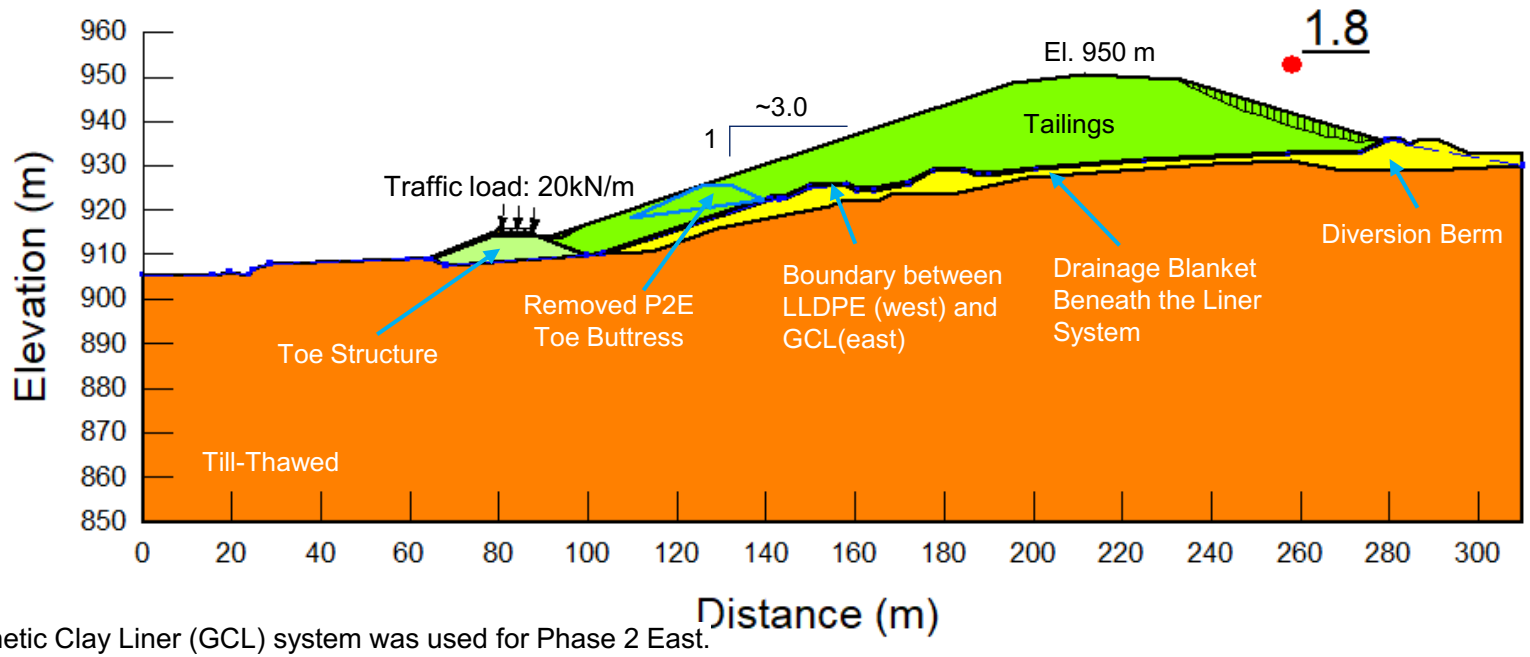
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C22

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Fully thawed)
Post-Seismic – S1 - Exit Tailings Toe

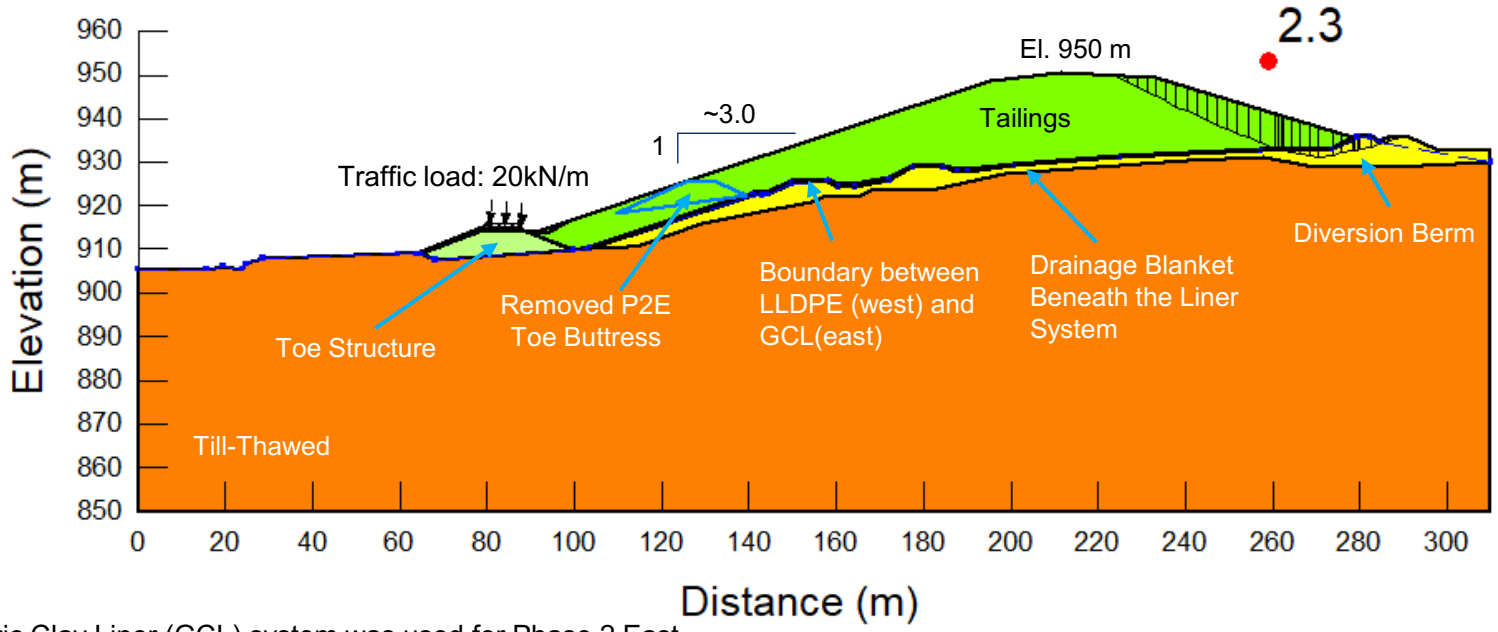
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C23

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Fully thawed) Post-Seismic– S2 -Global

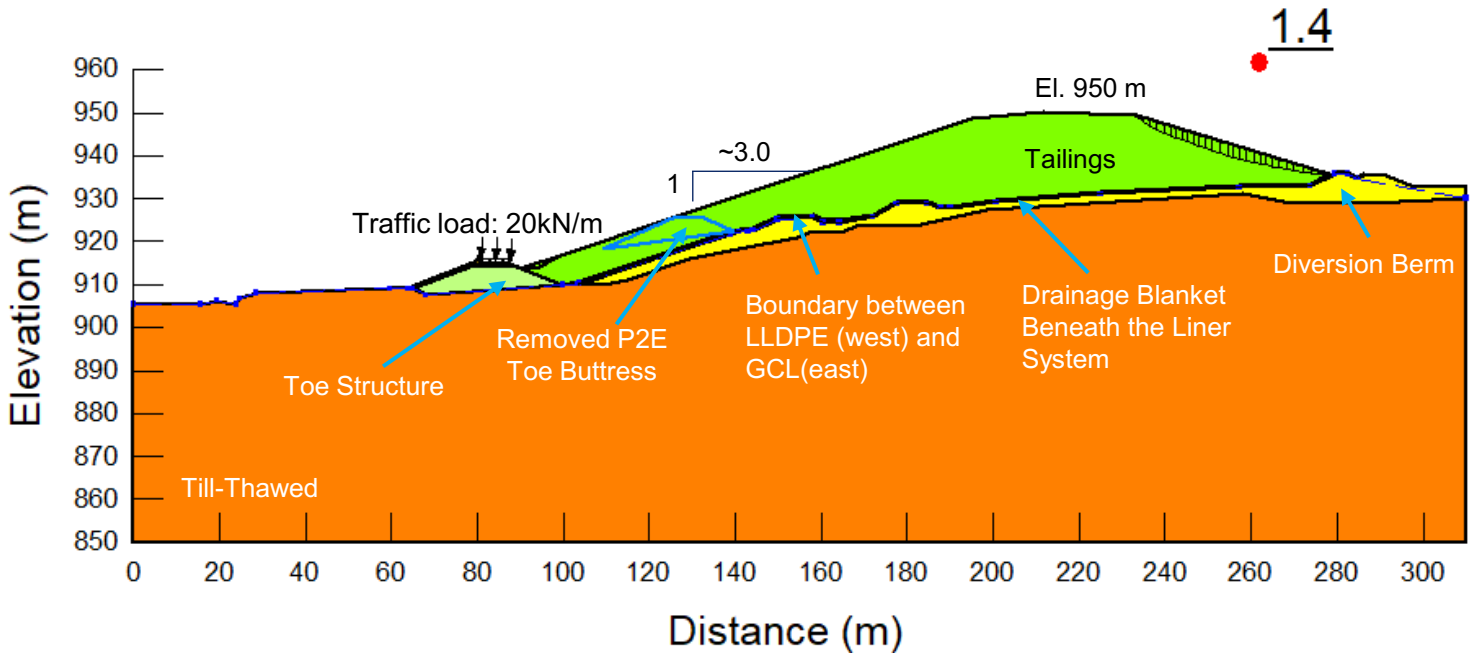
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C24

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Fully thawed)
Seismic – S1 - Exit Tailings Toe

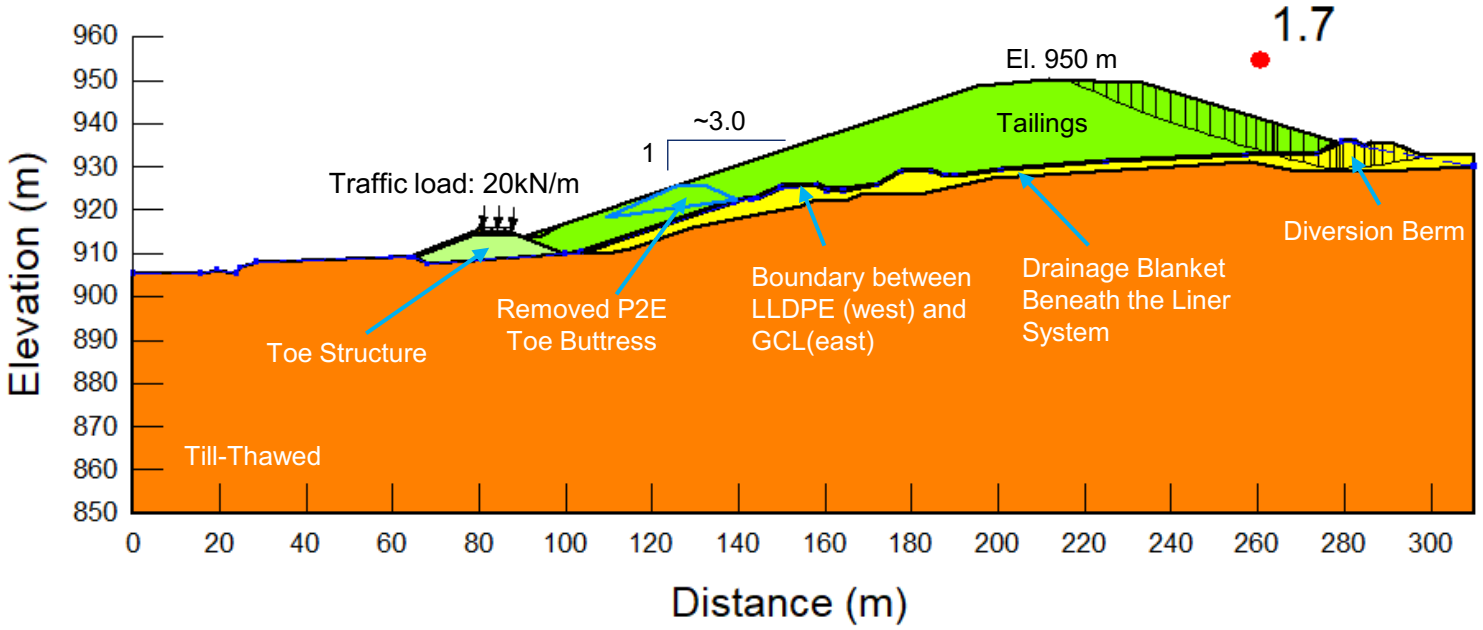
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C25

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Fully thawed)
Seismic – S2 -Global

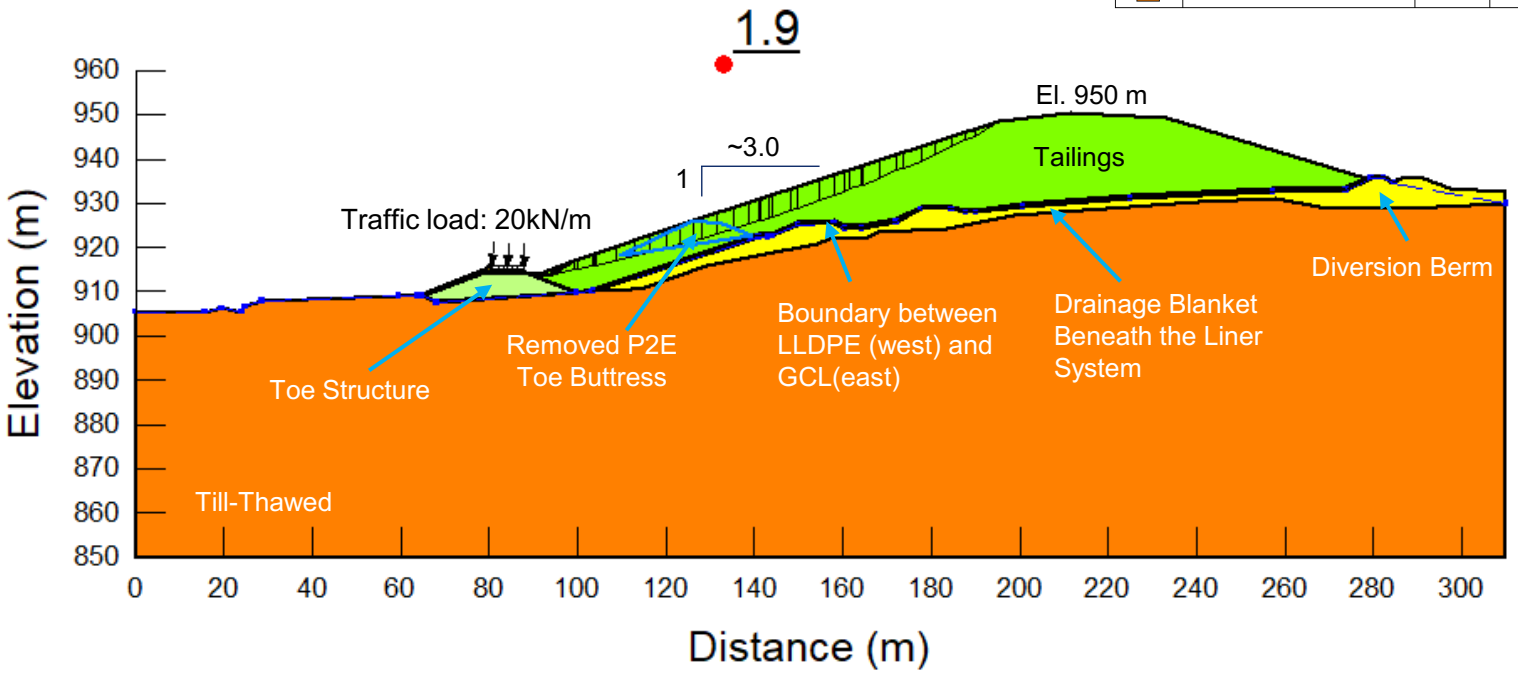
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C26

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Fully thawed)
Static – S1 - Exit Tailings Toe

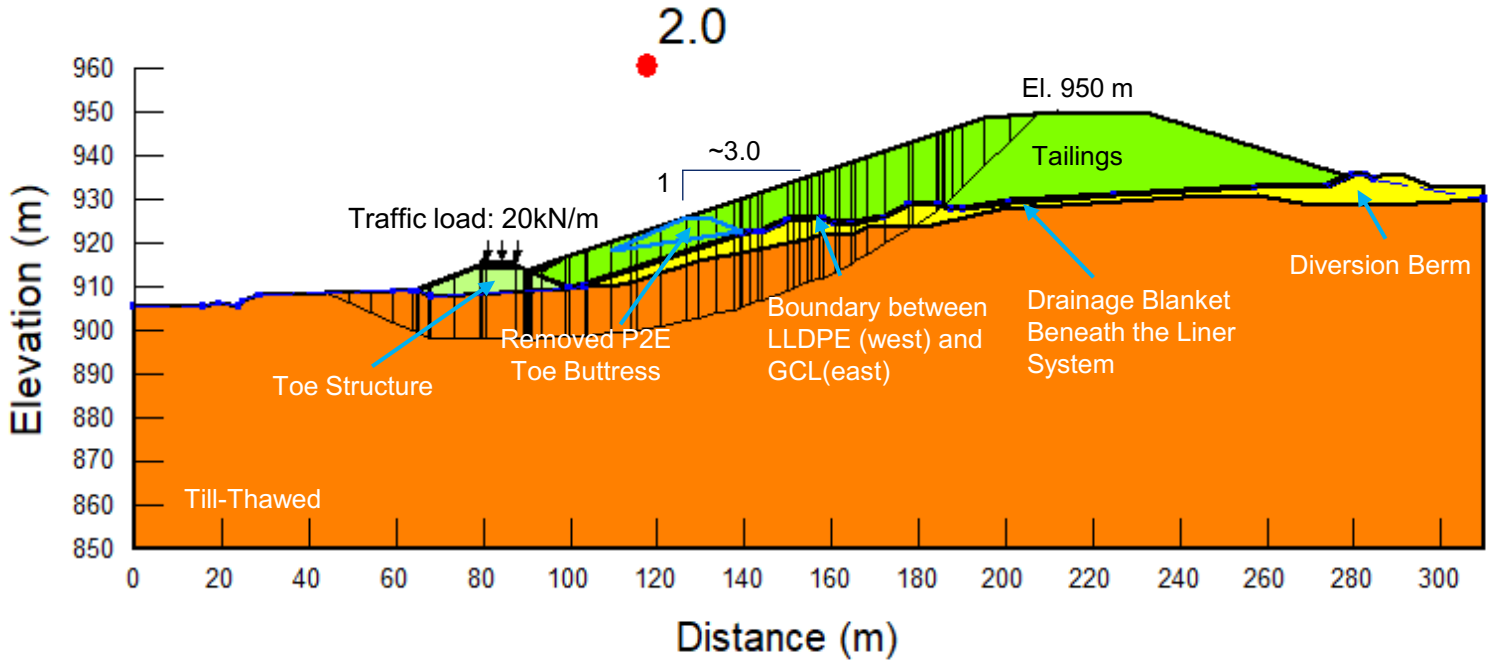
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C27

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Fully thawed)
Static – S2 - Global

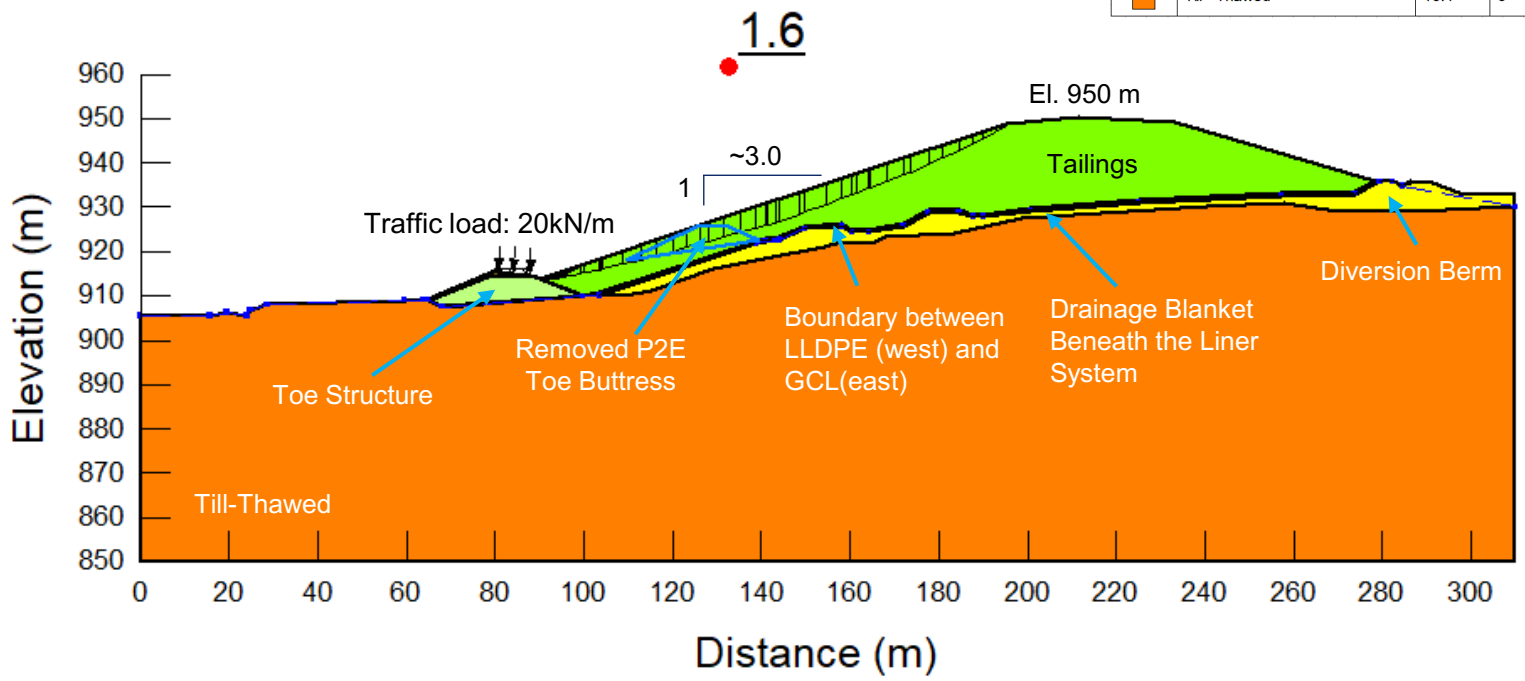
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C28

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Fully thawed) Post-Seismic– S1 - Exit Tailings Toe

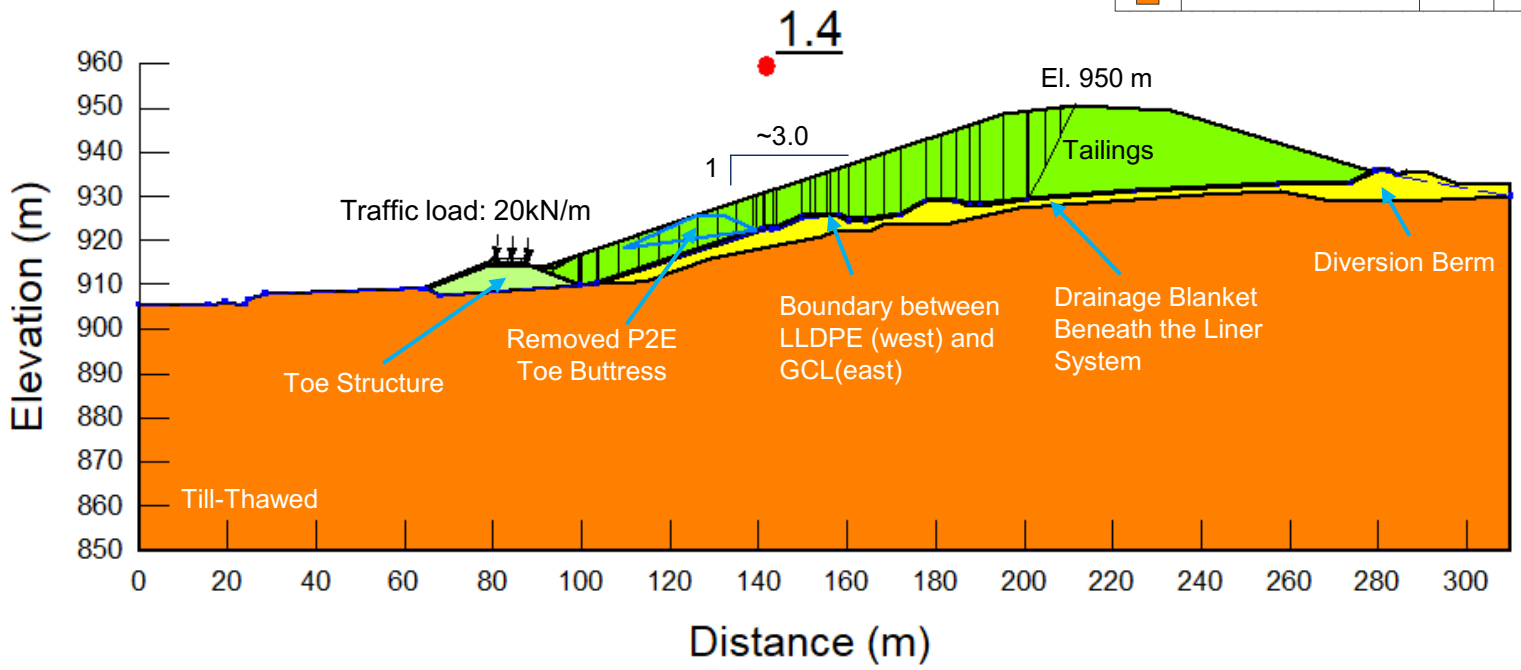
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C29

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A –West (Fully thawed) Post-Seismic– S2 - Global

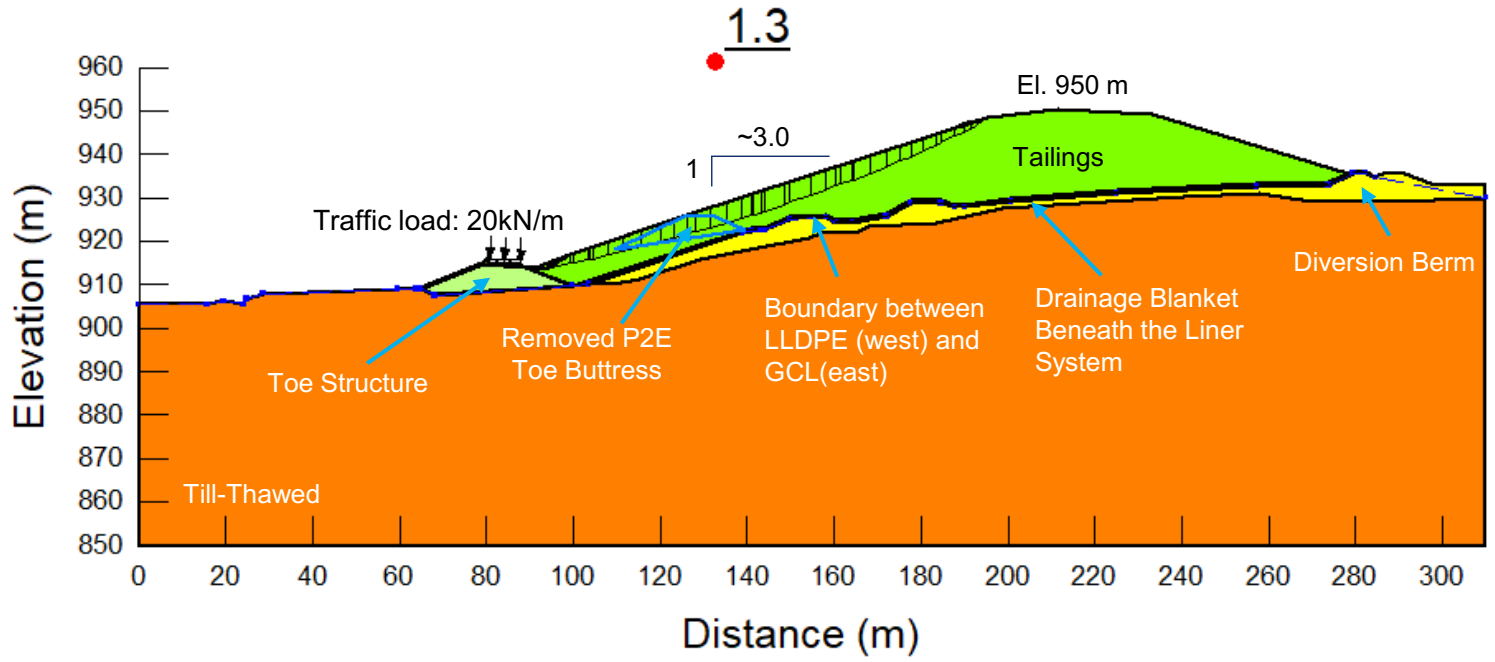
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C30

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Fully thawed)
Seismic– S1 - Exit Tailings Toe

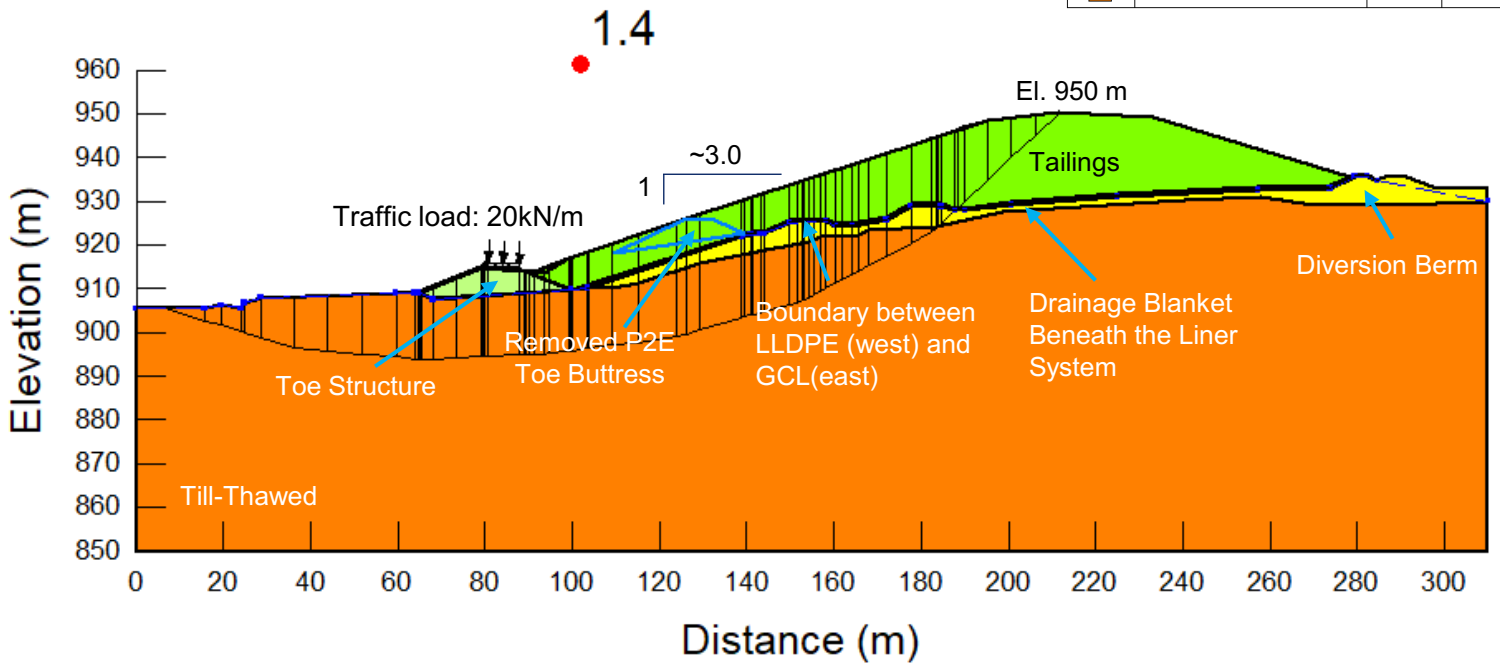
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C31

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A –West (Fully thawed)
Seismic – S2 - Global

TETRA TECH

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

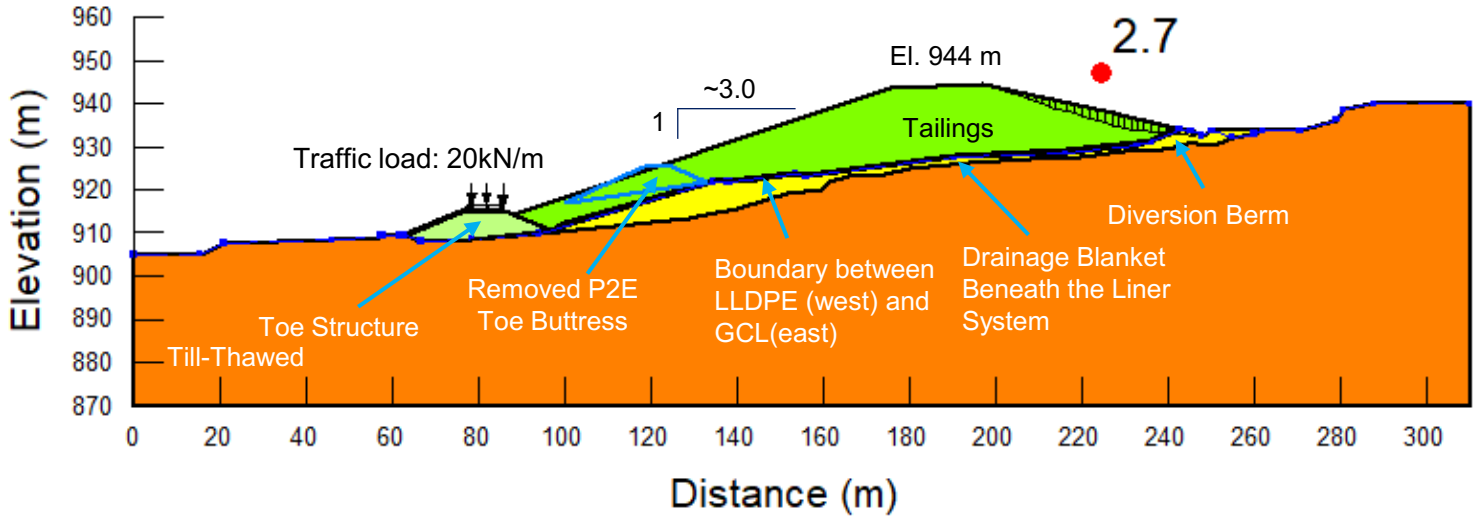
OFFICE
EDMONTON

DATE
February 2026

Appendix C32

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Fully Thawed)
Static – S1 - Exit Tailings Toe

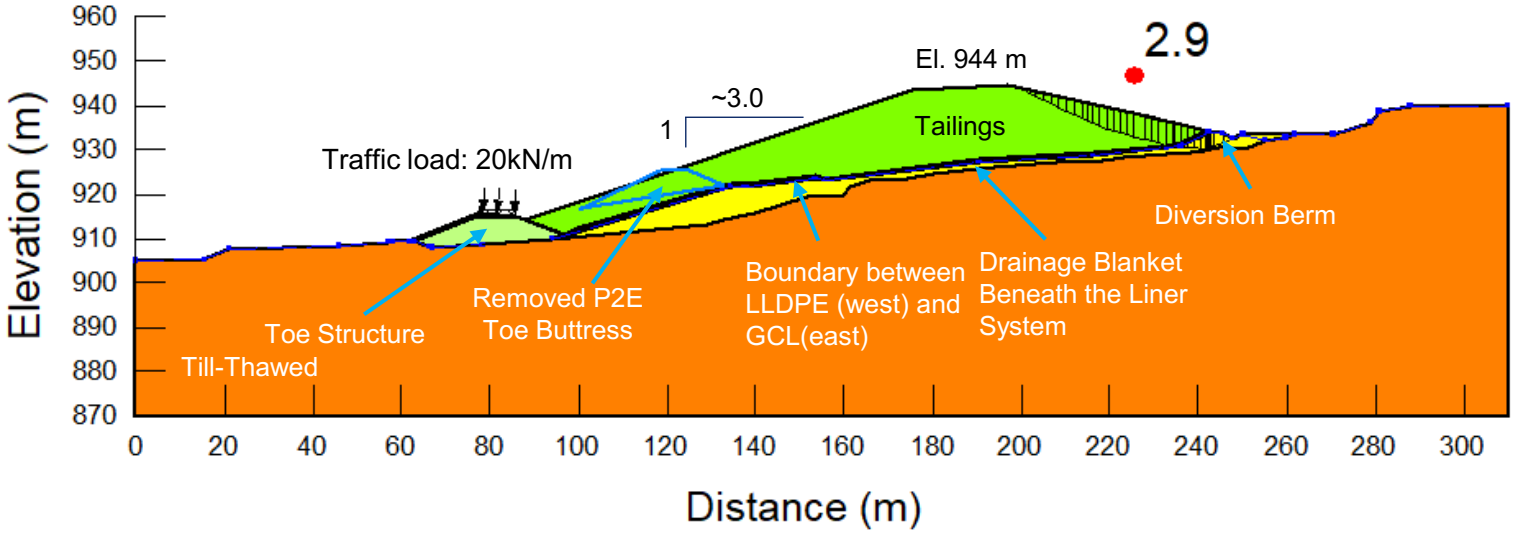
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C33

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Fully Thawed)
Static – S2 - Global

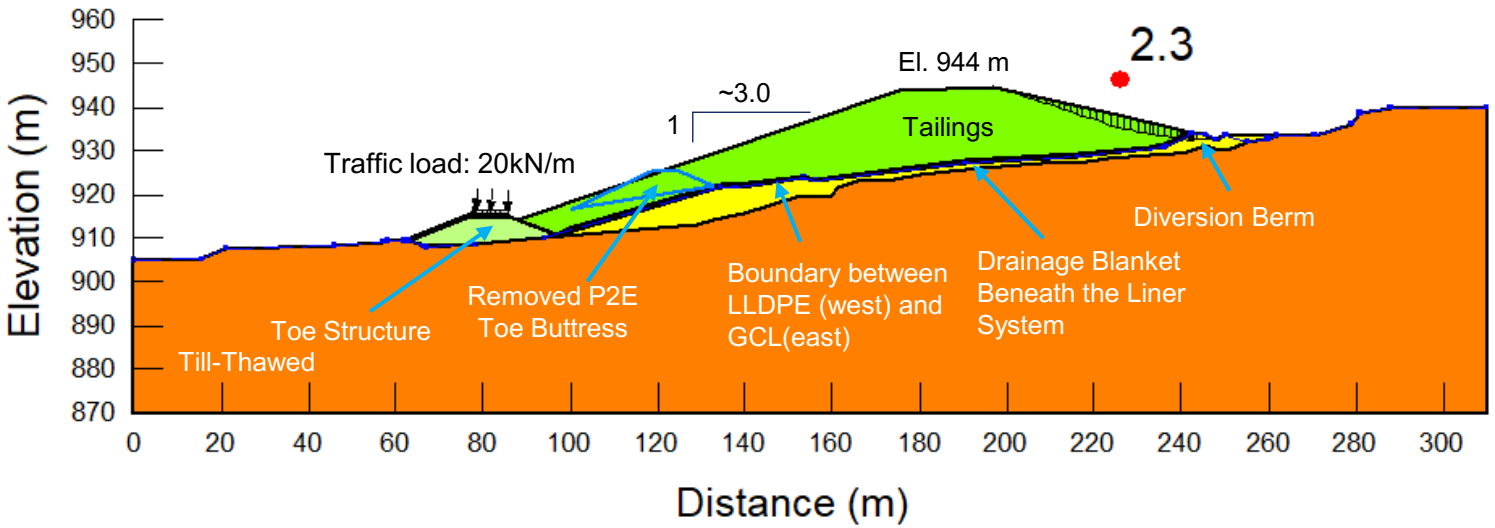
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C34

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Fully Thawed)
Post-Seismic – S1 - Exit Tailings Toe

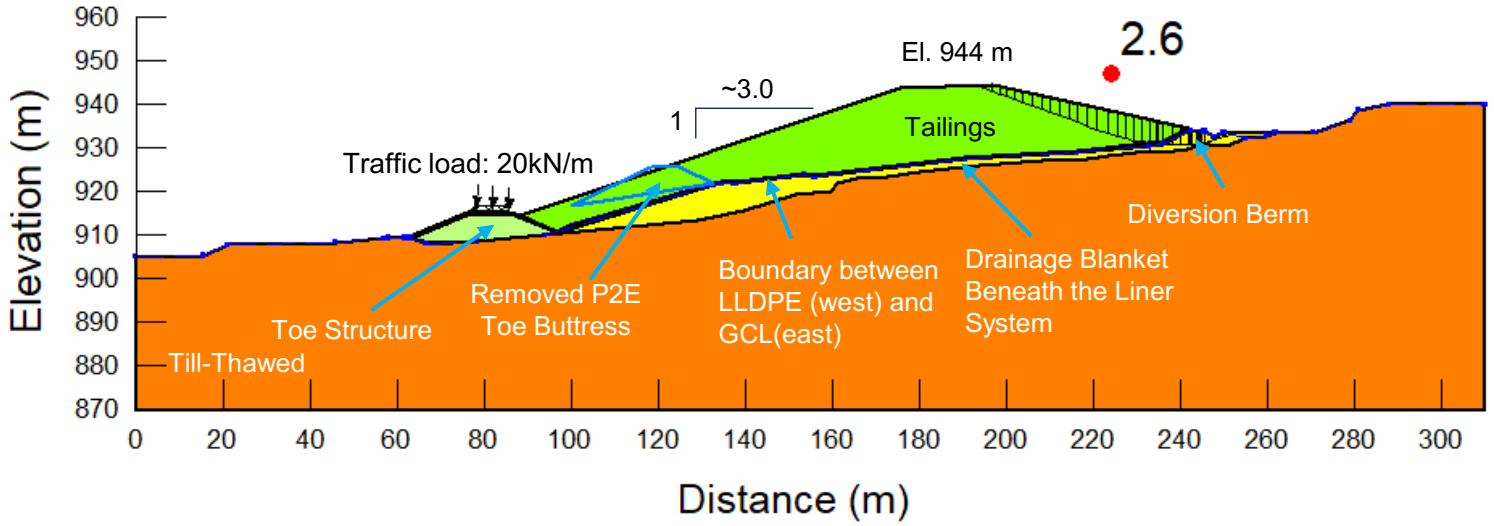
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C35

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Fully Thawed)
Post-Seismic – S2 - Global

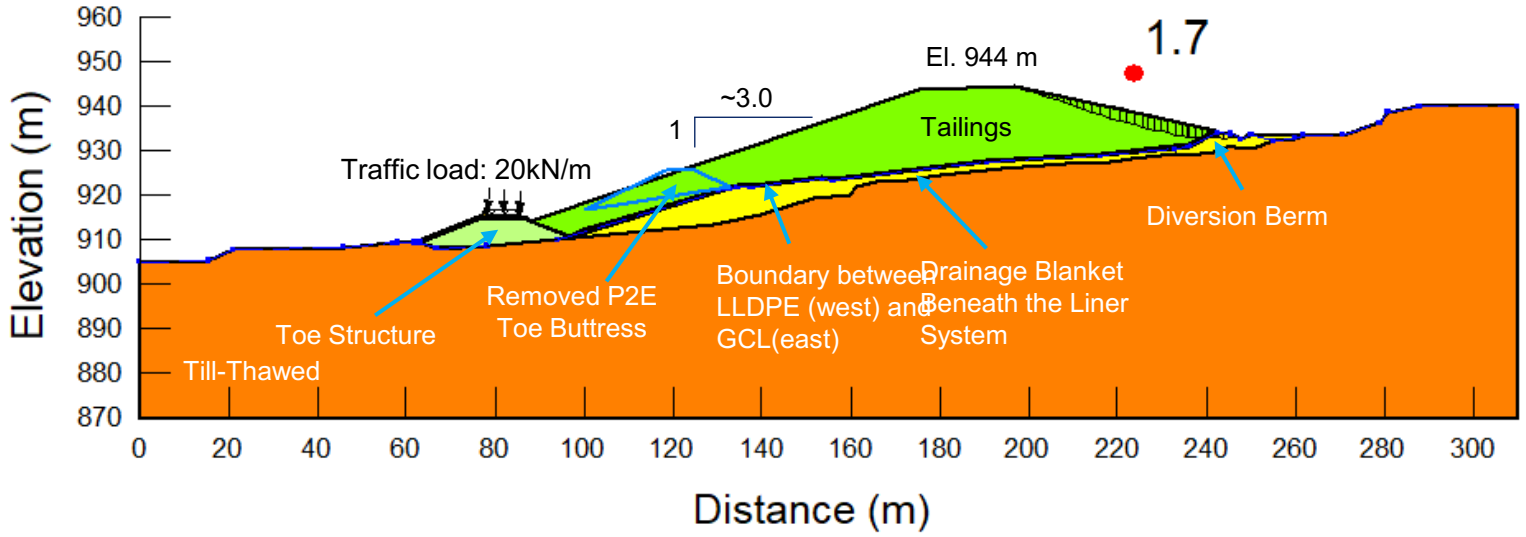
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C36

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Fully Thawed)
Seismic – S1 - Exit Tailings Toe

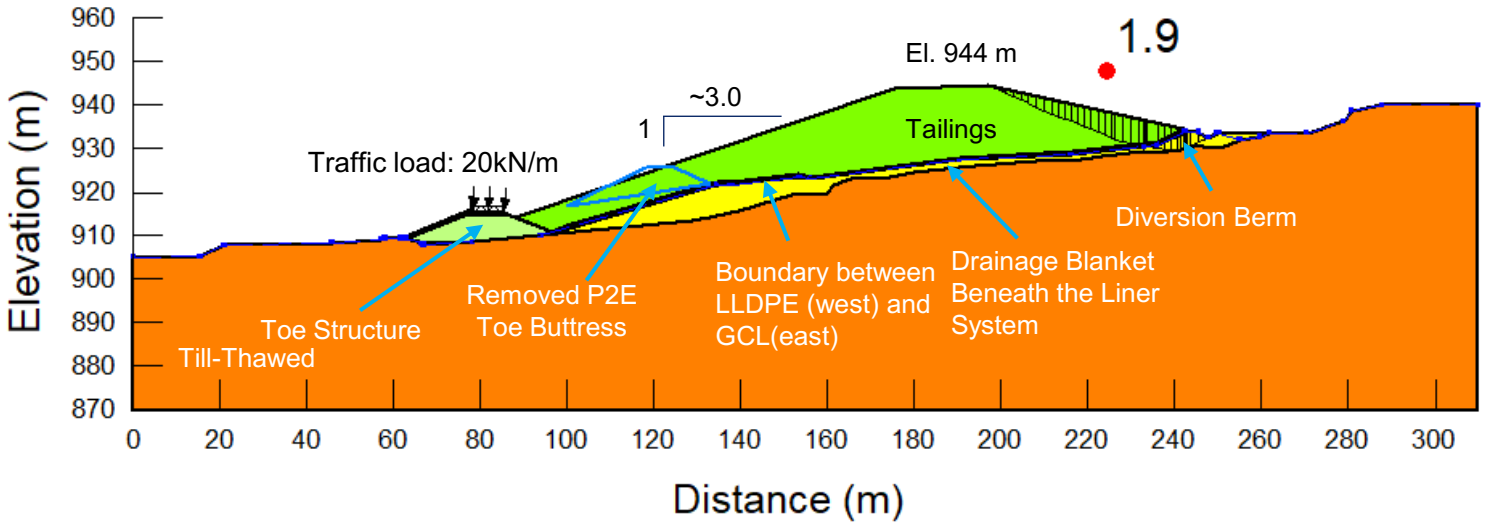
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C37

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Fully Thawed)
Seismic – S2 - Global

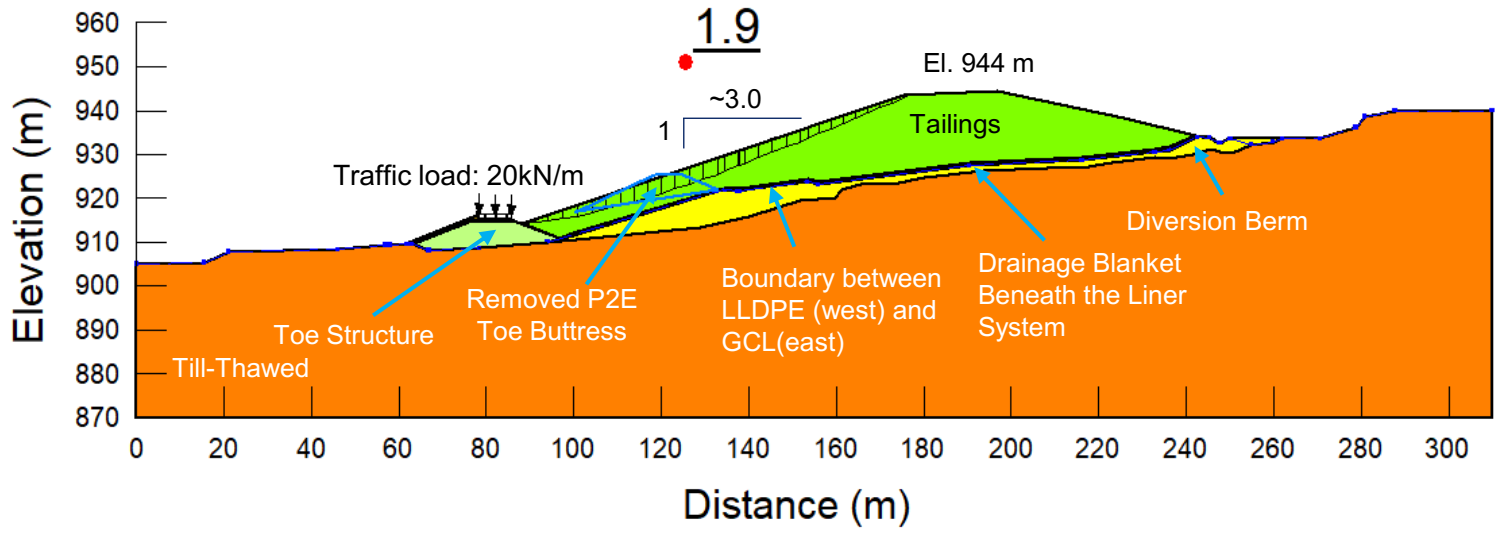
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C38

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Fully Thawed)
Static – S1 - Exit Tailings Toe

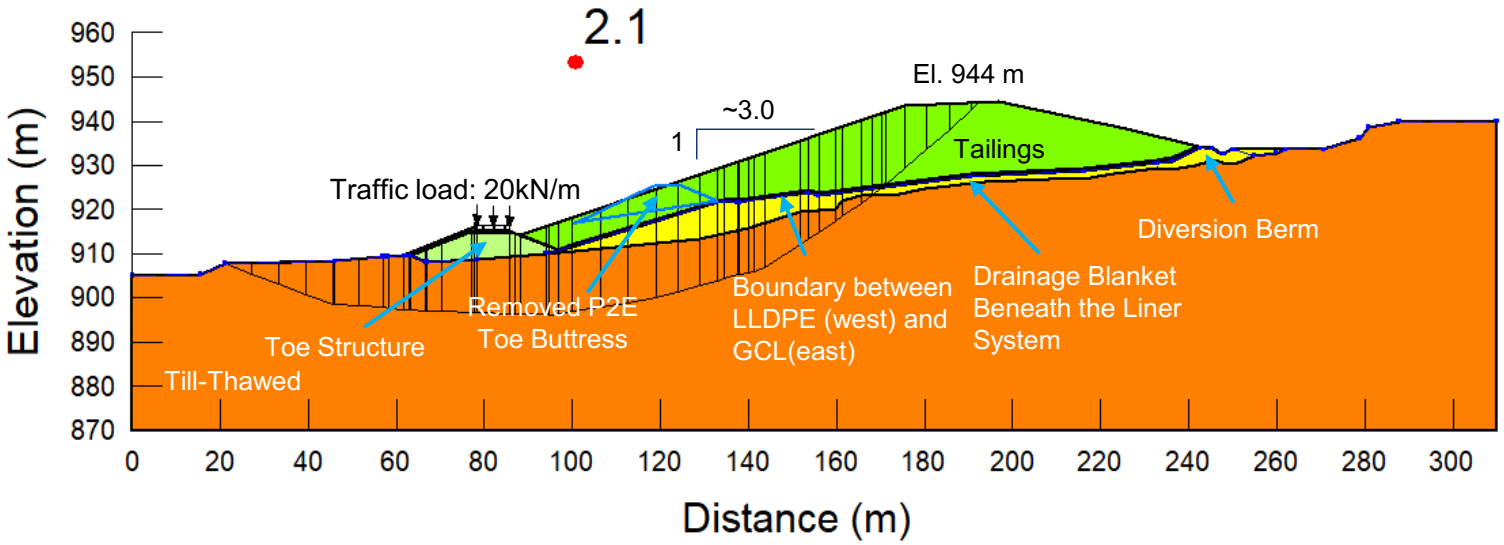
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C39

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Fully Thawed)
Static – S2 - Global

TETRA TECH

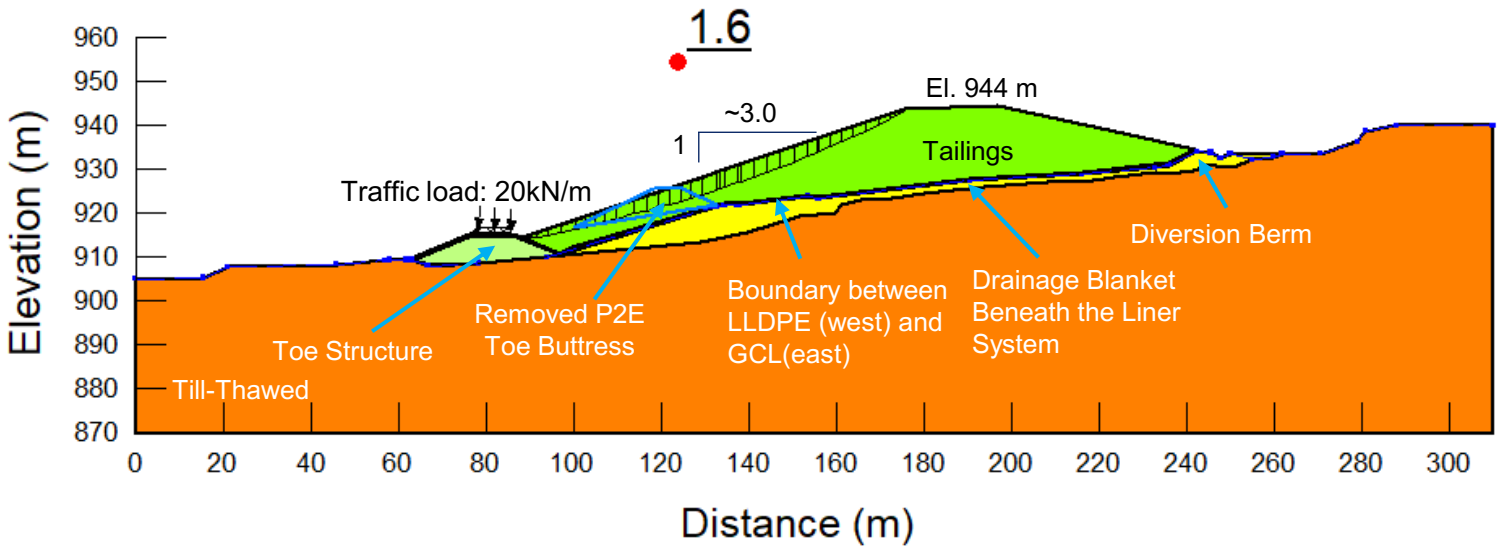
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C40

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Fully Thawed)
Post-Seismic – S1 - Exit Tailings Toe

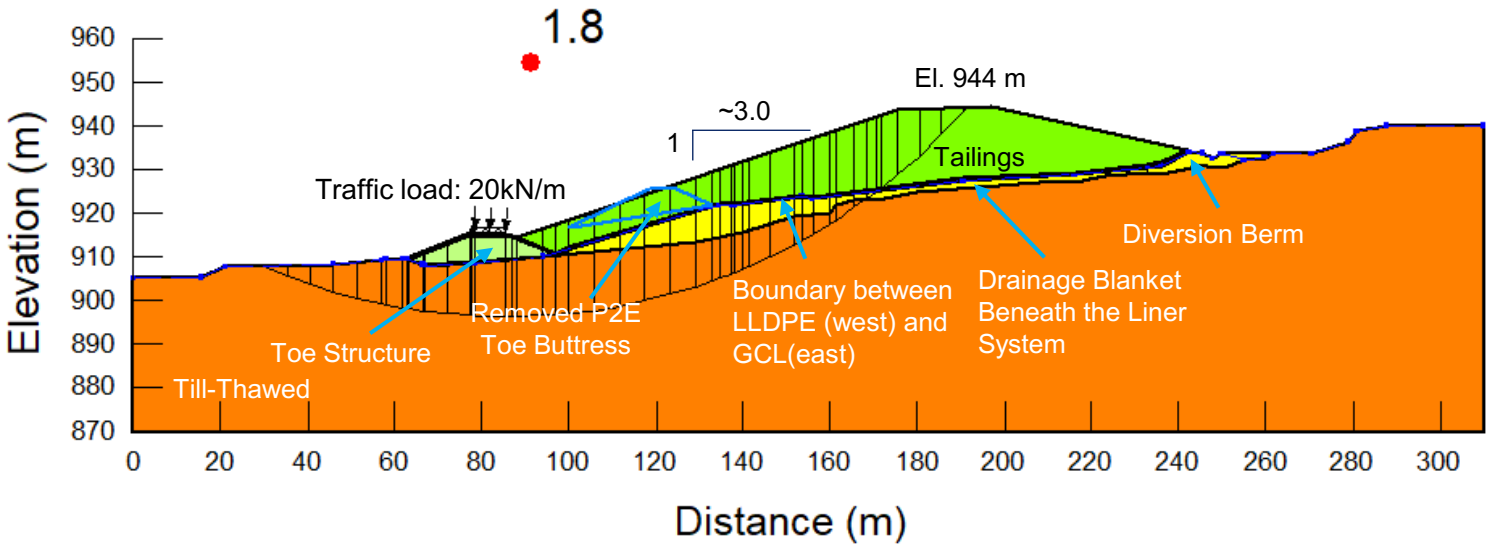
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C41

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Fully Thawed)
Post-Seismic – S2 - Global

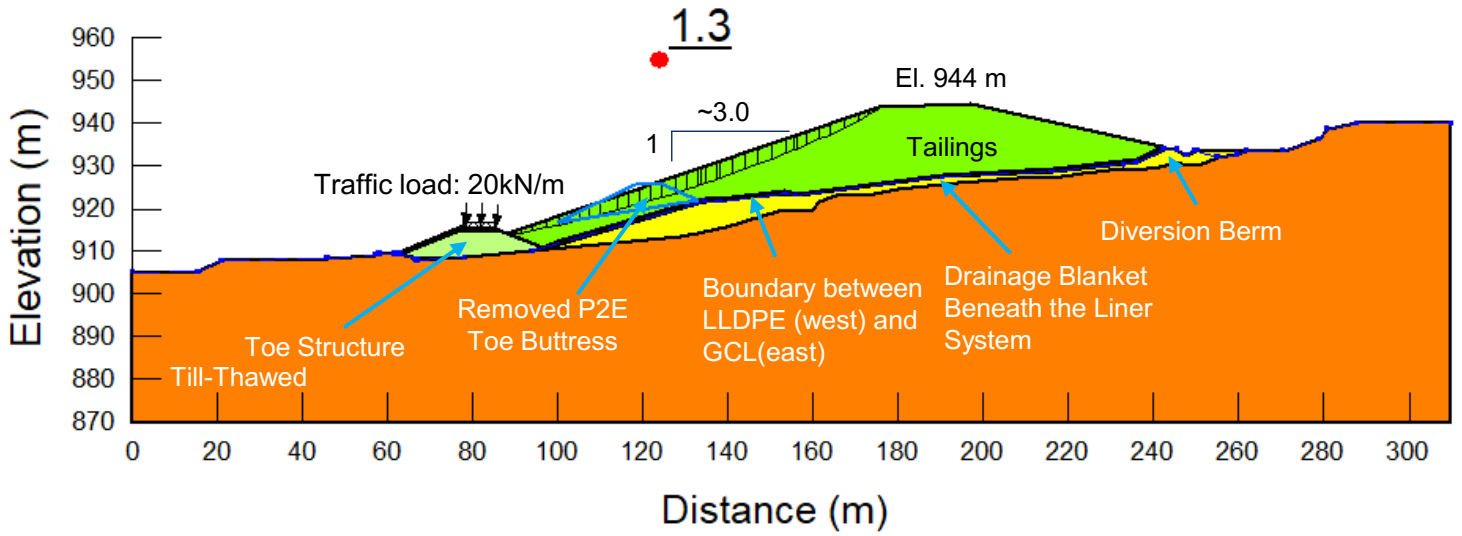
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C42

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Fully Thawed)
Seismic – S1 - Exit Tailings Toe

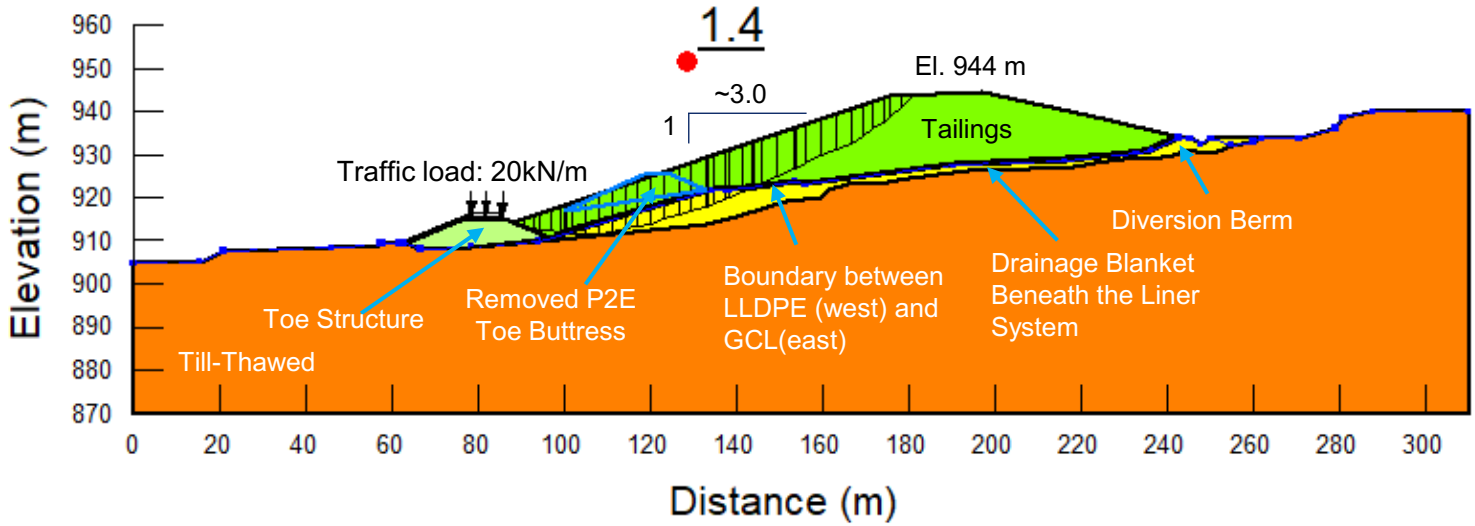
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C43

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Fully Thawed)
Seismic – S2 - Global

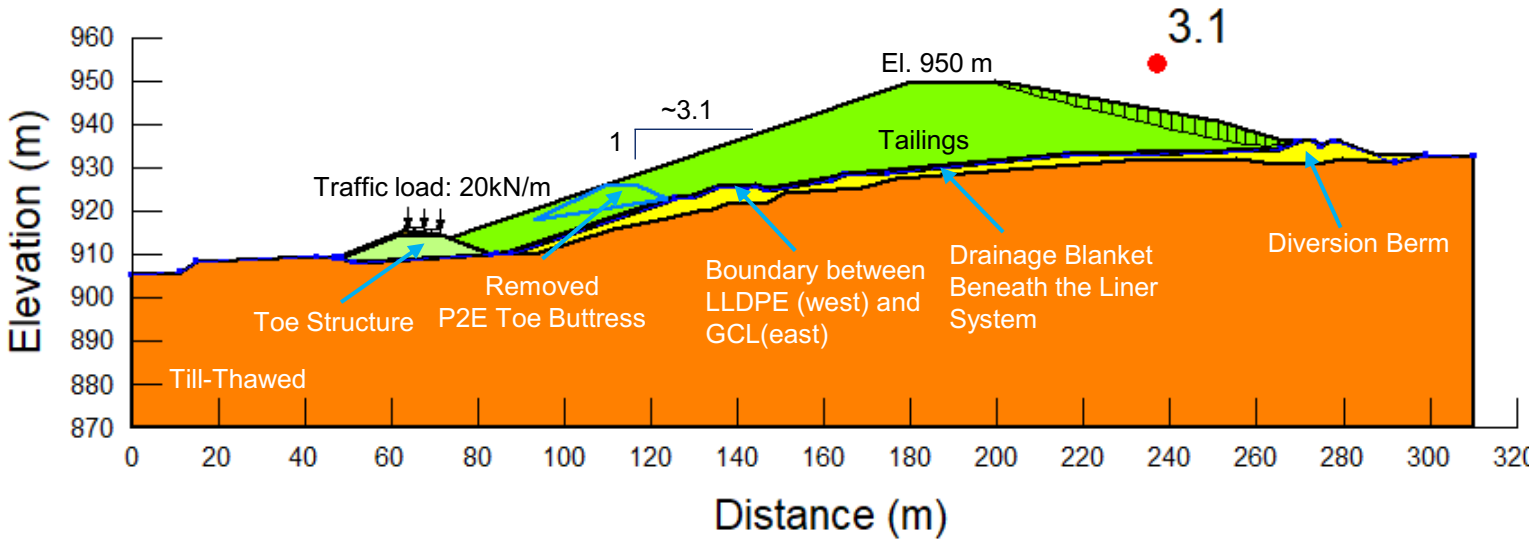
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C44

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Fully Thawed)
Static – S1 - Exit Tailings Toe

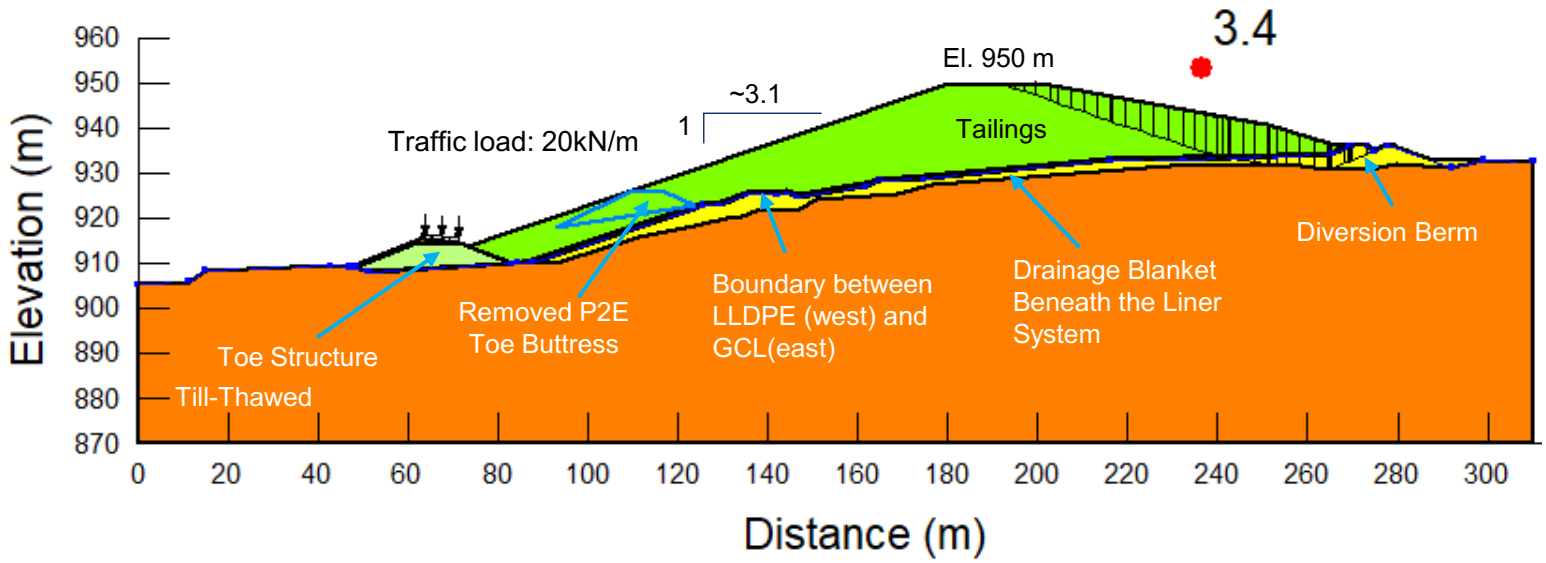
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C45

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East(Fully Thawed)
Static – S2 - Global

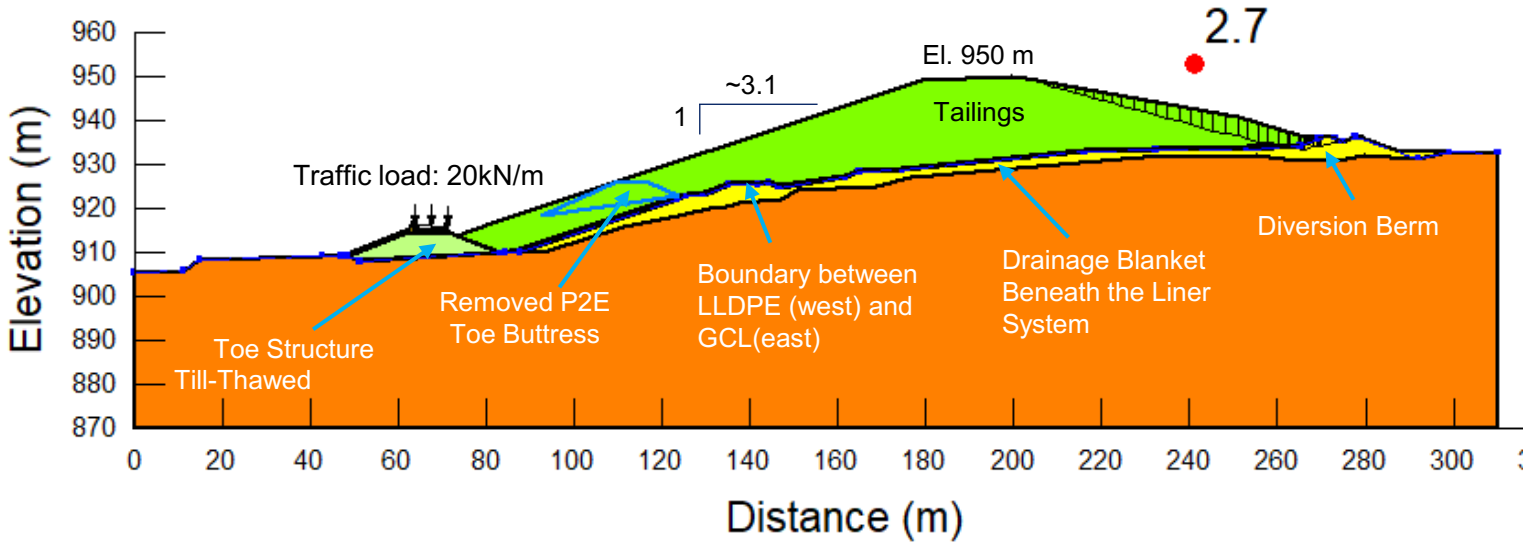
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C46

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Fully Thawed)
Post-Seismic – S1 - Exit Tailings Toe

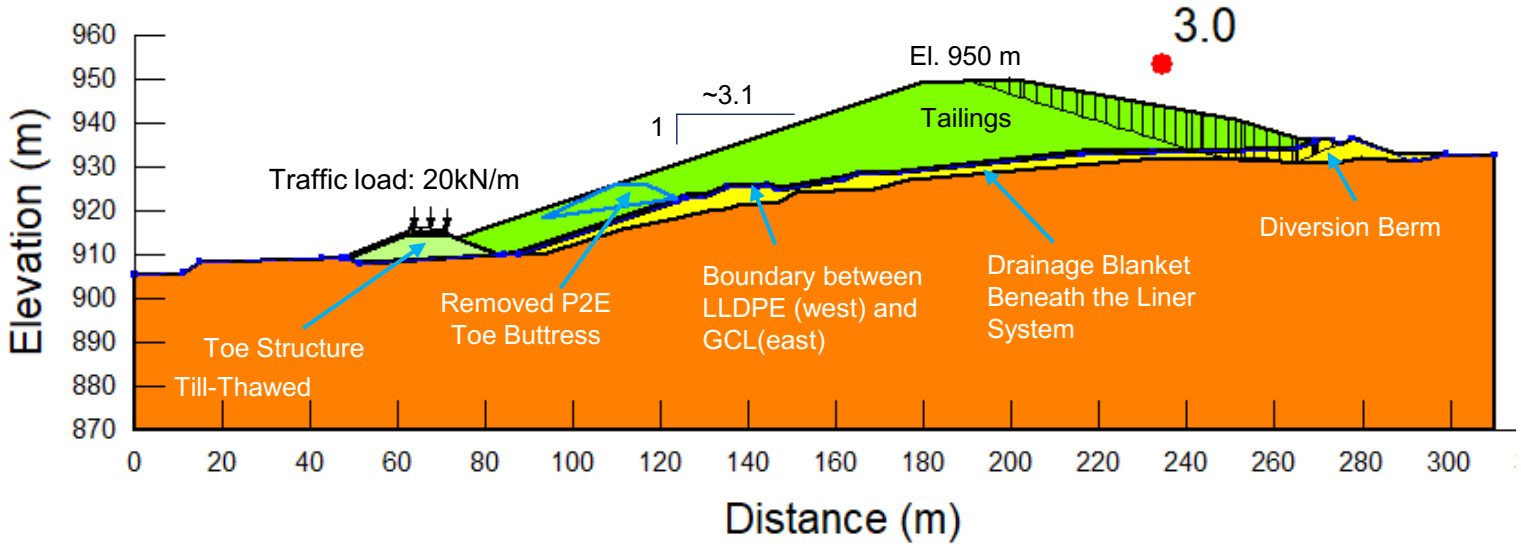
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C47

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Fully Thawed)
Post-Seismic – S2 - Global

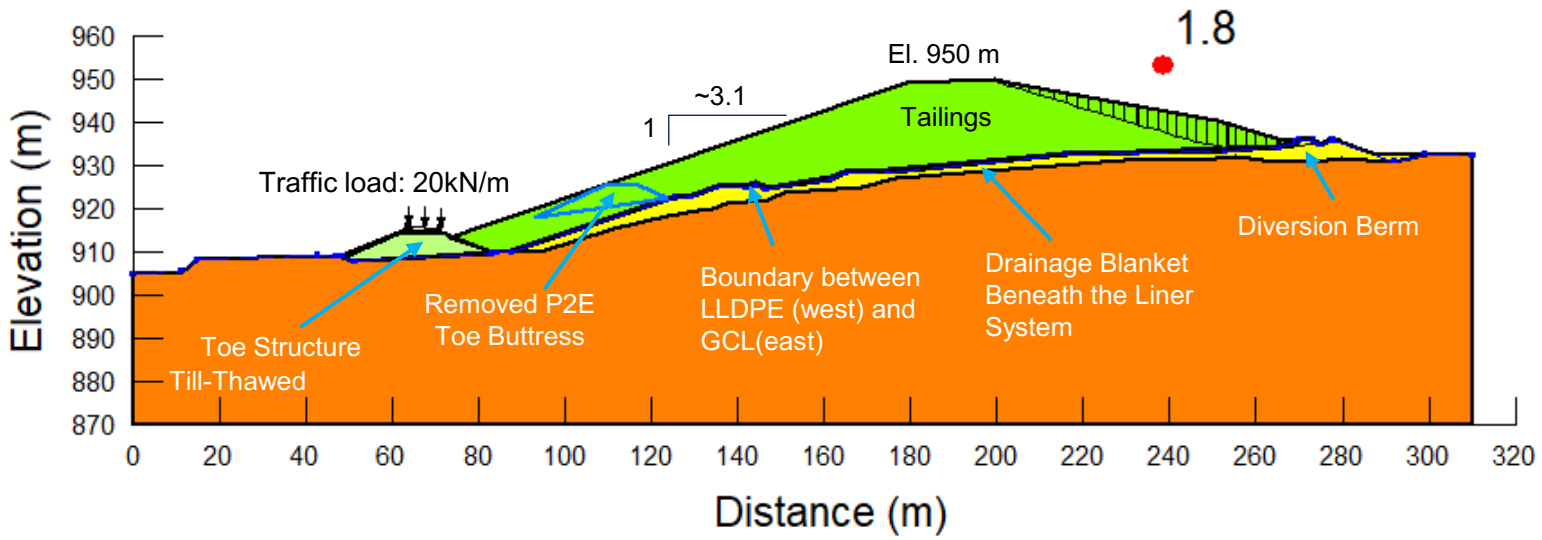
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C48

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Fully Thawed)
Seismic – S1 - Exit Tailings Toe

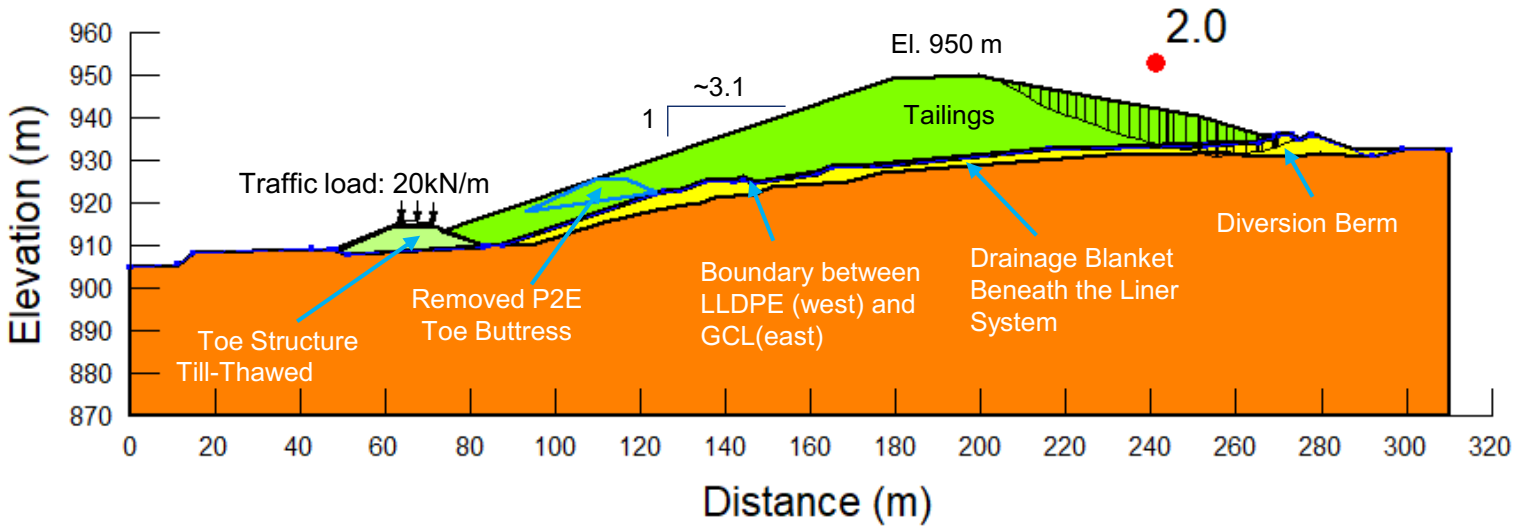
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C49

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Fully Thawed)
Seismic – S2 - Global

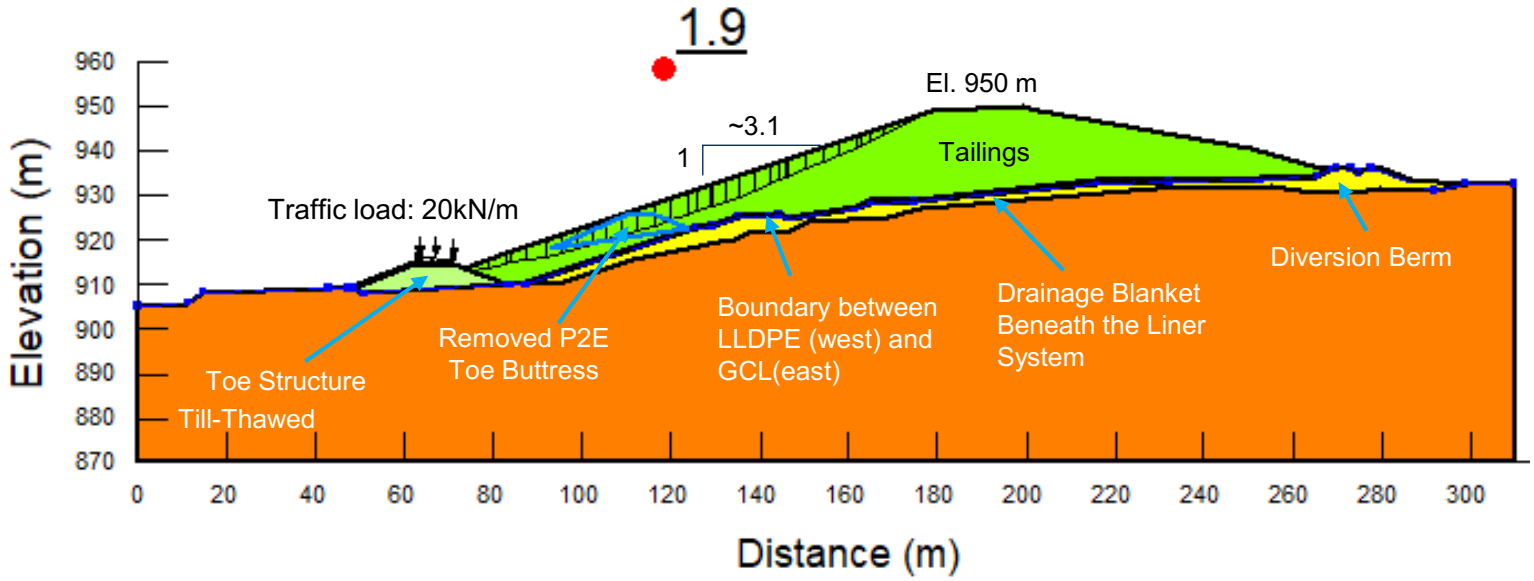
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C50

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Fully Thawed)
Static – S1 - Exit Tailings Toe

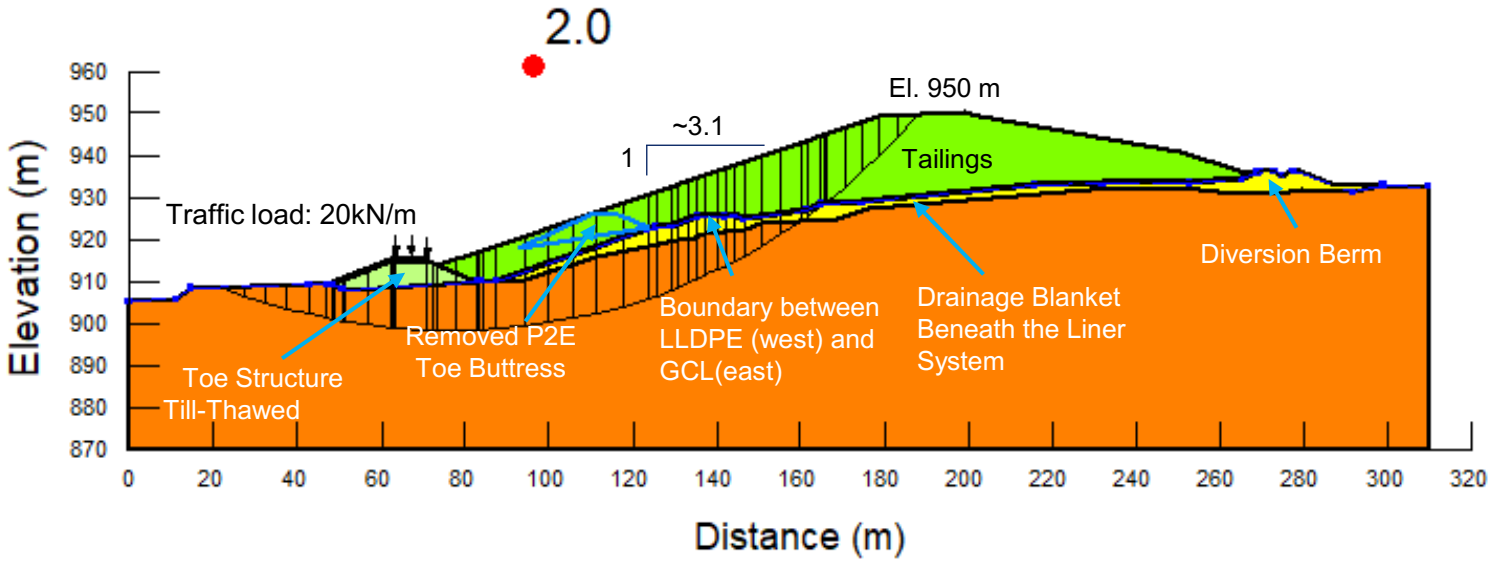
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C51

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Fully Thawed)
Static – S2 - Global

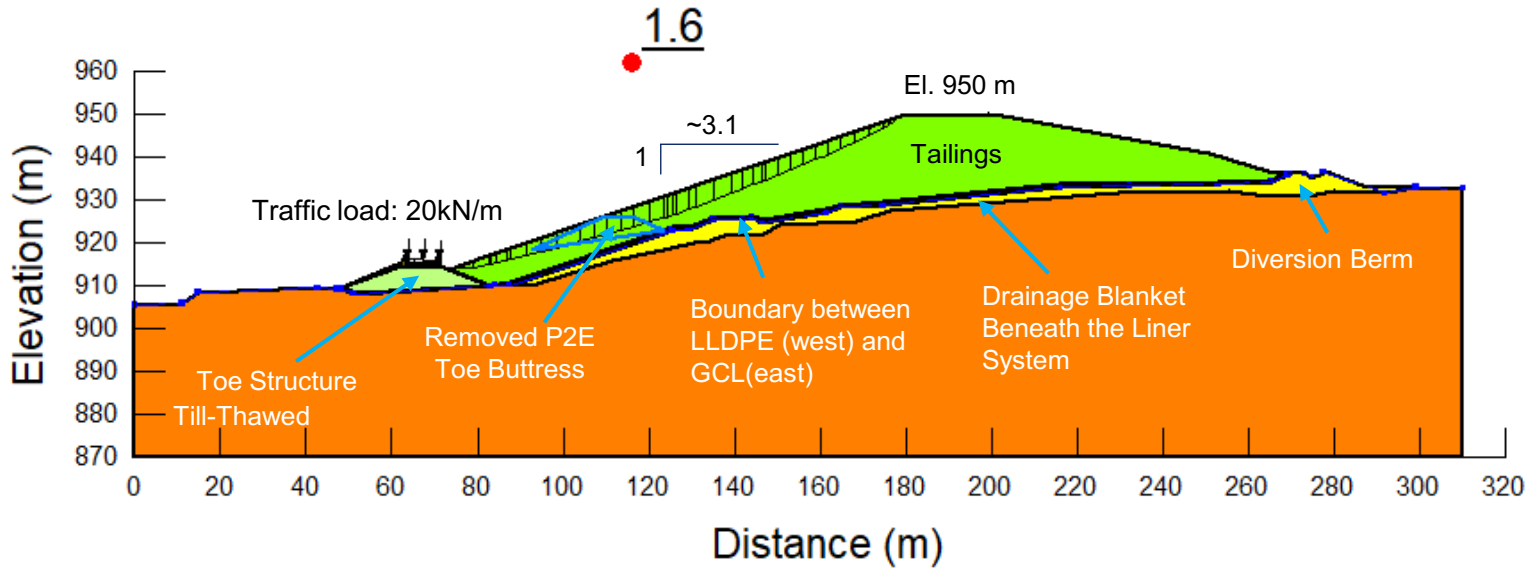
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C52

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Fully Thawed)
Post-Seismic – S1 - Exit Tailings Toe

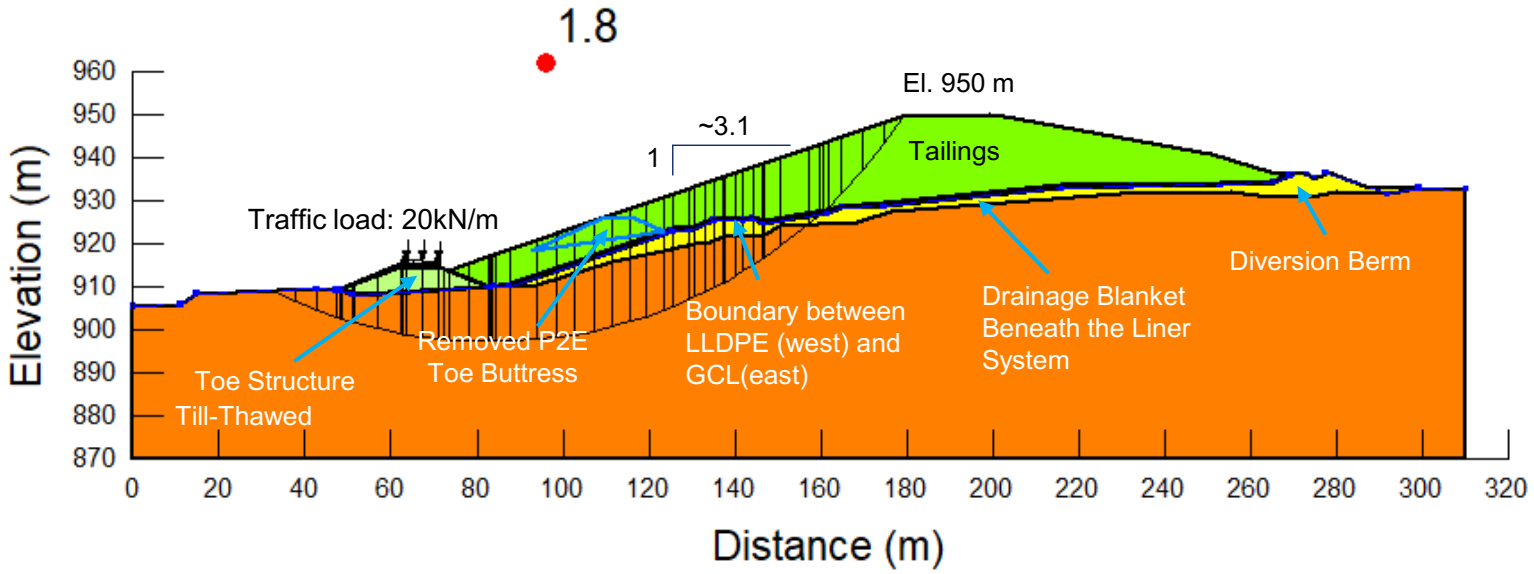
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C53

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Fully Thawed)
Post-Seismic – S2 - Global

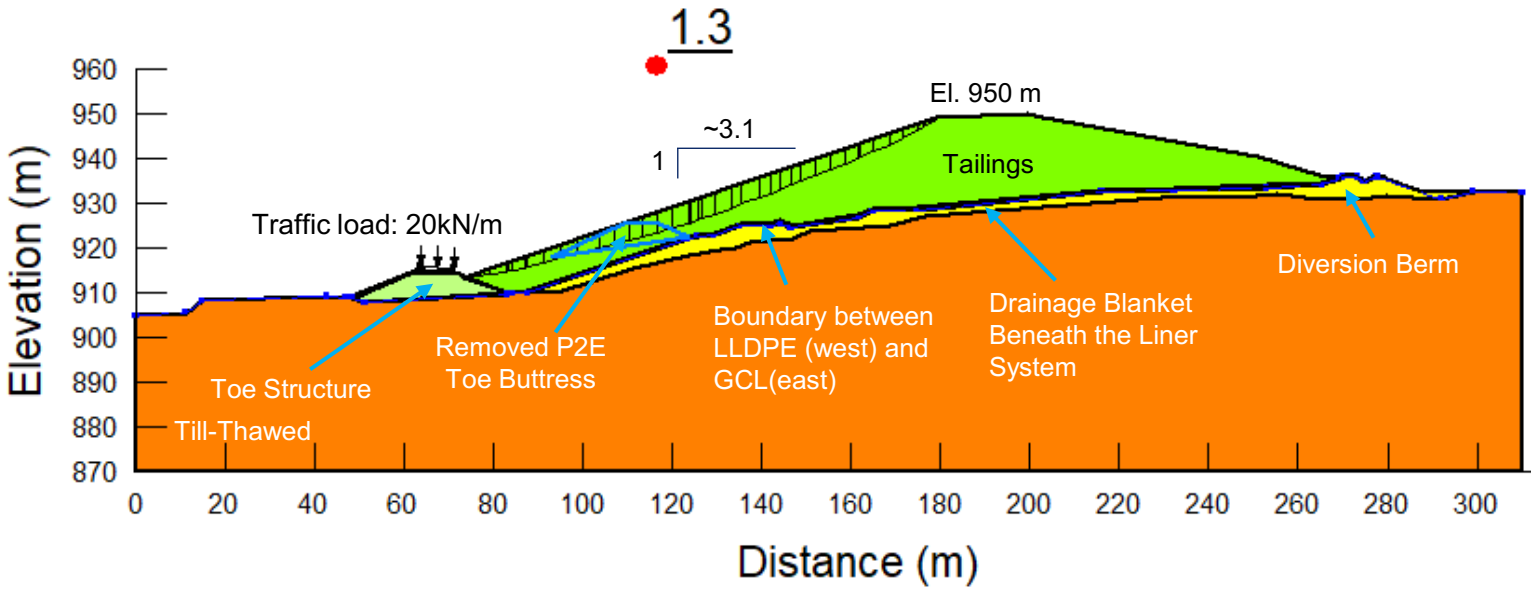
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C54

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Fully Thawed)
Seismic – S1 - Exit Tailings Toe

TETRA TECH

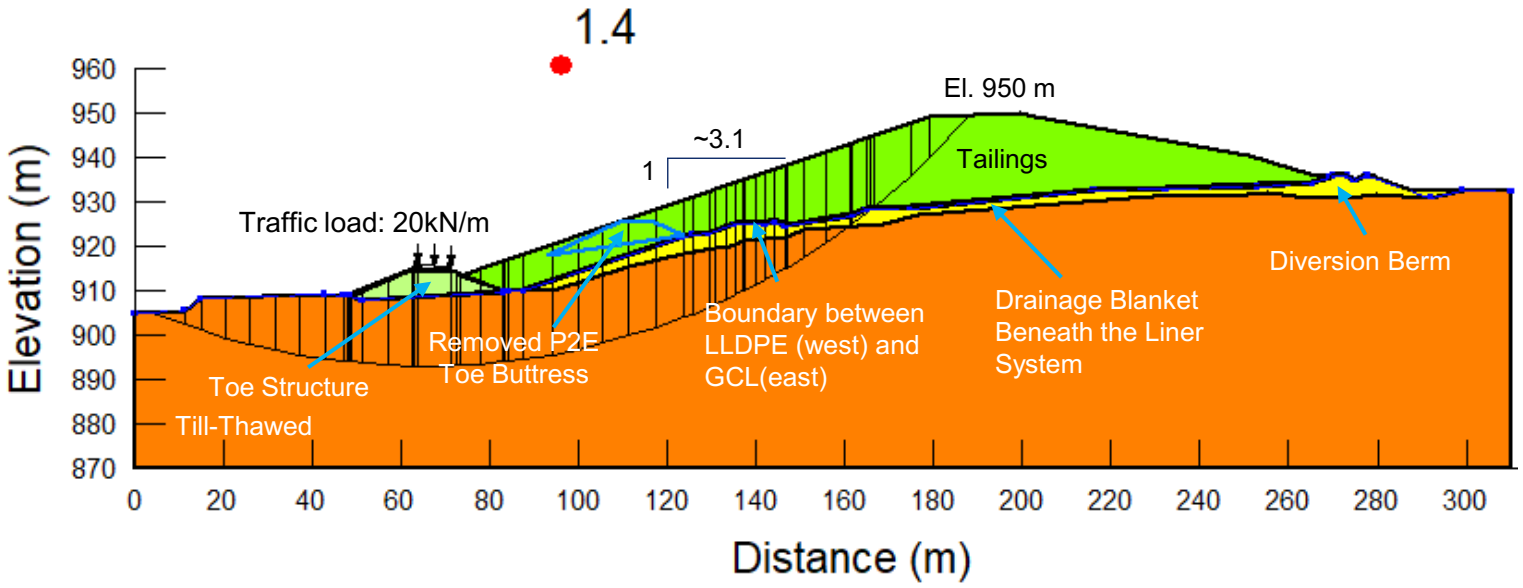
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C55

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Fully Thawed)
Seismic – S2 - Global

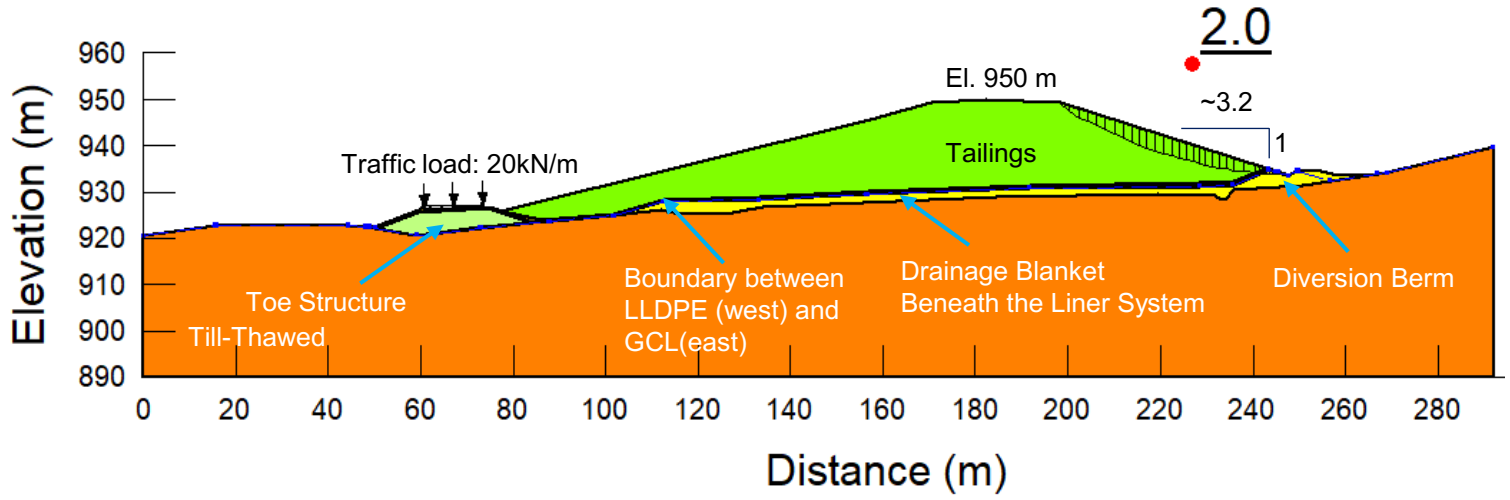
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C56

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Fully Thawed)
Static – S1 - Exit Tailings Toe

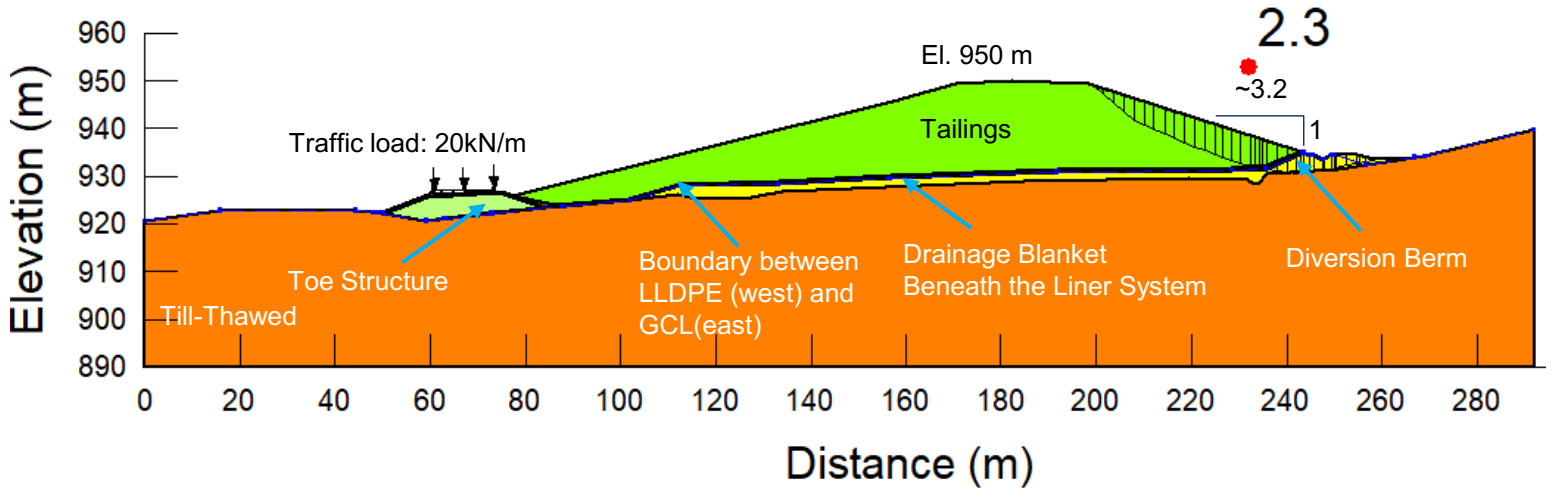
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C57

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Fully Thawed)
Static – S2 - Global

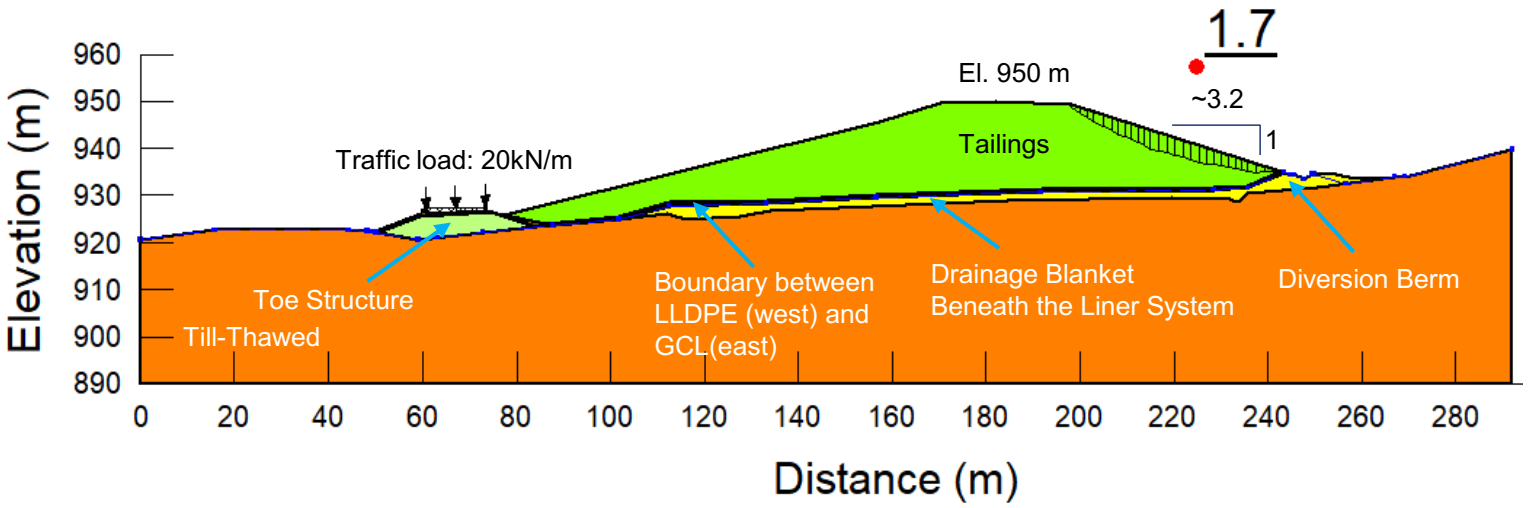
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C58

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Fully Thawed)
Post-Seismic– S1 - Exit Tailings Toe

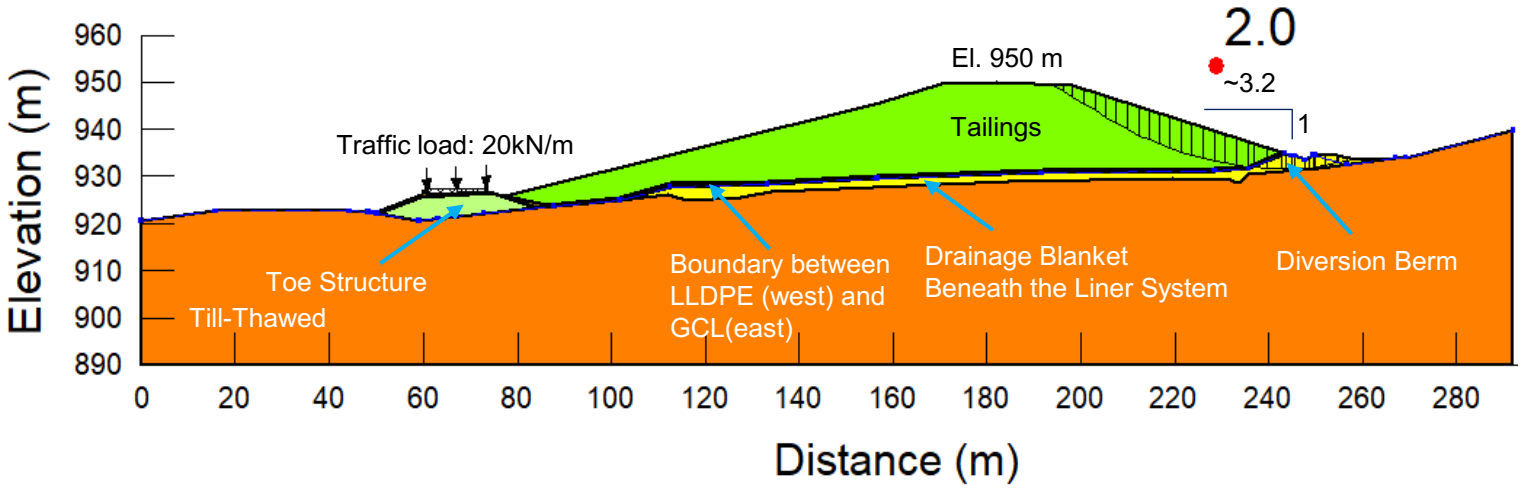
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C59

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Fully Thawed)
Post-Seismic – S2 - Global

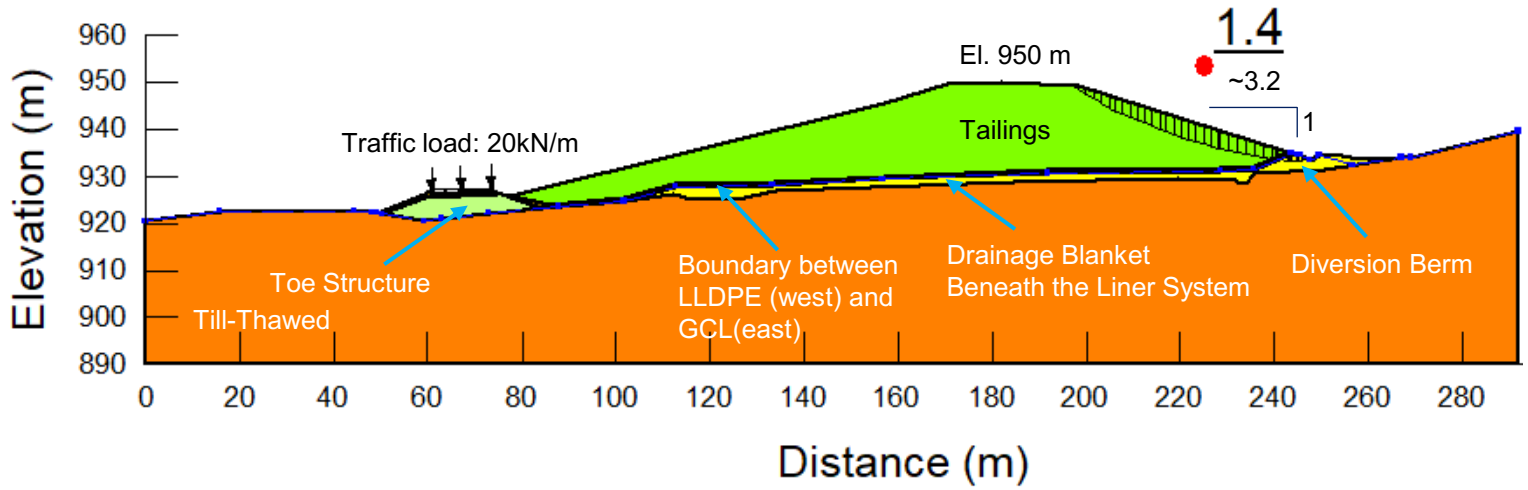
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C60

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Fully Thawed)
Seismic – S1 - Exit Tailings Toe

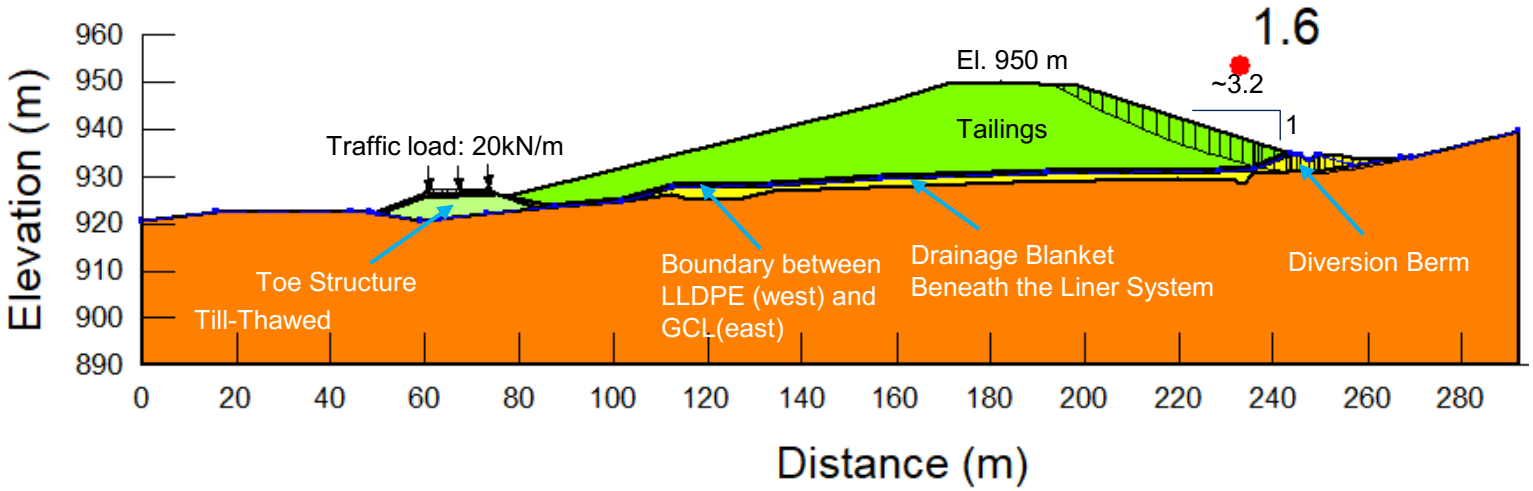
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C61

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Fully Thawed)
Seismic – S2 - Global

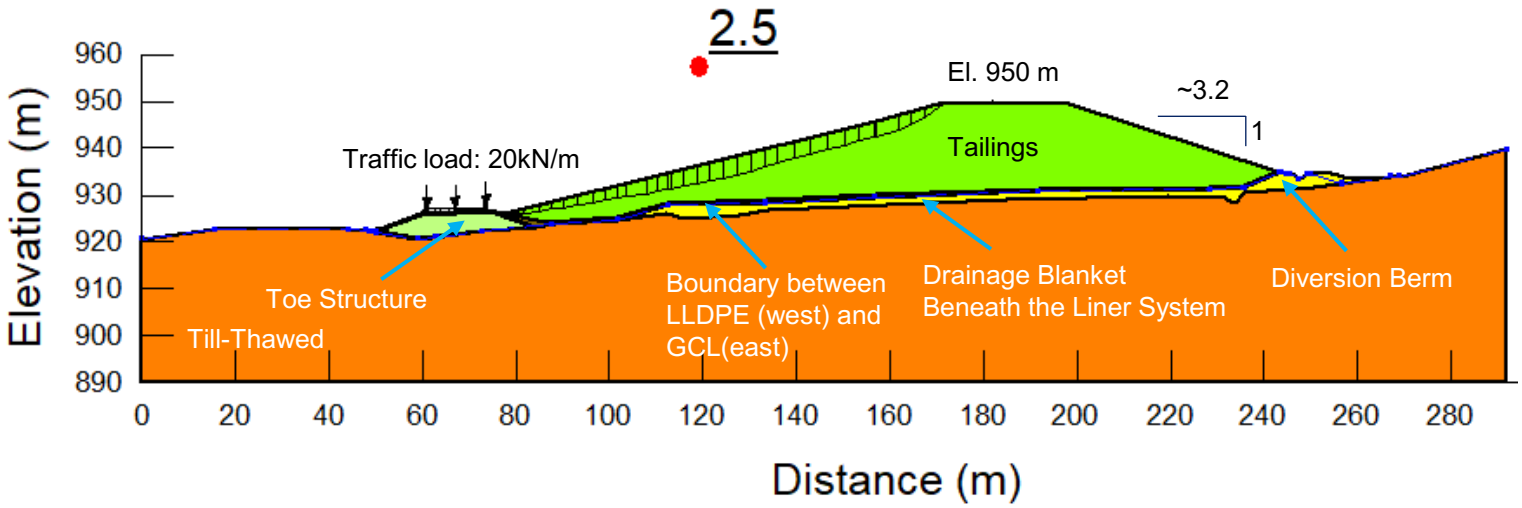
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C62

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Fully Thawed)
Static – S1 - Exit Tailings Toe

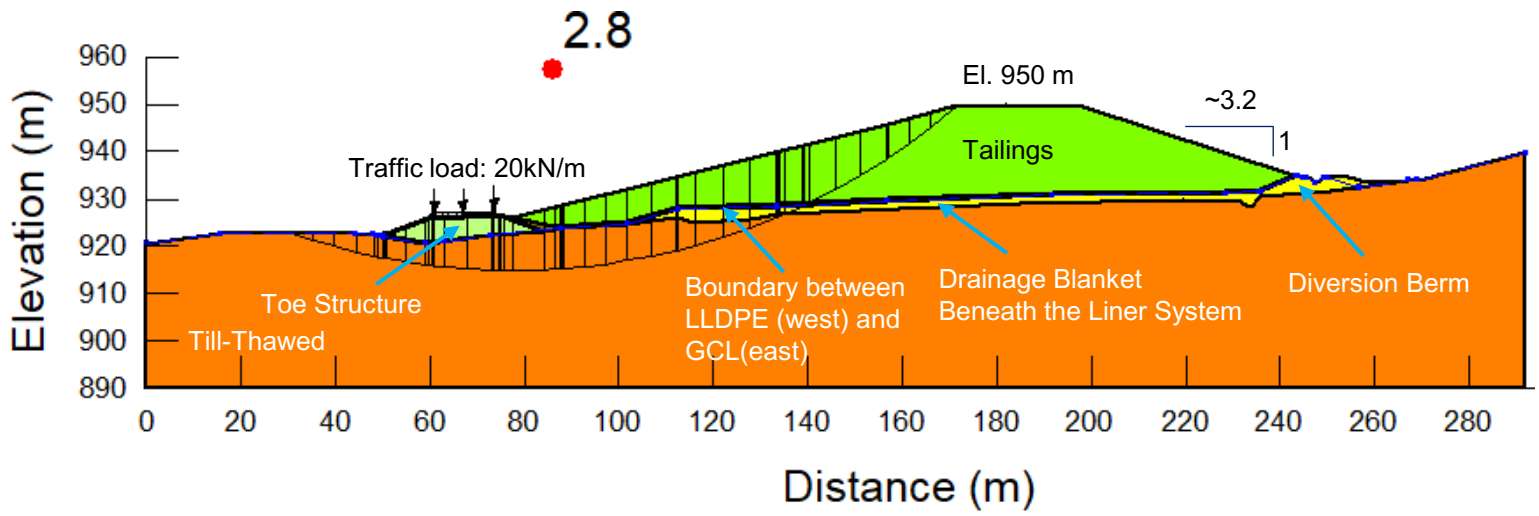
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C63

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Fully Thawed)
Static – S2 - Global

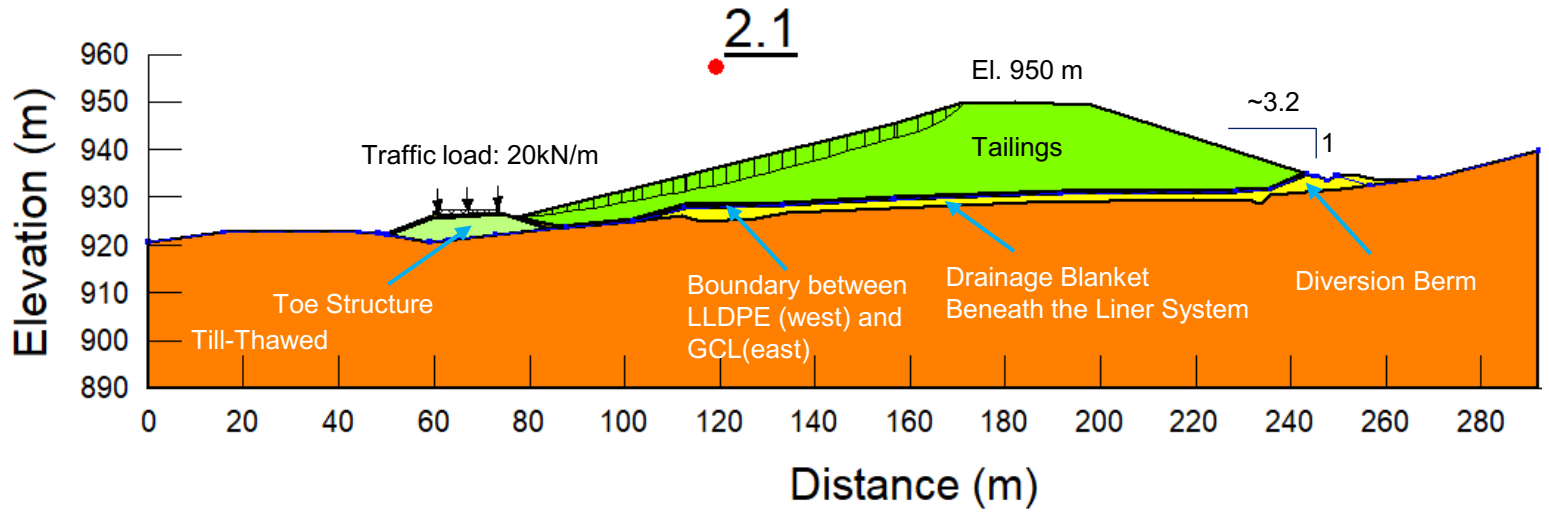
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C64

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Fully Thawed)
Post-Seismic– S1 - Exit Tailings Toe

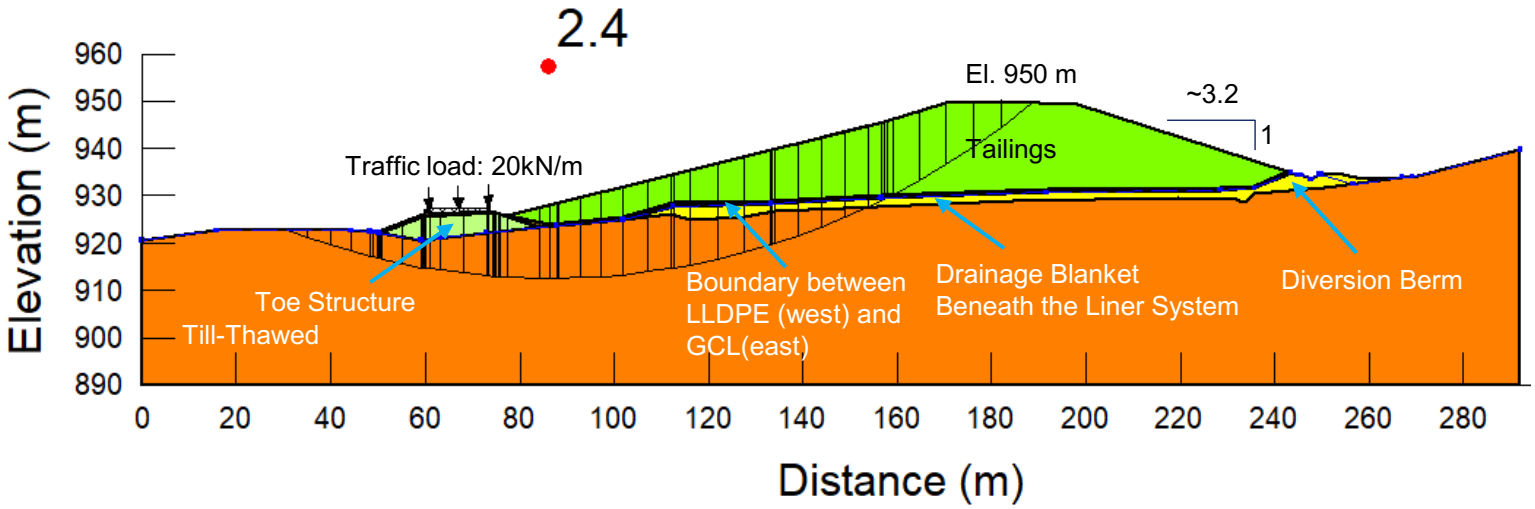
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C65

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Fully Thawed)
Post-Seismic – S2 - Global

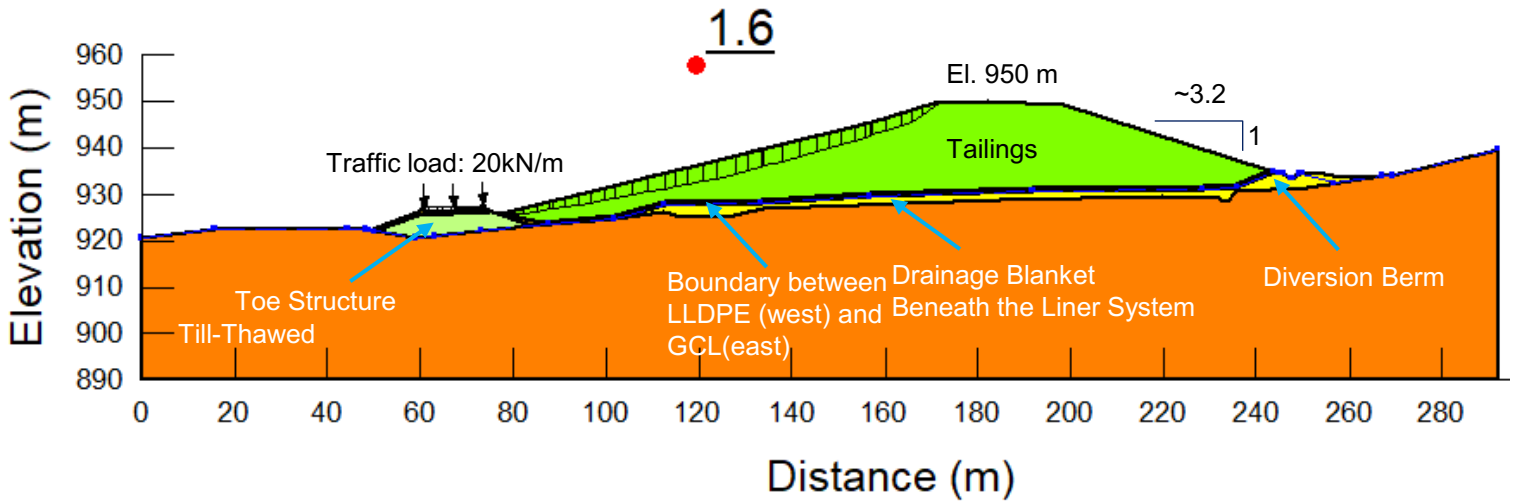
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C66

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Fully Thawed)
Seismic– S1 - Exit Tailings Toe

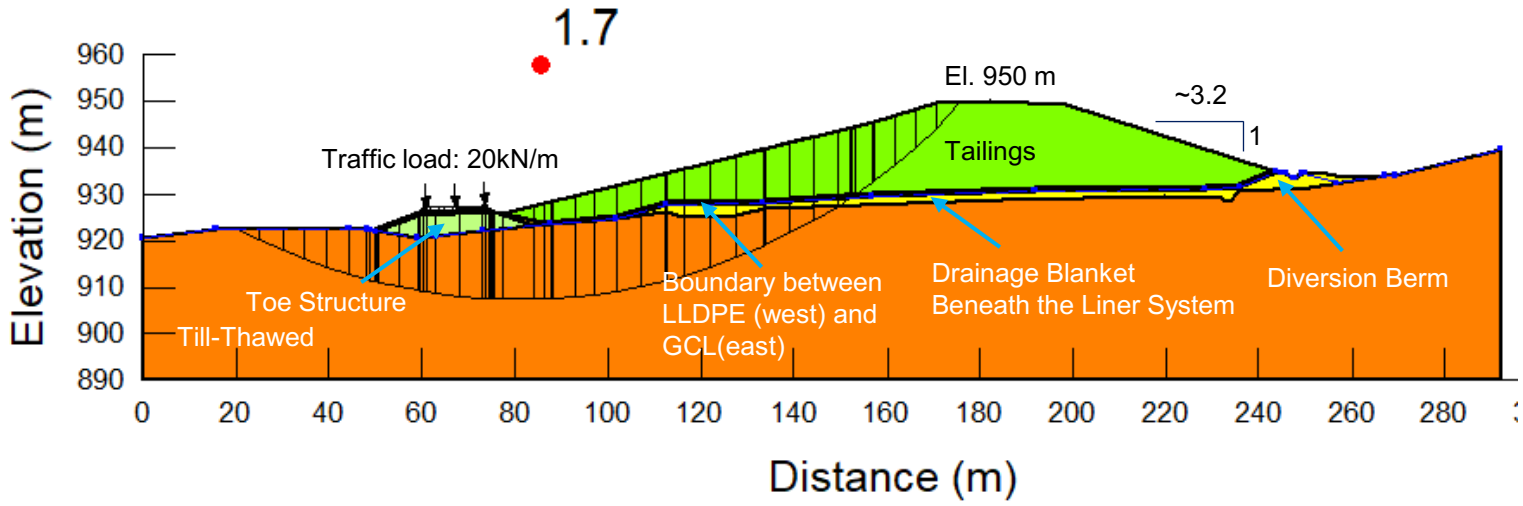
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C67

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Fully Thawed)
Seismic – S2 - Global

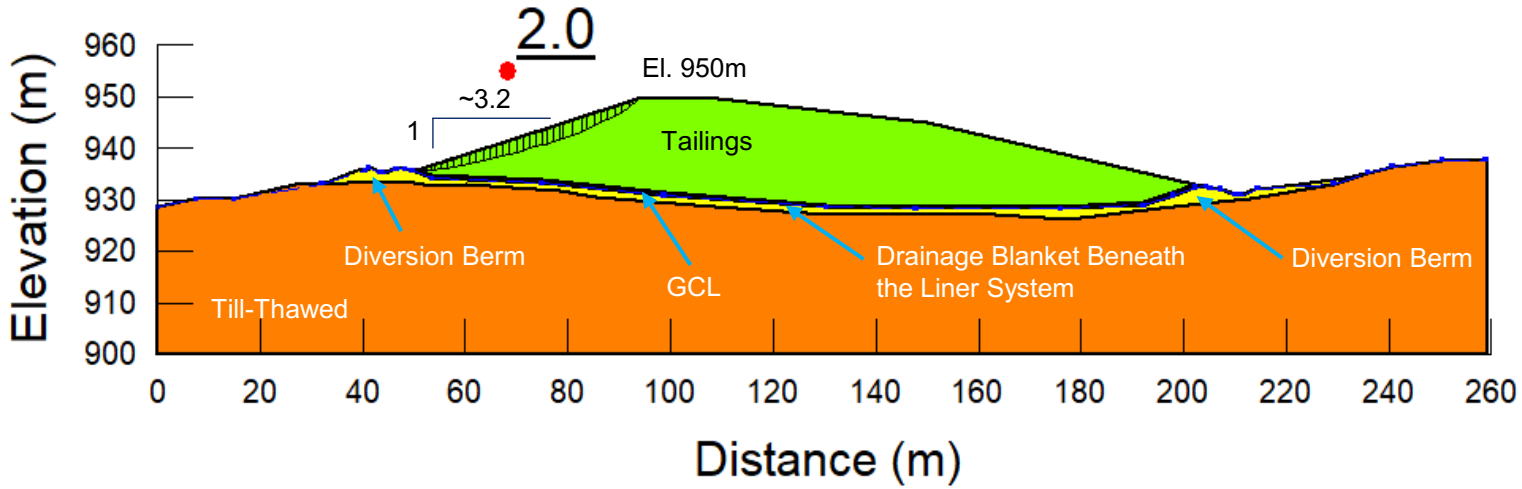
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C68

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Fully Thawed)
Static – S1 - Exit Tailings Toe

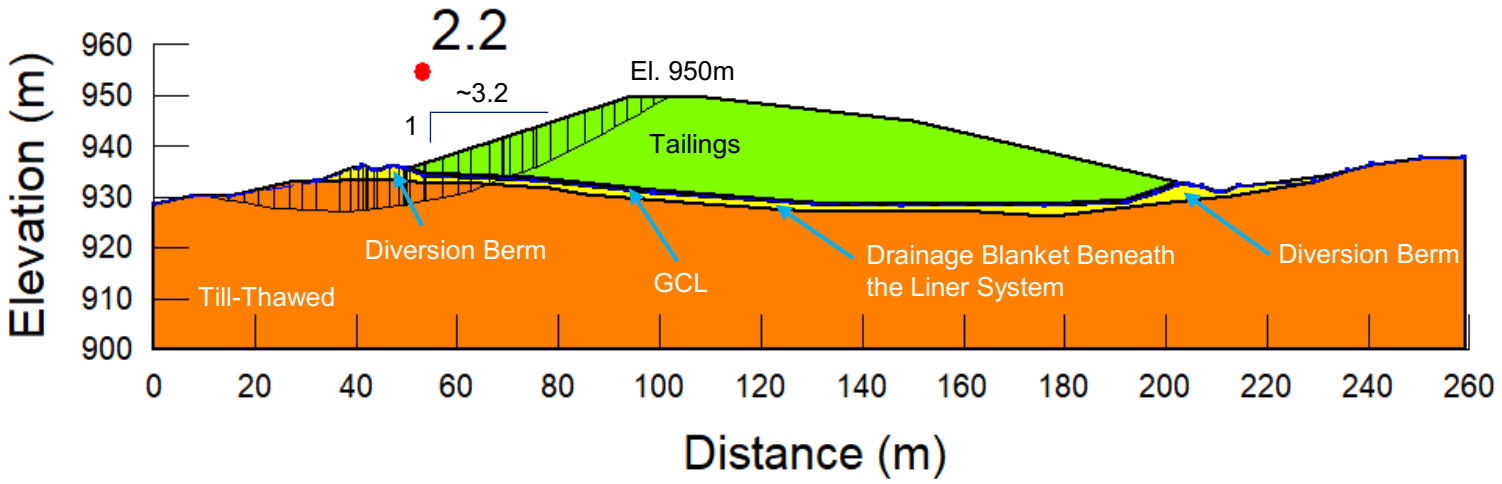
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C69

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Fully Thawed)
Static – S2 - Global

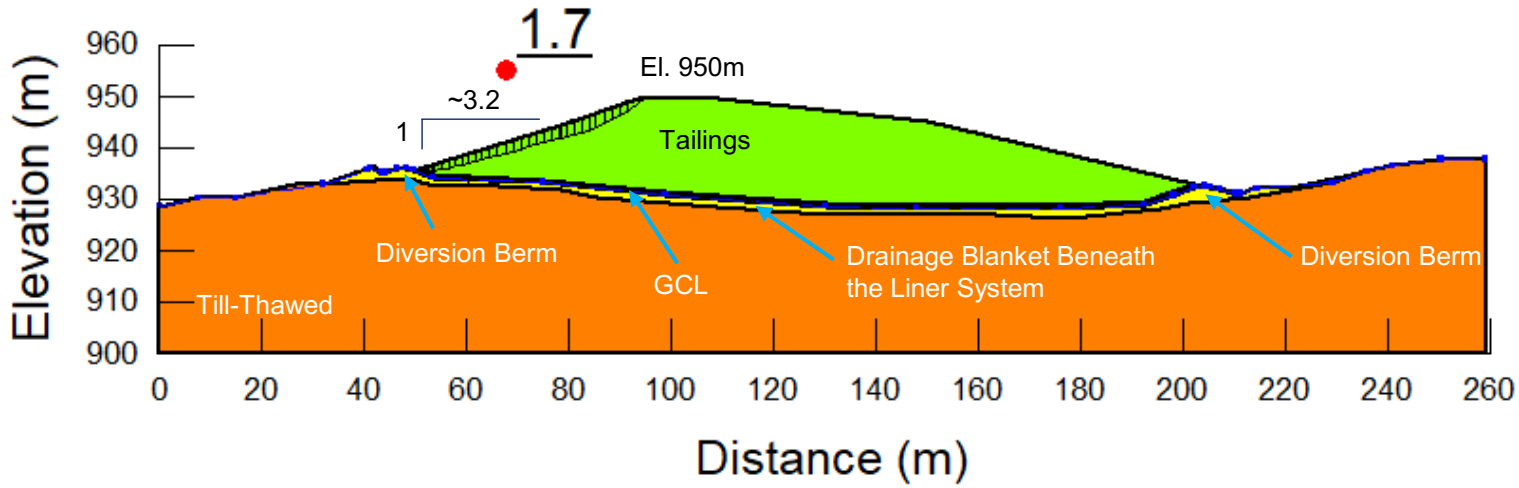
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C70

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35
	Till - Thawed	19.1	0	32



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Fully Thawed)
Post-Seismic – S1 - Exit Tailings Toe

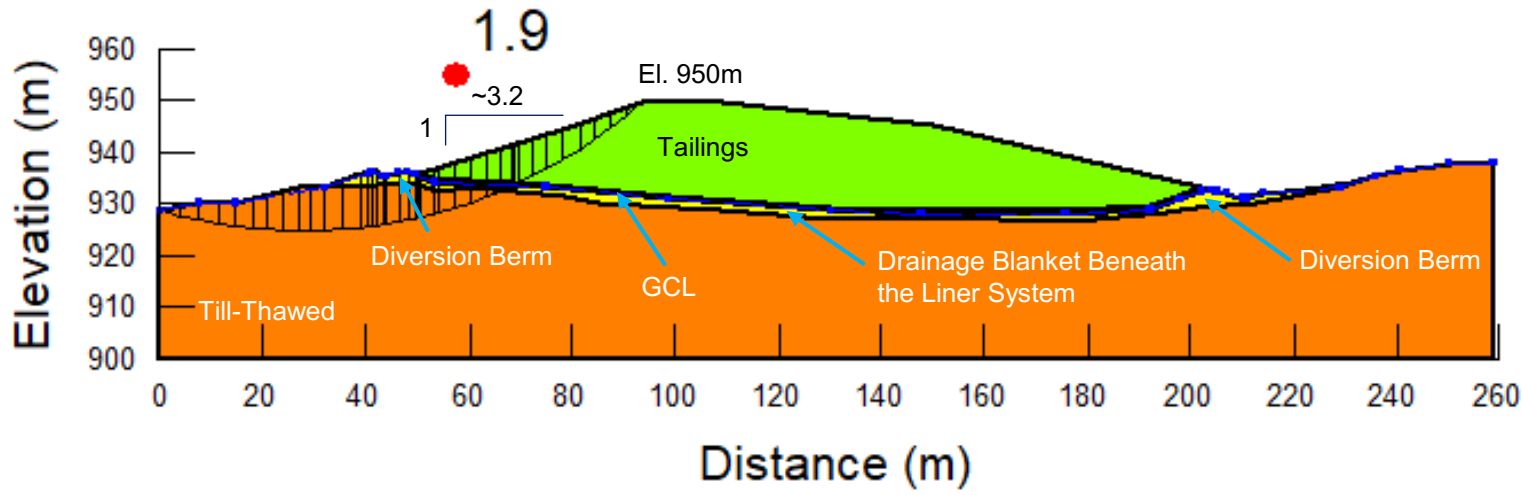
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C71

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35
	Till - Thawed	19.1	0	32



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Fully Thawed)
Post-Seismic – S2 - Global

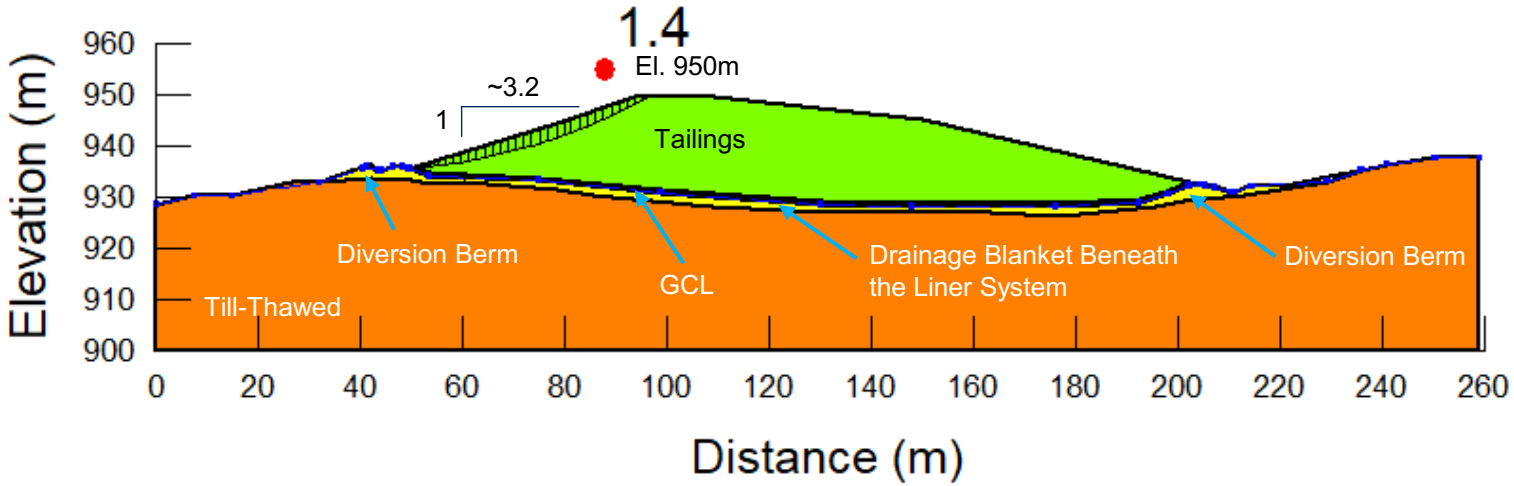
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C72

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Fully Thawed)
Seismic – S1 - Exit Tailings Toe

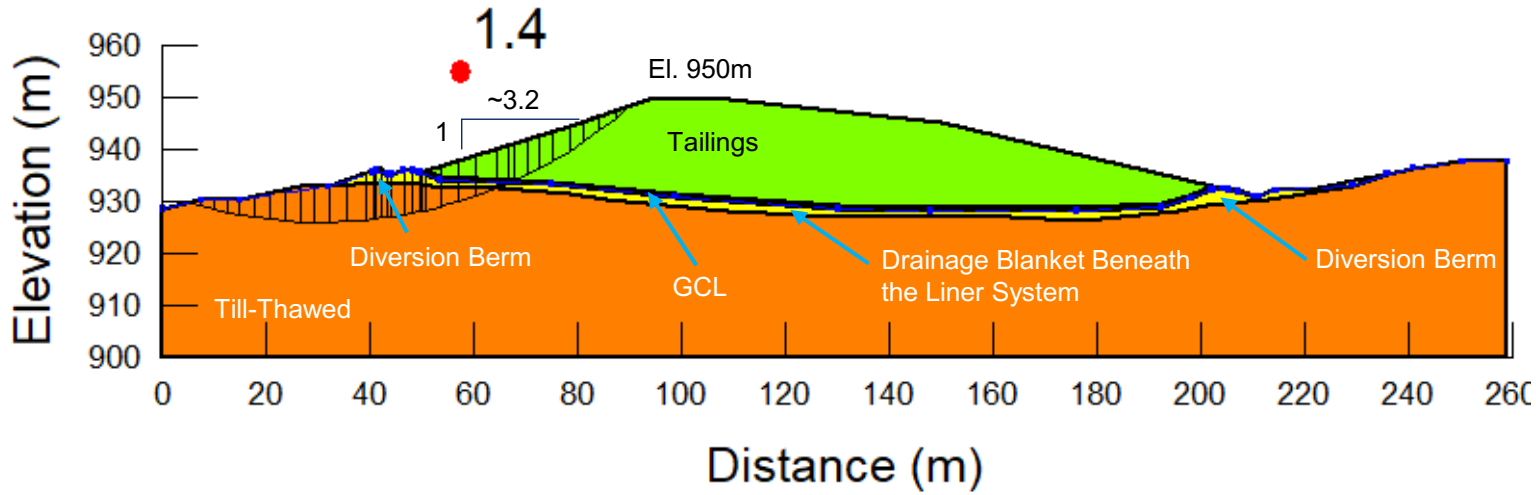
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C73

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Fully Thawed)
Seismic – S2 - Global

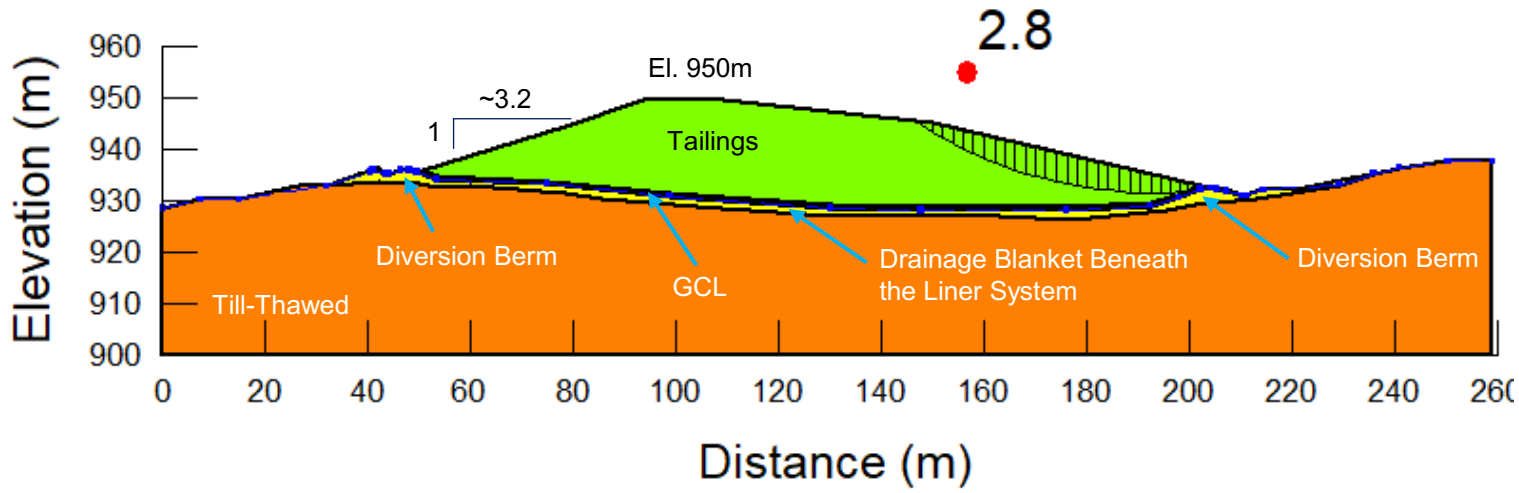
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C74

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Fully Thawed)
Static – S1 - Exit Tailings Toe

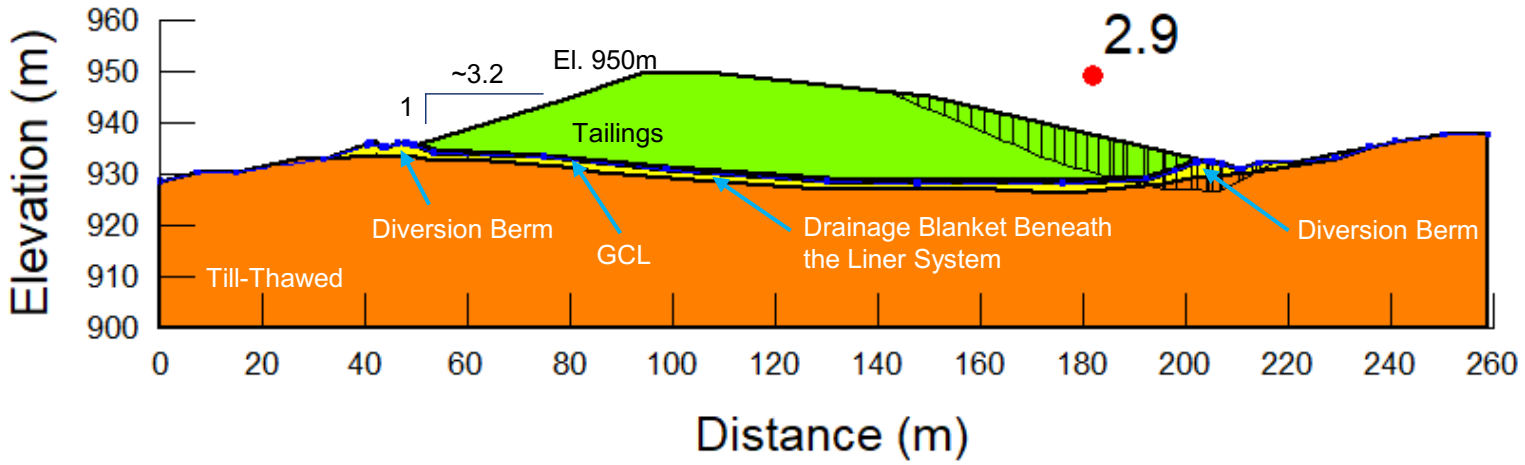
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C75

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Fully Thawed)
Static – S2 - Global

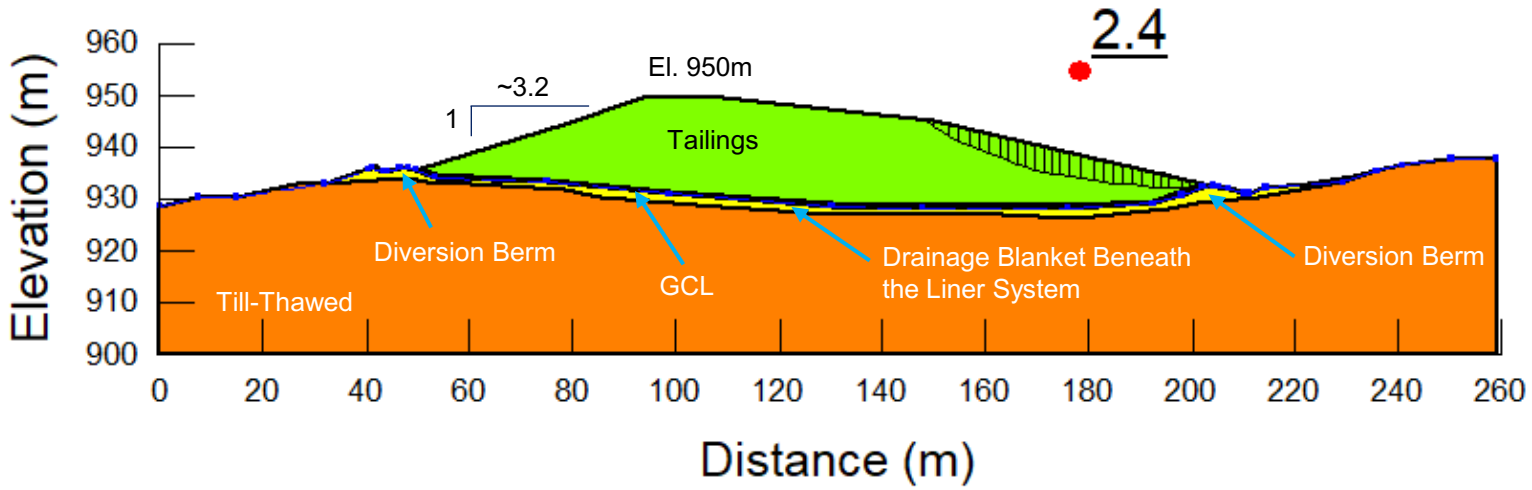
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C76

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35
	Till - Thawed	19.1	0	32



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Fully Thawed)
Post-Seismic – S1 - Exit Tailings Toe

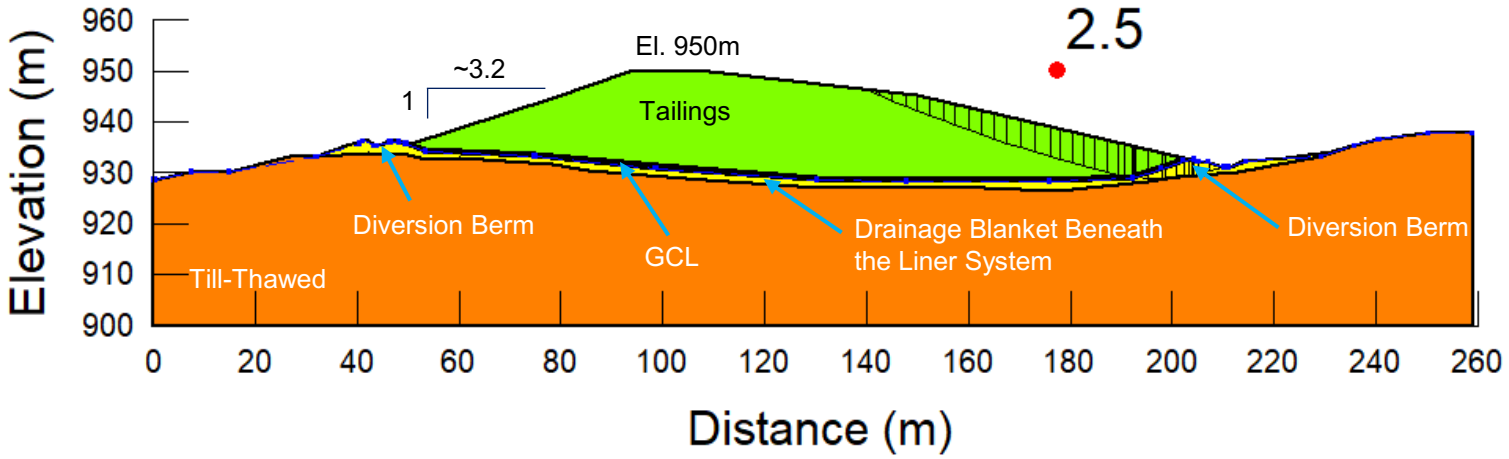
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C77

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35
	Till - Thawed	19.1	0	32



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Fully Thawed)
Post-Seismic – S2 - Global

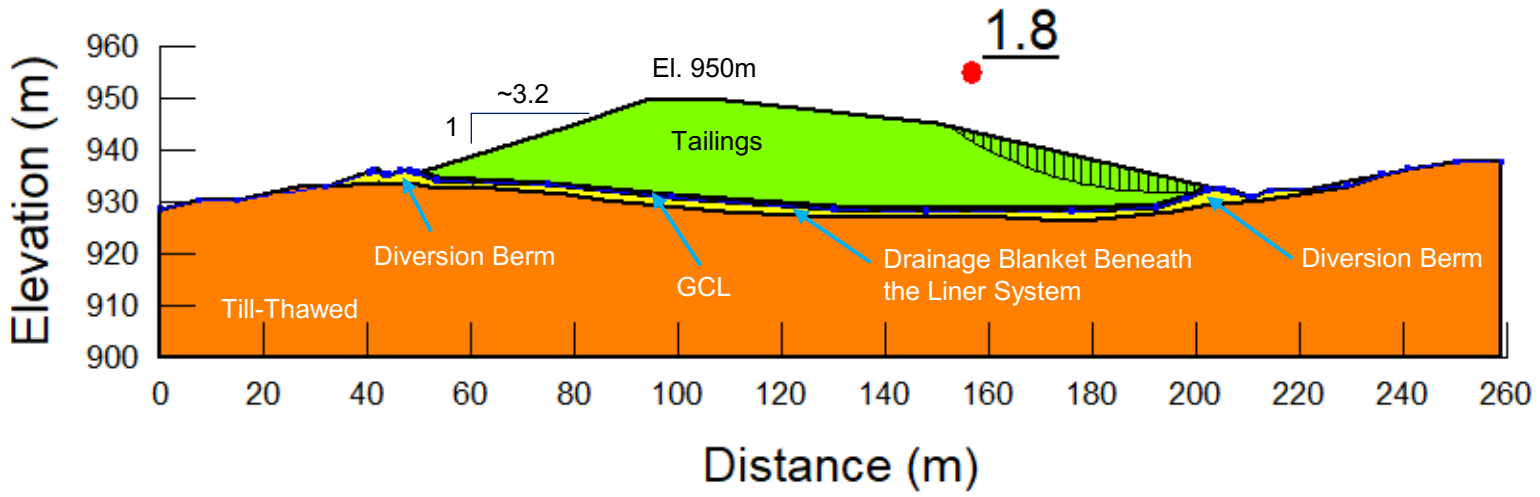
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C78

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Fully Thawed)
Seismic – S1 - Exit Tailings Toe

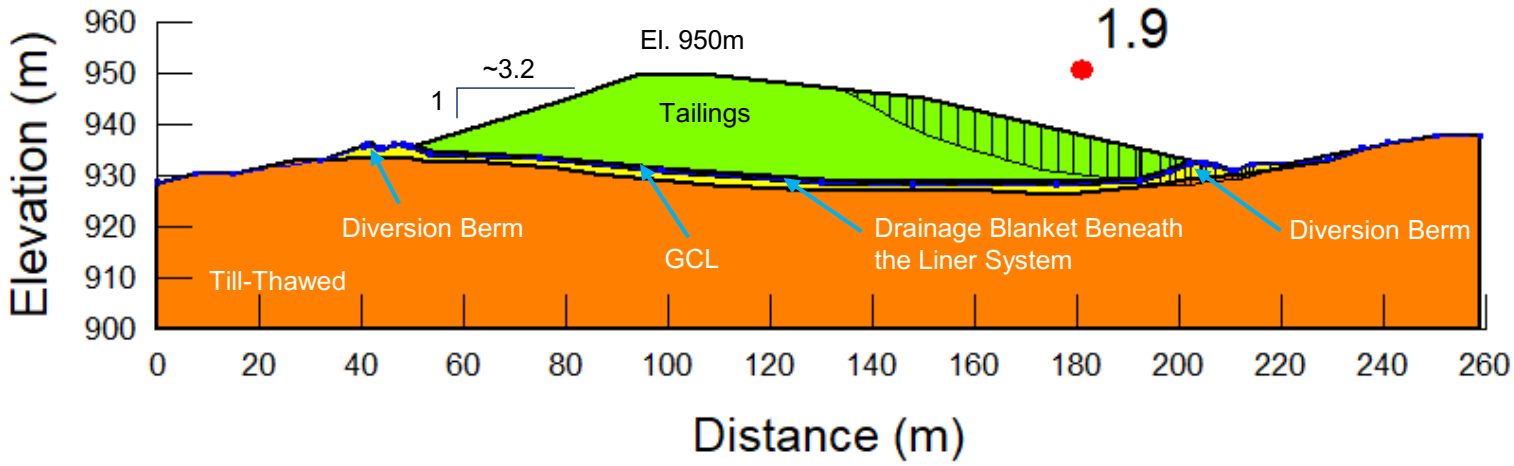
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C79

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Fully Thawed)
Seismic – S2 - Global

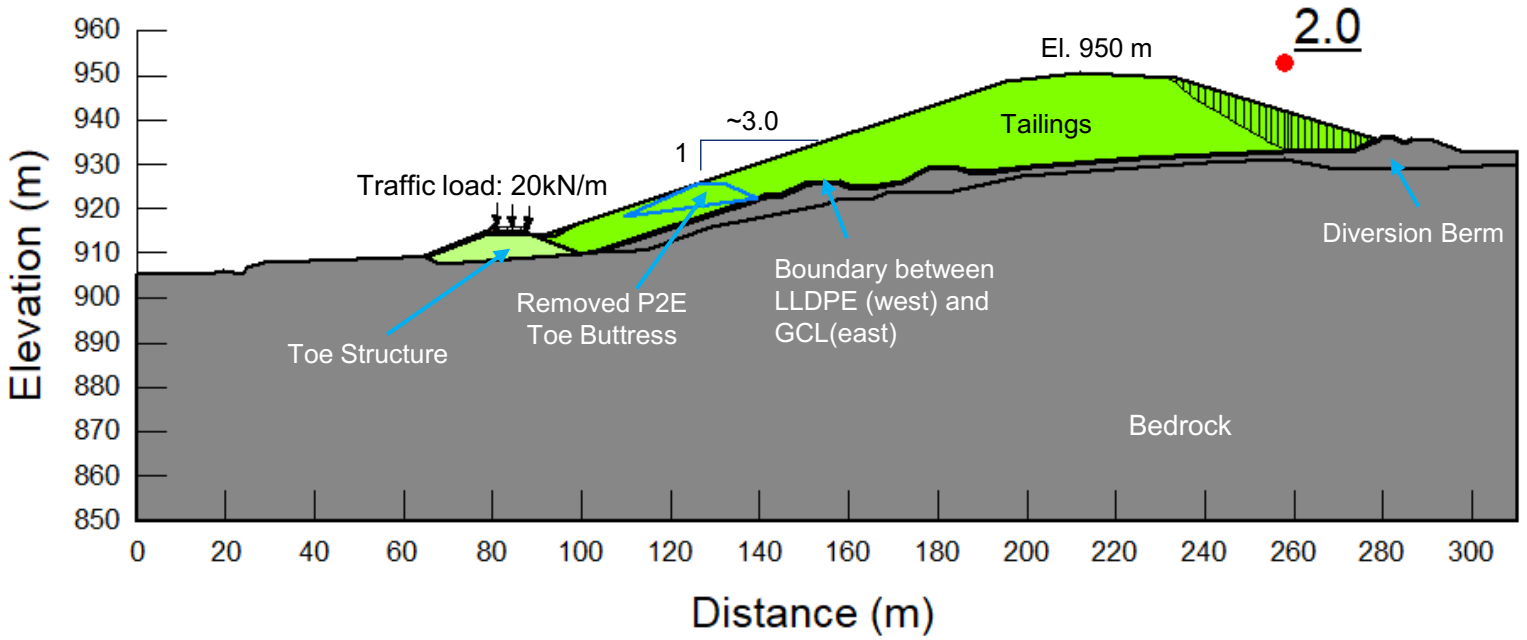
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C80

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Along the Liner)
Static – S3 - Exit Tailings Toe

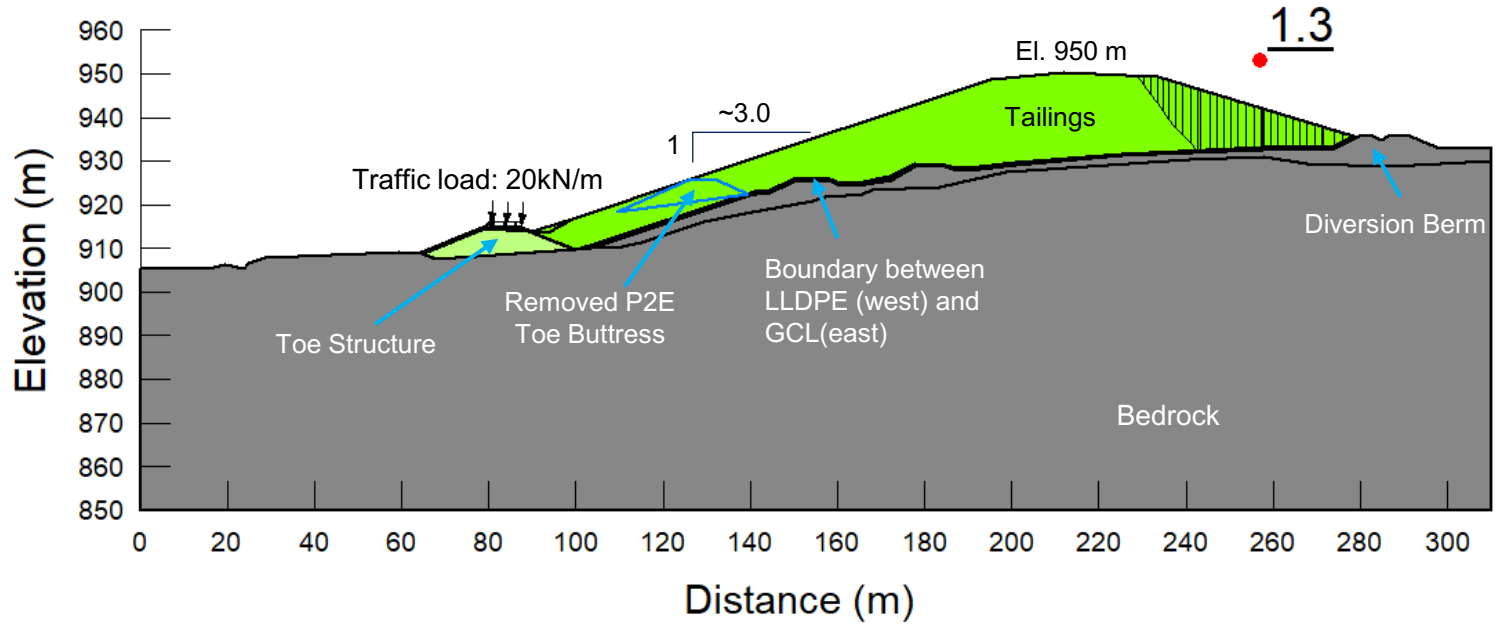
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C81

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Along the Liner)
Post-Seismic – S3 - Exit Tailings Toe

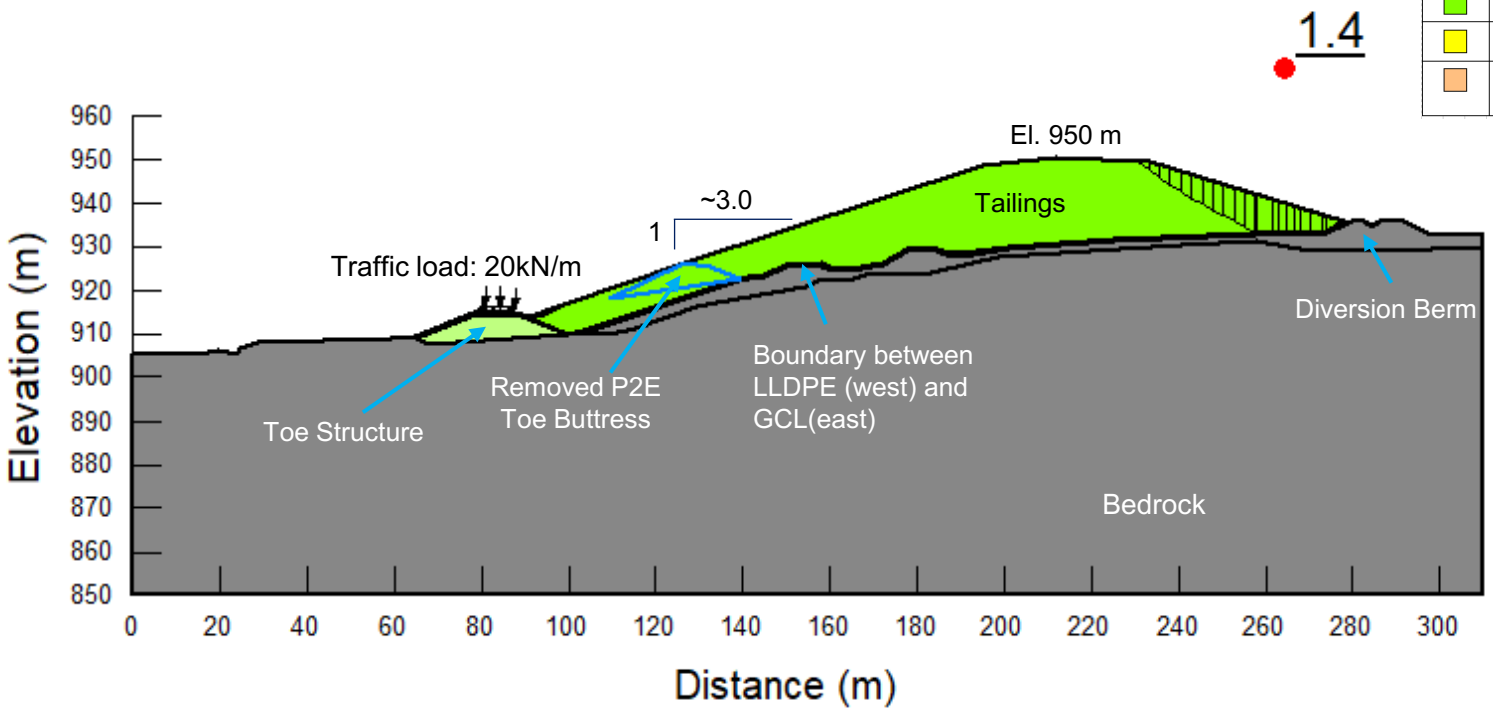
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C82

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – East (Along the Liner)
Seismic – S3 - Exit Tailings Toe

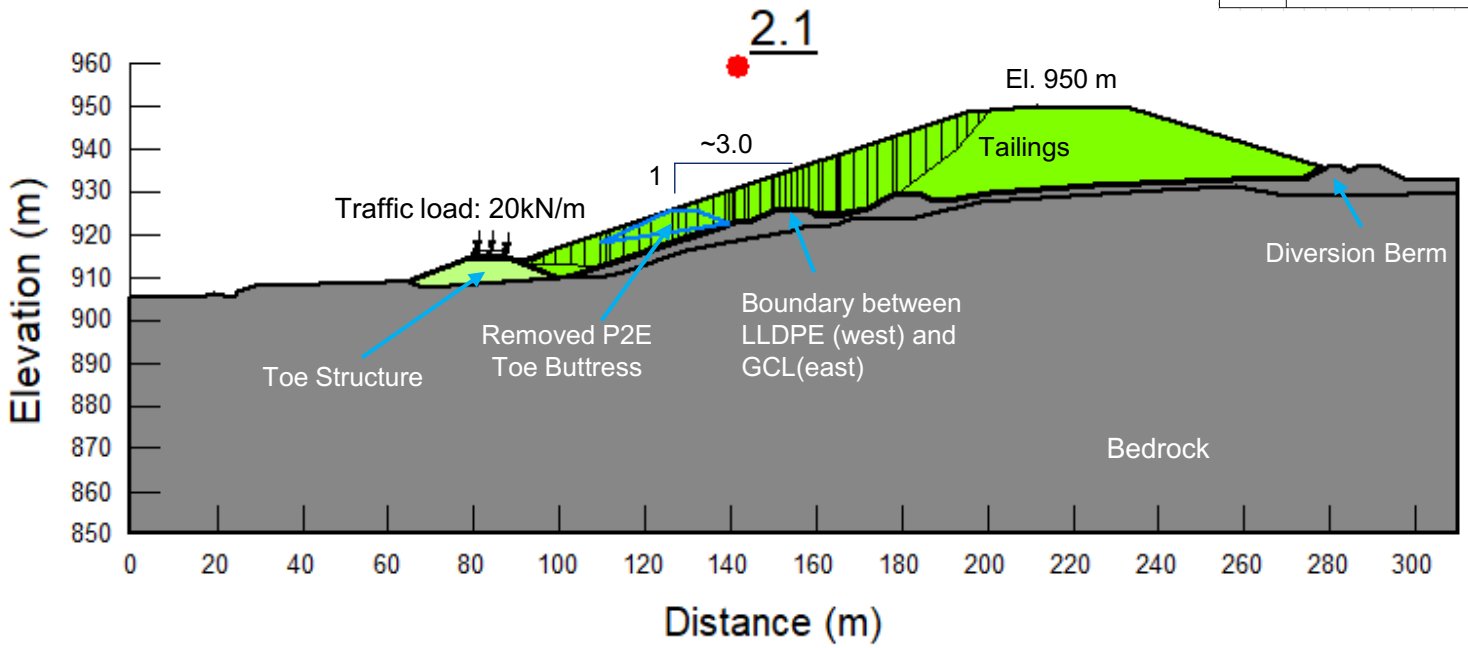
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C83

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West Along the Liner)
Static – S3 - Exit Tailings Toe

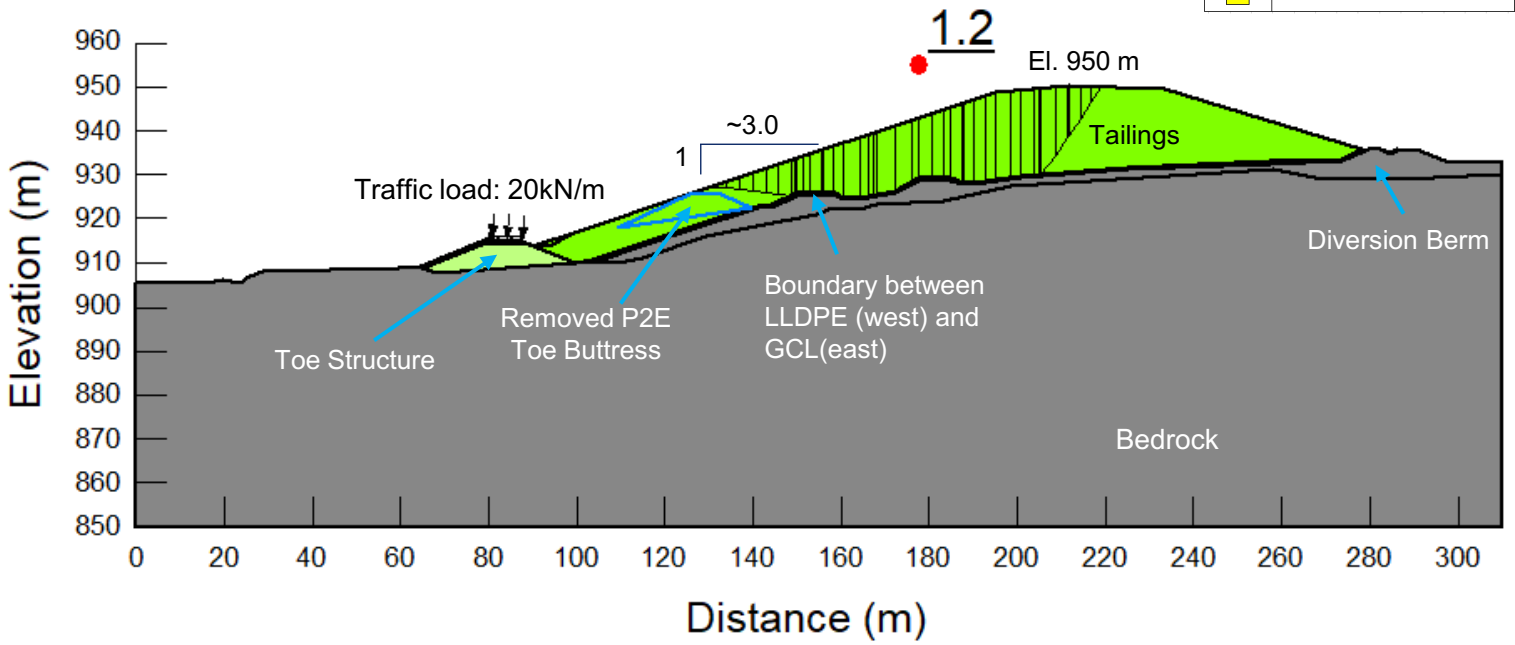
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C84

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Along the Liner)
Post-Seismic– S3 - Exit Tailings Toe

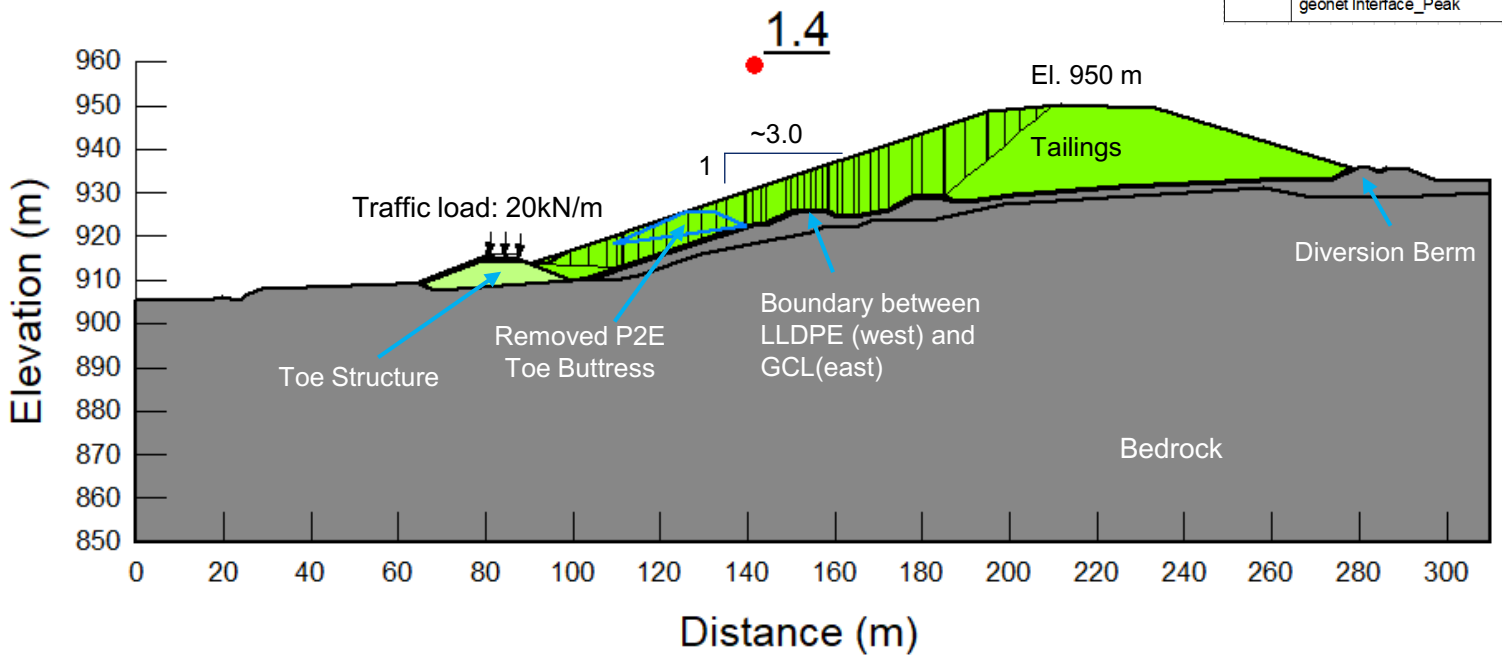
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C85

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Along the Liner)
Seismic – S3 - Exit Tailings Toe

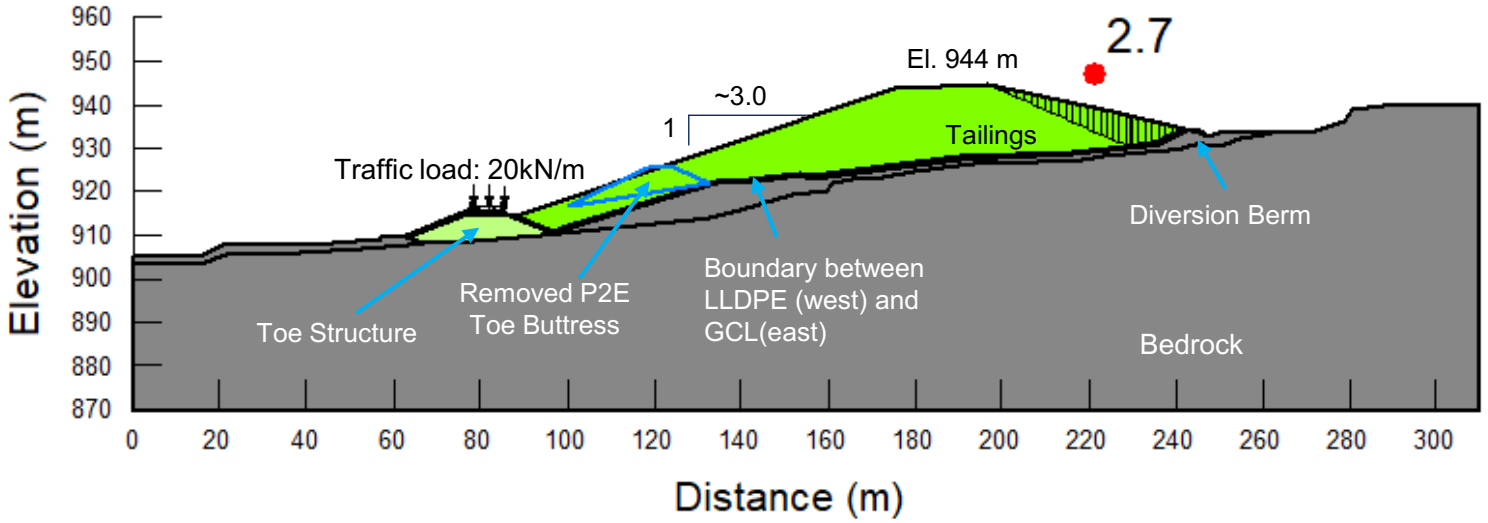
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C86

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Along the liner)
Static – S3 - Exit Tailings Toe

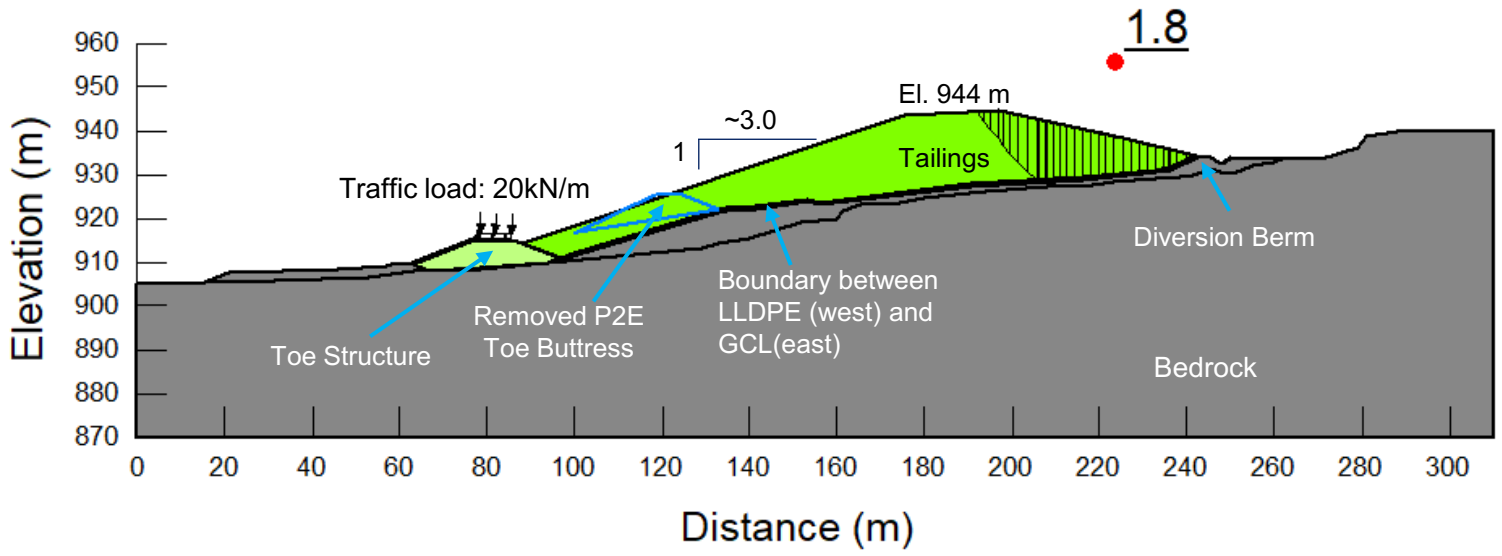
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C87

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Along the liner)
Post-Seismic– S3 - Exit Tailings Toe

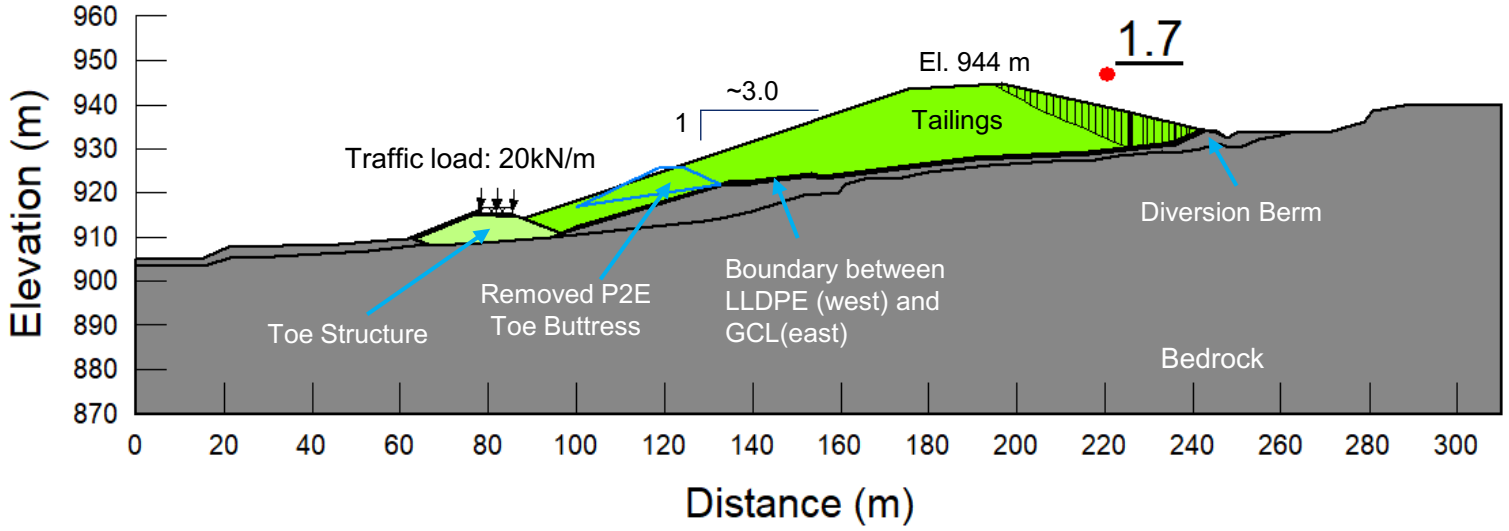
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C88

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – East (Along the liner)
Seismic – S3 - Exit Tailings Toe

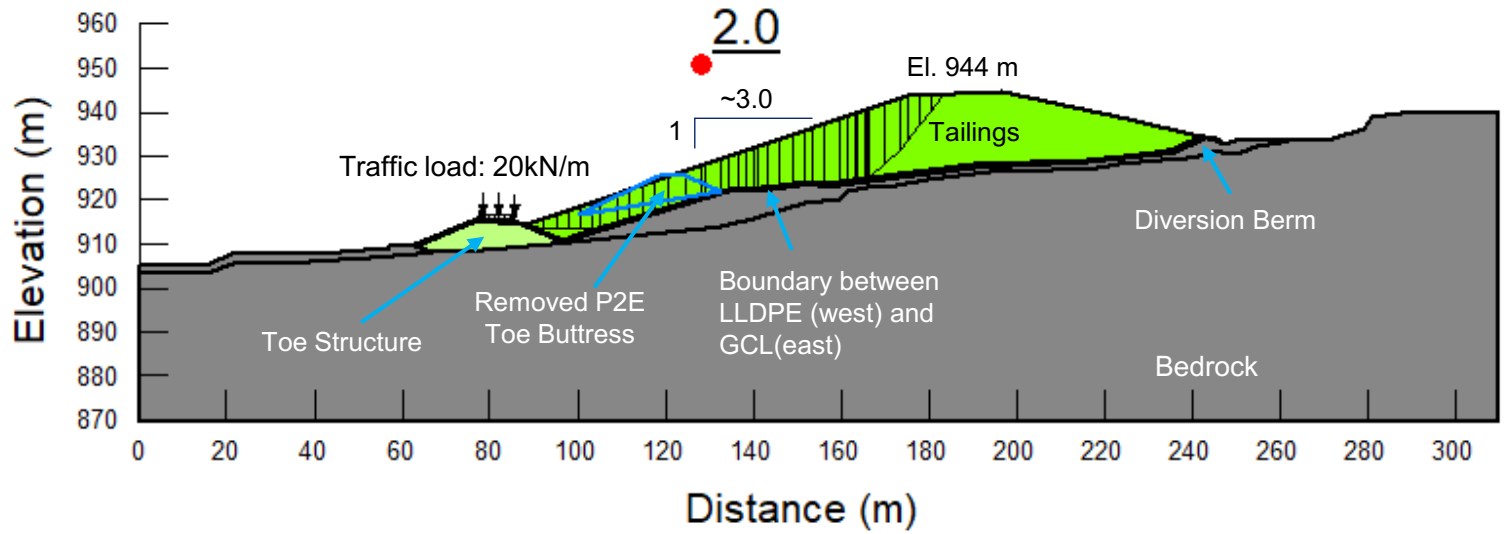
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C89

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Along the liner)
Static – S3 - Exit Tailings Toe

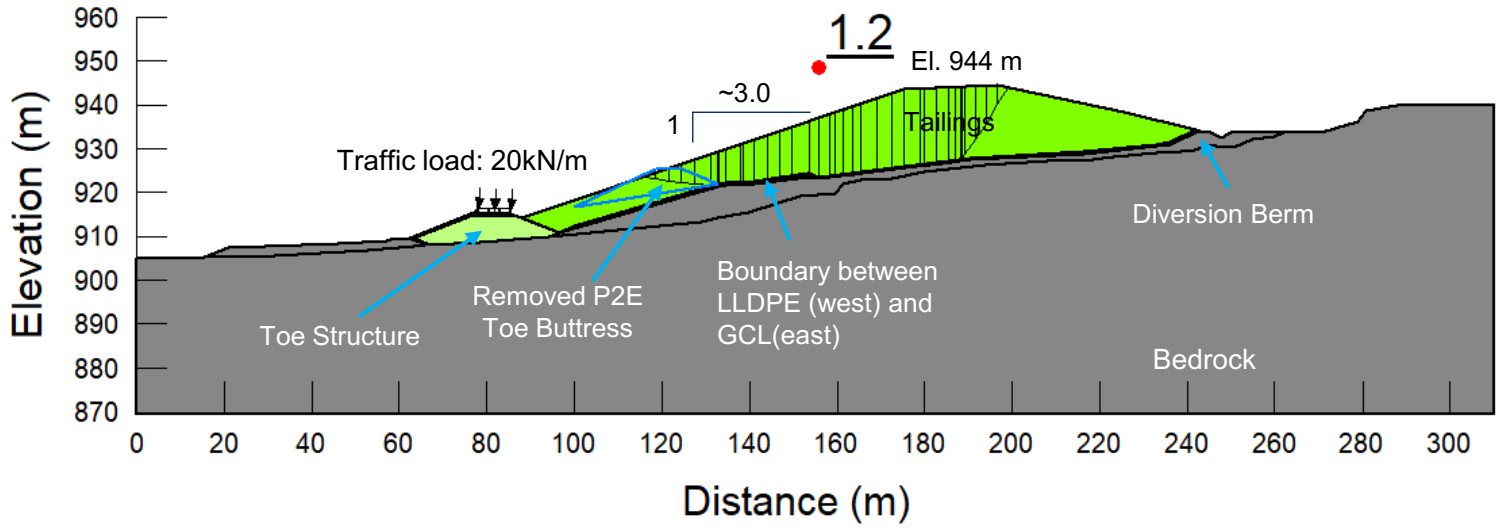
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C90

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Along the liner)
Post-Seismic – S3 - Exit Tailings Toe

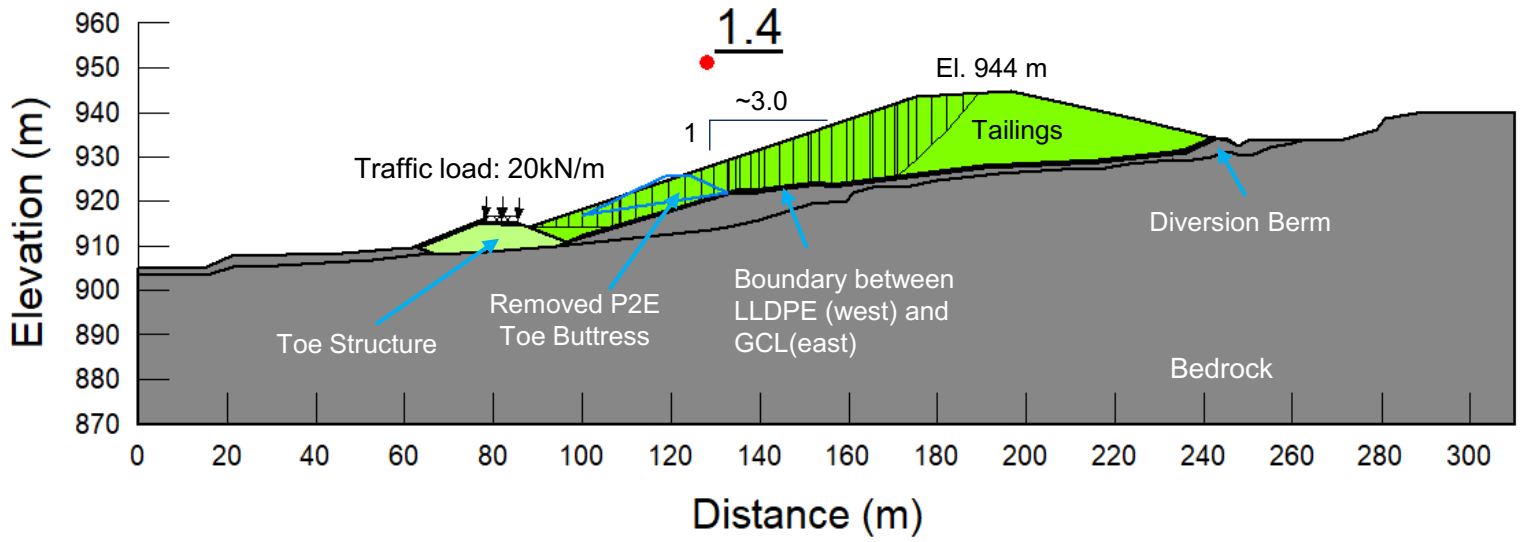
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C91

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 7 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section B – West (Along the liner)
Seismic – S3 - Exit Tailings Toe

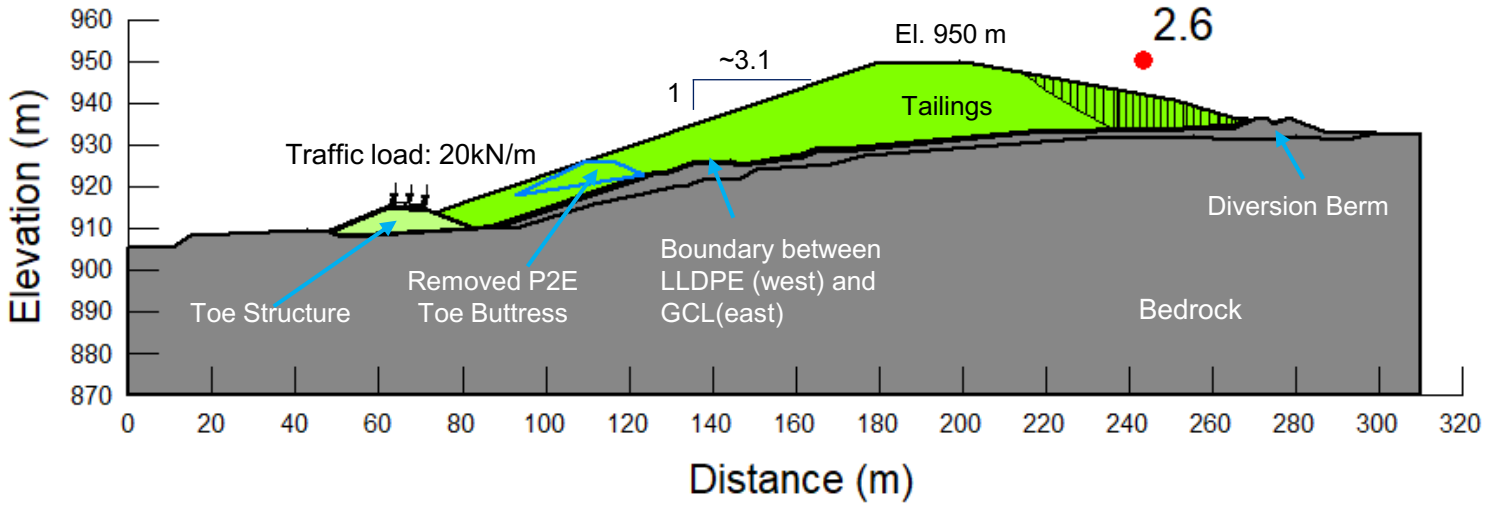
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C92

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Along the liner)
Static – S3 - Exit Tailings Toe

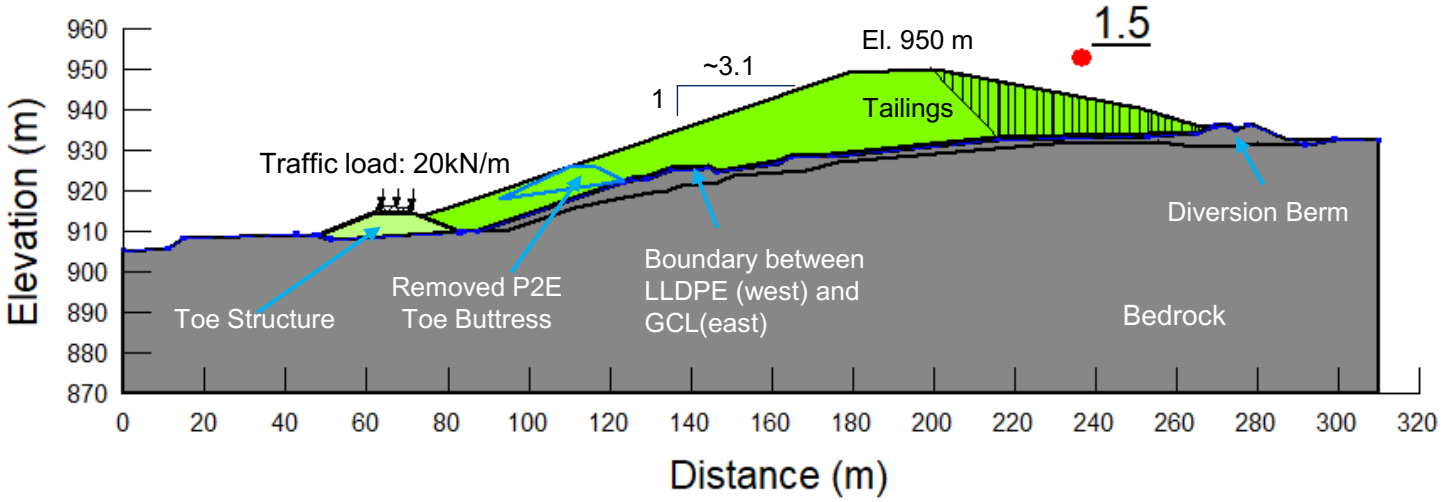
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C93

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Along the liner)
Post-Seismic – S3 - Exit Tailings Toe

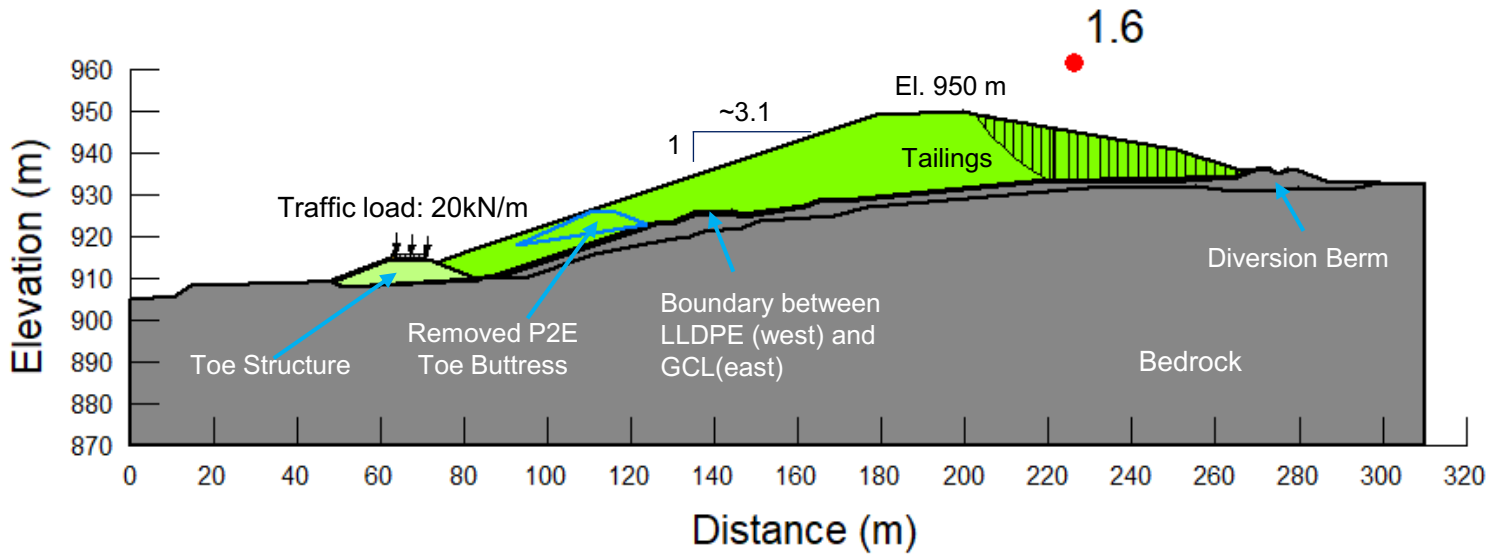
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C94

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – East (Along the liner)
Seismic – S3 - Exit Tailings Toe

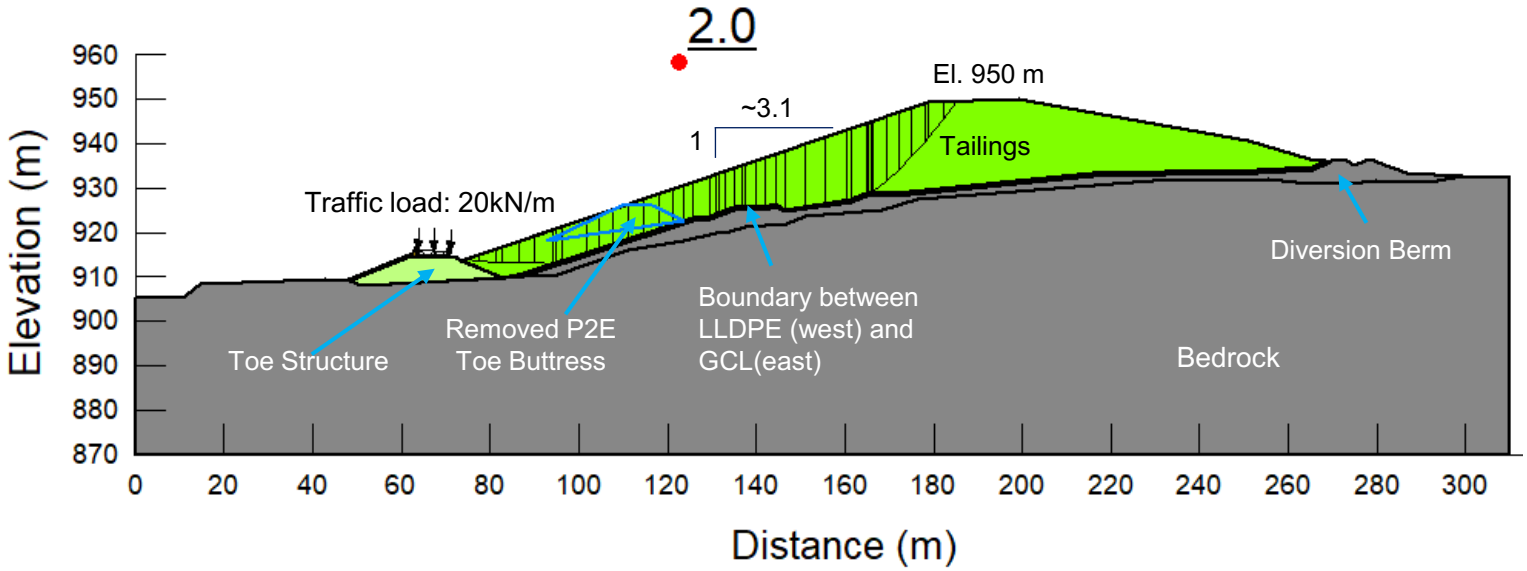
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C95

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Along the liner)
Static – S3 - Exit Tailings Toe

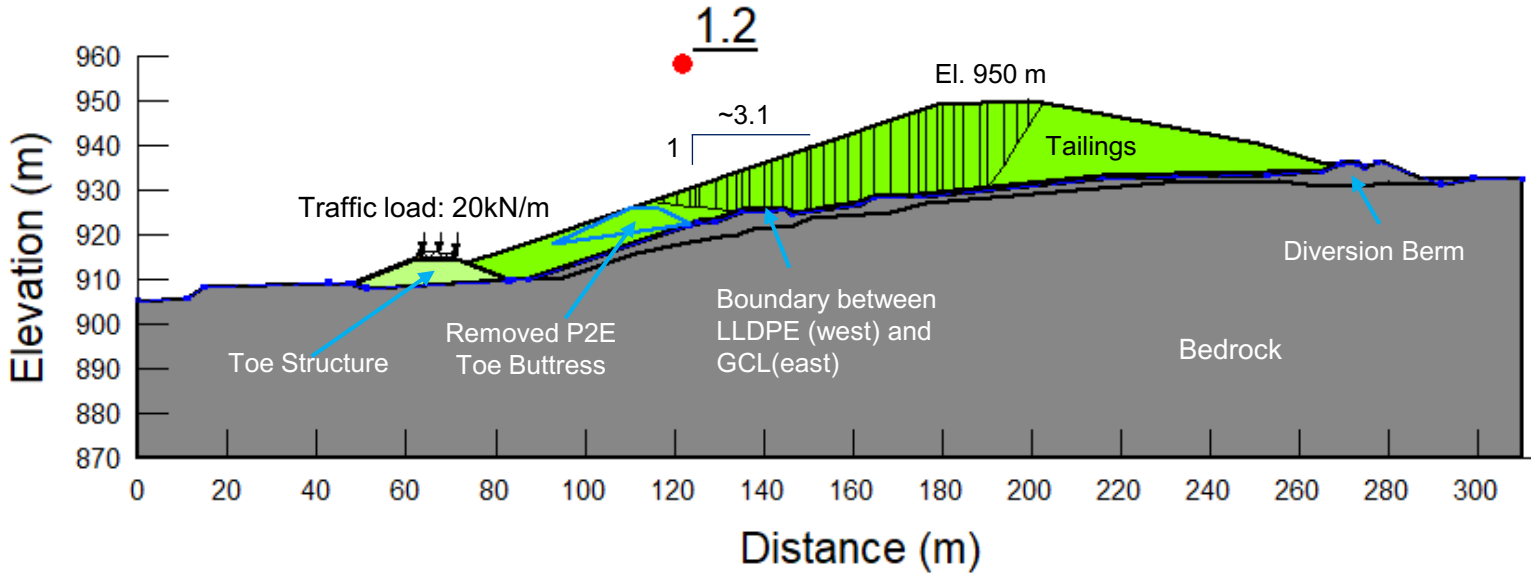
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C96

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Along the liner)
Post-Seismic – S3 - Exit Tailings Toe

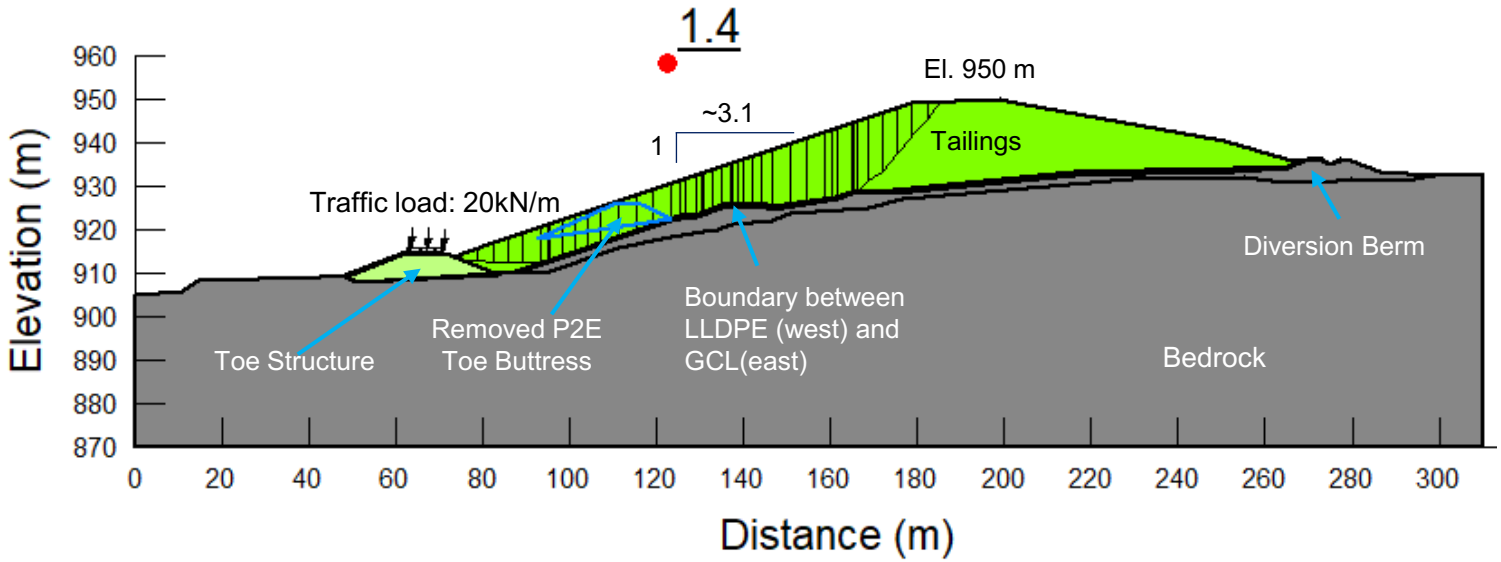
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C97

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 14.5 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section C – West (Along the liner)
Seismic – S3 - Exit Tailings Toe

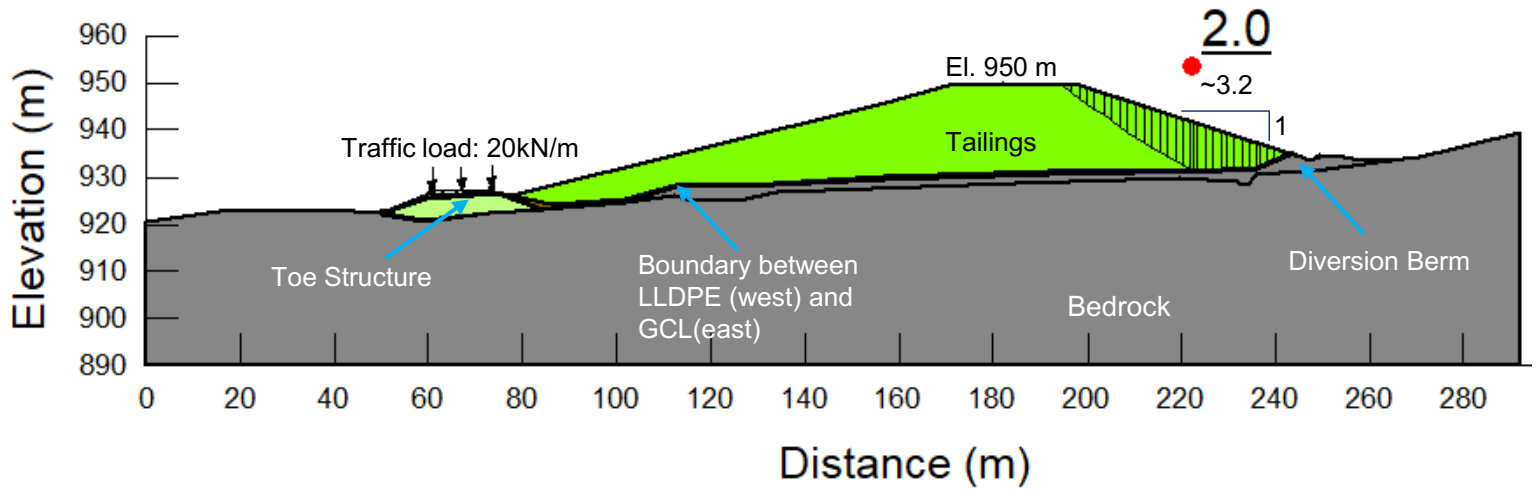
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C98

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Along the liner)
Static – S3 - Exit Tailings Toe

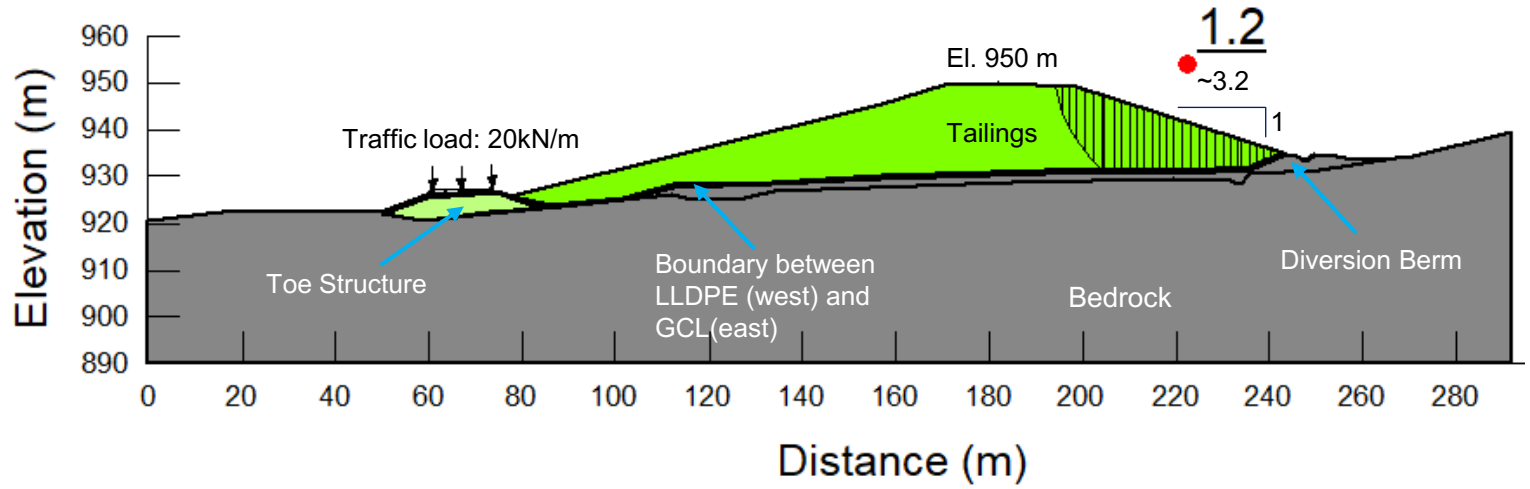
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C99

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Along the liner)
Post-Seismic – S3 - Exit Tailings Toe

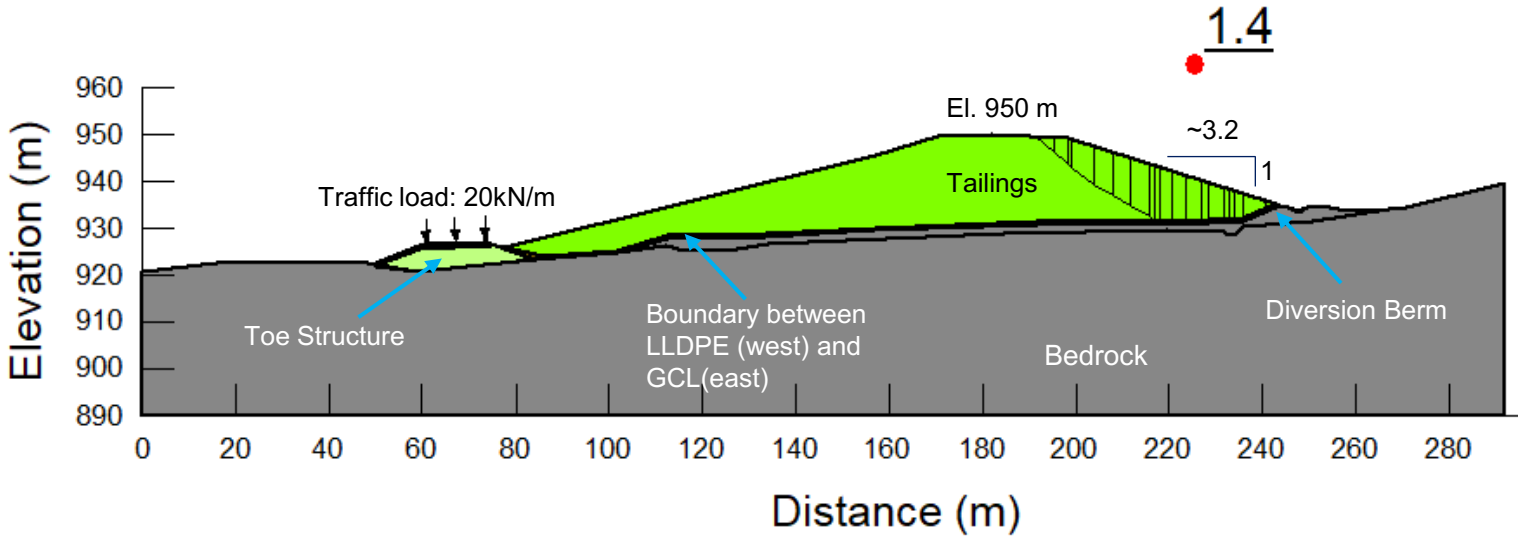
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C100

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Along the liner)
Seismic – S3 - Exit Tailings Toe

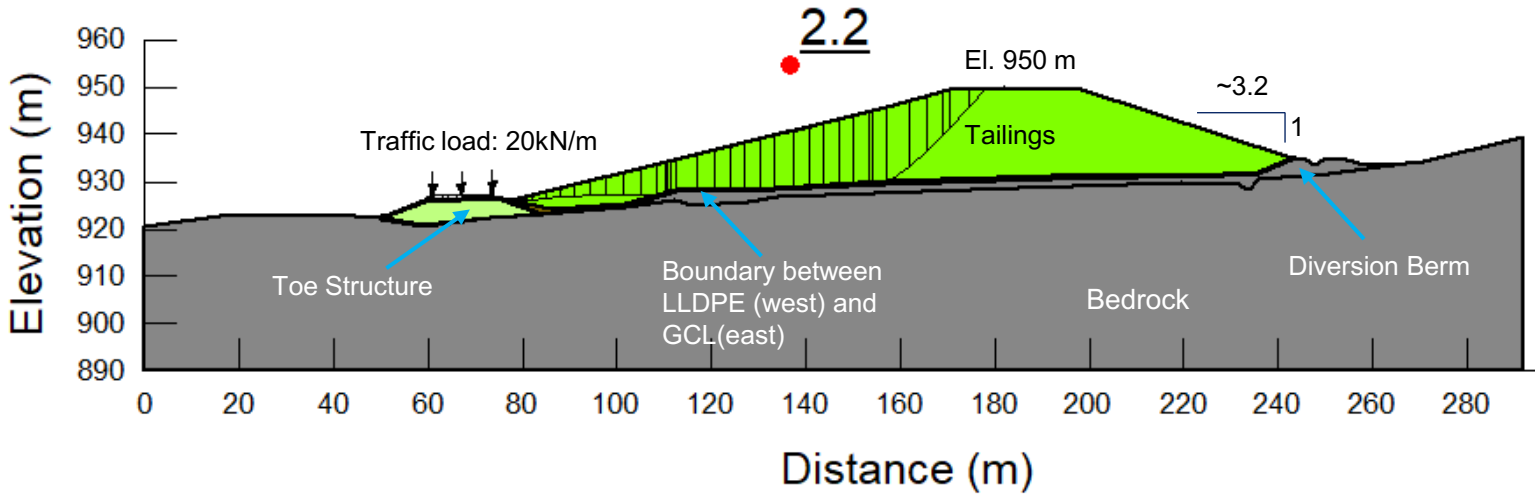
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C101

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Along the liner)
Static – S3 - Exit Tailings Toe

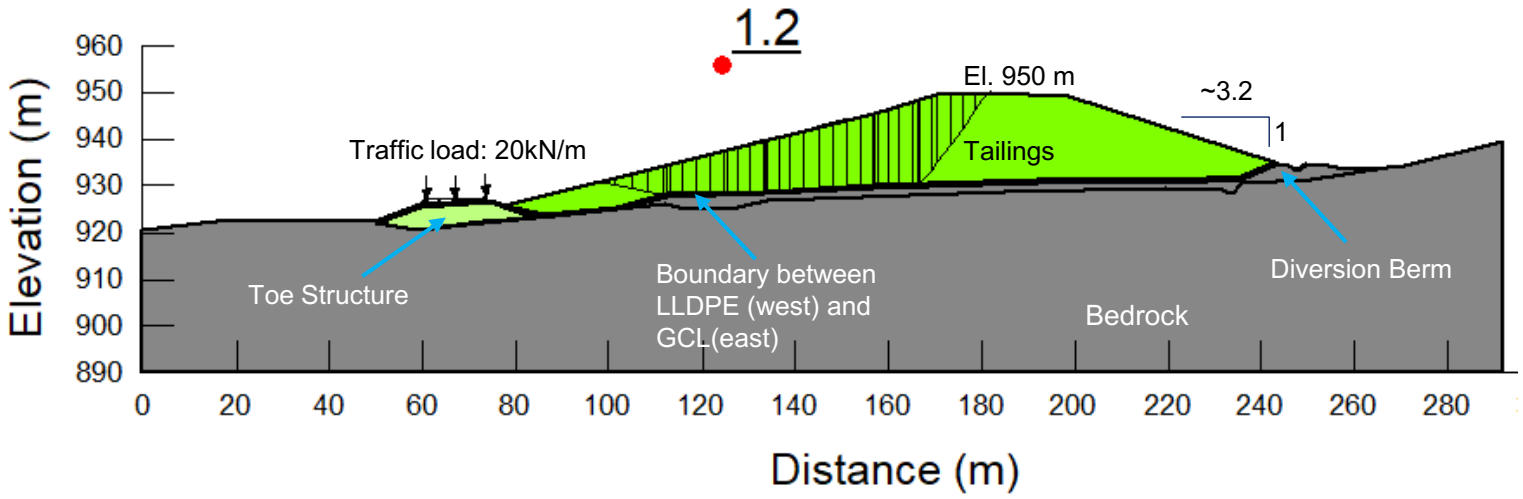
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C102

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Along the liner)
Post-Seismic – S3 - Exit Tailings Toe

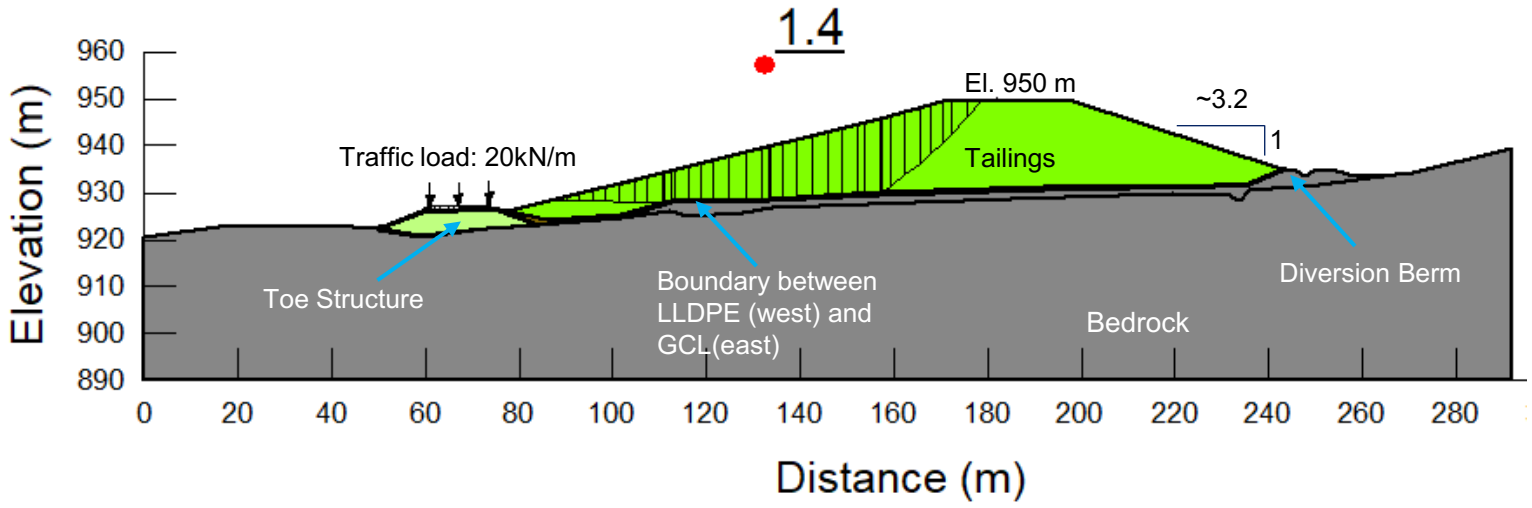
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C103

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – West (Along the liner)
Seismic – S3 - Exit Tailings Toe

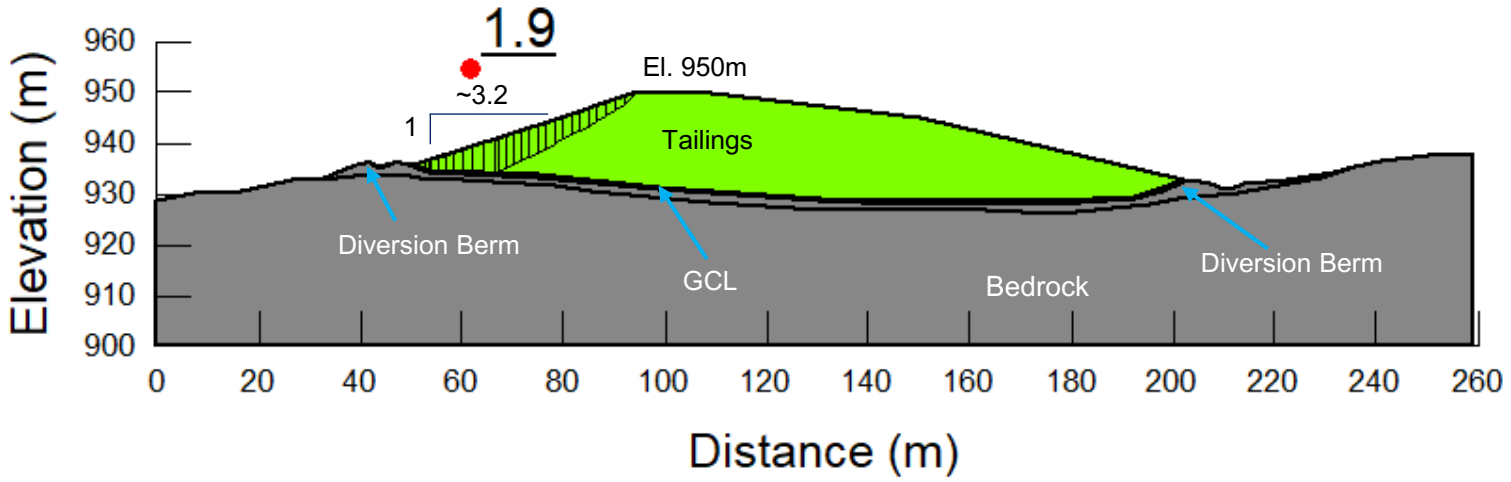
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C104

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Bedrock			
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Along the liner)
Static – S3 - Exit Tailings Toe

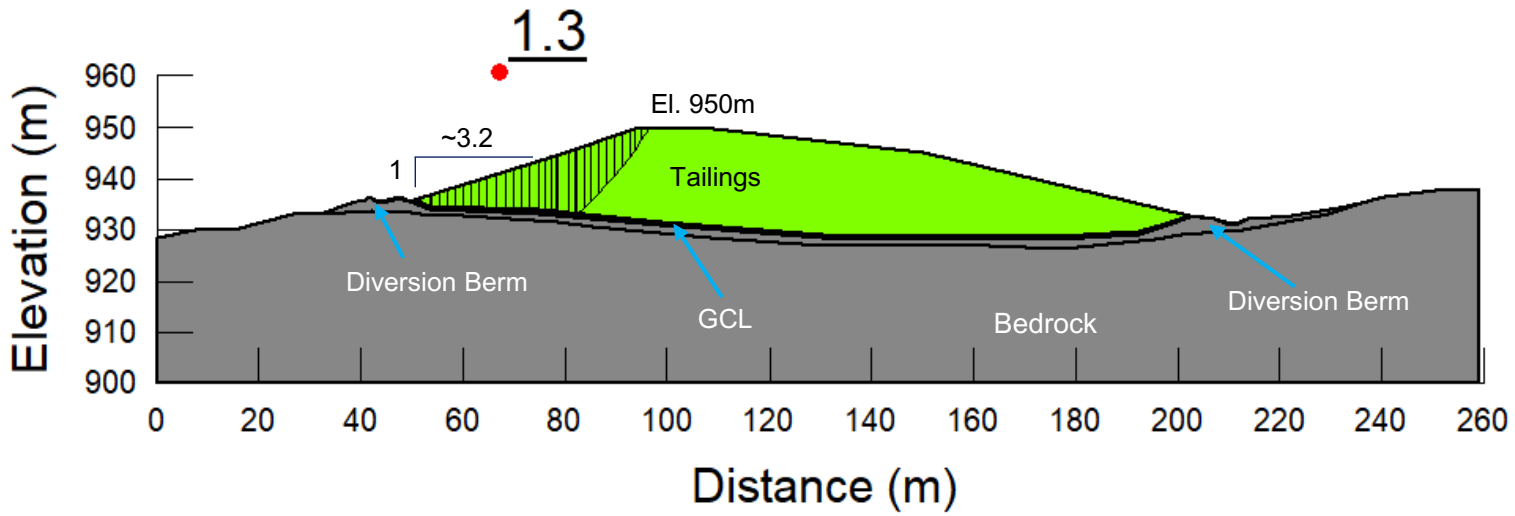
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C105

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35
	Till - Thawed	19.1	0	32



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Along the liner)
Post-Seismic – S3 - Exit Tailings Toe

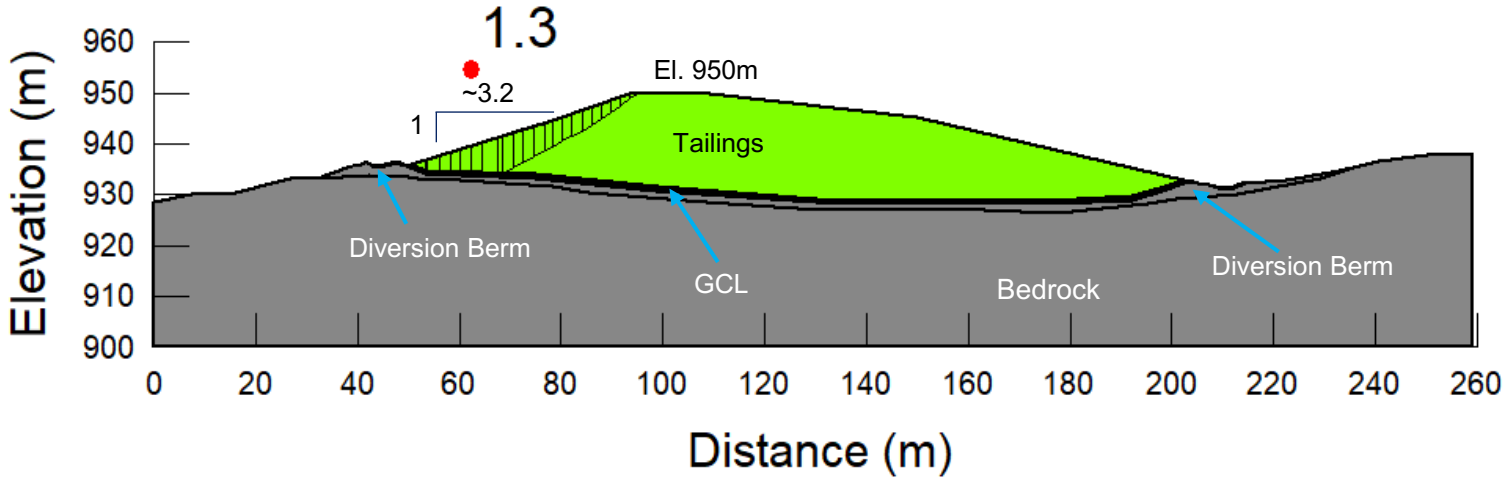
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C106

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Bedrock			
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Along the liner)
Seismic – S3 - Exit Tailings Toe

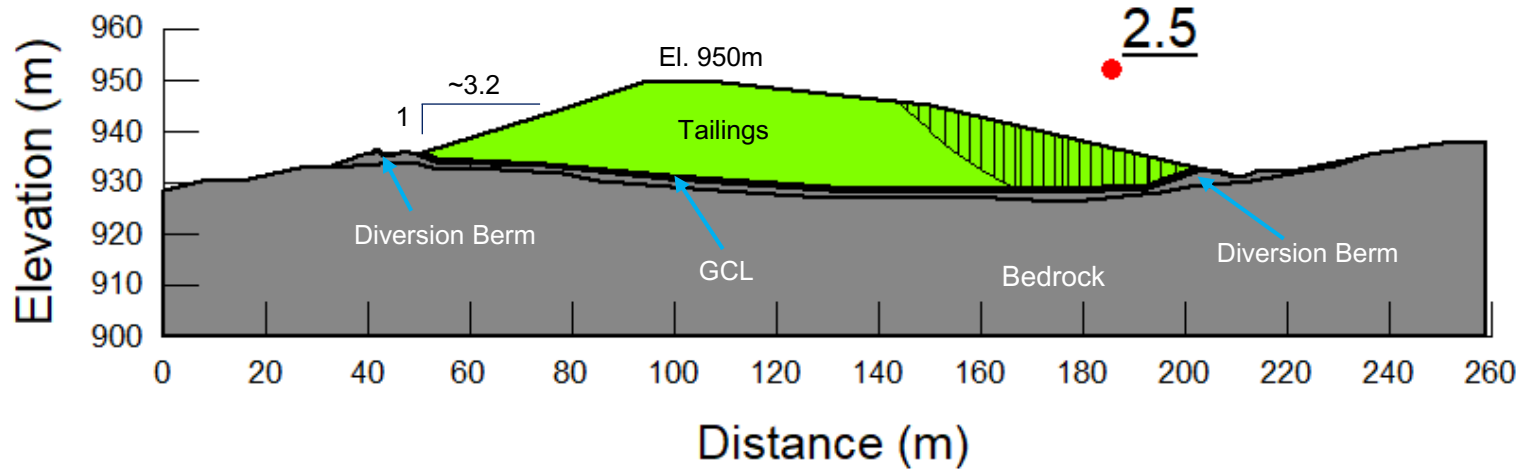
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C107

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Bedrock			
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – North (Along the liner)
Static – S3 - Exit Tailings Toe

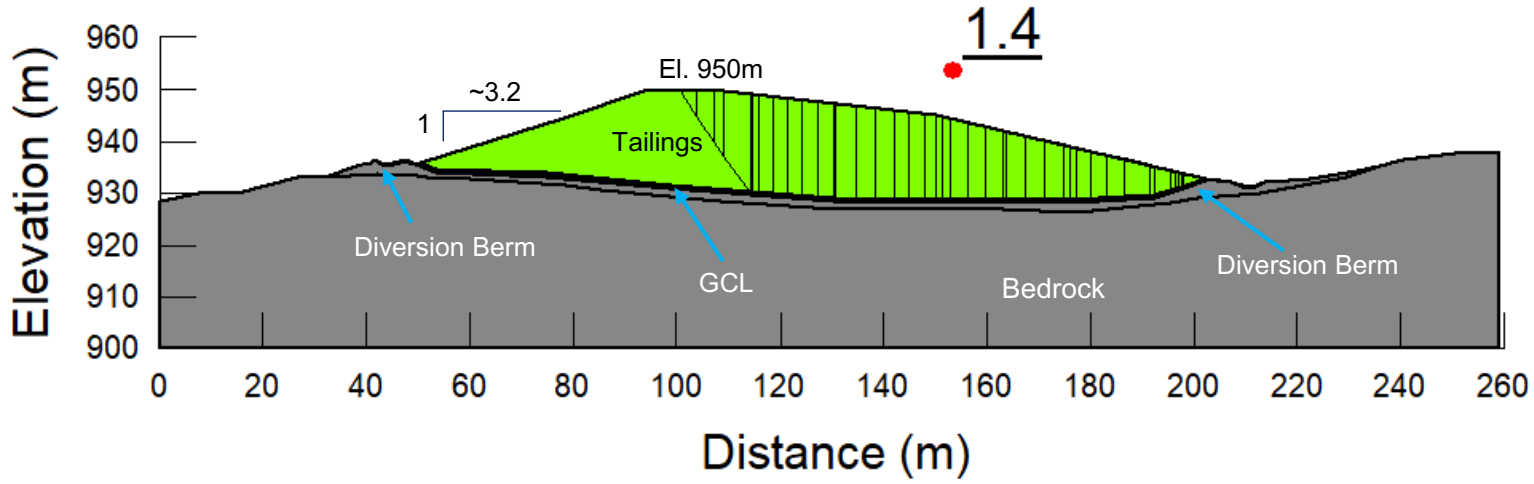
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C108

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35
	Till - Thawed	19.1	0	32



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Along the liner)
Post-Seismic – S3 - Exit Tailings Toe

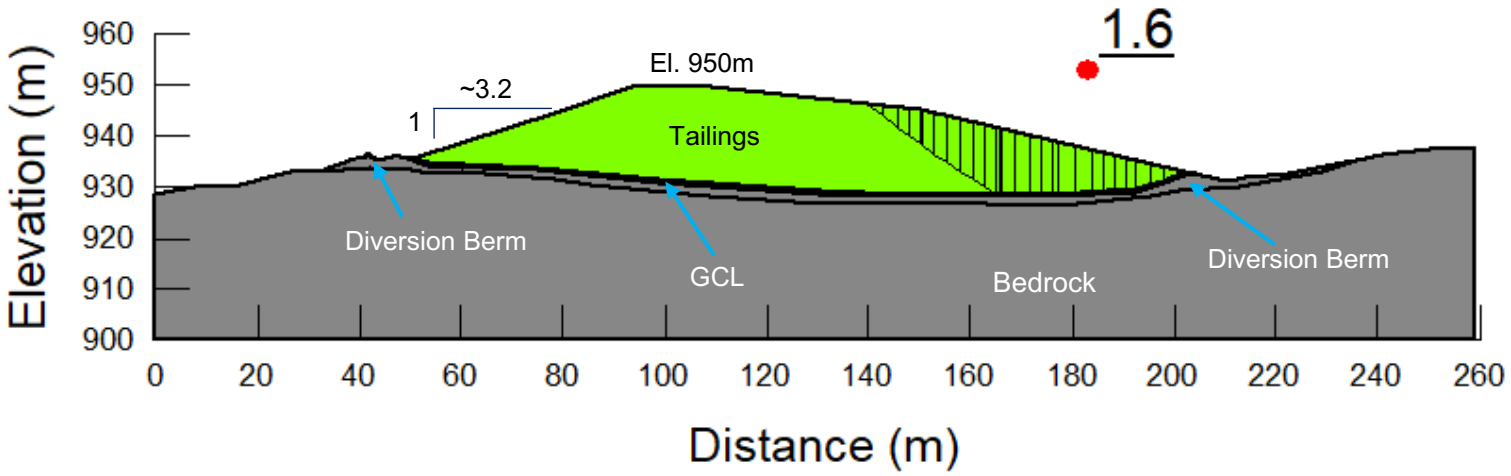
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix C109

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	Bedrock			
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:
1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section E – South (Along the liner)
Seismic – S3 - Exit Tailings Toe

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix C110

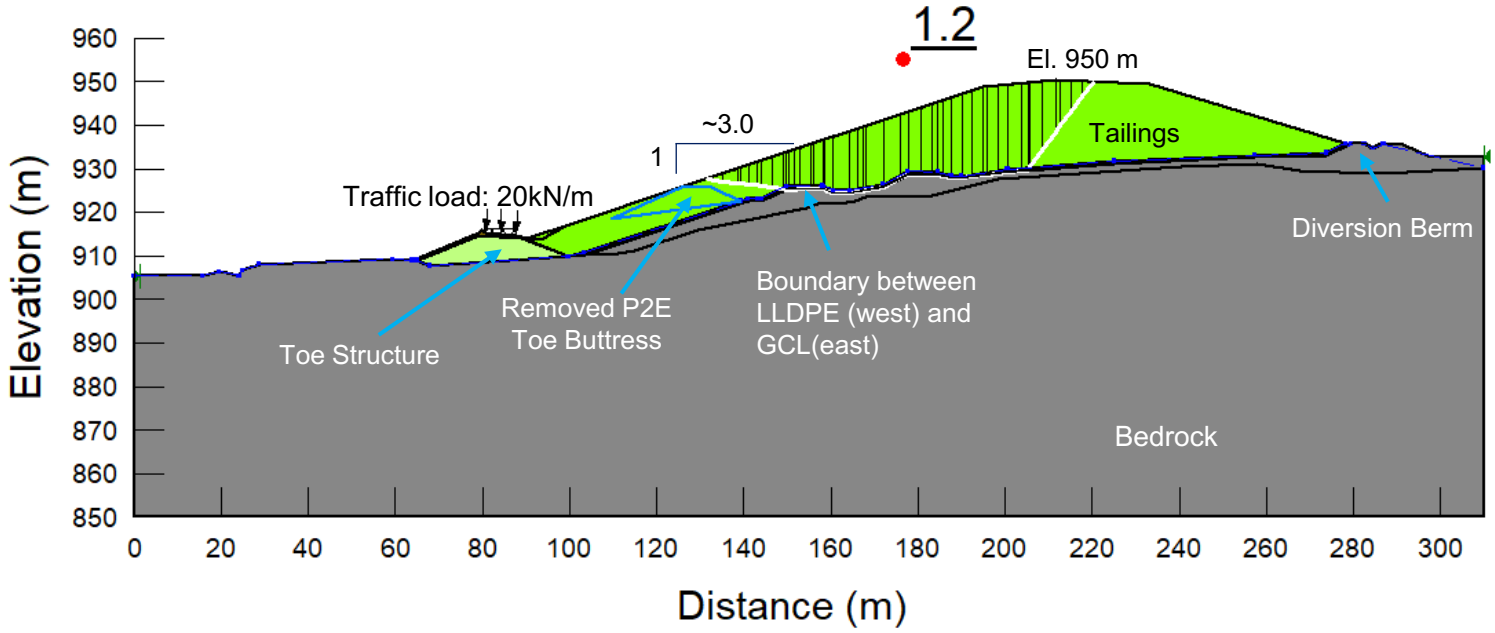
APPENDIX D

ADDITIONAL SLOPE STABILITY RESULTS (SLOPE/ W OUTPUT)

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Bedrock				
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	1
	Gravel Drainage Blanket	22.5	0	35	1

Phreatic surface - 0.5 m above Liner



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Along the Liner)
Post-Seismic– S3 - Exit Tailings Toe

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

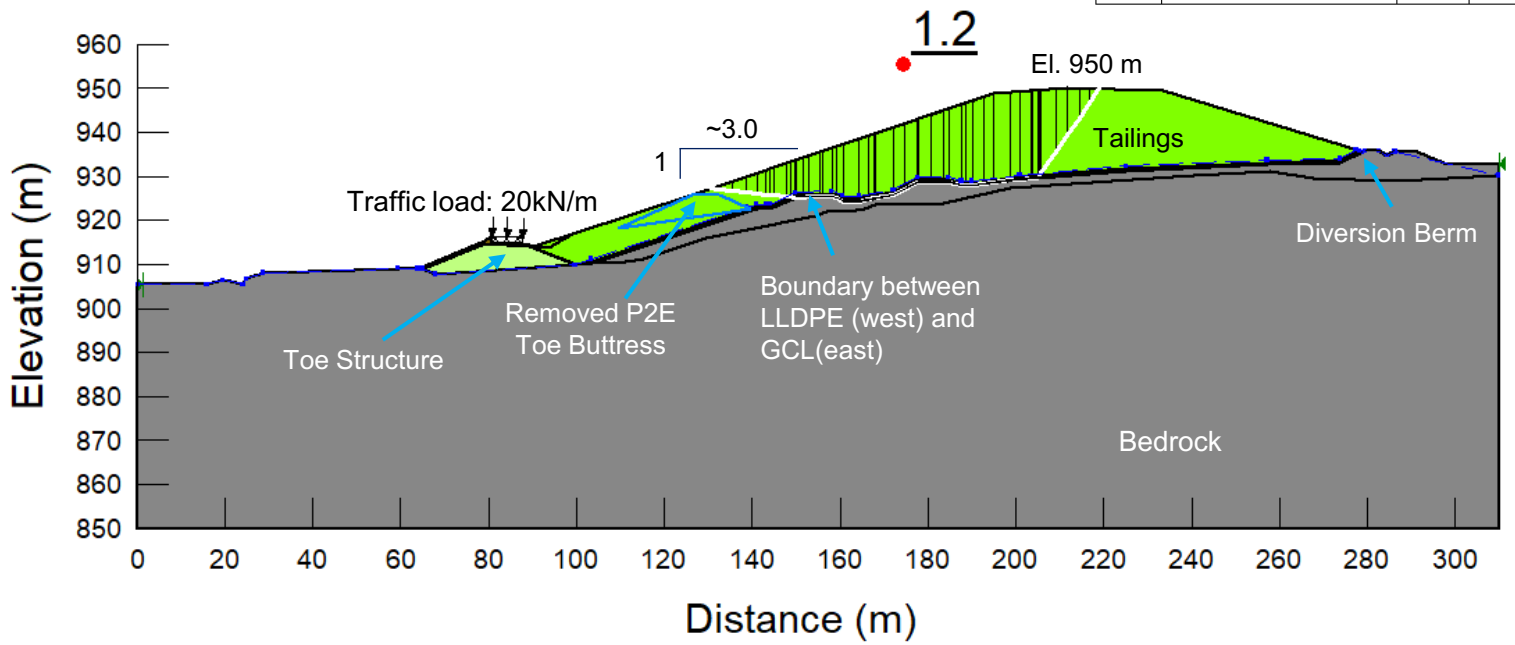
OFFICE: EDMONTON
DATE: February 2026

Appendix D1

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Bedrock				
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	1
	Gravel Drainage Blanket	22.5	0	35	1

Phreatic surface – 1 m above Liner



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Along the Liner)
Post-Seismic– S3 - Exit Tailings Toe

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

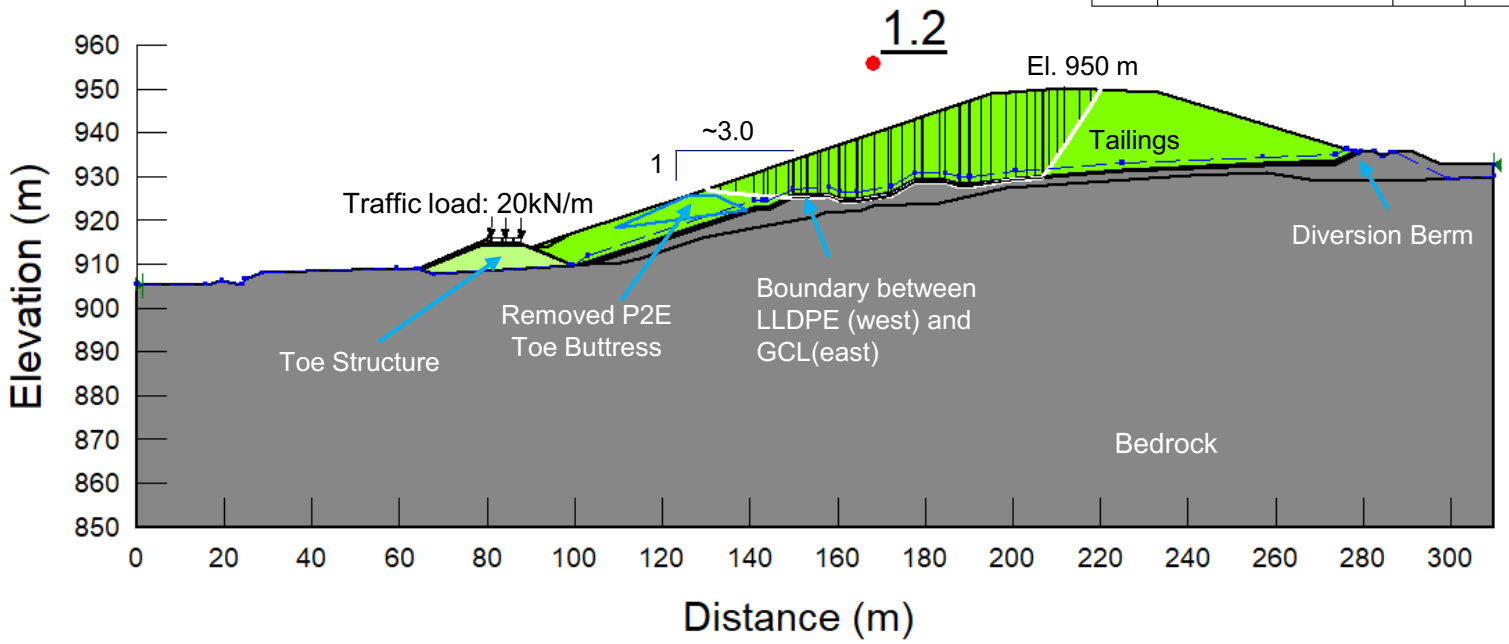
OFFICE: EDMONTON
DATE: February 2026

Appendix D2

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Bedrock				
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	1
	Gravel Drainage Blanket	22.5	0	35	1

Phreatic surface – 2 m above Liner



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Along the Liner)
Post-Seismic– S3 - Exit Tailings Toe

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

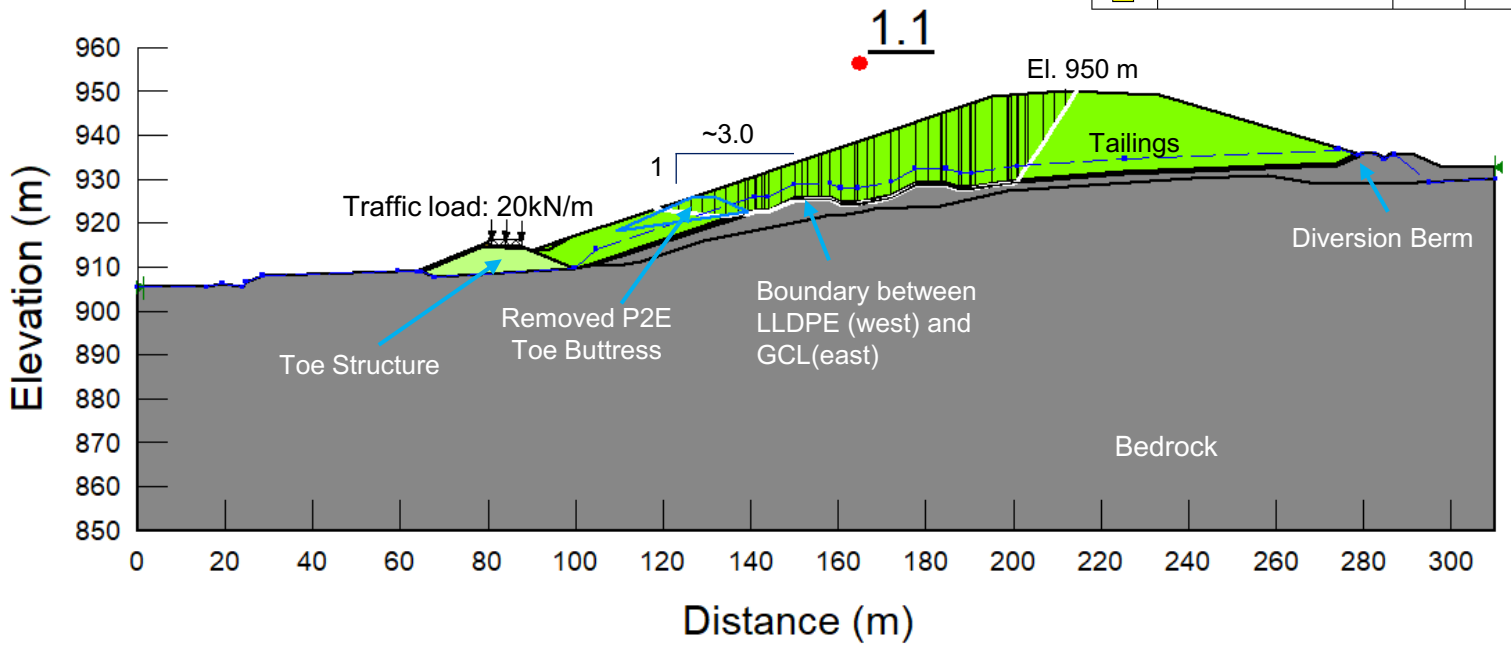
OFFICE: EDMONTON
DATE: February 2026

Appendix D3

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Bedrock				
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	1
	Gravel Drainage Blanket	22.5	0	35	1

Phreatic surface – 3.5 m above Liner



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL into Phase 2 East.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – West (Along the Liner)
Post-Seismic– S3 - Exit Tailings Toe

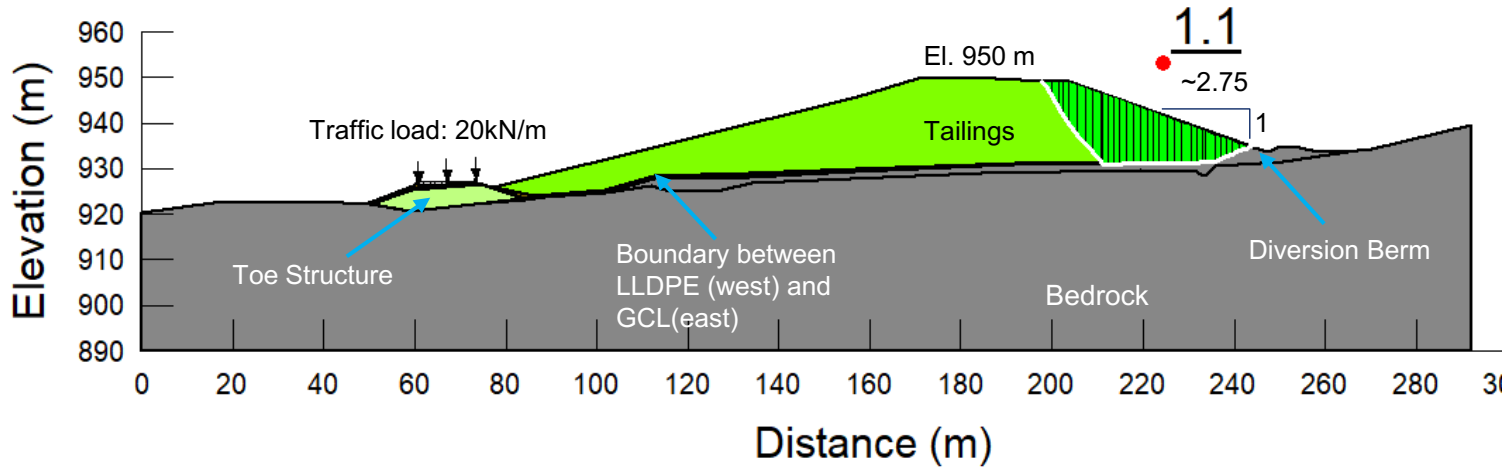
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix D4

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Bedrock				
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	1
	Gravel Drainage Blanket	22.5	0	35	1



Note:

1. The Geosynthetic Clay Liner (GCL) system was used for Phase 2 East.
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section D – East (Along the Liner)
Post-Seismic– S3 - Exit Tailings Toe

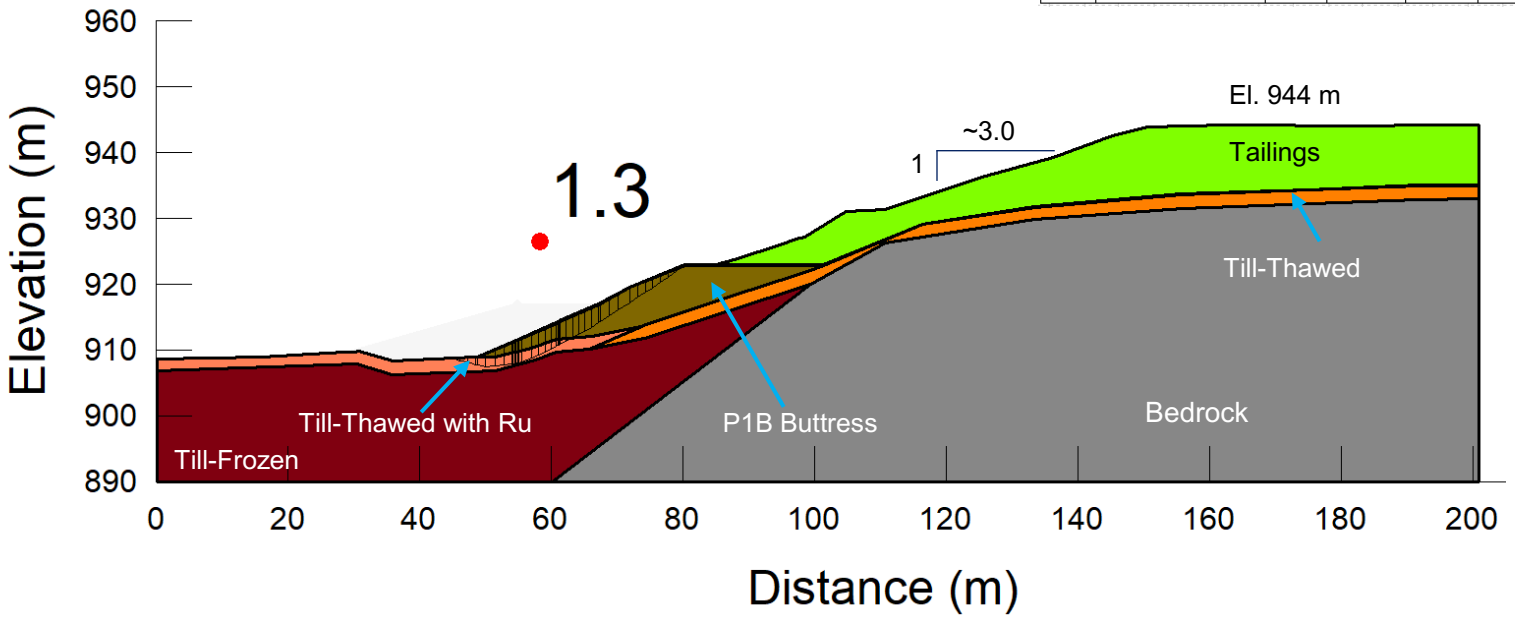
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix D5

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru	Exclude if unsaturated
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1		
	Bedrock				No			
	Buttress Gravel/Cover	22.5	0	35	No			
	Contained Tailings (Toe Structure)	22.5	0	35	No			
	DSTF Tailings	22.5	0	32	No			
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1		
	Till - Ice Poor	17	0	36	No			
	Till - Thawed	19.1	0	36	No	1		
	Till - Thawed (withr Ru)	19.1	0	36	Yes	1	0.15	No



Note:
1. Partially thawed foundation till was assumed only in the P2W area.
2. Ru is pore-pressure ratio

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Partially thawed Static – S2 - Global failure

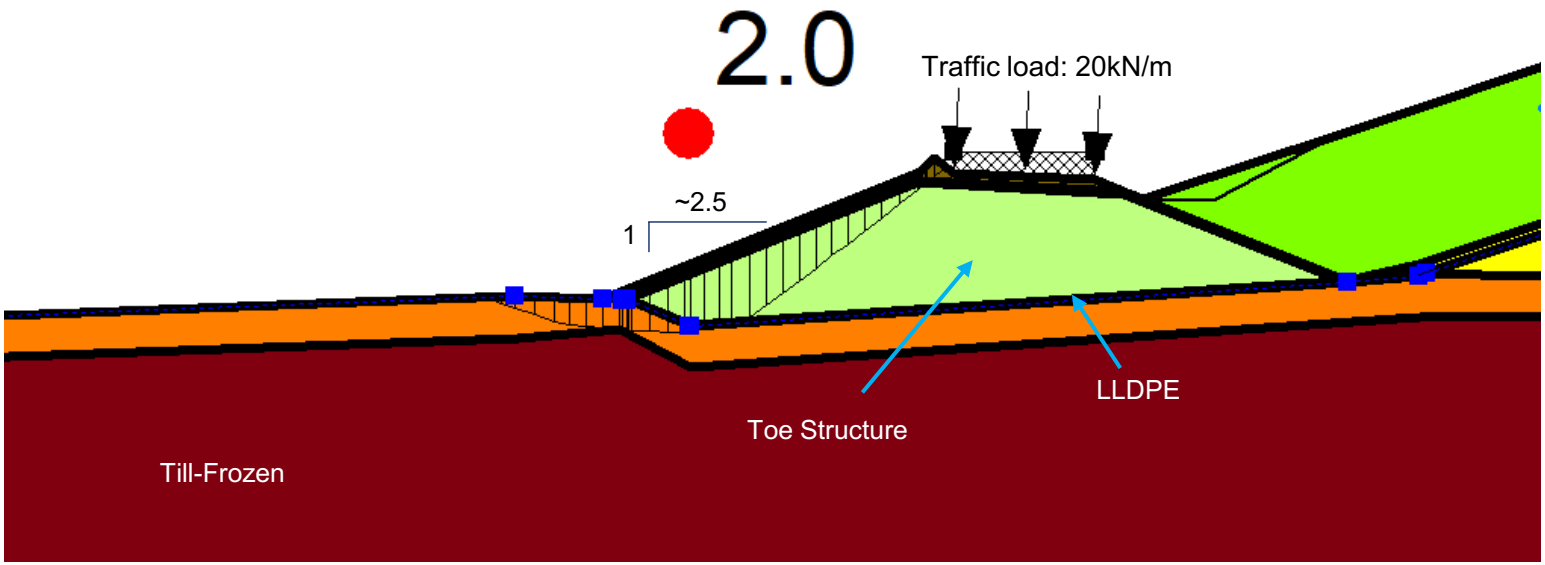
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix D6

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Soil and GCL Liner Interface_Peak	16	0	20	No	1	
	Soil and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Toe Structure (Partially thawed) Static – S2 - Global

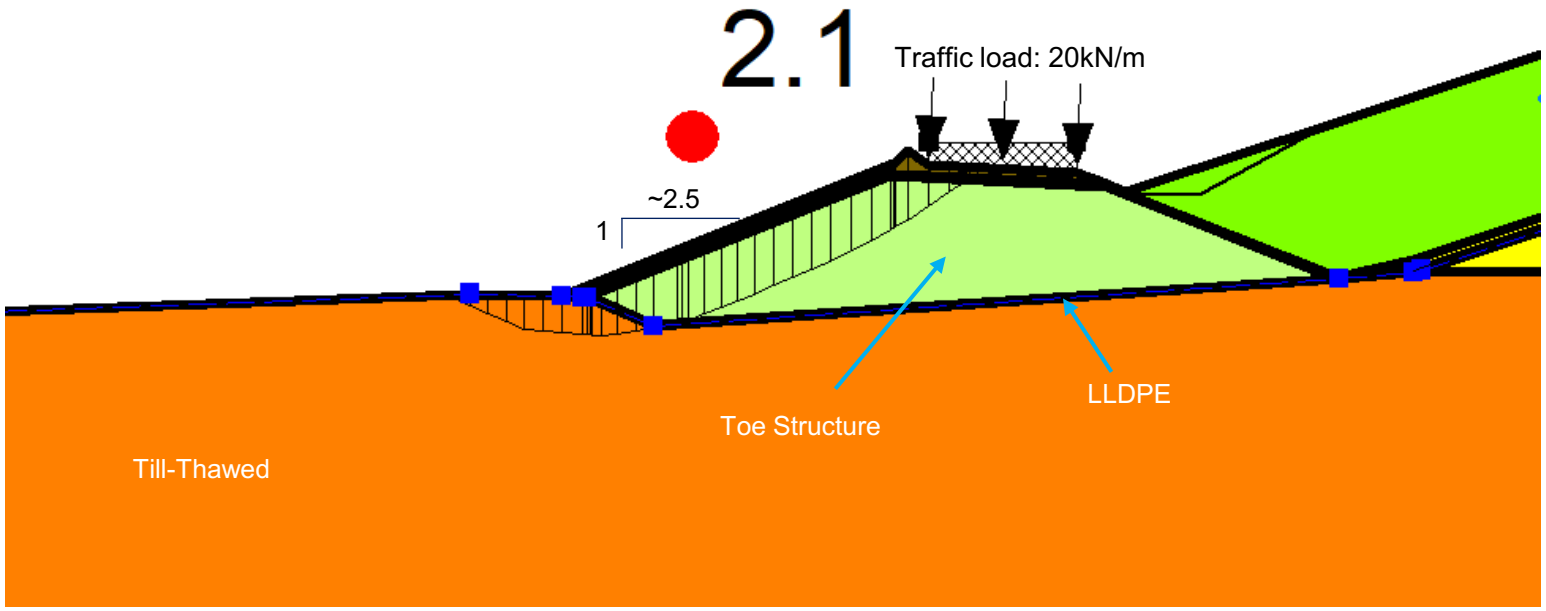
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix D7

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Toe Structure (Fully thawed)
Static – S2 - Global failure

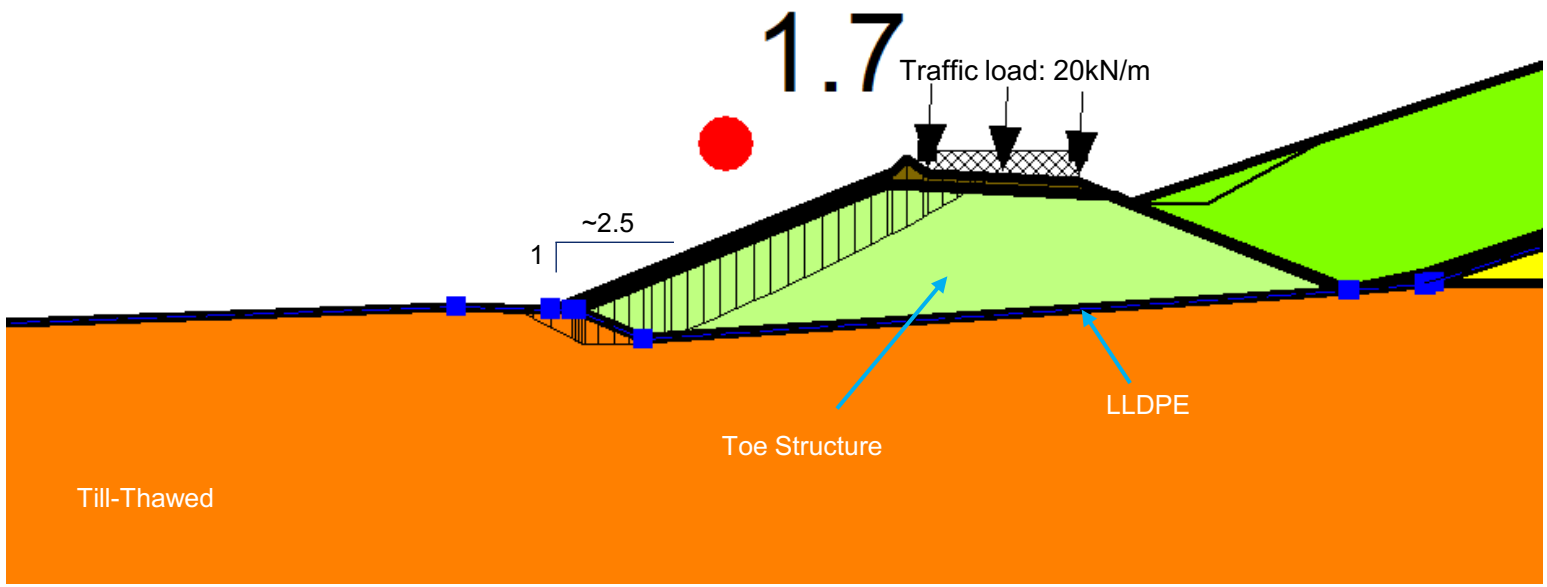
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix D8

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	30	
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3	1
	DSTF Tailings	22.5	0	28	
	Gravel Drainage Blanket	22.5	0	35	1
	Till - Thawed	19.1	0	32	1



Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Toe Structure (Fully thawed) Post-Seismic– S2 -Global

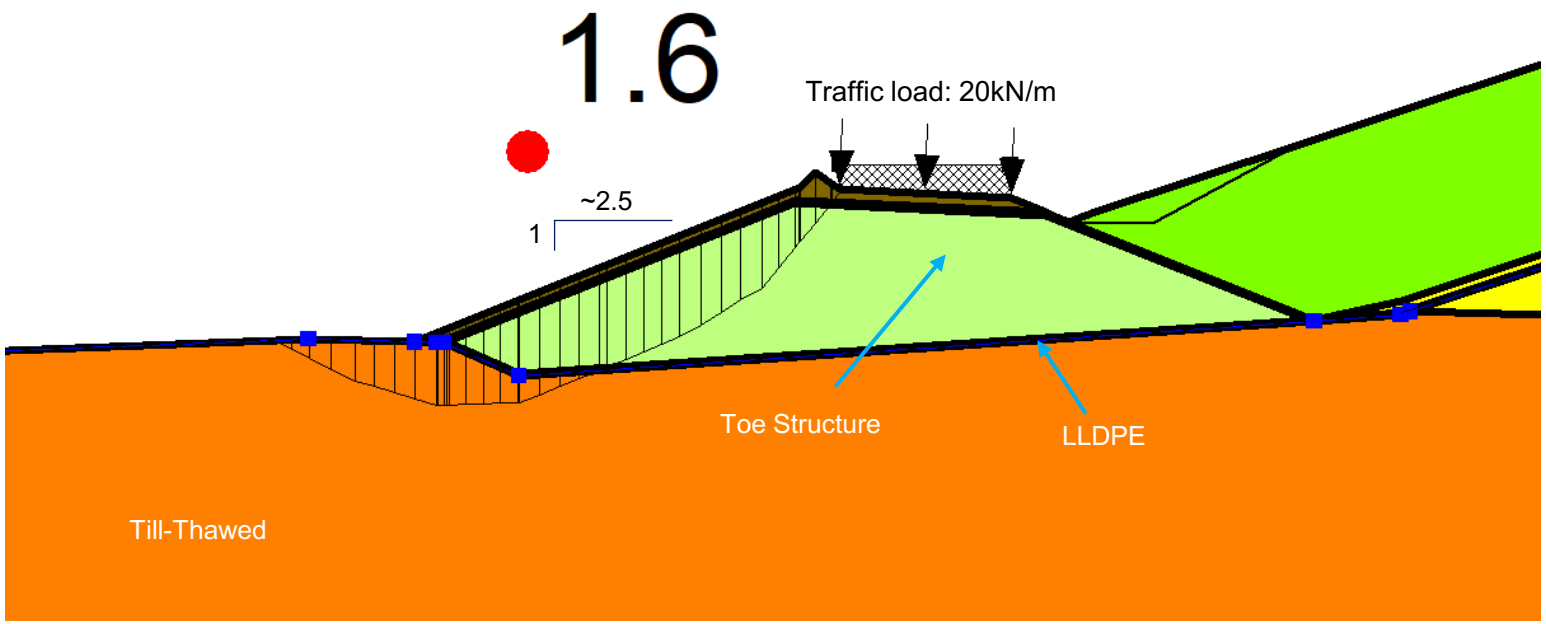
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix D9

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Piezometric Surface
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	1
	Buttress Gravel/Cover	22.5	0	35	
	Contained Tailings (Toe Structure)	22.5	0	35	
	DSTF Tailings	22.5	0	32	
	Gravel Drainage Blanket	22.5	0	35	1
	Non-woven geotextile and geonet Interface_Peak	16	0	20	1
	Till - Thawed	19.1	0	36	1



Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Toe Structure (Fully thawed) Seismic – S2 -Global

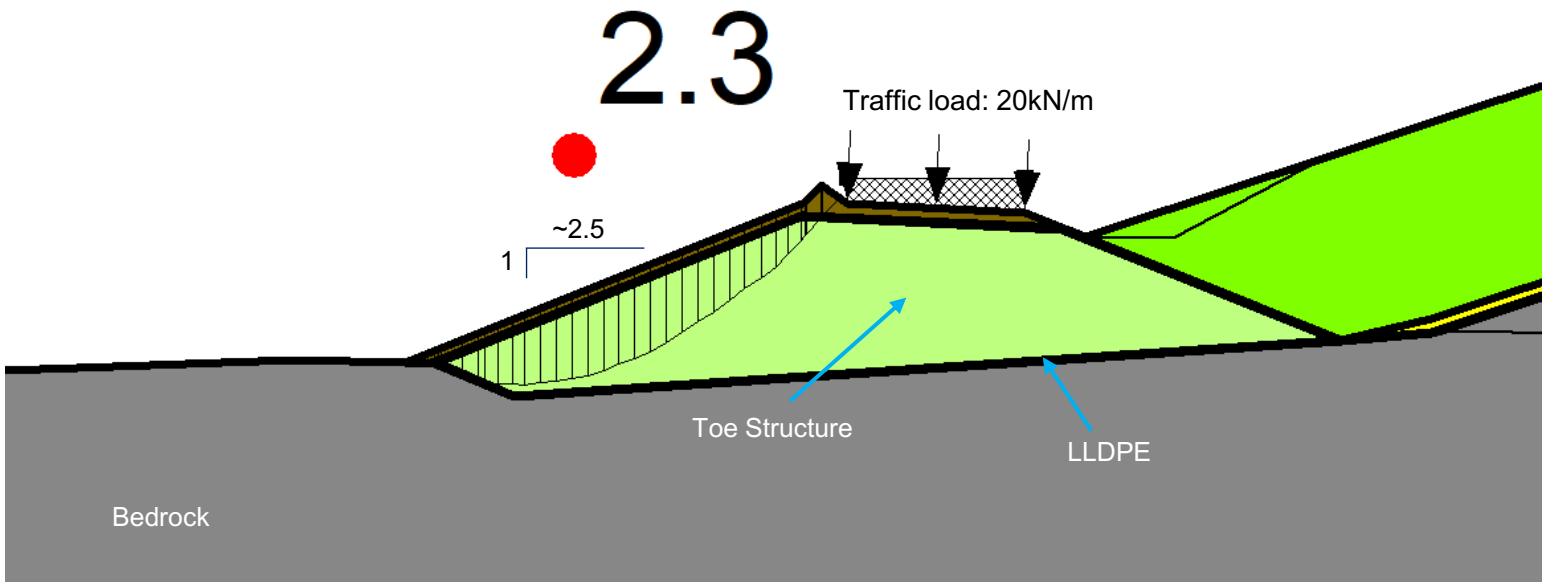
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix D10

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Toe Structure (Along the Liner) Static – S3 - Exit Tailings Toe

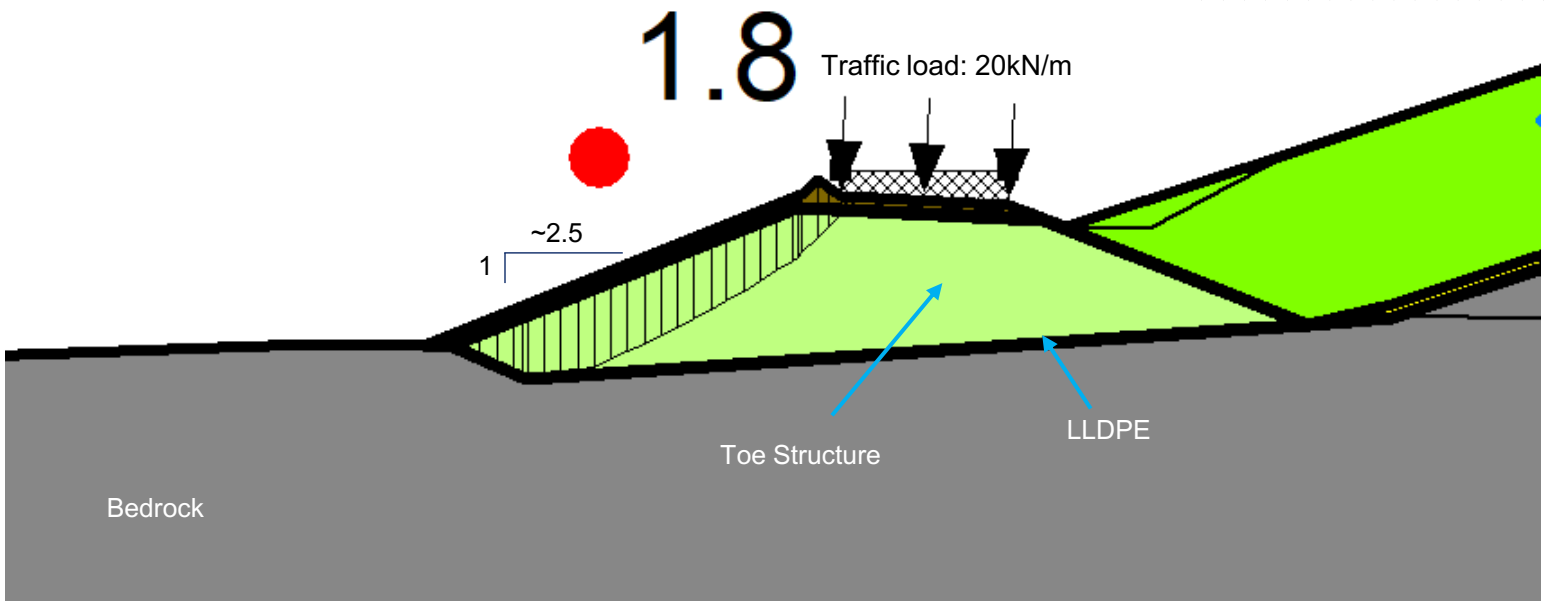
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix D11

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Residual	16	0	26.6
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	30
	Drainage blanket material and GCL Liner Interface_Residual	16	18	3
	DSTF Tailings	22.5	0	28
	Gravel Drainage Blanket	22.5	0	35



Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Toe Structure (Along the Liner)
Post-Seismic – S3 - Exit Tailings Toe

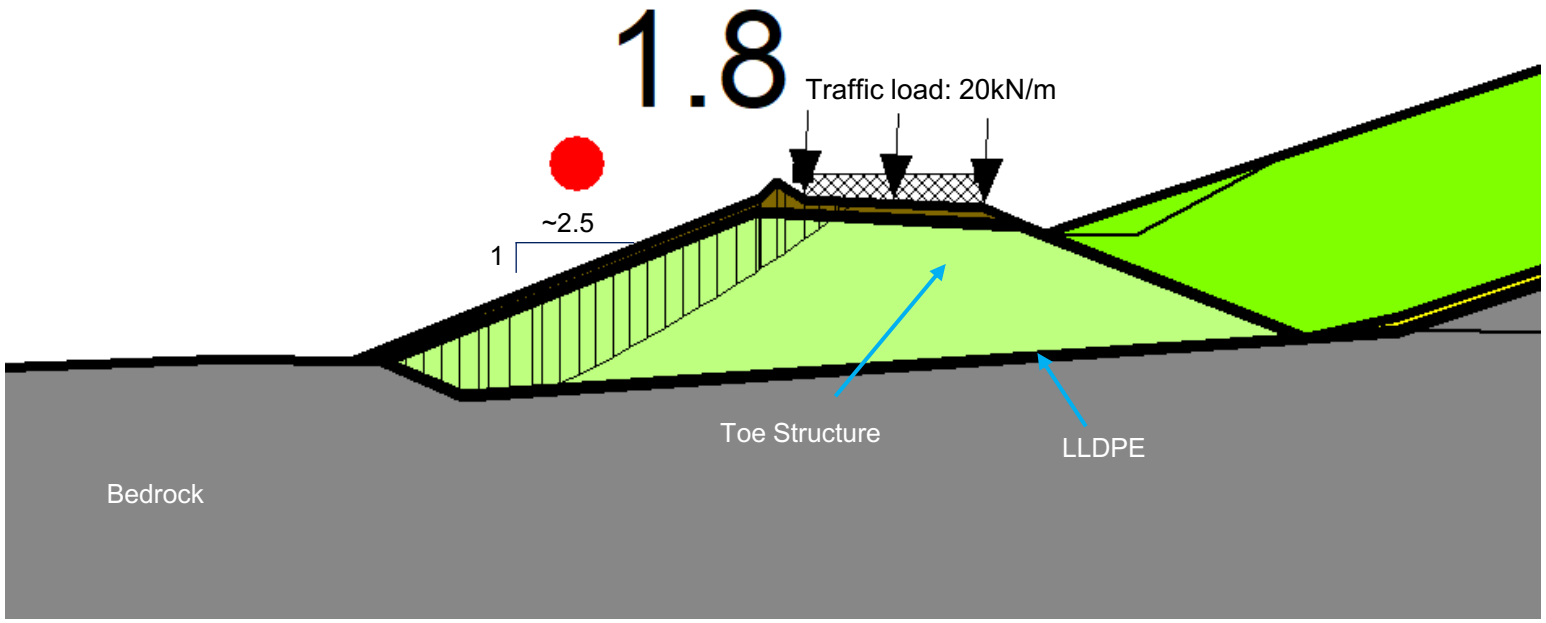
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix D12

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – Toe Structure (Along the Liner)
Seismic – S3 - Exit Tailings Toe

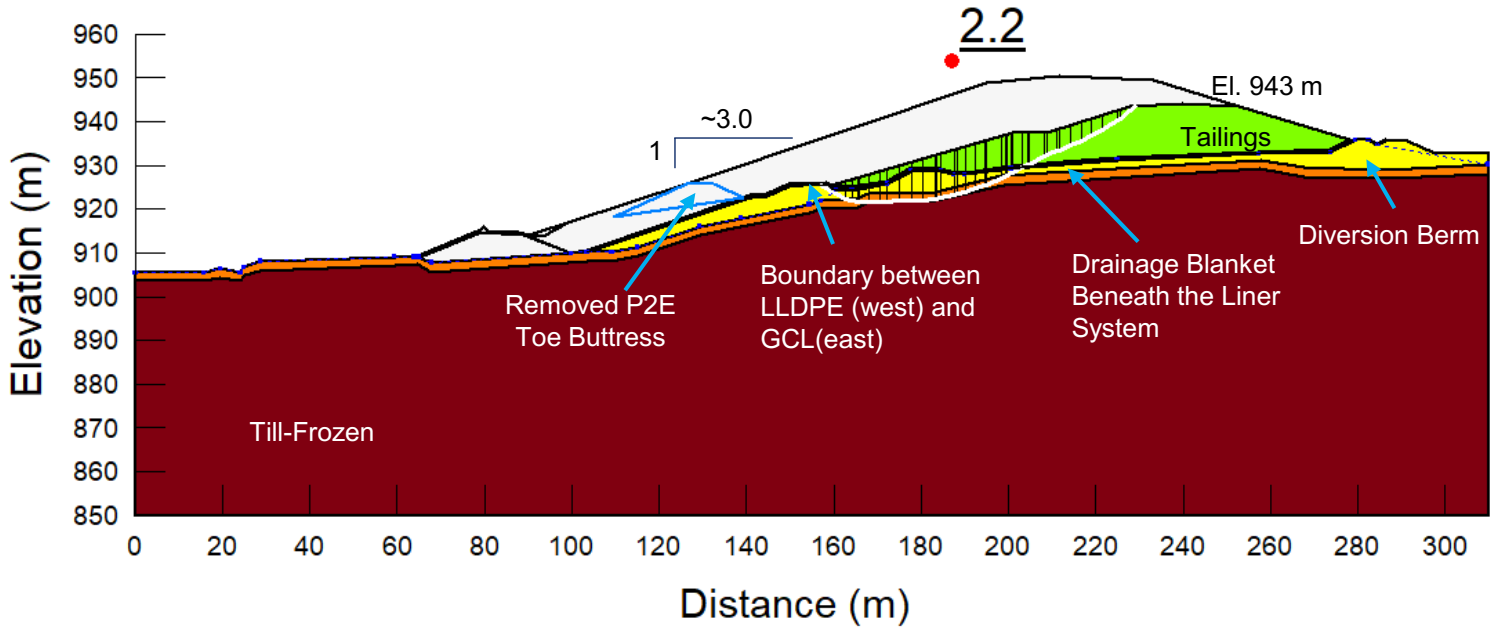
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE	DATE
EDMONTON	February 2026

Appendix D13

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)	Include Ru	Piezometric Surface	Ru
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32	No	1	
	Buttress Gravel/Cover	22.5	0	35	No		
	Contained Tailings (Toe Structure)	22.5	0	35	No		
	DSTF Tailings	22.5	0	32	No		
	Gravel Drainage Blanket	22.5	0	35	No	1	
	Non-woven geotextile and geonet Interface_Peak	16	0	20	No	1	
	Till - Ice Poor	17	0	36	No		
	Till - Thawed	19.1	0	36	Yes	1	0.15



Note:

1. The Geosynthetic Clay. Liner (GCL) system was used for Phase 2 East
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL in Phase 2 East.
3. P2E interim design surface was adopted for tailings surface.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – During Construction (Partially thawed)
Static – S2 -Global

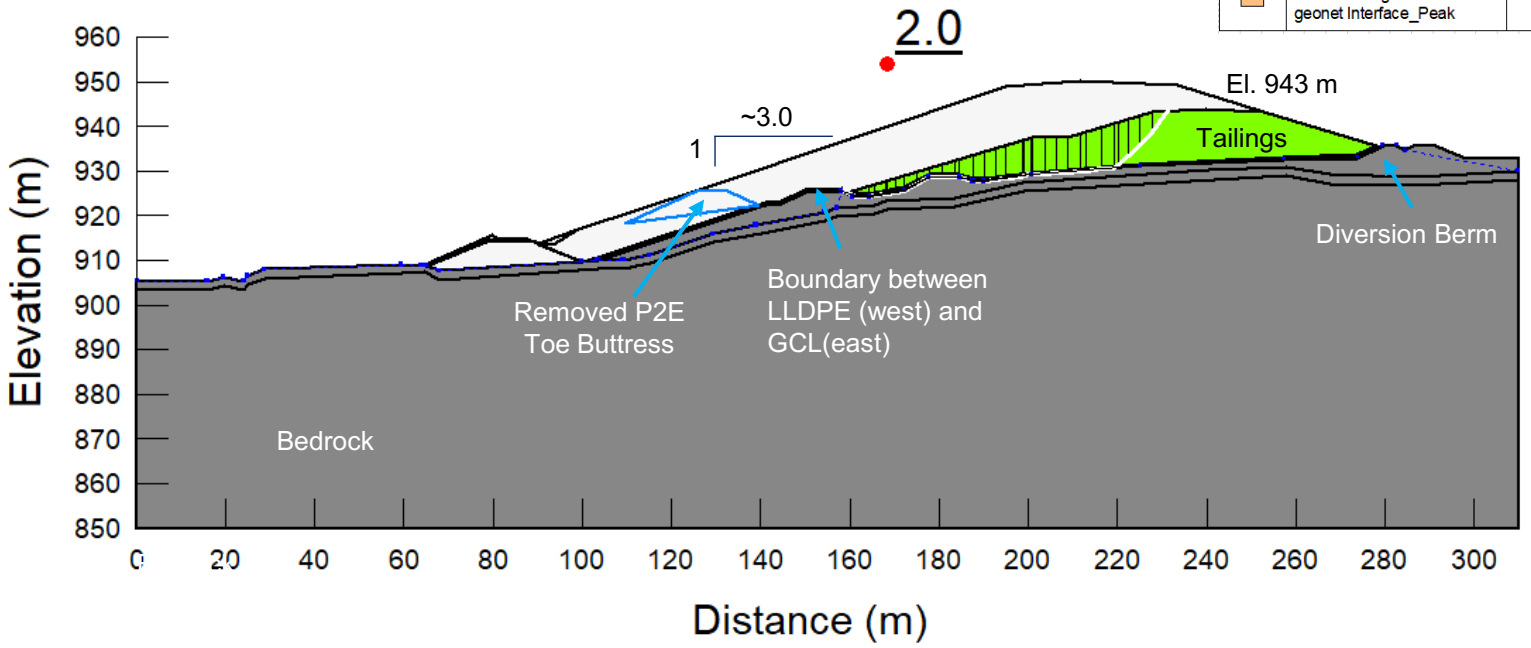
PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix D14

Input Parameters for Slope Stability Analysis

Color	Name	Unit Weight (kN/m³)	Effective Cohesion (kPa)	Effective Friction Angle (°)
	5 mm bedding material and LLDPE Liner Interface_Peak	16	13	32
	Bedrock			
	Buttress Gravel/Cover	22.5	0	35
	Contained Tailings (Toe Structure)	22.5	0	35
	DSTF Tailings	22.5	0	32
	Gravel Drainage Blanket	22.5	0	35
	Non-woven geotextile and geonet Interface_Peak	16	0	20



Note:

1. The Geosynthetic Clay. Liner (GCL) system was used for Phase 2 East
2. The Linear Low-Density Polyethylene (LLDPE) liner system will be used for Phase 2 West and will replace the 15 m GCL in Phase 2 East.
3. P2E interim design surface was adopted for tailings surface.

Q:\Whitehorse\Data\0201 Geoslope\WARC04673-04 DSTF P2W\03 Model\IFR_V1

LEGEND

NOTES

STATUS
ISSUED FOR USE

CLIENT
Hecla MINING COMPANY

TETRA TECH

PHASE II EXPANSION DETAILED DESIGN DRY STACK TAILINGS FACILITY AT KENO HILL DISTRICT MILL SITE

Section A – During Construction (Along the Liner)
Static – S3 - Exit Tailings Toe

PROJECT NO.	DWN	CKD	APVD	REV
704-ENG.WARC04673-04	YL	HX		

OFFICE: EDMONTON
DATE: February 2026

Appendix D15