WASTE MANAGEMENT OF CANADA CORPORATION

TWIN CREEKS ENVIRONMENTAL CENTRE LANDFILL OPTIMIZATION

GEOTECHNICAL FEASIBILITY REVIEW - FINAL ADDENDUM

OCTOBER 24, 2025

FINAL REPORT

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FINAL REPORT

PROJECT NO.: CA0034898.5617
DATE: OCTOBER 24, 2025

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October 24, 2025

FINAL REPORT

WASTE MANAGEMENT OF CANADA CORPORATION
100 York Boulevard, Suite 300
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Attention: Larry Fedec, HDR

Dear Mr. Fedec:

Subject: **Twin Creeks Environmental Centre Landfill Feasibility Addendum - Alternative Method 2**

WSP is pleased to provide the Geotechnical Feasibility Review Addendum (FINAL Submission) for Client review and comments.

Should you require further information concerning this report, please contact the undersigned at 705-270-0158, or by email to Steve.Ash@wsp.com

Yours sincerely,

J. Stephen Ash, P.Eng., P.Geo.
Sr. Geotechnical Engineer

Encl.
cc: Larry Fedec, HDR
WSP ref.: CA0034898.5617

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REVISION HISTORY

FIRST ISSUE

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Ahmed Abdelaziz, M.Eng., P.Eng.
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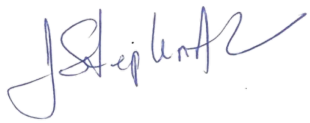

October 24th, 2025

J. Stephen Ash, P. Eng., P. Geo.
Lead Principal Geotechnical Engineer

Date

APPROVED BY

Date

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The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

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In preparing this report, WSP has relied in good faith on information provided by others, as noted in the report. WSP has reasonably assumed that the information provided is correct and WSP is not responsible for the accuracy or completeness of such information.

Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, construction, planning, development, etc.

This limitations statement is considered an integral part of this report.

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1 INTRODUCTION

WSP Canada Inc. (WSP) was engaged by WM to prepare an Addendum to the Geotechnical Feasibility report dated May 4, 2021 for the expansion of the Twin Creeks Environmental Centre Landfill near Warwick, Ontario. As part of this scope of work, no site investigations have been considered since it is assumed the background documentation contains adequate information to perform the assessment.

The purpose of this Addendum is to evaluate the feasibility of Alternative Method 2 as described in the Conceptual Design Report, dated November 15, 2024. Alternative 2 considers a vertical increase within the approved waste disposal footprint area to a maximum elevation of 319 meters above sea level (masl). The side slopes will transition from 4H:1V to 2.5H:1V starting at elevation 250 masl and continue to elevation 313 masl, and then transition to 5% slope until reaching the peak elevation of 319 masl.

2 ANALYTICAL APPROACH

Our Geotechnical Feasibility Review Addendum involved the following tasks:

— Analyse waste loadings for staged construction and perform 2D settlement/deformation and slope stability assessments. Two stages were considered in the RS2 model, including: 1) waste deposited to proposed grades; and 2) seismic load applied to evaluate liquefaction potential / strength loss (note: the seismic load will be determined from the peak horizontal ground acceleration (PGA) as published on Natural Resources of Canada website / hazard calculator).
— Identify geotechnical concerns with respect to landfill basal pressure gradients and potential settlements, and factors of safety for proposed external slopes, which could potentially affect engineering design decisions and feasibility of the proposed expansion.
— Sensitivity analysis: critical parameters affecting applied loadings and deformation behavior, and the factor of safety for slopes were varied within an inferred range to assess the estimated “worst, best and intermediate” response of the landfill to the proposed load increase.

3 RESULTS

3.1 NUMERICAL MODELLING

3.1.1 INPUTS

Evaluated design cross-section is included as **Drawing 2.2** (Alternative Method 2) of Conceptual Design Report report. The cross-section indicates original grade (based on topographic survey), base of cell excavation (liners), existing and approved design profiles, and the expanded profiles of the Landfill.

Based on borehole logs and geotechnical report information (i.e., Alston, 2006) the subsurface soil profile below the Landfill base footprint comprises approximately 15 m of Rannoch Till, a predominantly brown to grey, stiff consistency, silty clay with traces of sand and gravel. The till layer reportedly contains occasional sand seams, and a relatively thin, basal silty sand layer may also exist just above the bedrock. The bedrock was reported at a typical elevation of approximately 210 masl below the site. Based on geological mapping (OGSEarth, 2021) the bedrock comprises black and green shale and siltstone of the Paleozoic era Kettle Point Formation.

For the purposes of numerical modelling, the Landfill design cross-sections were simplified into the following three primary layers (as identified from top to bottom):

— Landfill Waste (including approximately 10% daily and final cover material)
— Rannoch Till Subsoil
— Bedrock

Landfill base liners and drainage layers were ignored in the modelling analysis as these materials are very thin as compared to the overall profile, and their effect on the results is negligible. It is also noted that the compacted clay liner material has been sourced from the till layer onsite; therefore, engineering properties and predicted behavior are expected to be similar to the existing native soil below.

We understand that groundwater (piezometric) levels at the site are close to the original ground surface (~238 masl). Within the Landfill area, groundwater and leachate are captured by the primary drainage layer. For the purposes of this report no internal leachate mound is expected to develop (i.e., leachate level is reportedly maintained at the primary drainage layer elevation).

A summary of selected engineering properties used in the numerical (FE) modelling analysis is provided in **Table 3-1**.

Table 3-1 Summary of Assigned Material Properties for Modelling

MATERIAL	PARAMETER	TYPICAL RANGE[1]	ASSIGNED MODELLING VALUES
Landfill Waste (incl. daily cover material)	Unit Weight	12 - 15 kN/m^3	12 and 15 kN/m^3 (as lower and upper bounds)
	Effective Internal Friction Angle	30 - 35 degrees	30 degrees
	Apparent Effective Cohesion	0 – 10 kPa	0
	Material Type		Elastic, Drained
Rannoch Till Subsoil	Unit Weight	19 – 22 kN/m^3	20 kN/m^3
	Effective Internal Friction	30 – 35 degrees	32 degrees
	Apparent Effective Cohesion	0 – 25 kPa	10 kPa
	Deformation Modulus (M)	10 – 35 MPa	13 MPa
	Over-Consolidation Ratio	3 to 6	--
	Pre-consolidation Pressure	300 – 450 kPa	--
	Material Type		Plastic, Drained
Bedrock	Unit Weight	26 - 27.5 kN/m^3	27 kN/m^3
	Deformation (Young's) Modulus	varies	20 GPa
	Poisson's Ratio	0.2 to 0.3	0.25
	Material Type		Elastic, Drained

Note 1: Typical Range based on limited literature reviews and available background data (including Alston, 2006).

While the upper and lower bounds of landfill waste unit weight are considered in the settlement and stability analysis to follow in this report, the upper bound (15 kN/m^3) is expected to govern. The lower bound unit weight (12 kN/m^3) is used for evaluating the geonet/pipe loading, which is not discussed in this report.

A Mohr-Coulomb material constitutive model was used, with field stress and gravitational body forces applied. The RS2 software also requires a convergence value to achieve equilibrium. For all the analyses described below, including the Strength Reduction Factor (SRF) analysis, a convergence value of 0.005 was assumed. This is within the recommended modelling convergence range of 0.001 to 0.01. Also, the "Enhanced Absolute Energy" convergence method was used.

RS2 facilitates analysis of staged construction, starting from the initial stress (pre-development) condition and ending at the final Landfill geometry. The following summarizes the construction stages that were considered:

- Stage 1 Initial Stress State: considers original land topography with no surcharge loads applied (i.e., allowing the model to consider the initial field stress state).
- Stage 2 Excavation: excavation of Landfill cell to a depth of approximately 10 m to 13 m (i.e., unloading stress condition).
- Stage 3 Approved Design Profile: Landfill at approved level (peak height at 279 masl).
- Stage 4 Proposed Expansion Stage 1: Proposed expansion stage 1 (peak height at 290 masl).
- Stage 5 Proposed Expansion Stage 2: Proposed expansion stage 2 (peak height at 290 masl).
- Stage 6 Proposed Expansion Stage 3: Proposed expansion stage 3 (peak height at 317 masl).
- Stage 7 Proposed Expansion Stage 4: Proposed expansion stage 4 (final expansion stage, peak height at 319 masl).

3.1.2 SETTLEMENT

The Landfill base design is site specific and comprises a double compacted clay liner with two (2) separate leachate drainage layers. Both primary and secondary leachate collection systems have been designed to comply with Ontario Regulation 232/98 (Ontario Landfill Design Standards). The Landfill base was designed with a 0.5% minimum grade toward the leachate collectors, which are spaced such that the drainage path for leachate is no longer than 50 m for the primary collectors and 100 m for the secondary collectors. The Landfill base was designed to operate adequately under the anticipated post-settlement conditions. For this reason, the cell floor was divided into three (3) drainage zones as follows:

- East Segment – minimum slope of 0.5% to meet O. Reg. 232/98
- Central Segment – slightly steeper than east section (i.e., medium slope) at 0.625%
- West Segment – steeper than central section and almost twice as steep as the east zone, approximately 1.0% depending on location

For the purposes of this Feasibility Review, settlements were calculated at intervals along the base of Landfill for the four stages of the landfill expansion. With respect to parameters given in **Table 3-1**, calculated settlements are relatively sensitive to assigned values of unit weight of waste and the deformation modulus of the subsoil. The models have been computed for inferred upper and lower bounds of the unit weight of waste (i.e., 12 and 15 kN/m^3), and the deformation modulus of the subsoil has been assigned at 13 MPa to provide consistency with the 2006 Geotechnical Design Report (as discussed further below).

Computed settlements for the final expansion stages of Alternative Method 2 are presented as **Figures 1 and 2** of **Appendix A** (i.e., RS2 material query plots). Computed settlements of the Landfill base under the toe and center of the waste mound at the end of each expansion stage are summarized in **Table 3-2** as follows.

Table 3-2 Summary of Computed Settlement

	WASTE UNIT WEIGHT = 12 KN /M³		WASTE UNIT WEIGHT = 15 KN /M³	
Landfill Profile:	Settlement under Landfill Toe (mm)	Settlement under Landfill Centre (mm)	Settlement under Landfill toe (mm)	Settlement under Landfill Centre (mm)
Expansion Stage 1	288	388	359	485
Expansion Stage 2	289	460	362	575
Expansion Stage 3	287	558	359	698
Expansion Stage 4 (final)	289	674	361	842

The post-settlement average slopes for the previously defined zones of the cell floor as determined by the assumed lower and upper bounds of the waste loading are presented in **Table 3-3** as follows.

Table 3-3 Summary of Estimated Base Slopes at Final Expansion Stage

WASTE UNIT WEIGHT	EAST SEGMENT	CENTRAL SEGMENT	WEST SEGMENT
Base Design	0.5%	0.625%	1.0%
12 kN/m^3	0.738%	0.612%	0.800%
15 kN/m^3	0.797%	0.610%	0.749%

In summary, it is concluded that for the Alternative Method 2, cell floor settlement will not have a significant effect on functionality of the leachate collection systems. Overall slope in a westerly direction will be maintained, and leachate will continue to drain toward the designated withdrawal points.

3.2 GLOBAL STABILITY

Stability safety factors were obtained in the limit equilibrium software Slide2 using the Morgenstern-Price method. The analysis was conducted with the apparent effective cohesion and internal effective friction angles in Table 3-1, with the exception of the bedrock, which was represented as an infinitely strong material for the purposes of this analysis.

Using the 2020 National Building Code of Canada Seismic Hazard Tool, and assuming a site classification C (for very dense soils with S_u > 100kPa) a horizontal seismic loading of 0.0053g has been used in the pseudo-static analysis, corresponding to 50% of the Peak Ground Acceleration (PGA) for a 2% probability of exceedance in 50 years.

3.2.1 STABILITY DURING EXPANSION STAGES

Stability during staged expansion stages was assessed in Slide2 with the unit weight of the waste differing at either 12 or 15 kN/m^3 for both drained and undrained conditions in the Rannoch Till layer, and under static and pseudo-static conditions. An undrained shear strength of 190 kPa was used for the Rannoch Till layer. **Table 3-4** and **Table 3-5** summarize the results of the stability analysis of the staged construction with undrained and drained conditions in the Rannoch Till layer, respectively.

Table 3-4 Summary of Stability During Staged Construction under Undrained Conditions

	WASTE UNIT WEIGHT = 12 KN /M³		WASTE UNIT WEIGHT = 15 KN /M³	
Landfill Profile:	**Safety Factor, Static Conditions**	**Safety Factor, Pseudo-Static Conditions**	**Safety Factor, Static Conditions**	**Safety Factor, Pseudo-Static Conditions**
Expansion Stage 1	1.54	1.51	1.52	1.50
Expansion Stage 2	1.54	1.51	1.52	1.50
Expansion Stage 3	1.51	1.48	1.50	1.47
Expansion Stage 4 (final)	1.51	1.48	1.47	1.47

Table 3-5 Summary of Stability During Staged Construction under Drained Conditions

	WASTE UNIT WEIGHT = 12 KN /M³		WASTE UNIT WEIGHT = 15 KN /M³	
Landfill Profile:	**Safety Factor, Static Conditions**	**Safety Factor, Pseudo-Static Conditions**	**Safety Factor, Static Conditions**	**Safety Factor, Pseudo-Static Conditions**
Expansion Stage 1	1.54	1.51	1.52	1.50
Expansion Stage 2	1.54	1.51	1.52	1.50
Expansion Stage 3	1.51	1.48	1.50	1.48
Expansion Stage 4 (final)	1.51	1.48	1.50	1.48

The results of the Slide2 analysis during expansion stages 1 through 4 show the safety factor remains at about 1.5 during each expansion stage under both static and seismic conditions. The critical failure surface remains fairly shallow at each stage and is relatively unchanged when the unit weight of the waste is increased from 12 kN/m^3 to 15 kN/m^3. The outputs of the Slide2 analysis are provided in Figures 3 through 26 in Appendix A.

3.2.2 STABILITY SENSITIVITY UNDER DIFFERING WASTE UNIT WEIGHT AND RANNOCH TILL STRENGTH CONDITIONS

Sensitivity analysis was conducted to compute the safety factor with the unit weight of the waste differing at either 12 or 15 kN/m^3 for both drained and undrained conditions in the Rannoch Till layer, and under static and Pseudo-Static conditions. The undrained shear strength for the Rannoch till layer was found to be greater than 190 kPa by field vane testing, and in the range of 100 to 150 kPa in the lab via undrained unconfined compression testing according to the report by Alston, 2006.

The outputs of the limit equilibrium analysis are presented as Figures 27 to 38 in Appendix A. Although the critical safety factor for static loading conditions was computed was 1.505 and 1.496 under waste loads of 12 kN/m^3 and 15 kN/m^3, respectively, it should be noted that the critical failure path is relatively shallow and does not pass through the landfill base or toe. The results of the sensitivity analysis are summarized in **Table 3-6** as follows.

Table 3-6 Summary of Stability Sensitivity Analysis

	WASTE UNIT WEIGHT = 12 KN /M^3		WASTE UNIT WEIGHT = 15 KN /M^3	
Rannoch Till Drainage Conditions	**Safety Factor, Static Conditions**	**Safety Factor, Pseudo-Static Conditions**	**Safety Factor, Static Conditions**	**Safety Factor, Pseudo-Static Conditions**
Drained	1.51	1.48	1.50	1.48
Undrained (100 kPa peak undrained shear strength)	1.22	1.20	1.09	1.07
Undrained (190 kPa peak undrained shear strength)	1.51	1.48	1.47	1.47

The results of the Slide2 sensitivity analysis show the safety factor is relatively sensitive to undrained strength of the till layer. On the low end of the lab-obtained peak undrained shear strength of 100 kPa, the seismic safety factor is estimated to be 1.20 and 1.07 for waste load conditions of 12 and 15 kN/m^3, respectively. However, on the low end of the field-obtained peak undrained shear strength of 190 kPa, the seismic safety factor is estimated to be 1.48 and 1.47 for waste load conditions of 12 and 15 kN/m^3, respectively. Furthermore, additional analysis was conducted in RS2 to determine the ground response to the applied PGA of 0.0053g. The relatively small seismic load is expected to produce no additional excess pore water pressure, and shear strains less than 0.0004 mm/mm in the clay till layer. The outputs of the RS2 seismic analysis are provided in figures 39 & 40 in Appendix A.

Given the absence of excess pore water pressure and minimal shear strain, the clay till layer is expected to have a drained response in the event of a design earthquake. The minimal seismic load on the foundation soils and the lack of development of excess pore water pressure presents no concern for liquefaction conditions. For such soils that exhibit small or no changes in pore pressure under undrained loading (e.g. Figure 39 of Appendix A), and barring any unexpected changes in soil structure, undrained strength after an earthquake cyclic loading event will be equal to undrained strength before the event (Kramer, 1996). Therefore, the static safety factors for the Alternative Expansion Method 2 are expected to be 1.51 and 1.50 under waste loads of 12 and 15 kN/m^3, respectively, and the seismic safety factors are expected to be 1.48 under both load cases.

The values are satisfactory for proposed 2.5H:1V slopes, as compared to typical target values in the order 1.3 to 1.5 for static stability conditions.

3.2.3 STABILITY SENSITIVITY UNDER INCREASED LEACHATE HEAD

The development of a leachate mound can be evaluated with regards to landfill stability during extreme weather events; however, the proposed landfill expansion does not include any open liner areas to allow for infiltration of surface water to the leachate collection system. Therefore, an extreme weather event is not expected to produce any mounding effect on the liner. Furthermore, the Hydrological Evaluation of Landfill Performance (HELP) model detailed in the Conceptual Design Report found the current leachate management system is under-utilized and maintains leachate head below the maximum limits in the ECA. This further mitigates the risk of leachate mounding conditions, and the leachate collection system can accommodate an increase in leachate head without mounding. Finally, the critical failure surfaces identified in the Slide2 limit equilibrium analyses are relatively shallow and do not pass through the landfill base or liner; therefore, any reasonable increase in leachate head will not reduce the computed safety factors previously discussed.

For clarity, stability sensitivity was evaluated for leachate mound heights ranging from 0.0 m to 0.3 m above the liner, consistent with the operational and regulatory head limits specified in the landfill's ECA.

4 CONCLUSION

In conclusion, this geotechnical feasibility review has determined that the proposed Alternative Method 2 expansions for the Twin Creeks Landfill is acceptable with respect to:

— Post-settlement Landfill base grades meeting O. Reg. 232/98 requirements and maintaining acceptable leachate collection in the primary drainage layer;
— Stability of the final 2.5H:1V maximum final slopes and peak profile height.

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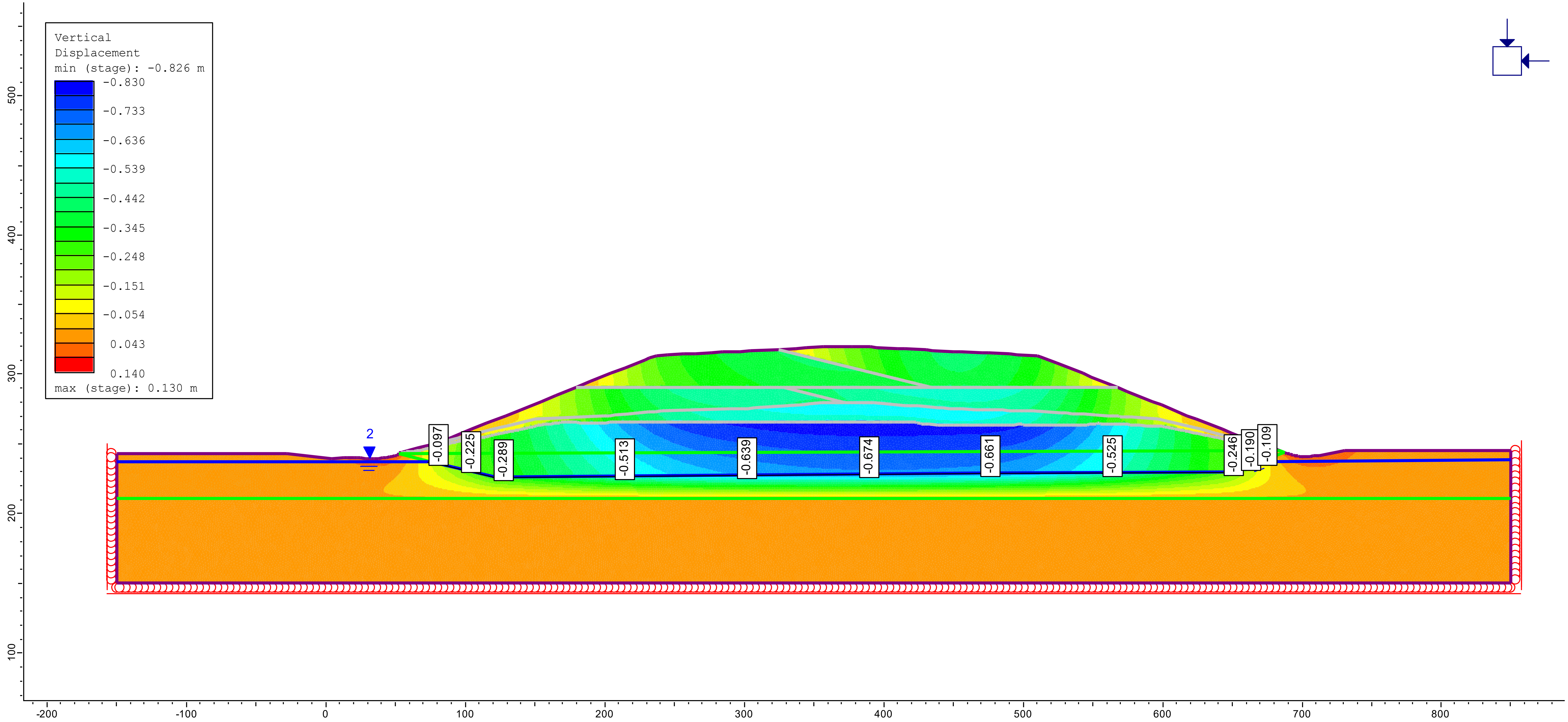
— Assessment of Geotechnical Design Requirements, New Landfill Facility Warwick, Ontario, Alston Associates, Ref. No. 98-133, July 31, 2006.
— Development and Operations Report Warwick Landfill Expansion (Volume 2 of 3), Henderson Paddon & Associates, March 2008.
— Geotechnical Earthquake Engineering (Kramer, 2006), Prentice Hall ISBN 0-13-374943-6

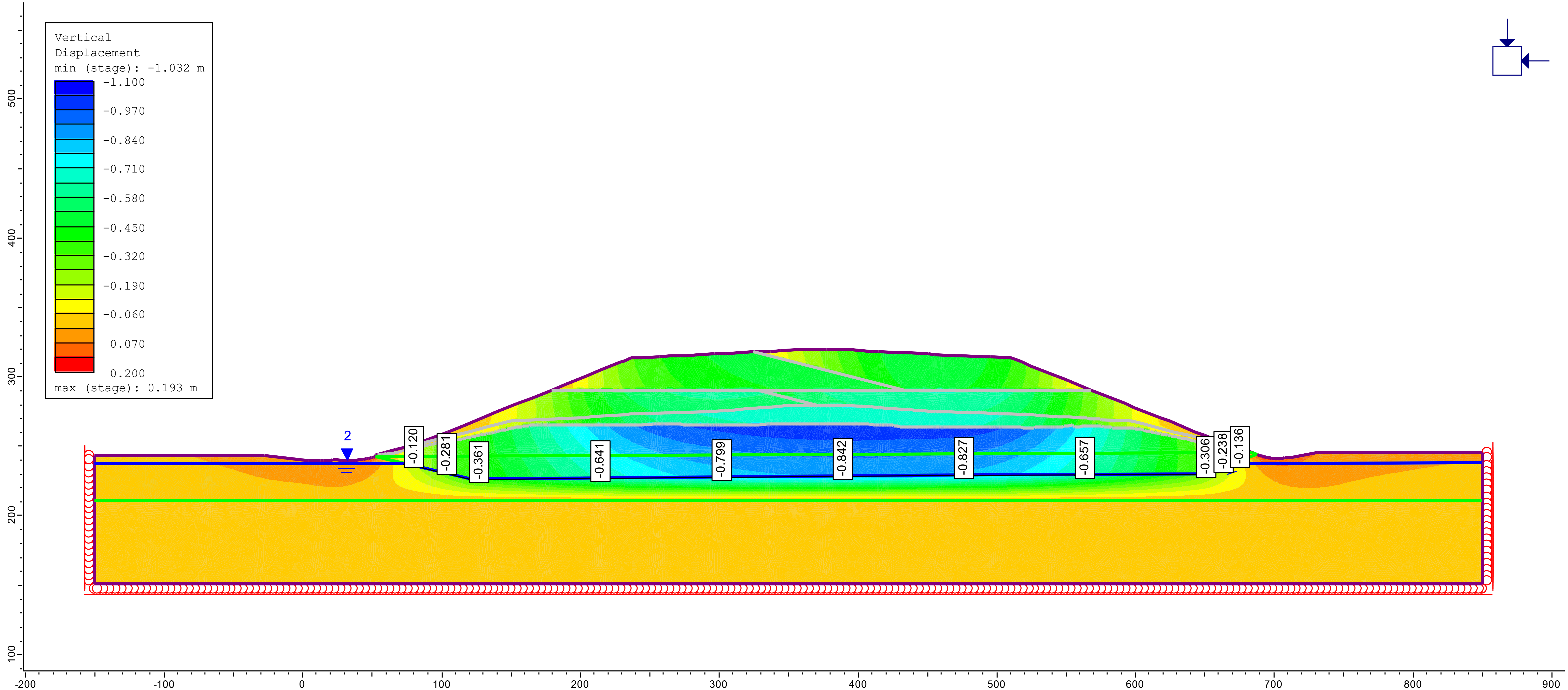
APPENDIX

A

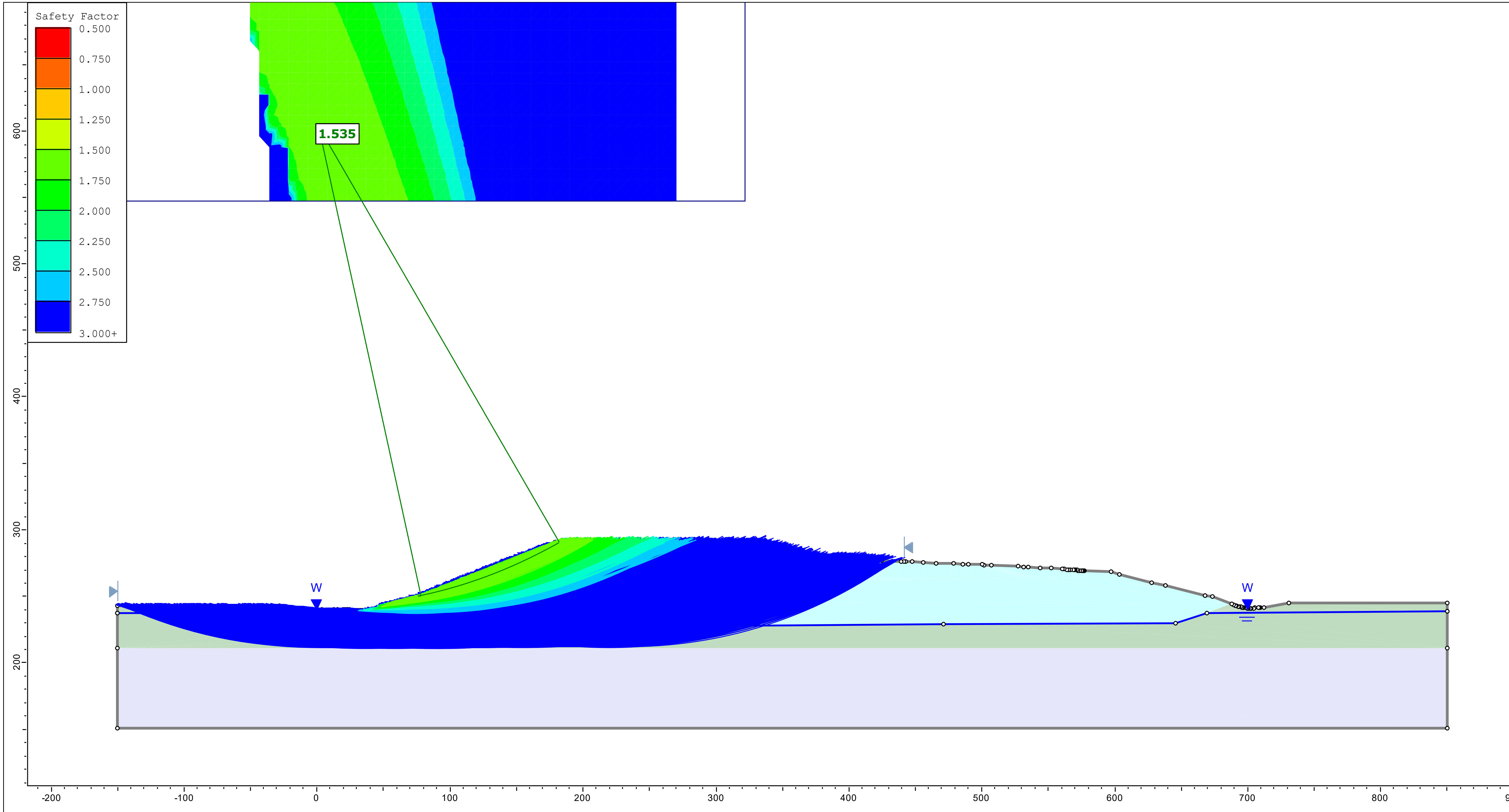
FIGURES 1 TO 40



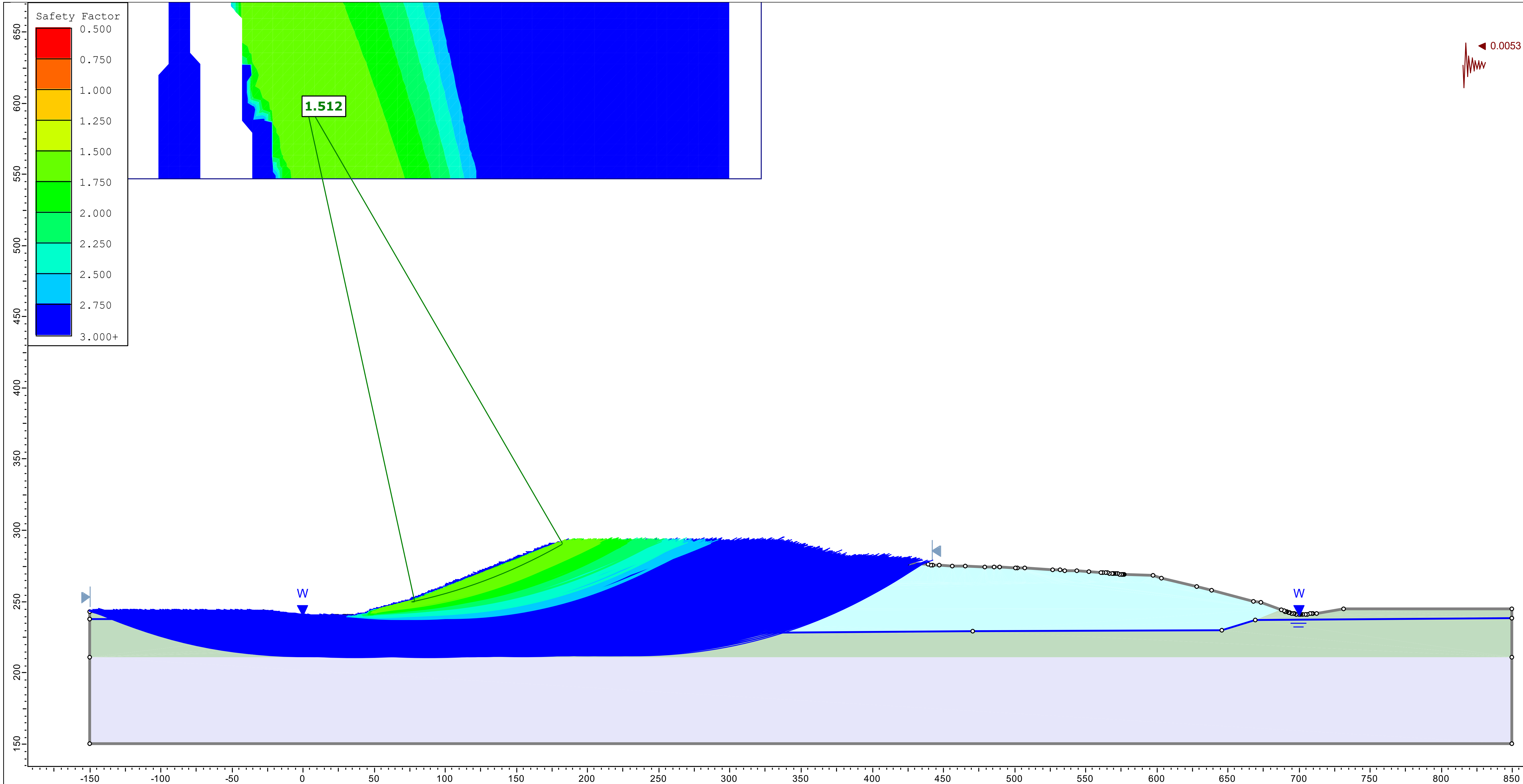
Client :	Waste Management of Canada Corporation	Figure 1
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Final Expansion Stage – vertical displacement with waste at 12 kN/m^3	



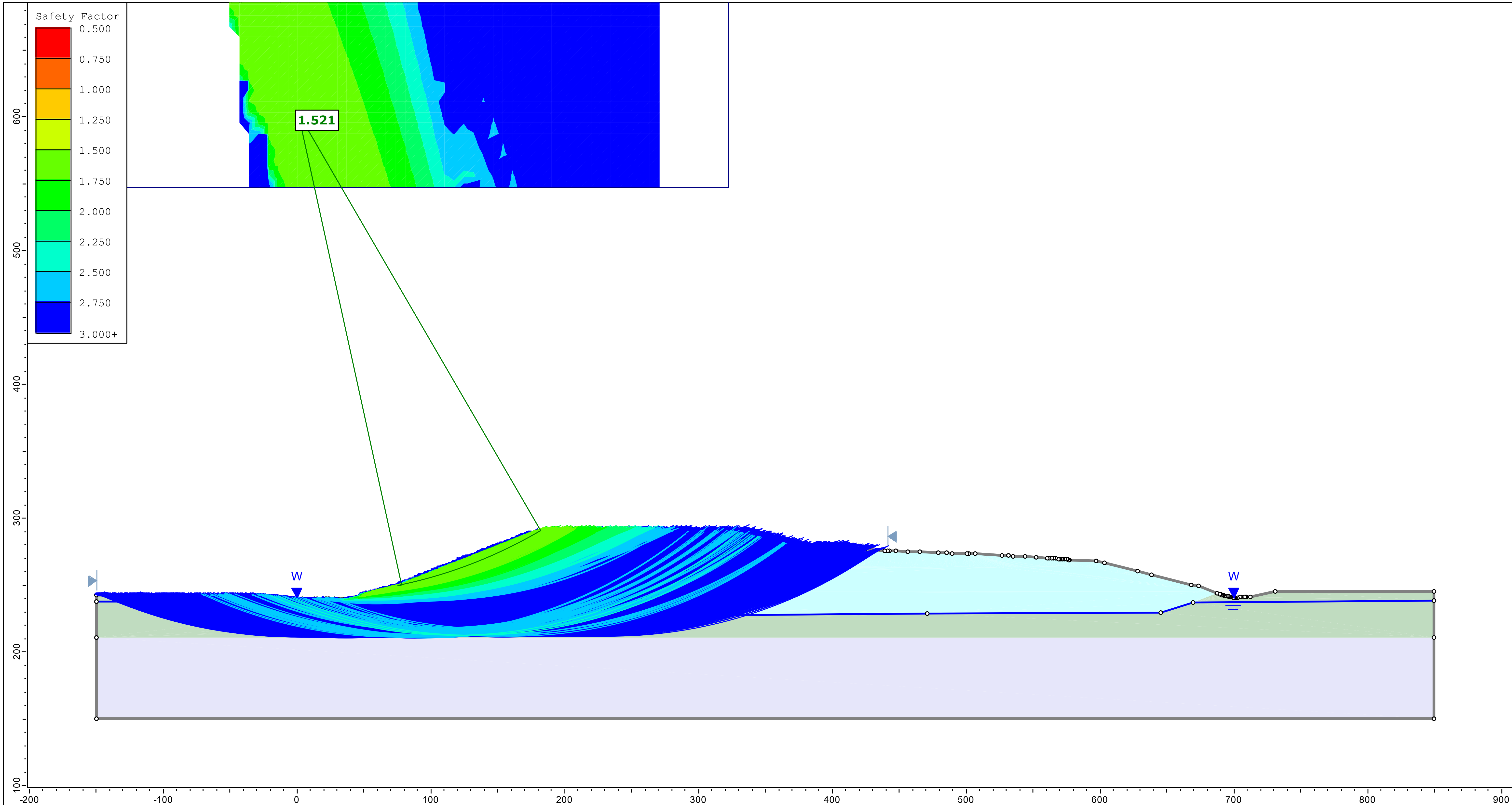
Client :	Waste Management of Canada Corporation	Figure 2
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Final Expansion Stage – vertical displacement with waste at 15 kN/m^3	



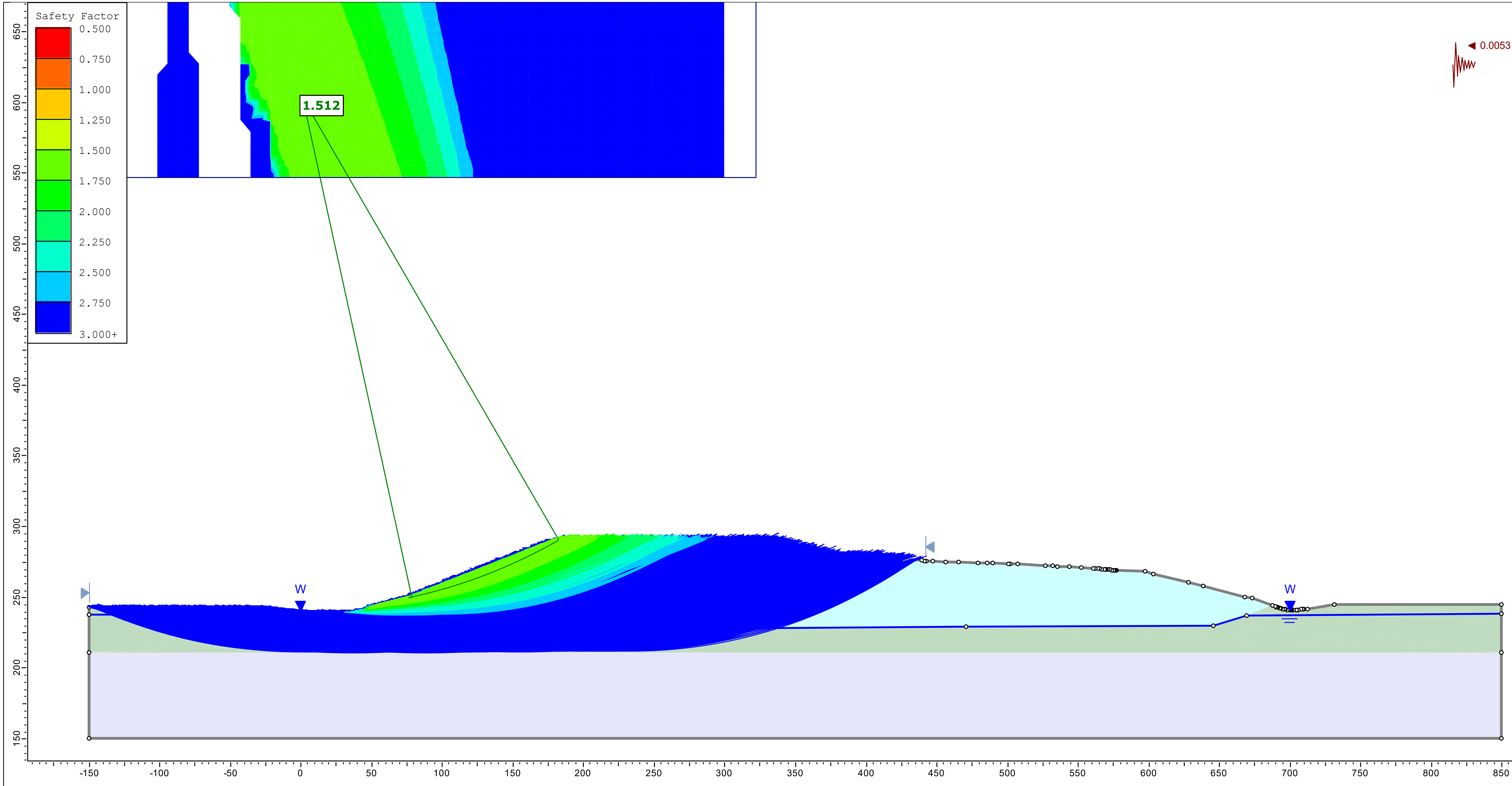
Client :	Waste Management of Canada Corporation	Figure 3
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 12 kN/m^3, static, S_u = 190 kPa	



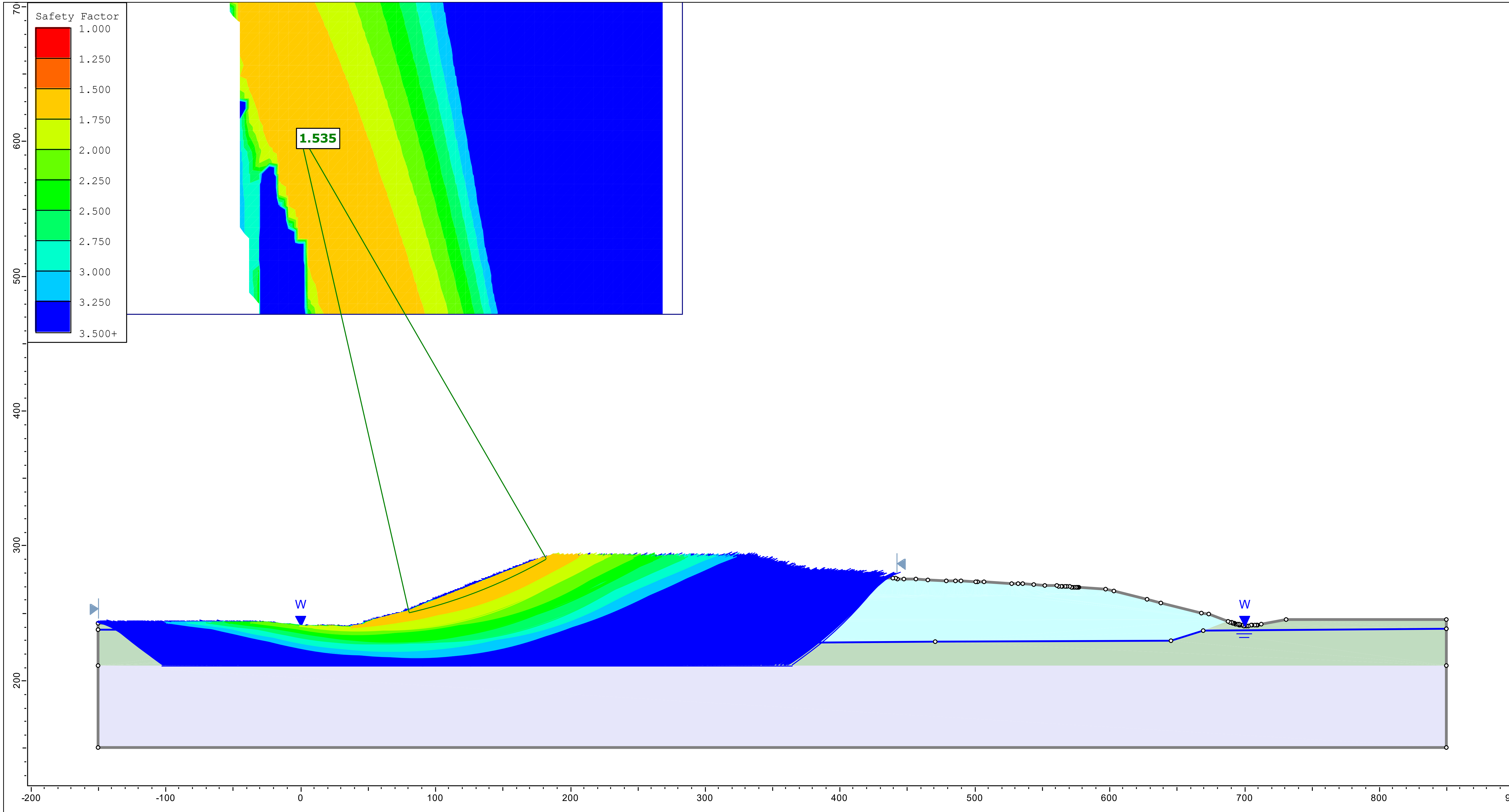
Client :	Waste Management of Canada Corporation	Figure 4
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 12 kN/m^3, seismic, S_u = 190 kPa	



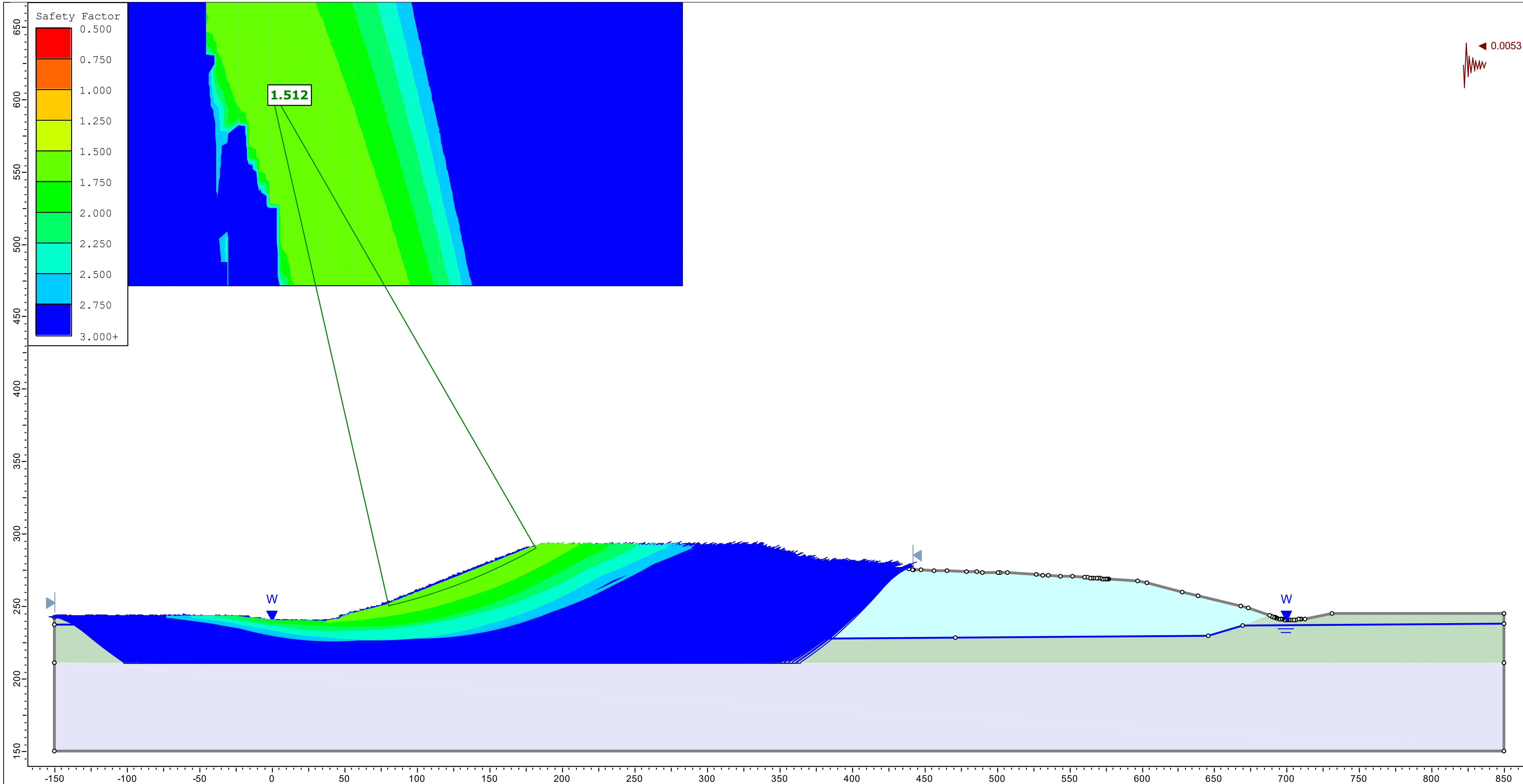
Client :	Waste Management of Canada Corporation	Figure 5
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 15 kN/m^3, static, S_u = 190 kPa	



Client :	Waste Management of Canada Corporation	Figure 6
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 15 kN/m^3, seismic, S_u = 190 kPa	



Client :	Waste Management of Canada Corporation	Figure 7
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 12 kN/m^3, static, drained	



Client :	Waste Management of Canada Corporation
Project :	Twin Creeks Environmental Centre Landfill Optimization
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 12 kN/m^3, seismic, drained

Figure 8

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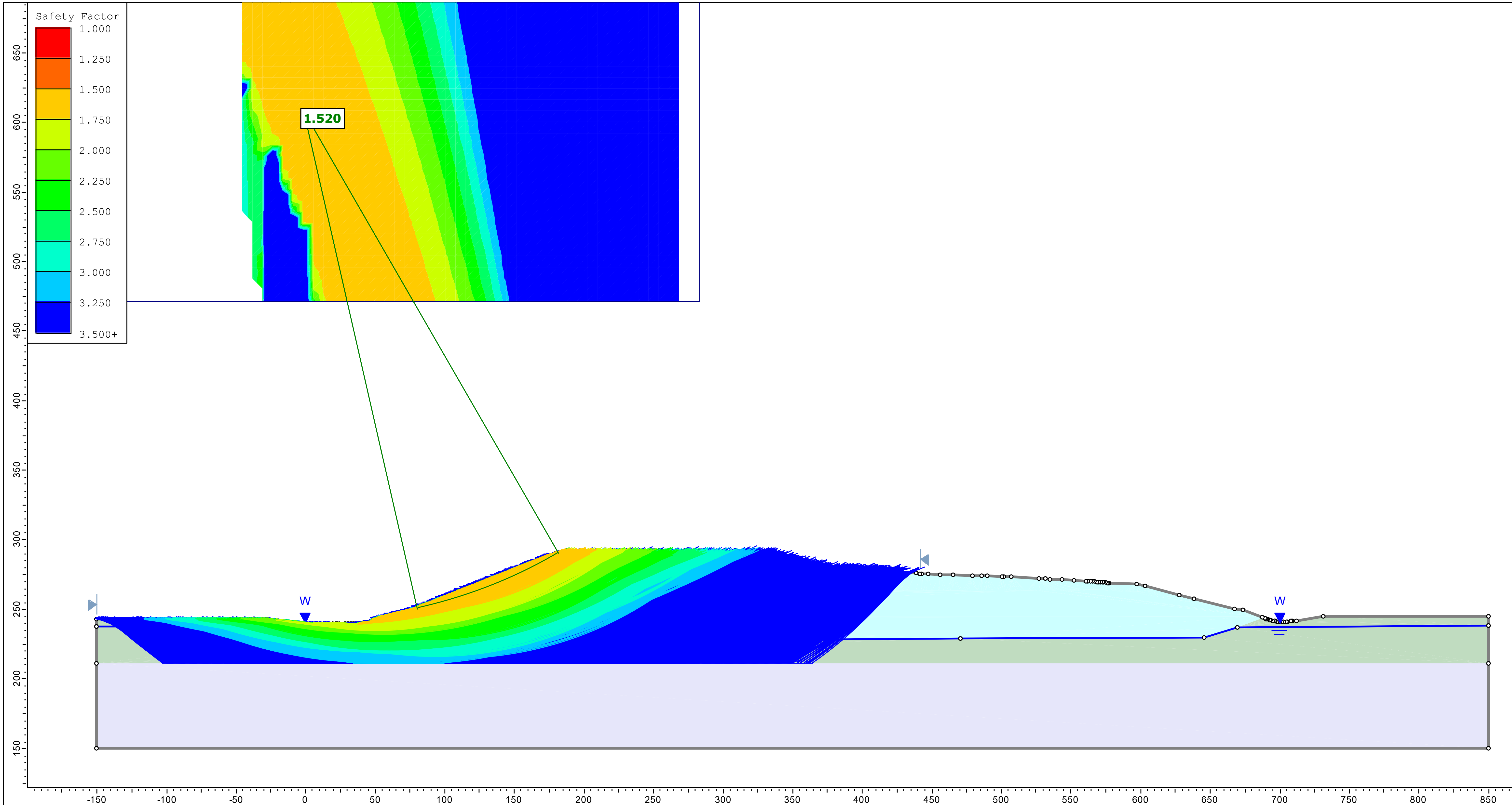
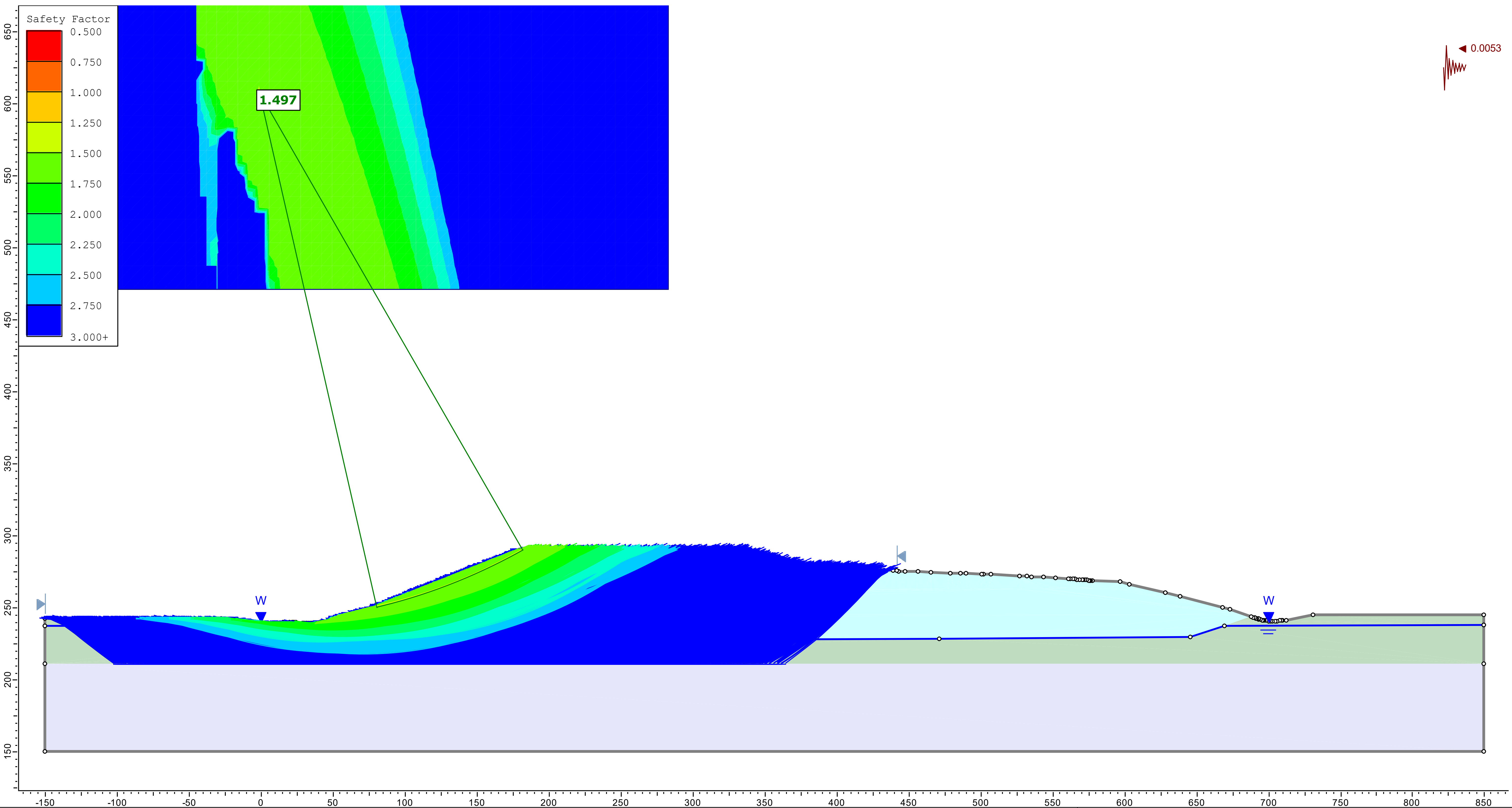
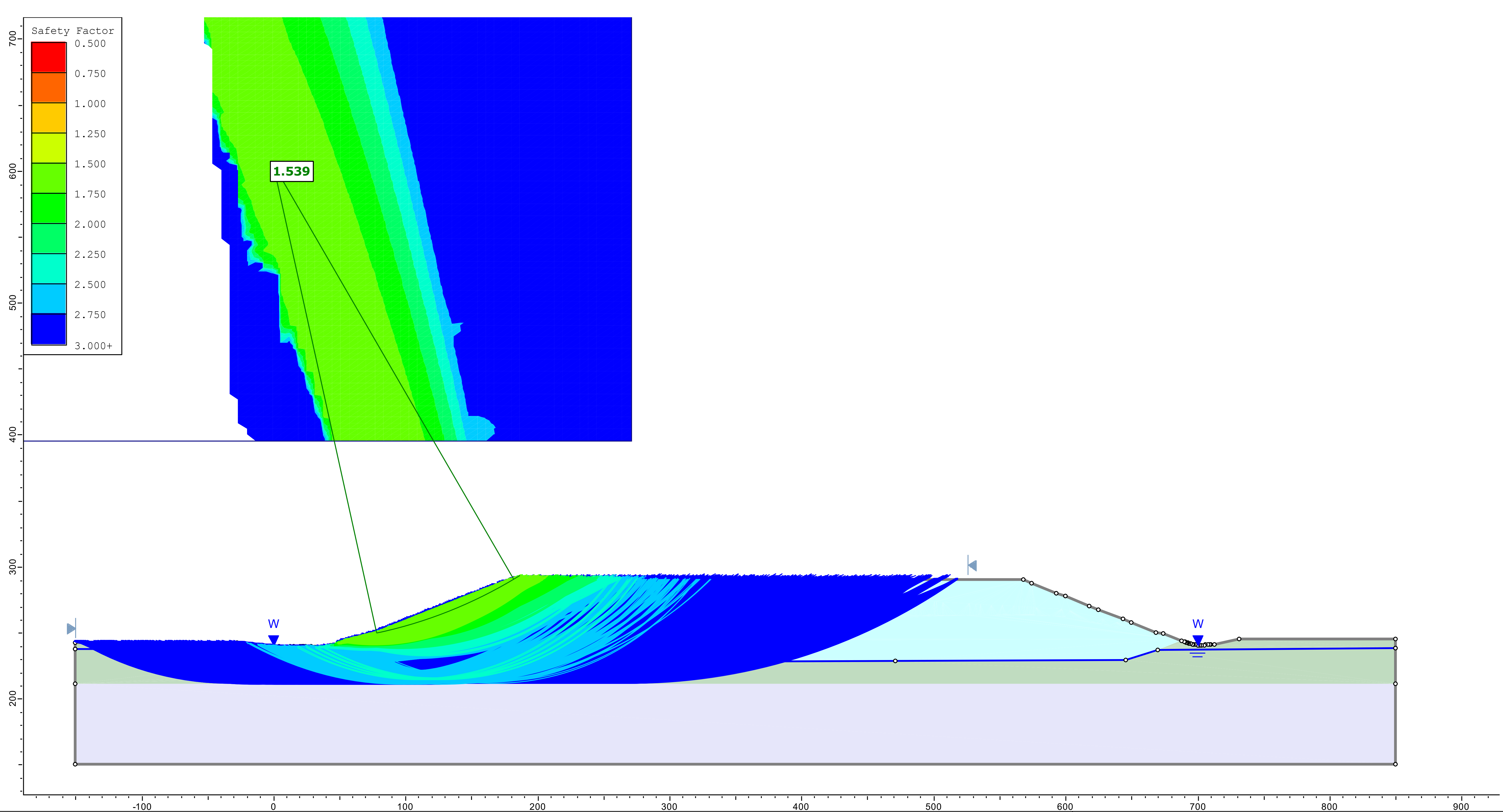


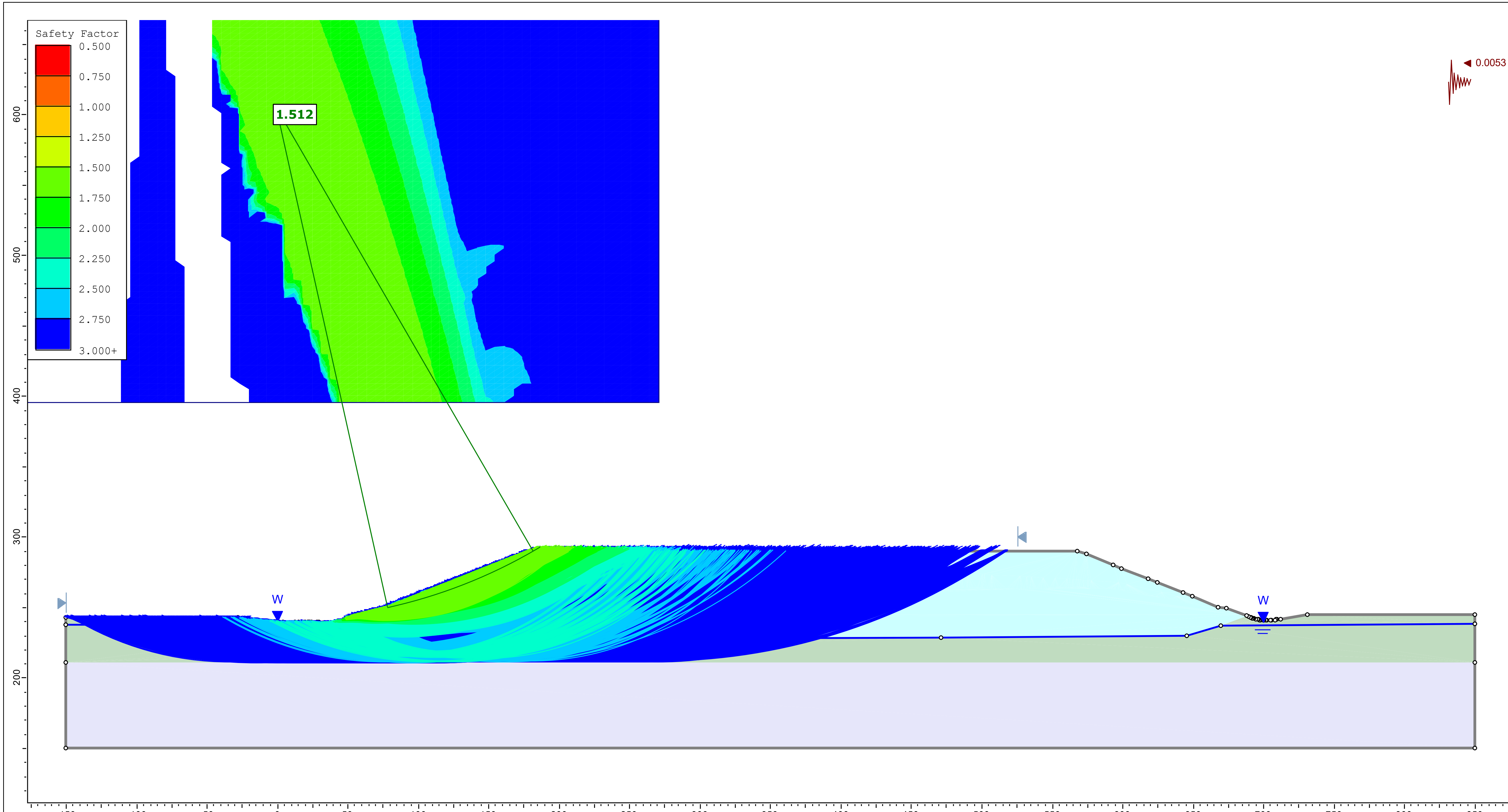
Client :	Waste Management of Canada Corporation	Figure 9
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 15 kN/m^3, static, drained	



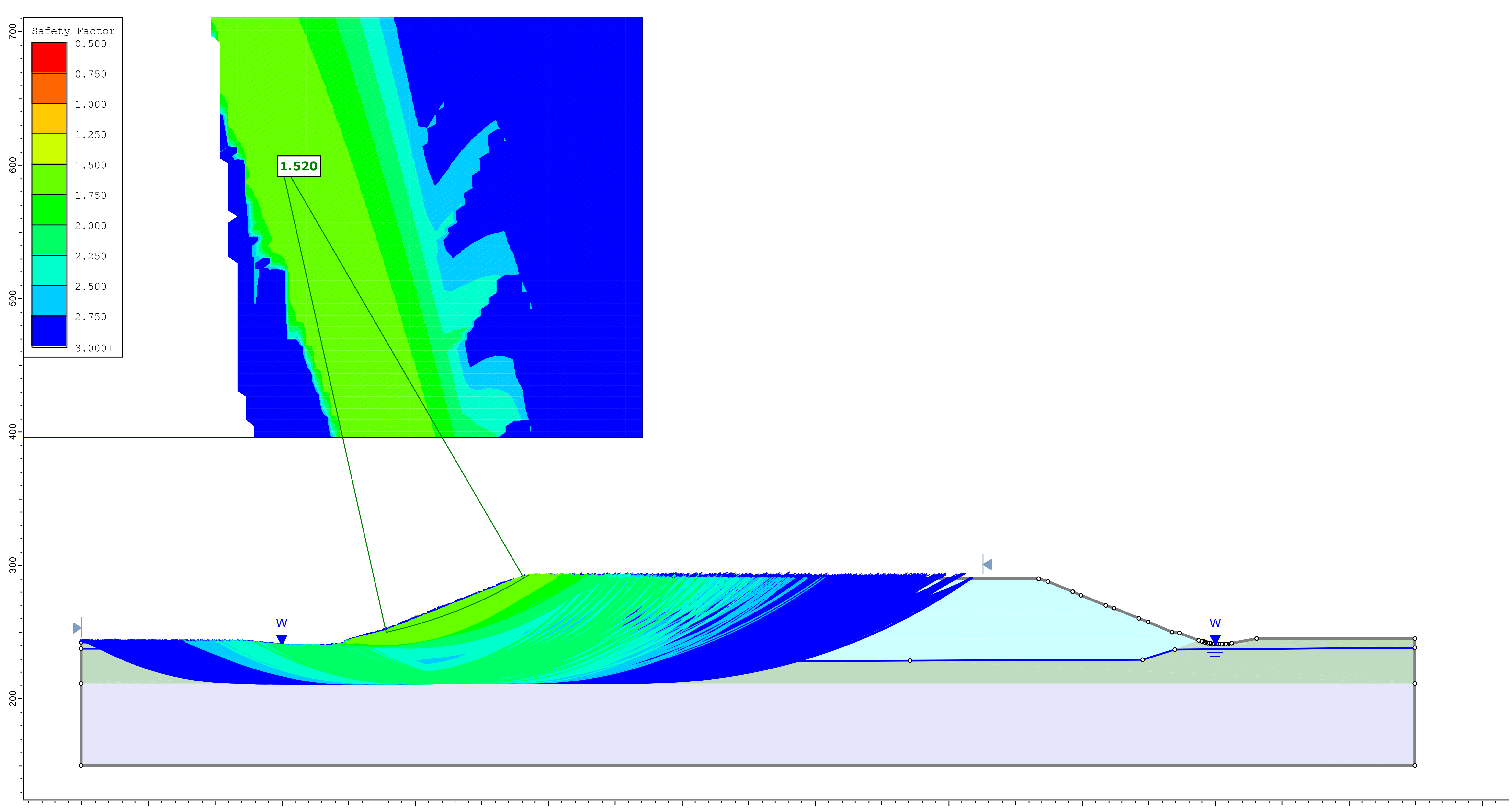
Client :	Waste Management of Canada Corporation	Figure 10
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 1 – Stability Safety Factor with waste at 15 kN/m^3, seismic, drained	



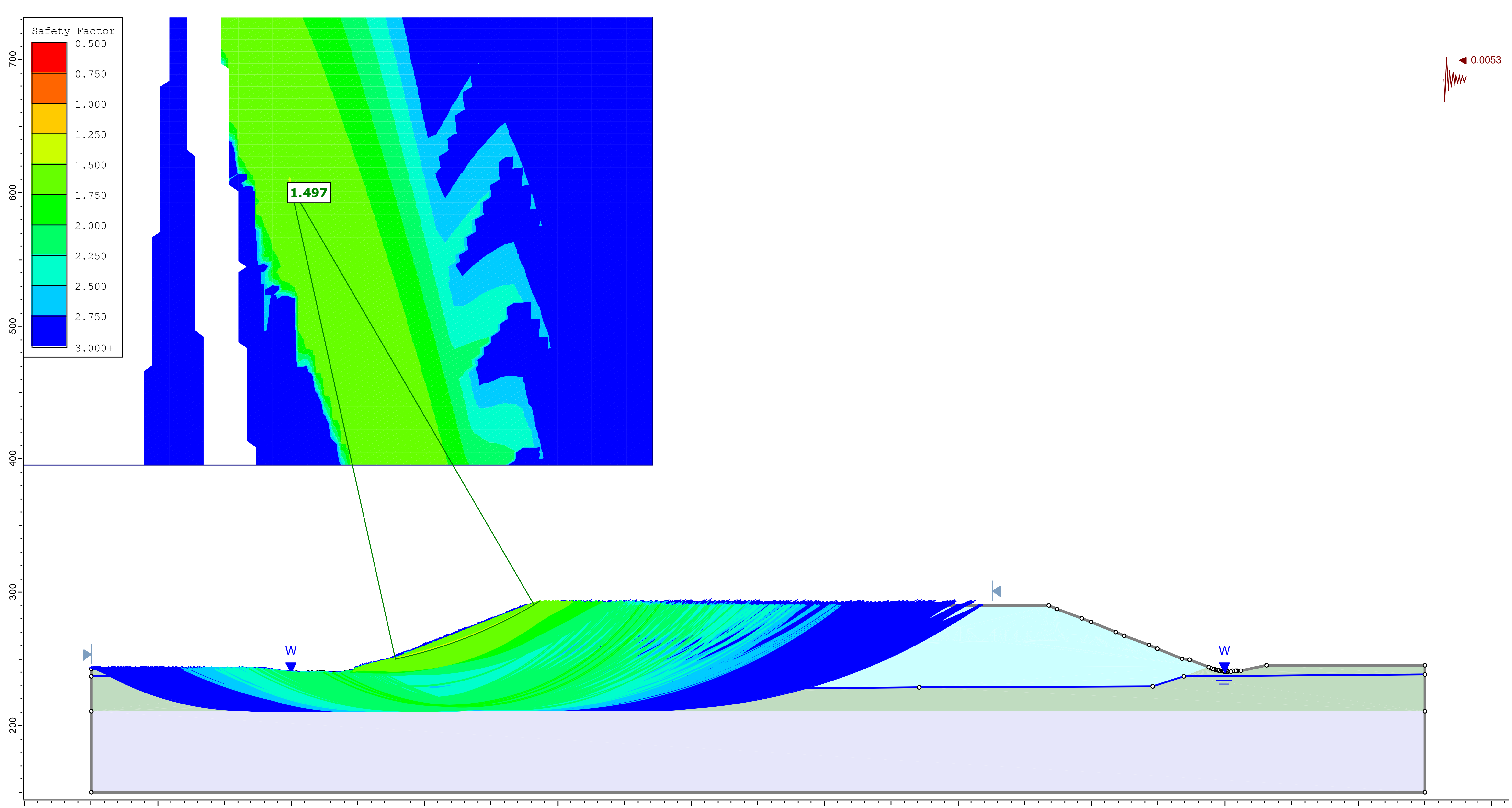
Client :	Waste Management of Canada Corporation	Figure 11
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 12 kN/m^3, static, S$_u$ = 190 kPa	



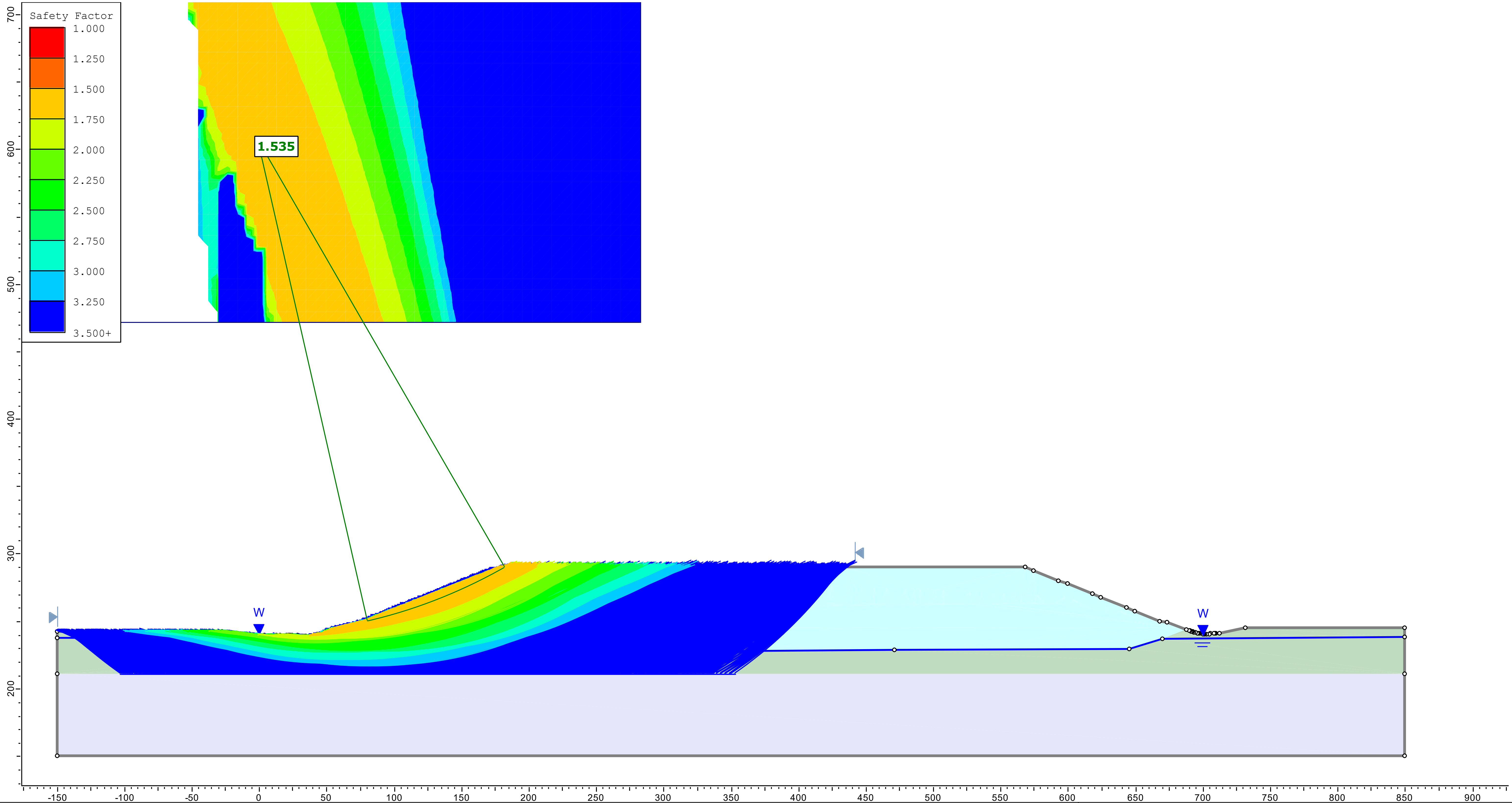
Client :	Waste Management of Canada Corporation	Figure 12
Project :	Twin Creeks Environmental Centre Landfill Optimization	wsp
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 12 kN/m^3, seismic, S_u = 190 kPa	



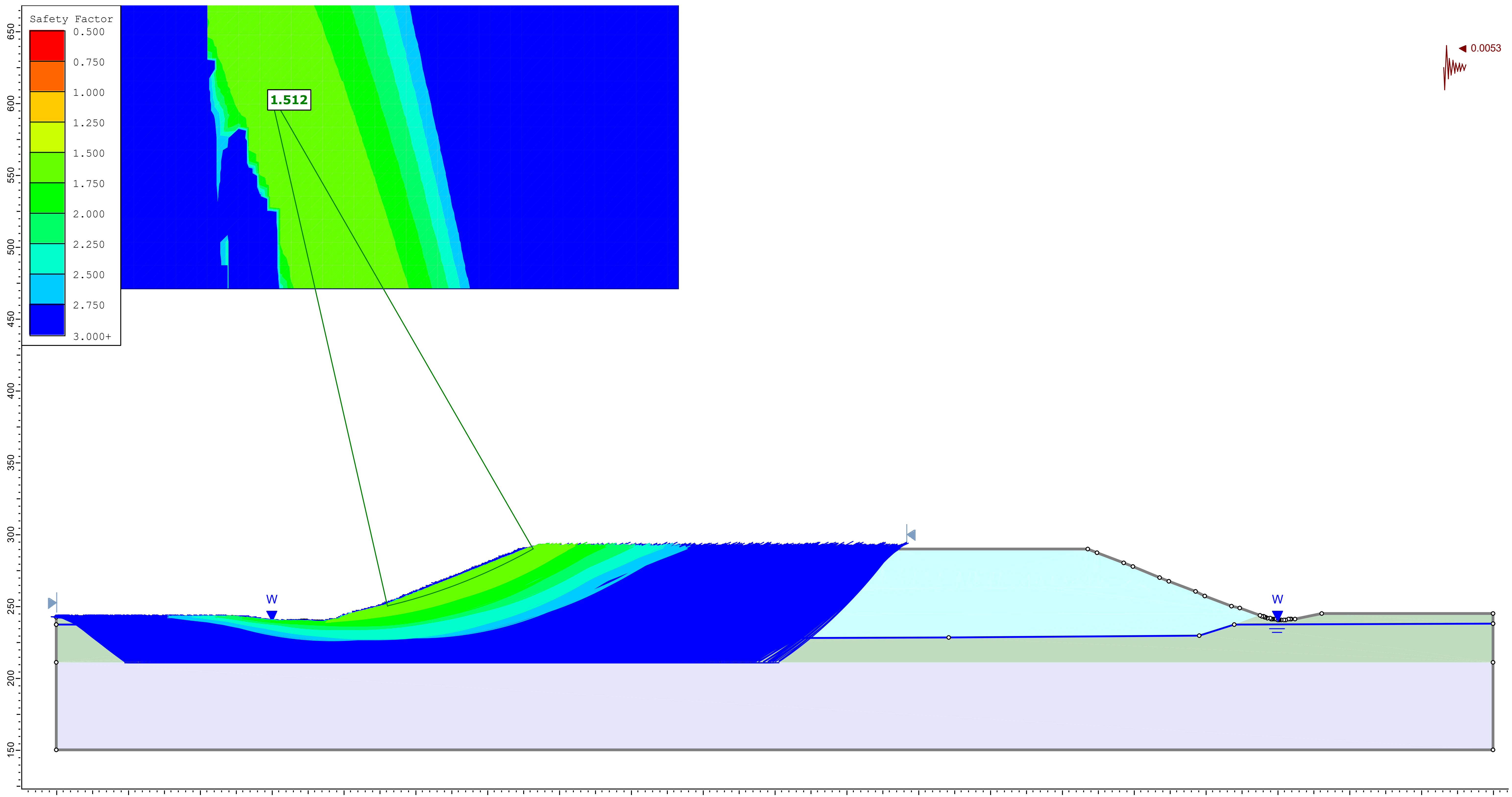
Client :	Waste Management of Canada Corporation	Figure 13
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 15 kN/m^3, static, S_u = 190 kPa	



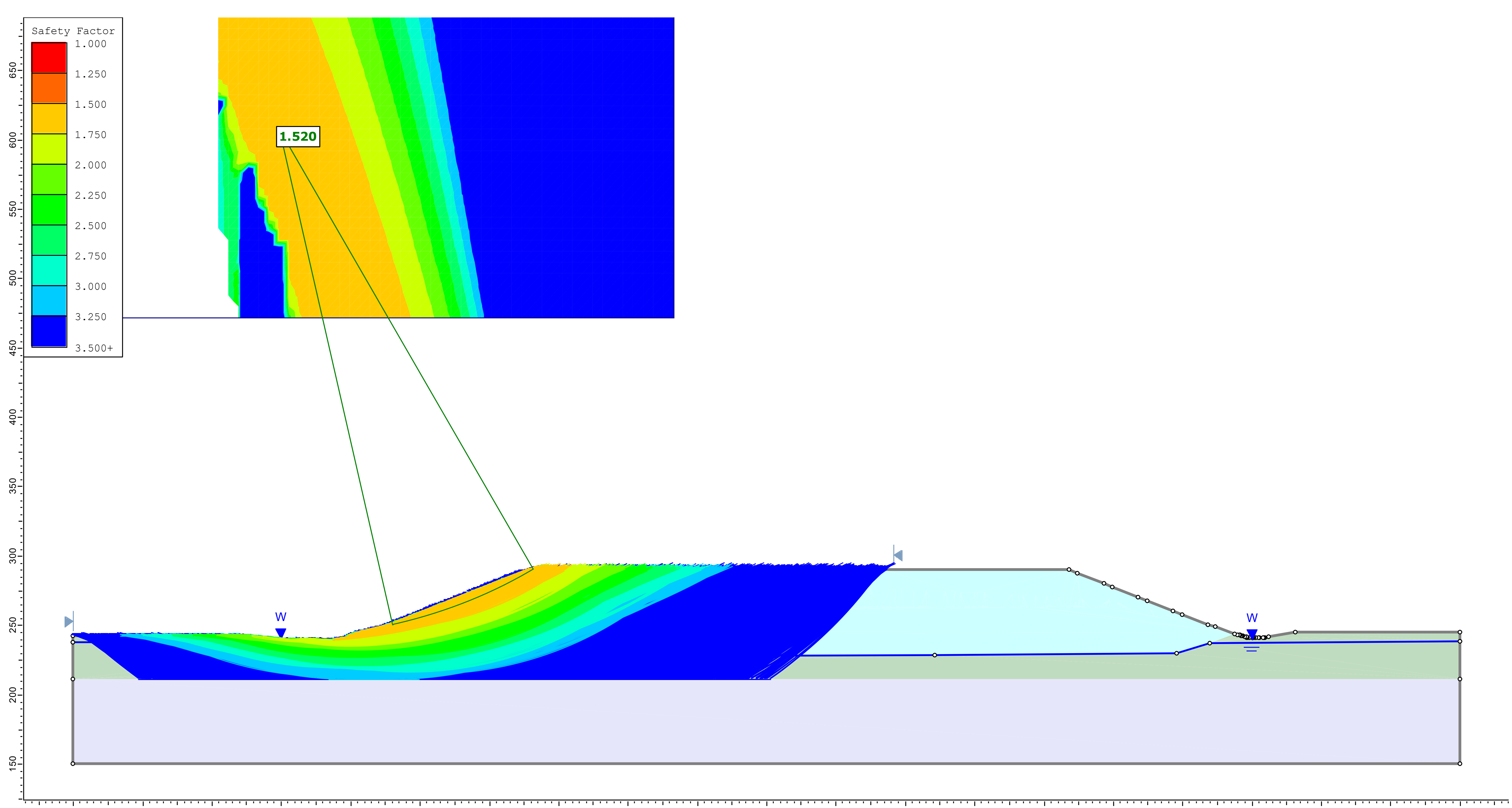
Client :	Waste Management of Canada Corporation	Figure 14
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 15 kN/m^3, seismic, S_u = 190 kPa	



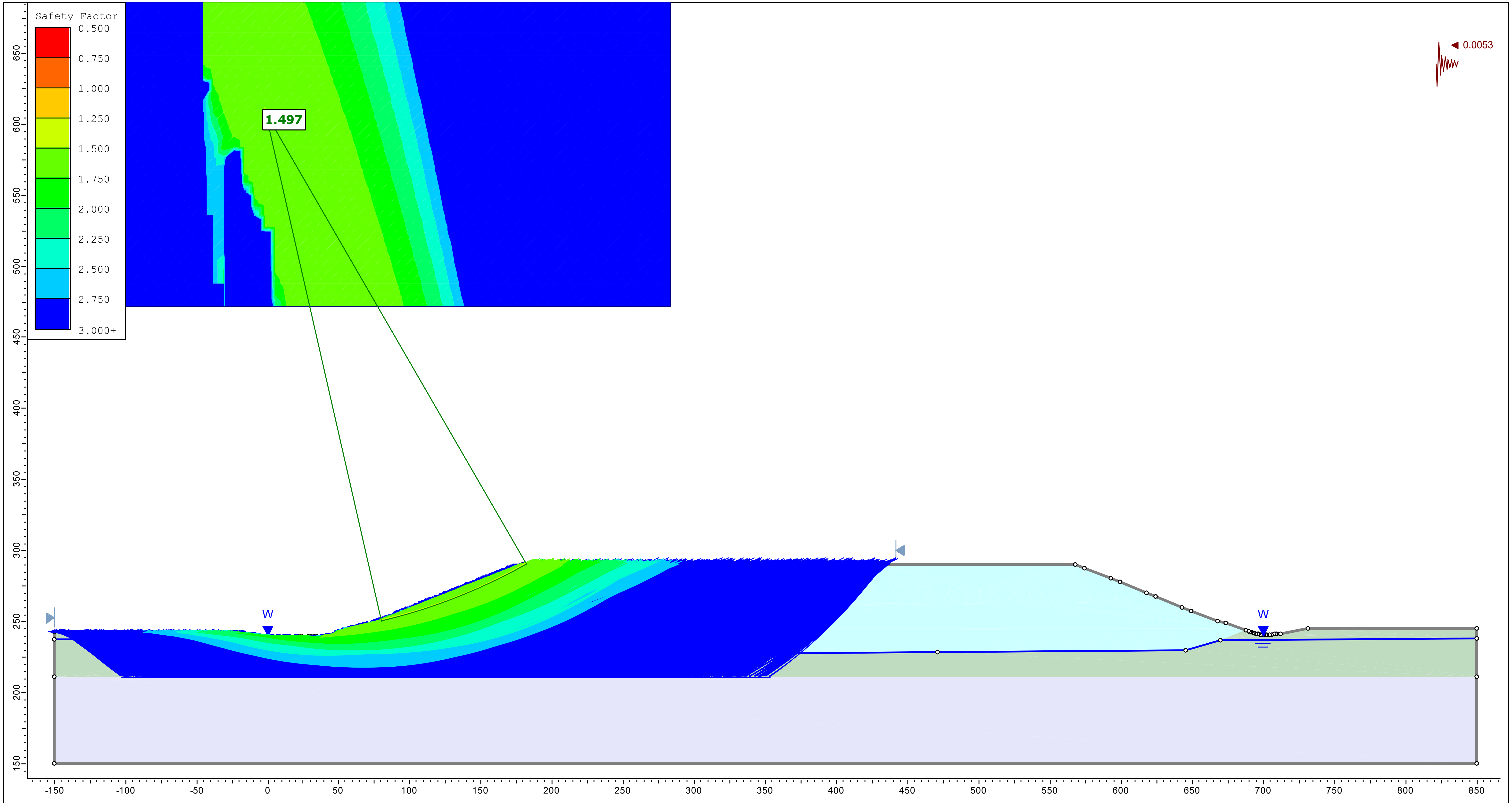
Client :	Waste Management of Canada Corporation	Figure 15
Project :	Twin Creeks Environmental Centre Landfill Optimization	wsp
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 12 kN/m^3, static, drained	



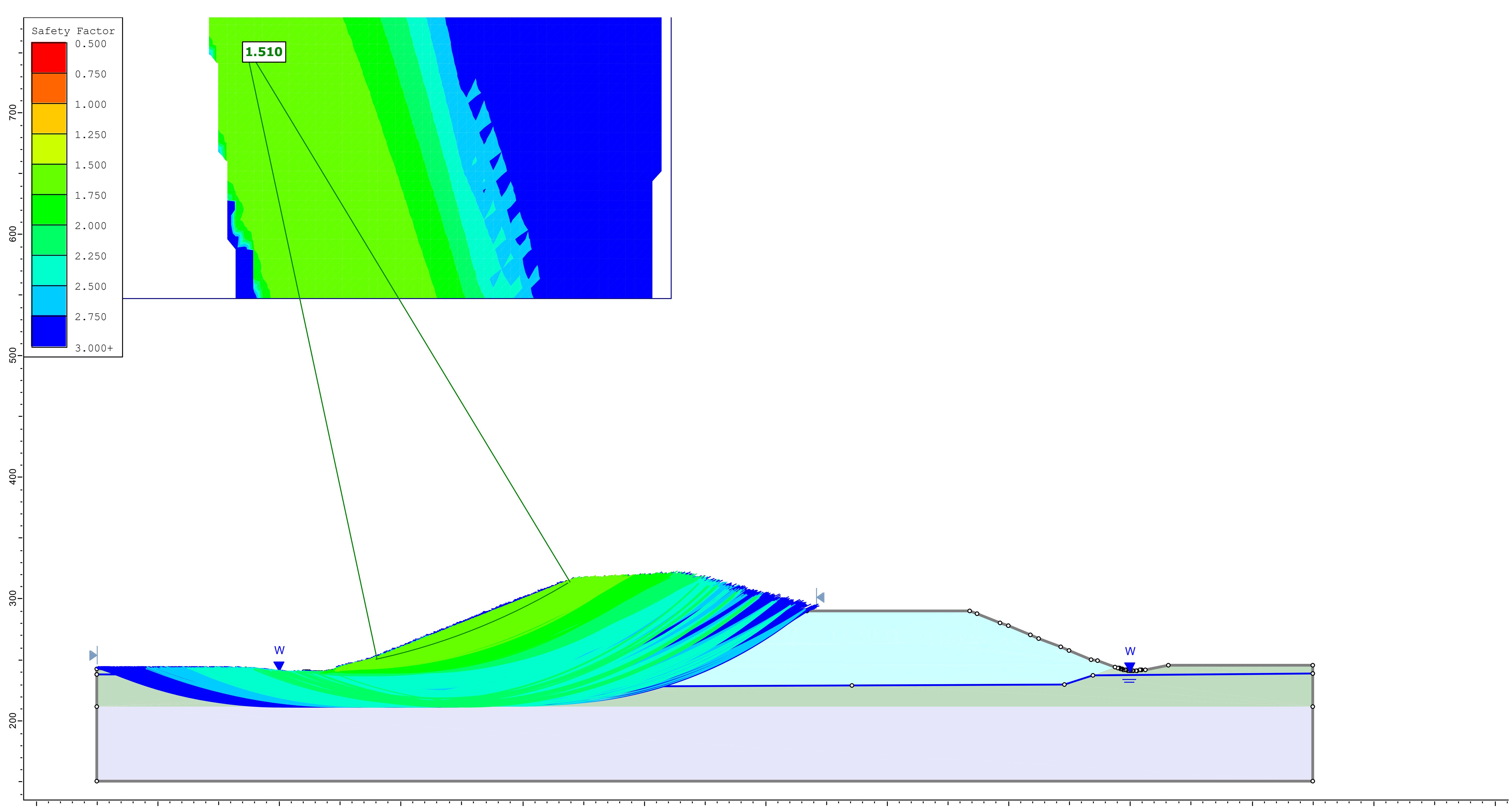
Client :	Waste Management of Canada Corporation	Figure 16
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 12 kN/m^3, seismic, drained	



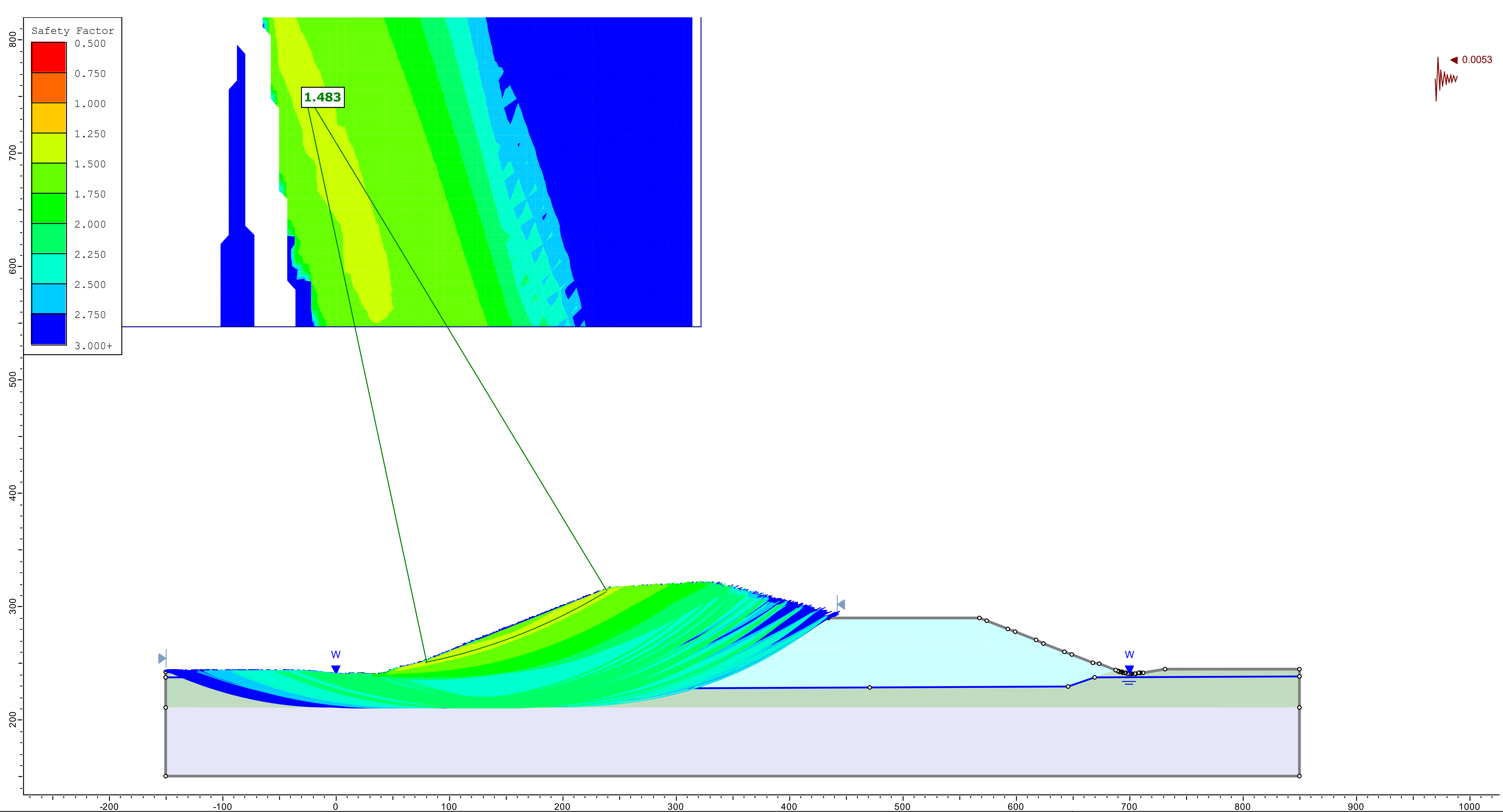
Client :	Waste Management of Canada Corporation	Figure 17
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 15 kN/m^3, static, drained	



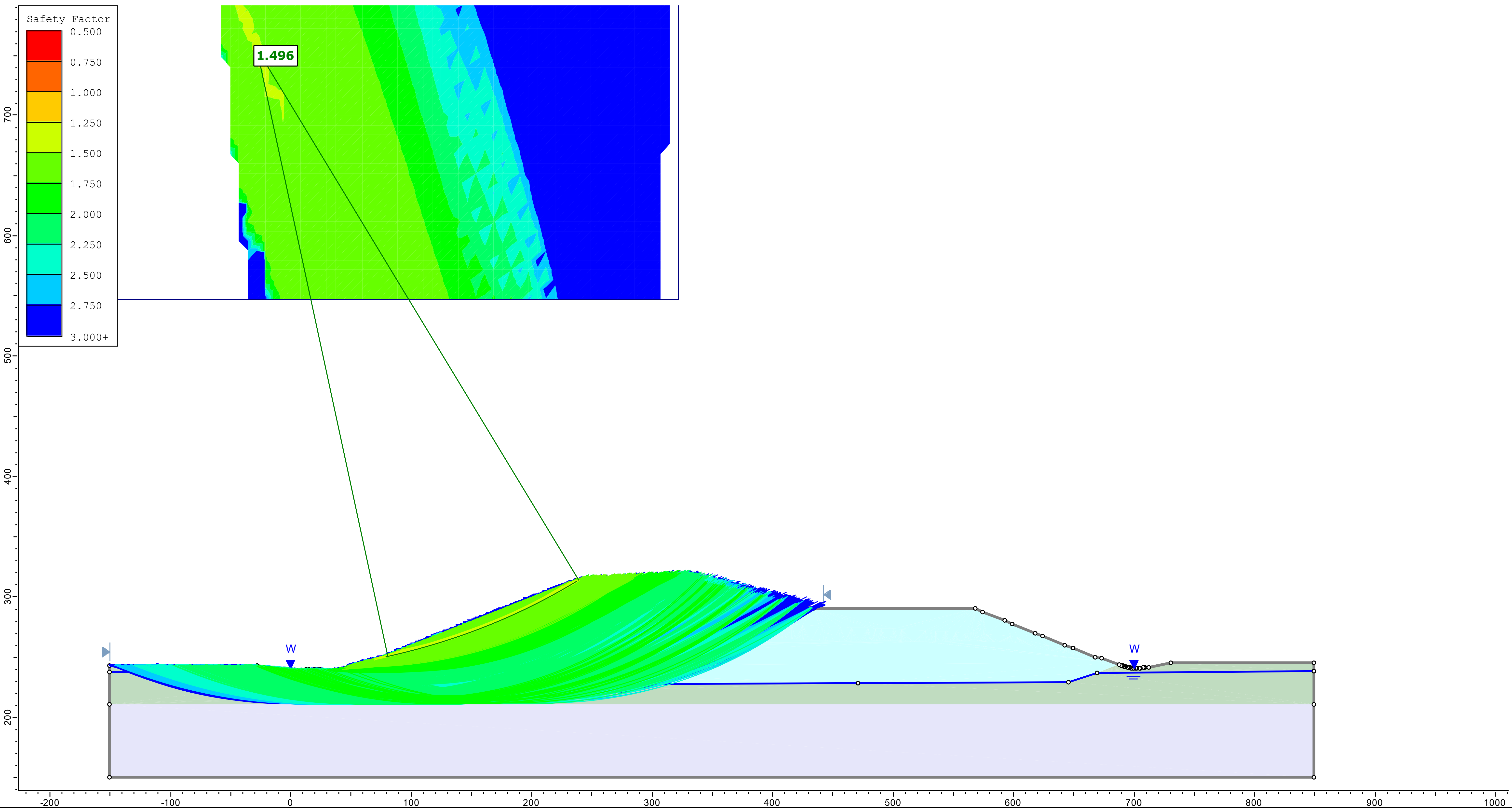
Client :	Waste Management of Canada Corporation	Figure 18
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 2 – Stability Safety Factor with waste at 15 kN/m^3, seismic, drained	



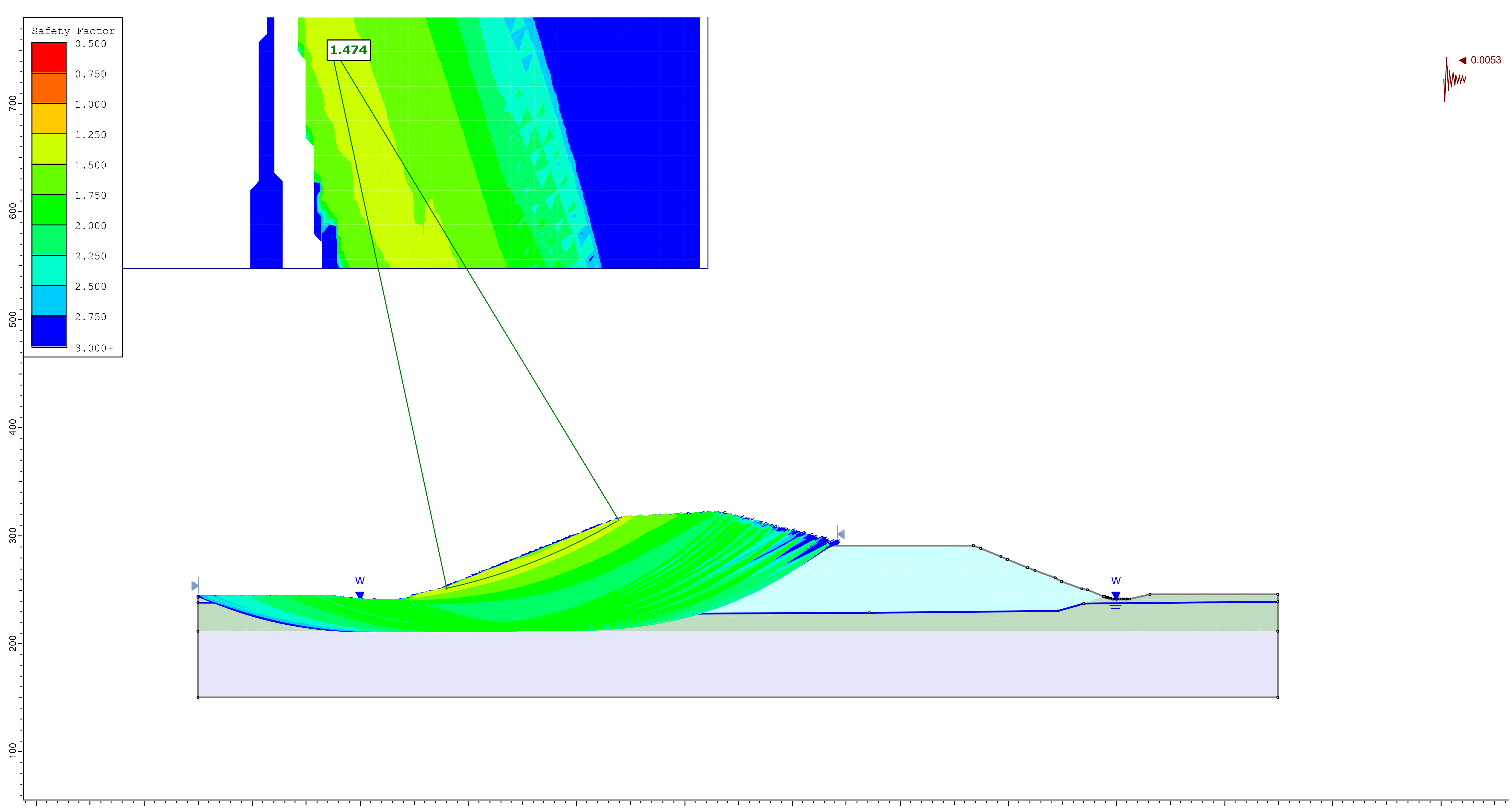
Client :	Waste Management of Canada Corporation	Figure 19
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 12 kN/m^3, static, S_u = 190 kPa	



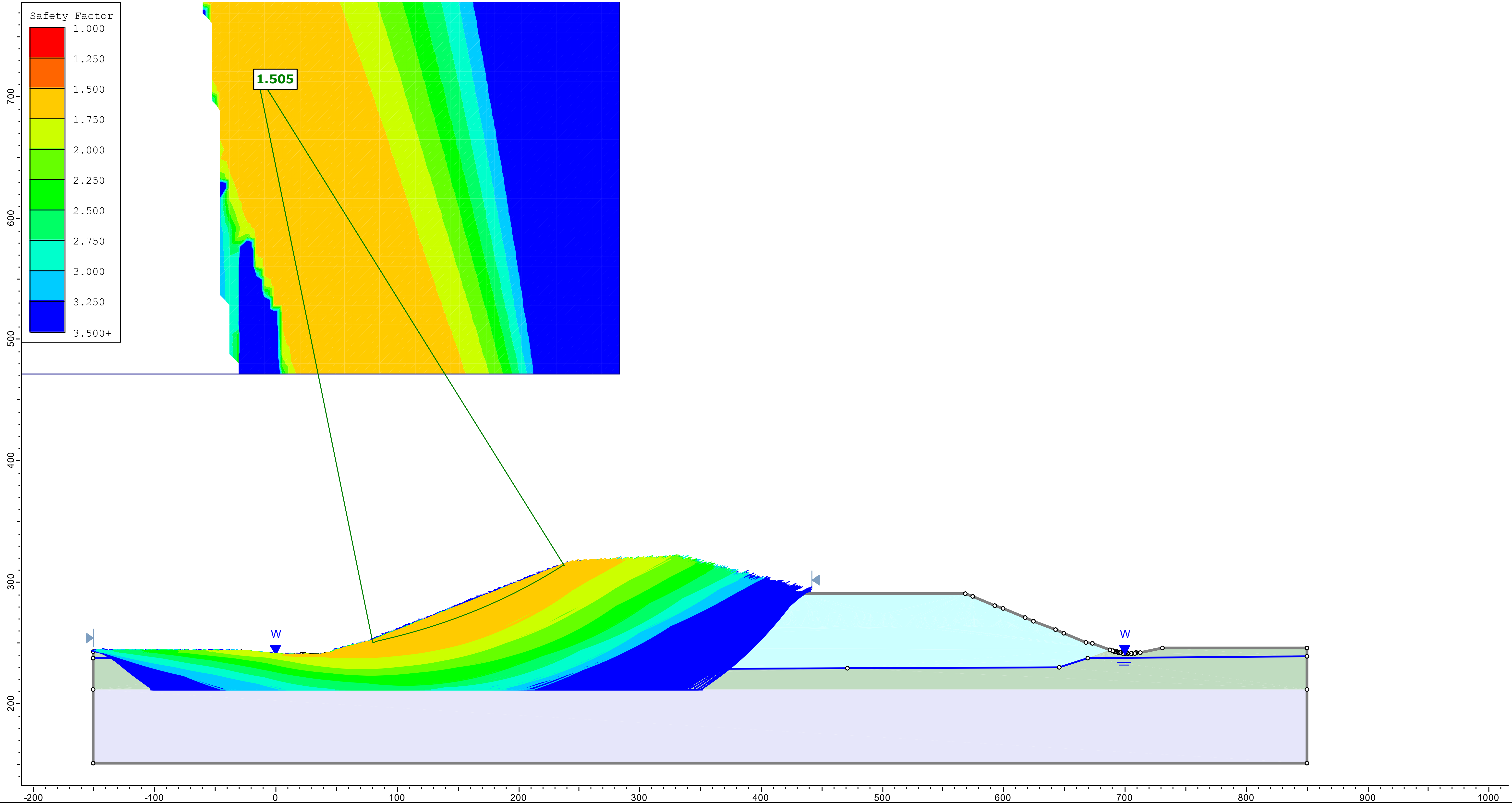
Client :	Waste Management of Canada Corporation	Figure 20
Project :	Twin Creeks Environmental Centre Landfill Optimization	wsp
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 12 kN/m^3, seismic, S_u = 190 kPa	



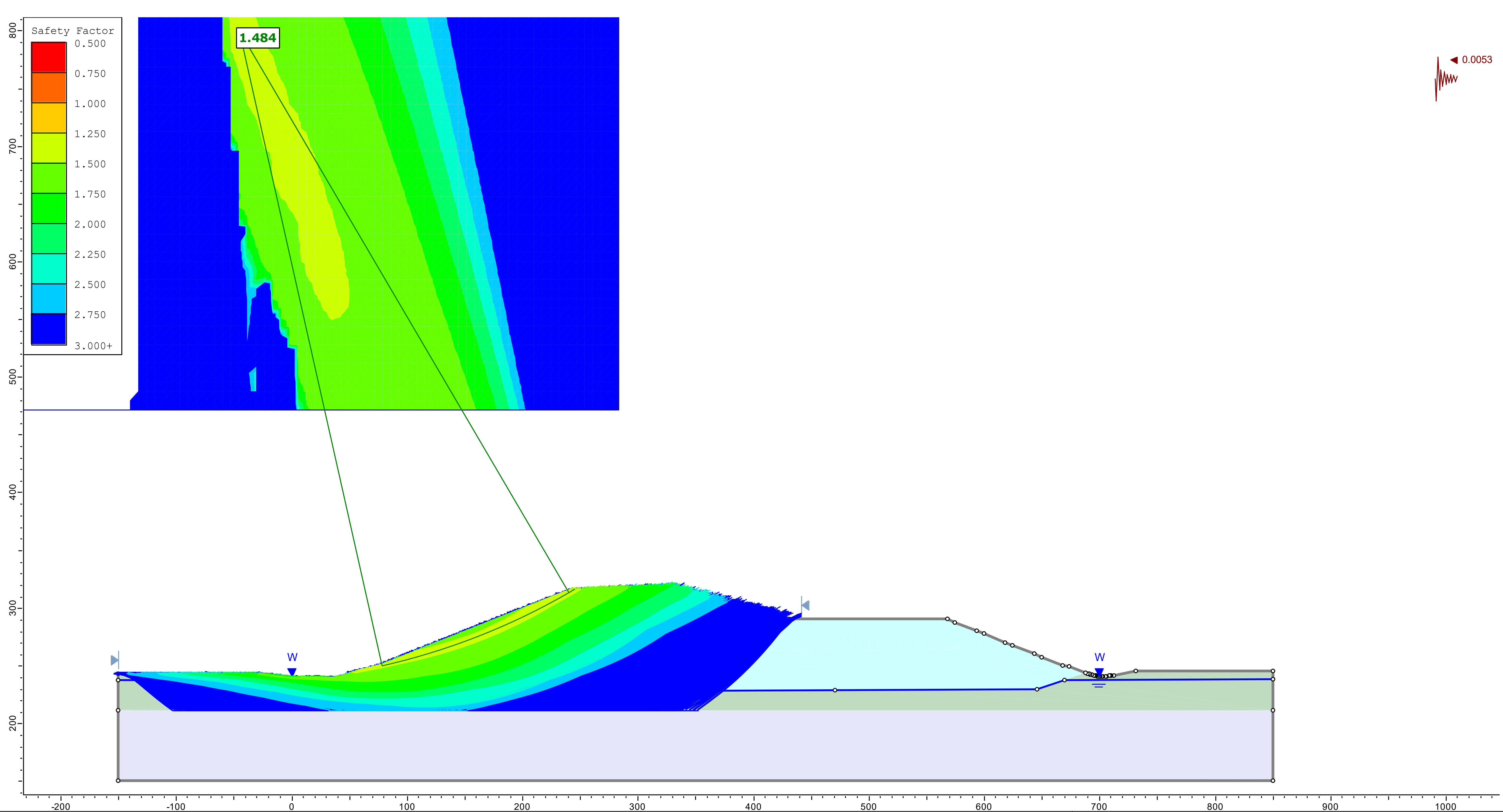
Client :	Waste Management of Canada Corporation	Figure 21
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 15 kN/m^3, static, S_u = 190 kPa	



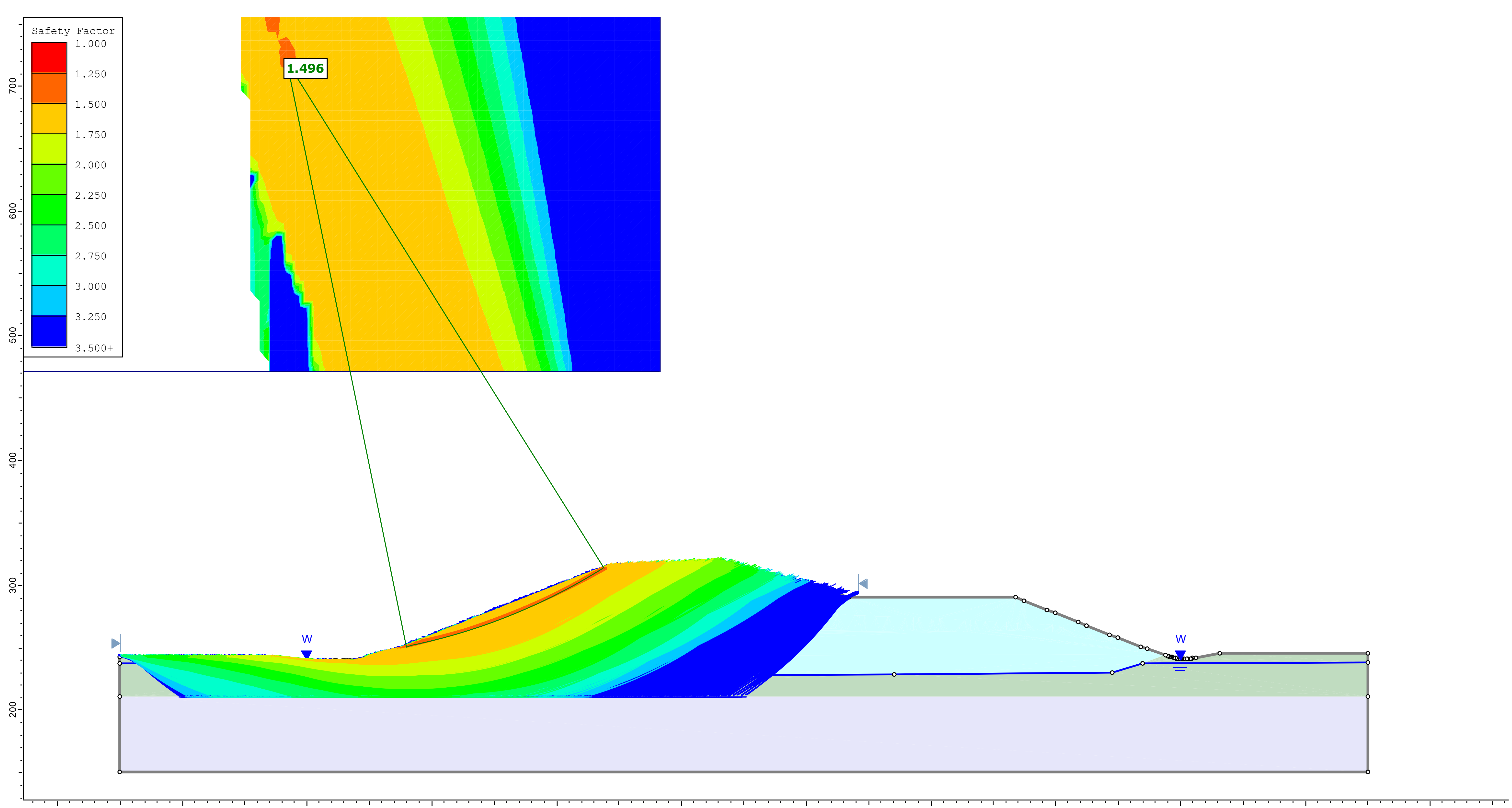
Client :	Waste Management of Canada Corporation	Figure 22
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 15 kN/m^3, seismic, S_u = 190 kPa	



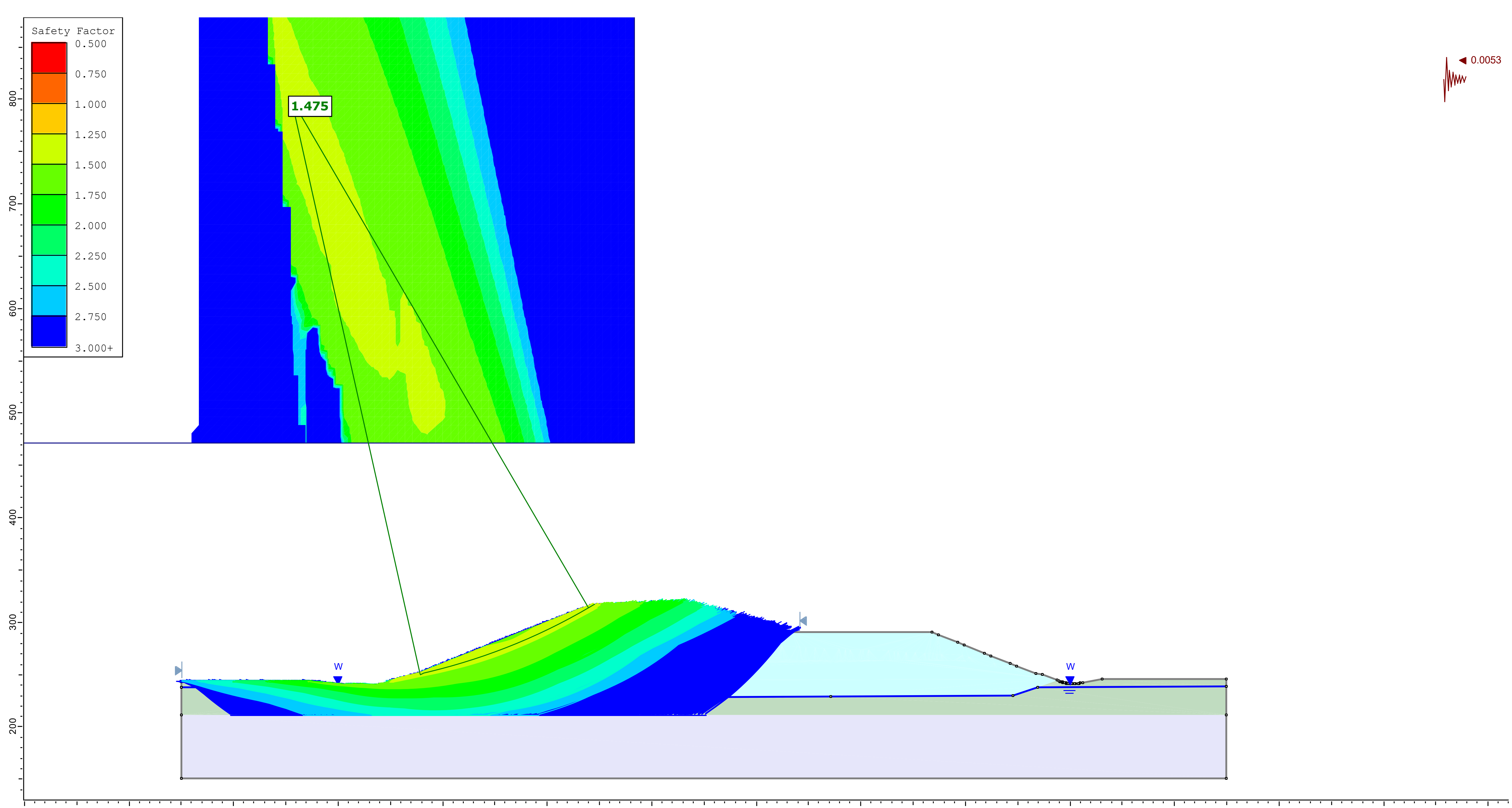
Client :	Waste Management of Canada Corporation	Figure 23
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 12 kN/m^3, static, drained	



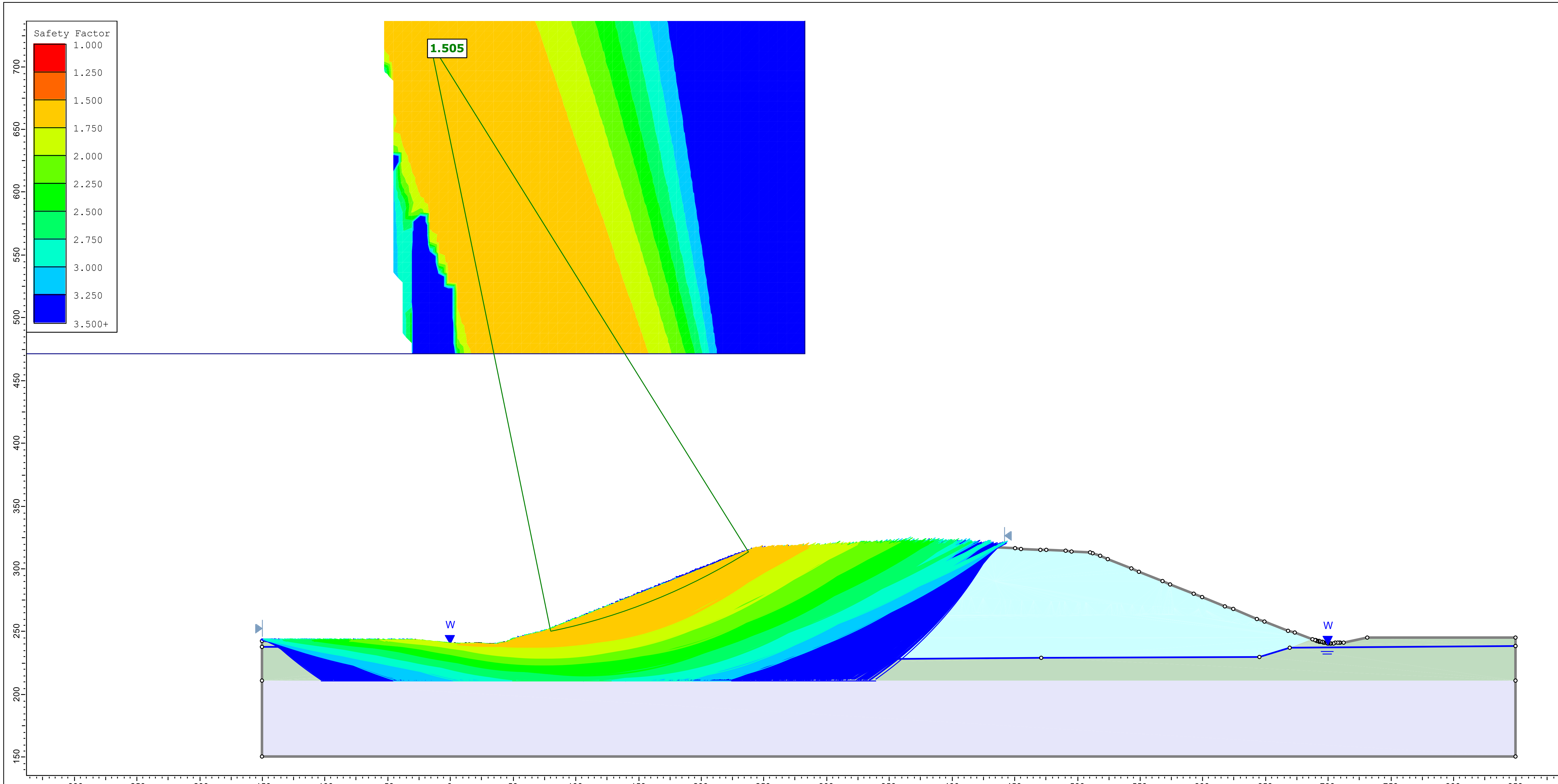
Client :	Waste Management of Canada Corporation	Figure 24
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 12 kN/m^3, seismic, drained	



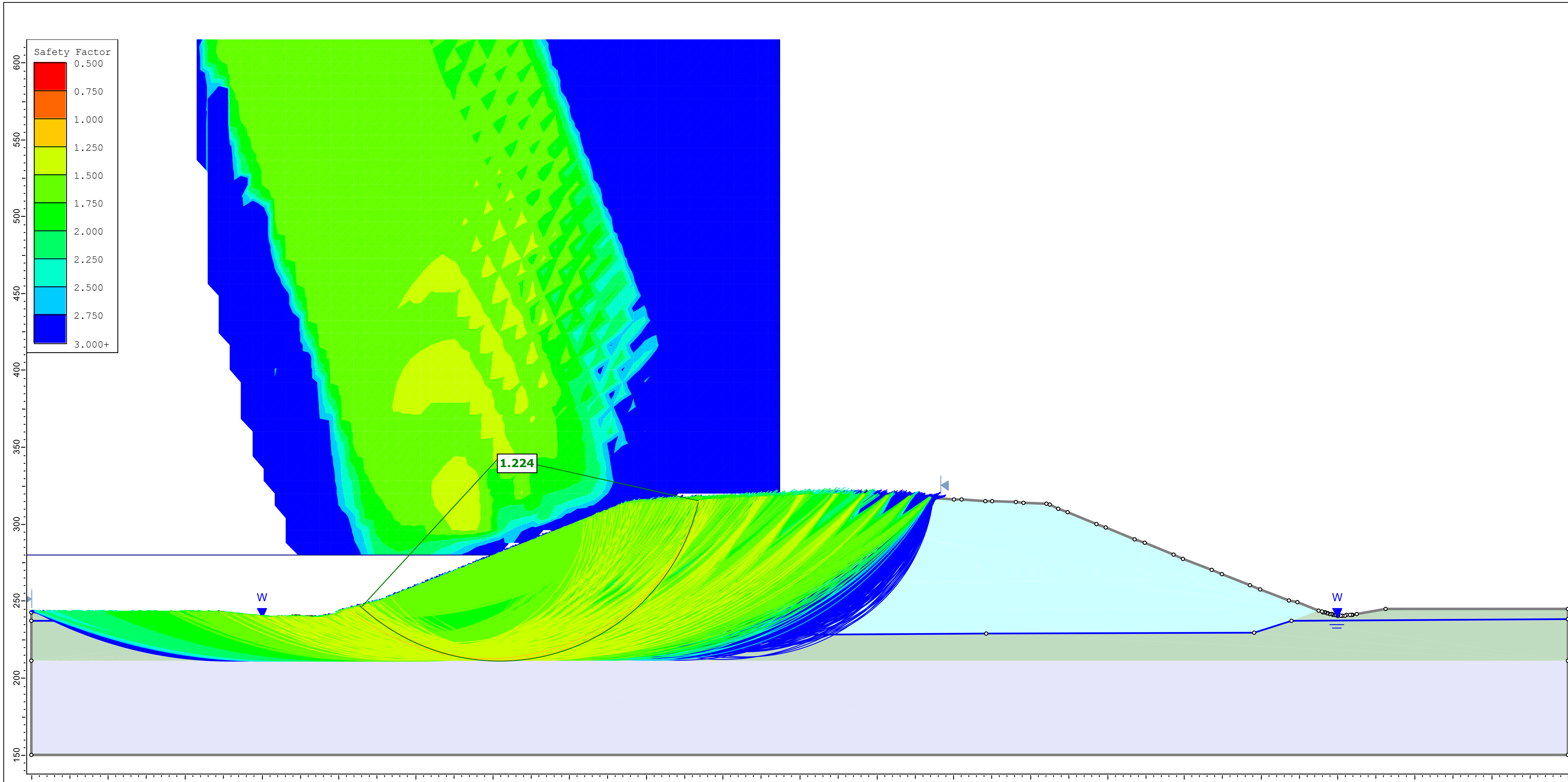
Client :	Waste Management of Canada Corporation	Figure 25
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 15 kN/m^3, static, drained	



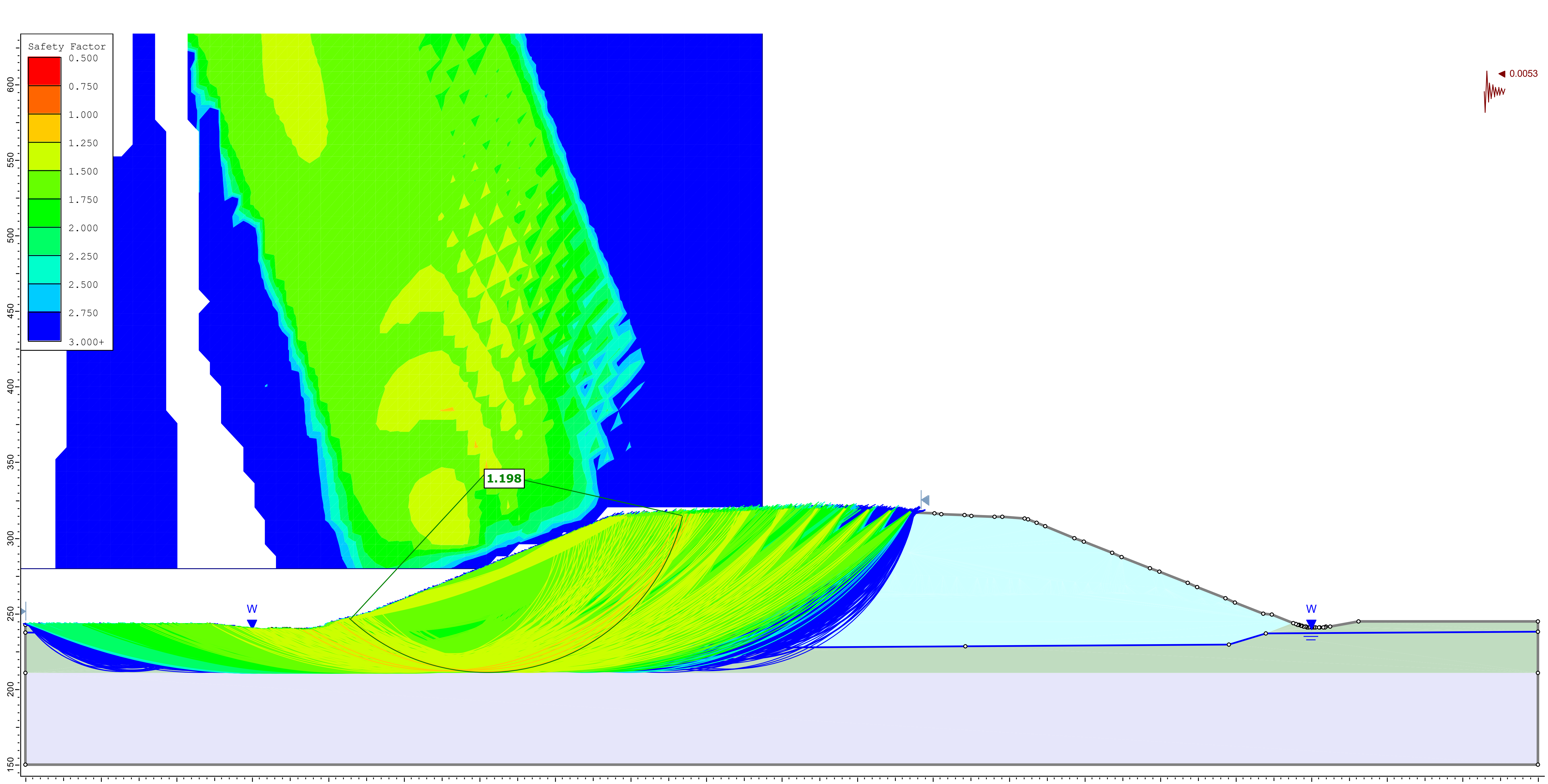
Client :	Waste Management of Canada Corporation	Figure 26
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Static Conditions – Expansion Stage 3 – Stability Safety Factor with waste at 15 kN/m^3, seismic, drained	



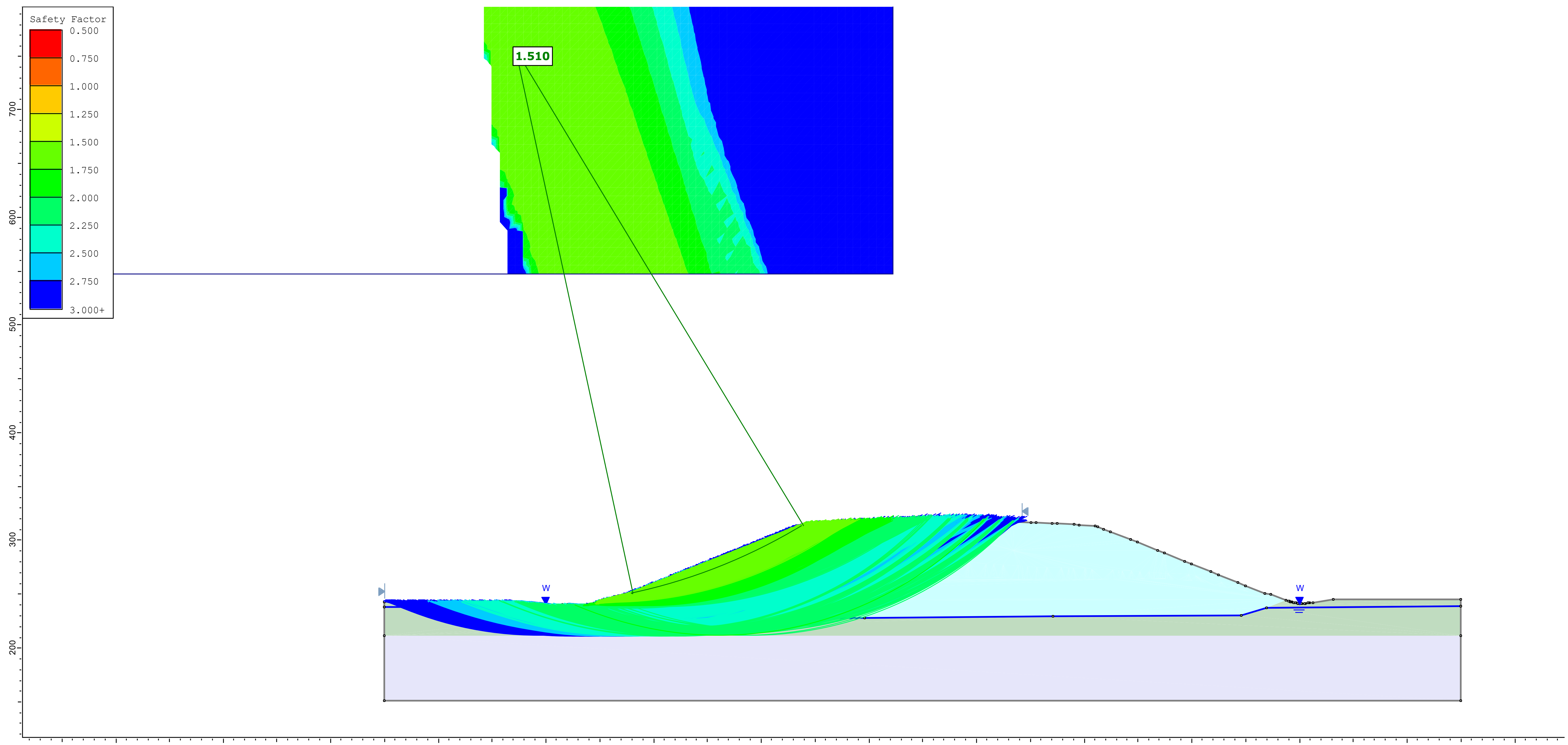
Client :	Waste Management of Canada Corporation	Figure 27
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 12 kN/m^3, static, drained	



Client :	Waste Management of Canada Corporation	Figure 28
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 12 kN/m^3, static, S_u = 100 kPa	

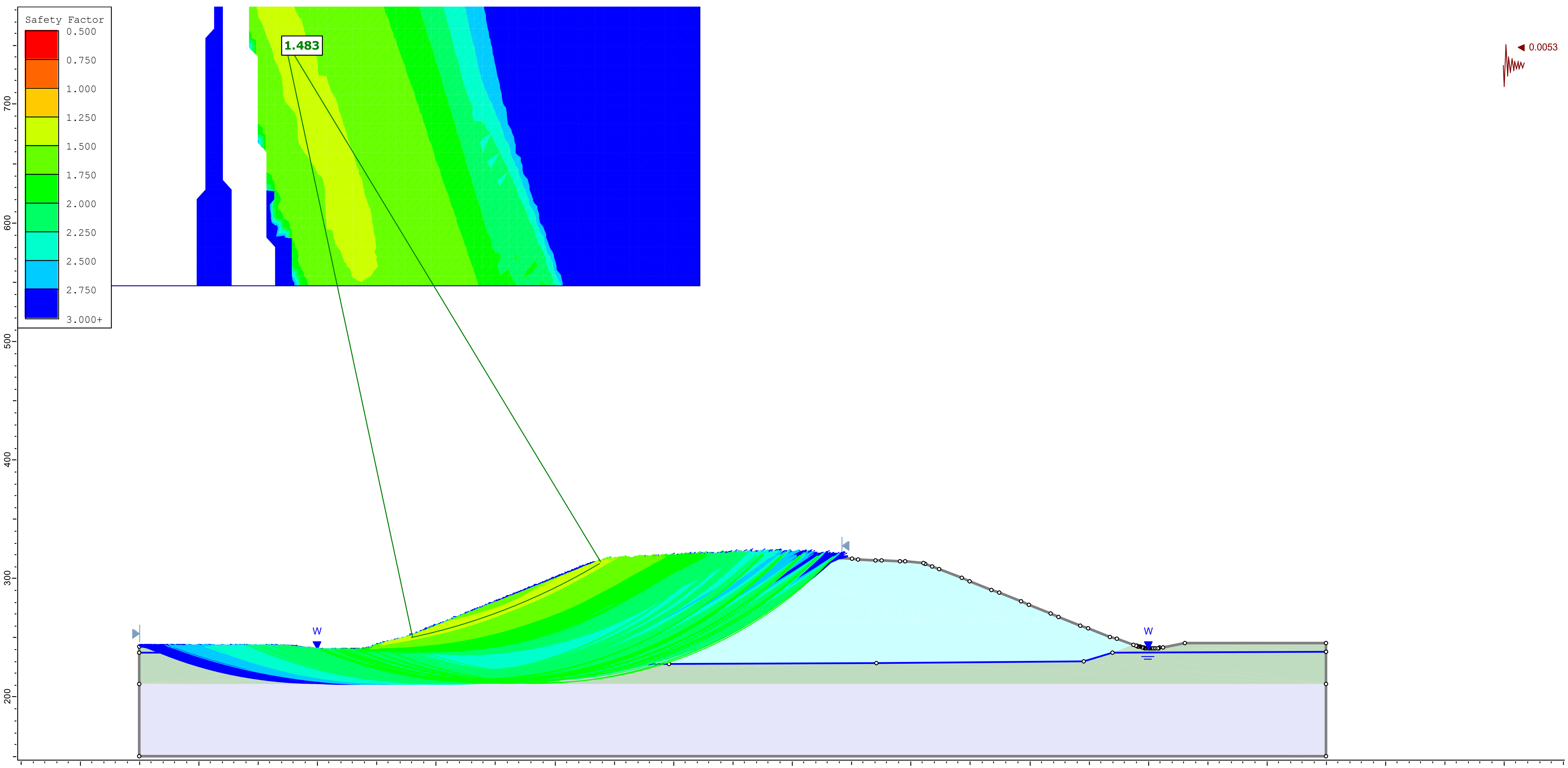


Client :	Waste Management of Canada Corporation	Figure 29
Project :	Twin Creeks Environmental Centre Landfill Optimization	wsp
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 12 kN/m^3, seismic, S_u = 100 kPa	

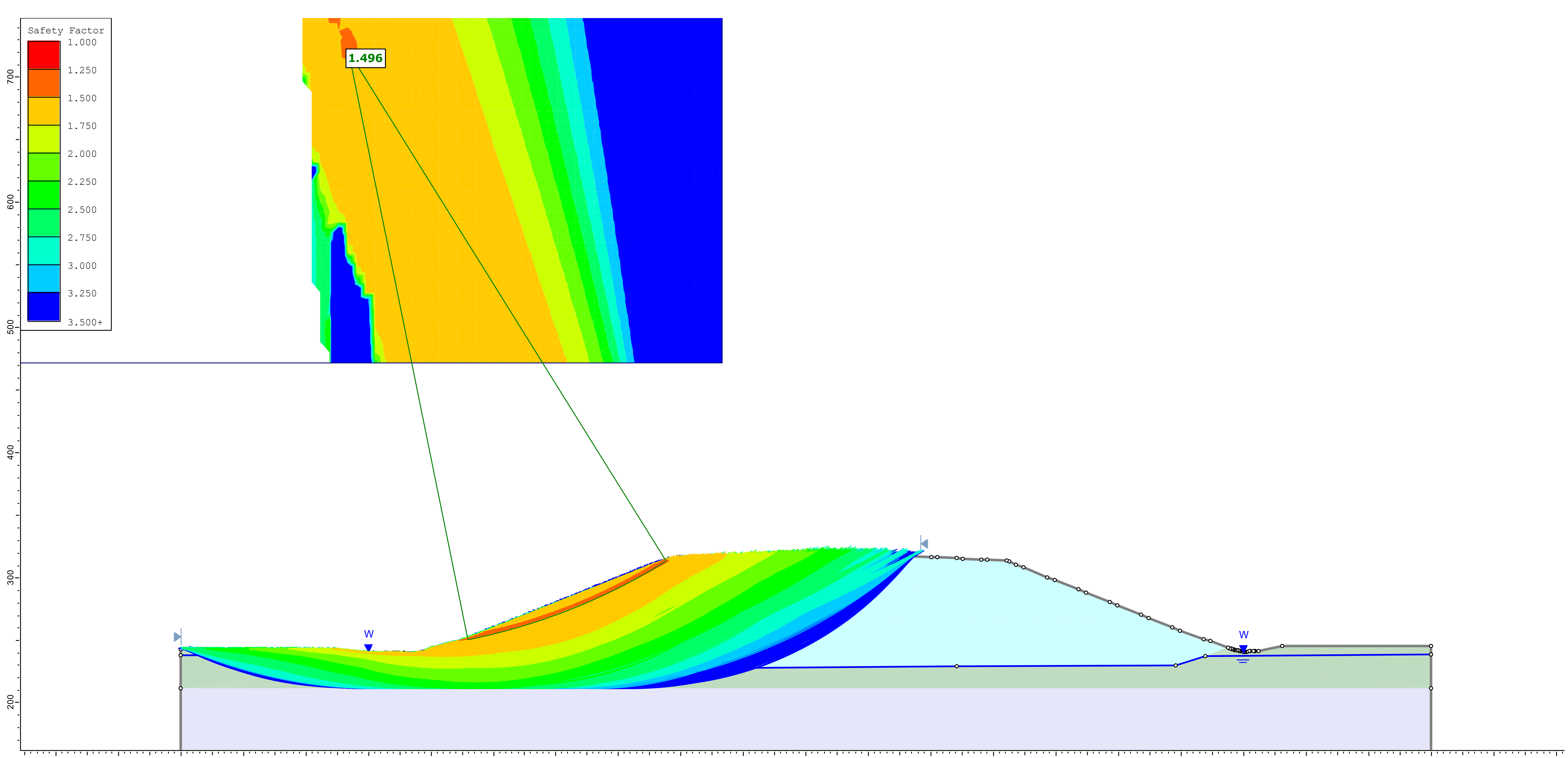


Client :	Waste Management of Canada Corporation
Project :	Twin Creeks Environmental Centre Landfill Optimization
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 12 kN/m^3, static, S_u = 190 kPa

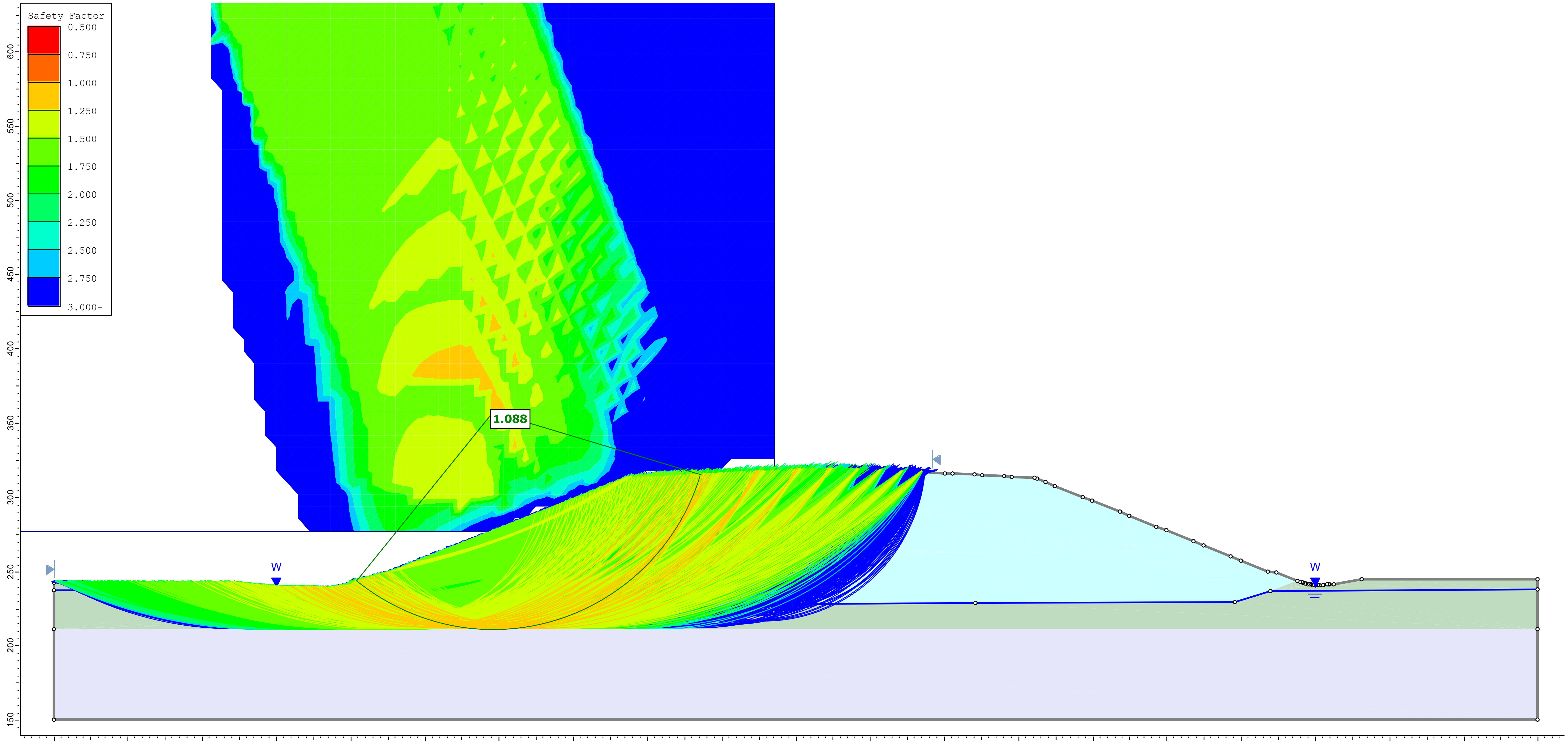
Figure 30



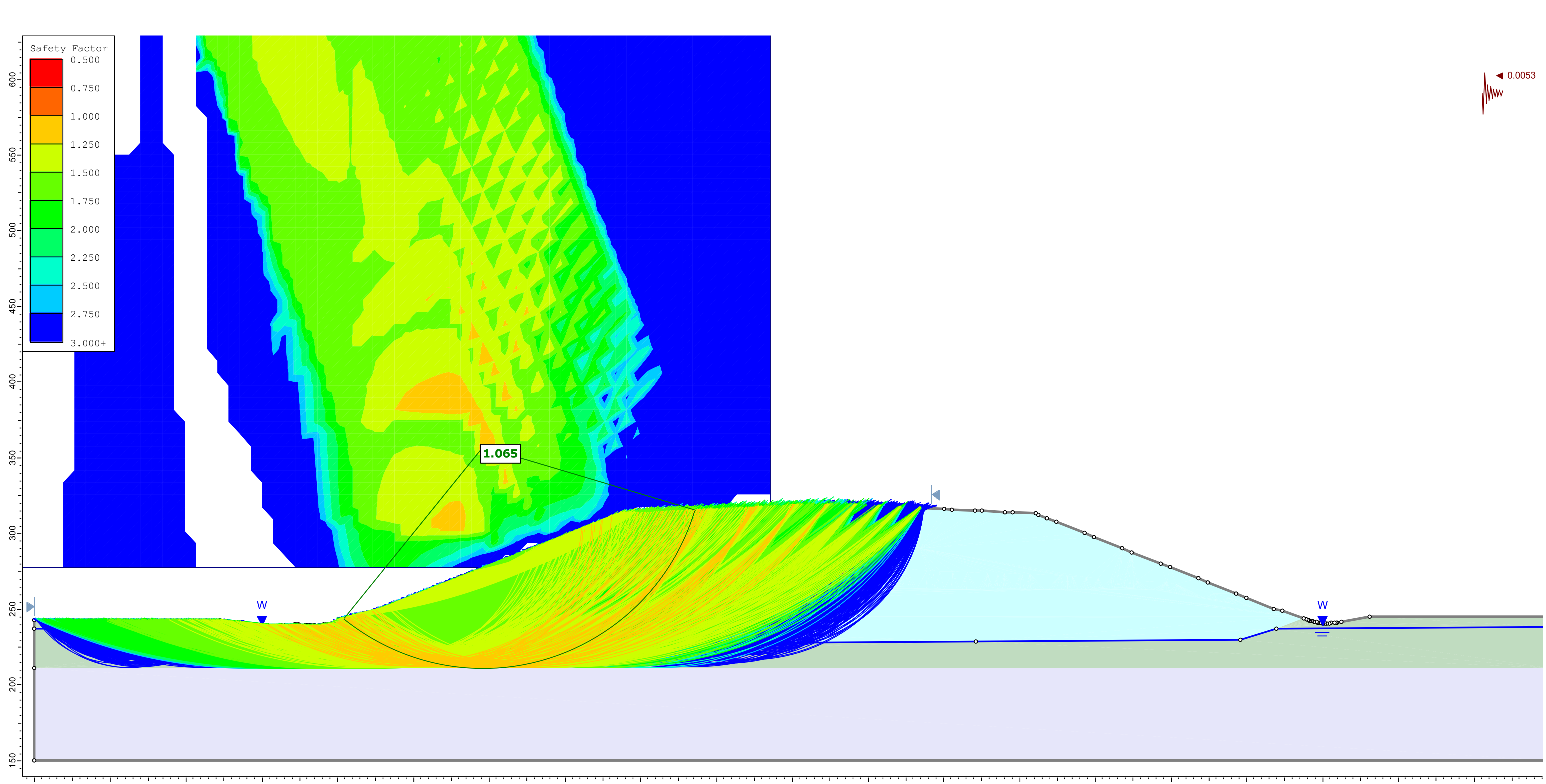
Client :	Waste Management of Canada Corporation	Figure 31
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 12 kN/m^3, seismic, S_u = 190 kPa	



Client :	Waste Management of Canada Corporation	Figure 32
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 15 kN/m³, static, drained	

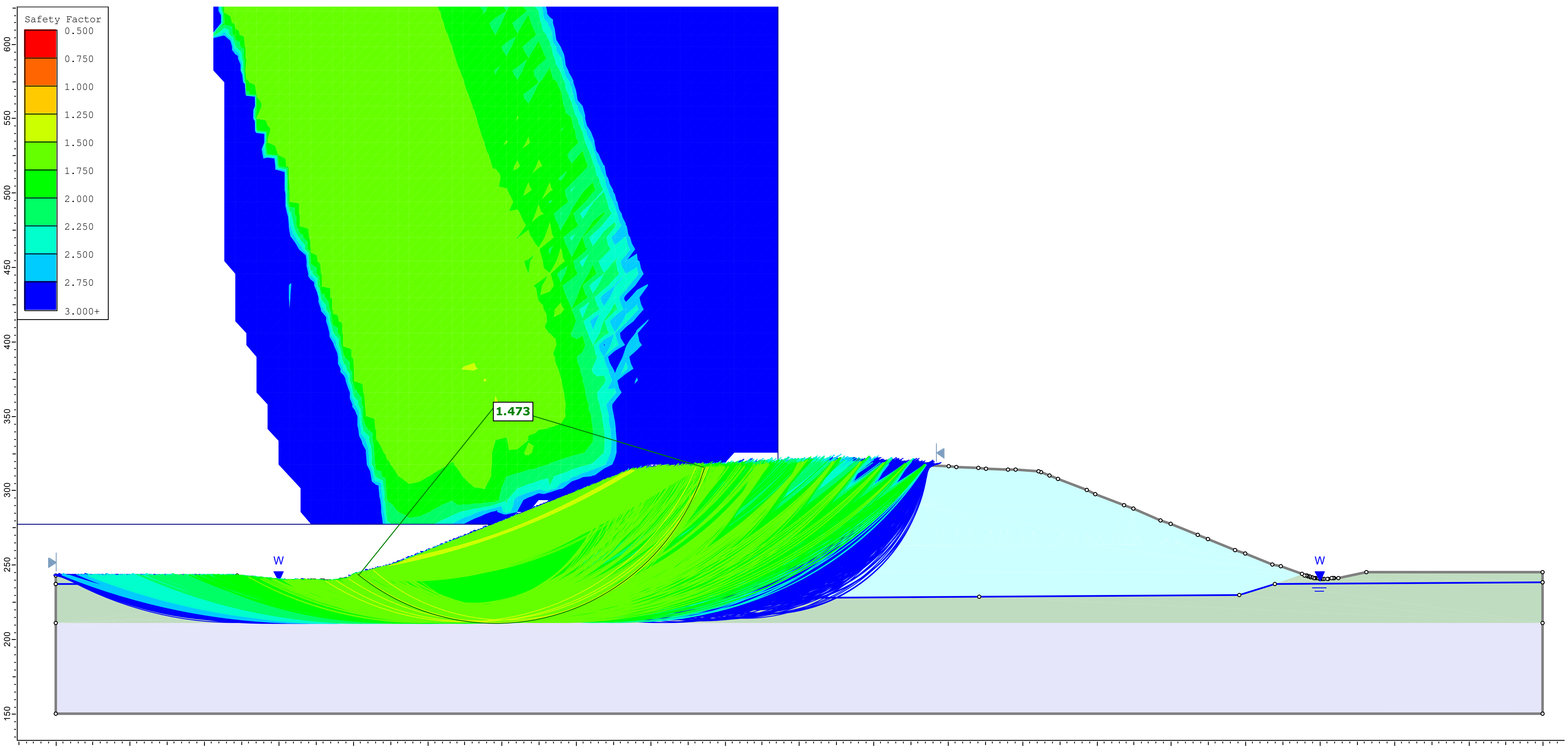


Client :	Waste Management of Canada Corporation	Figure 33
Project :	Twin Creeks Environmental Centre Landfill Optimization	wsp
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 15 kN/m^3, static, S_u = 100 kPa	

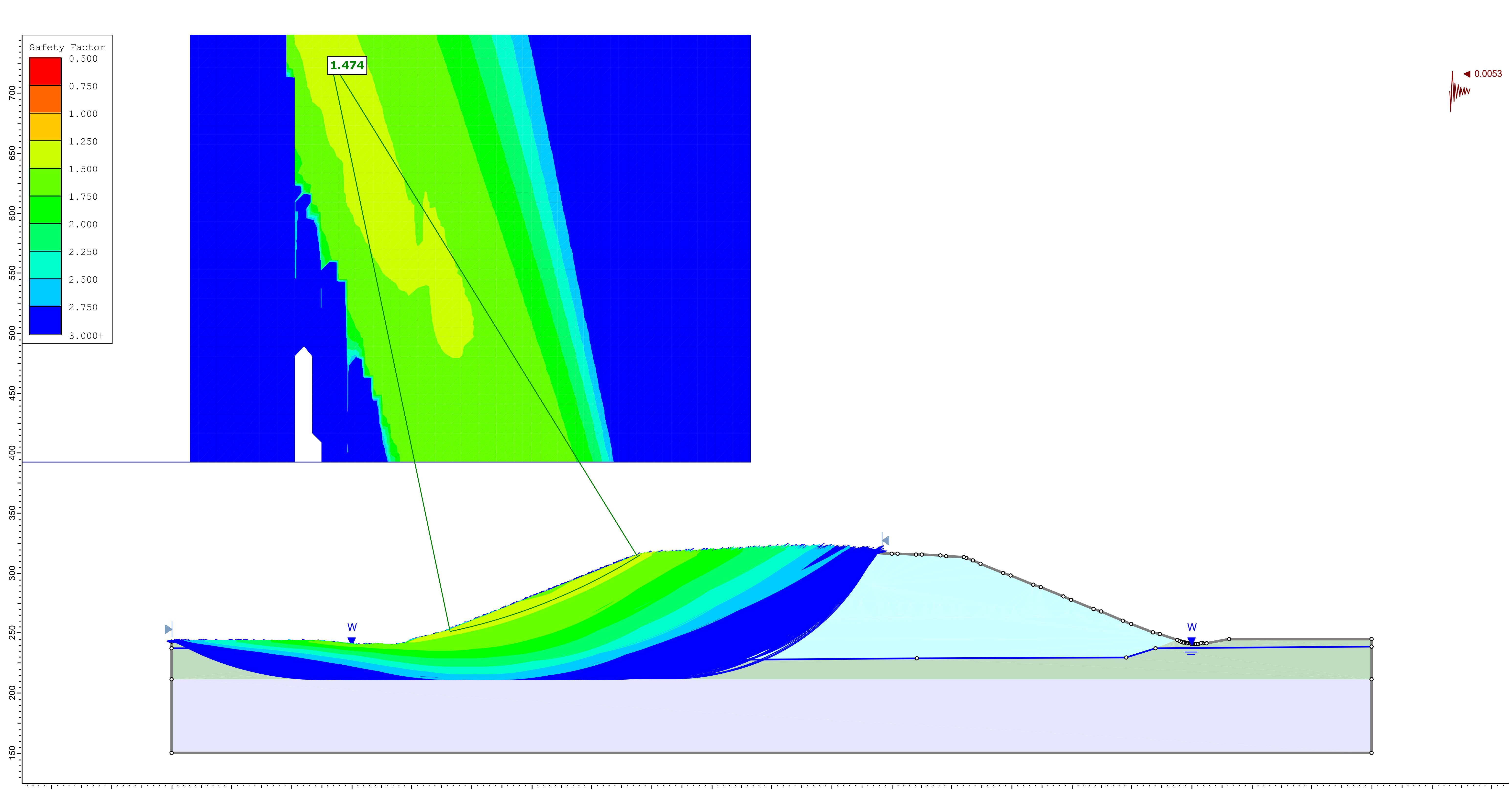


Client :	Waste Management of Canada Corporation
Project :	Twin Creeks Environmental Centre Landfill Optimization
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 15 kN/m^3, seismic, S_u = 100 kPa

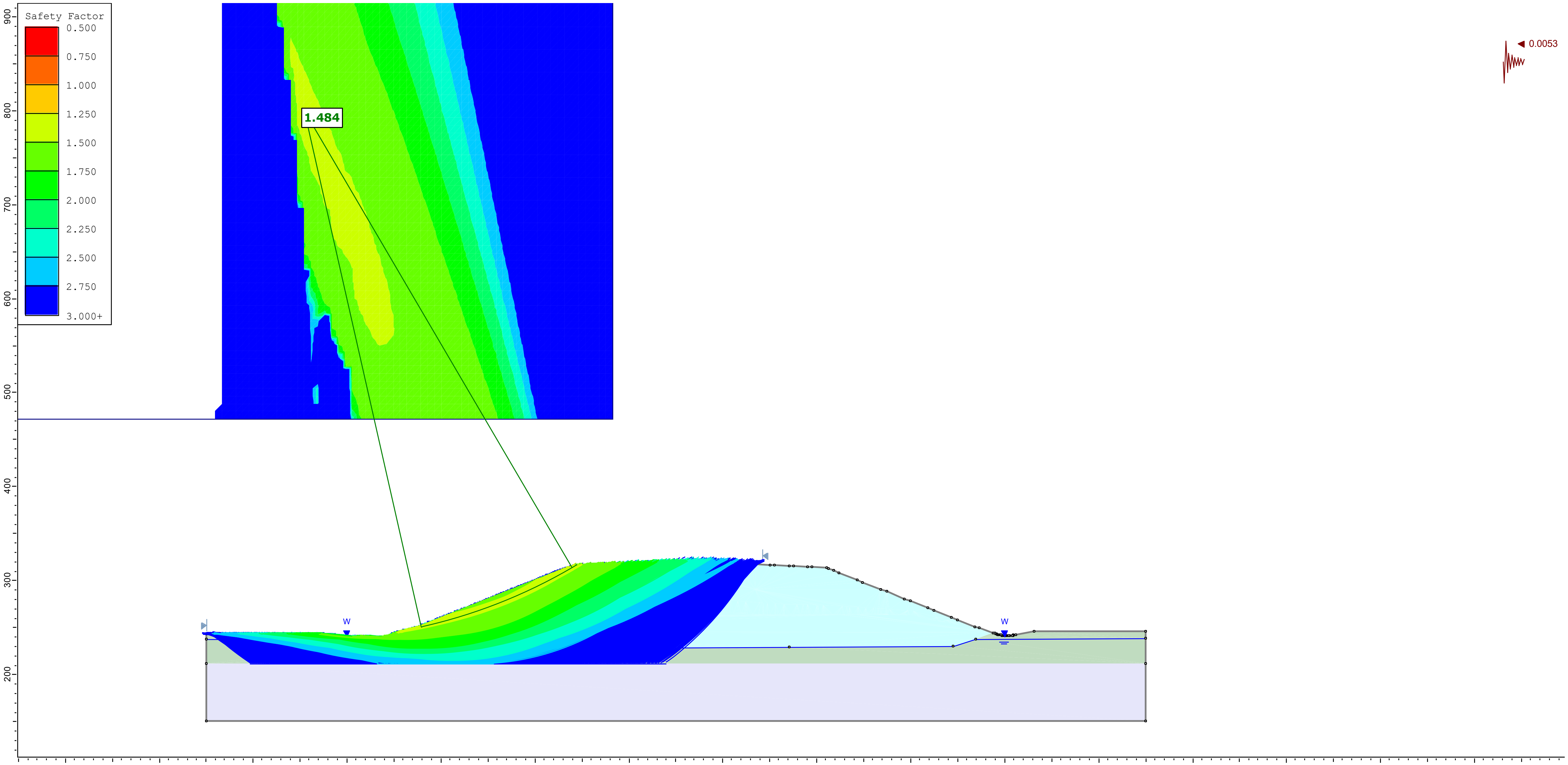
Figure 34



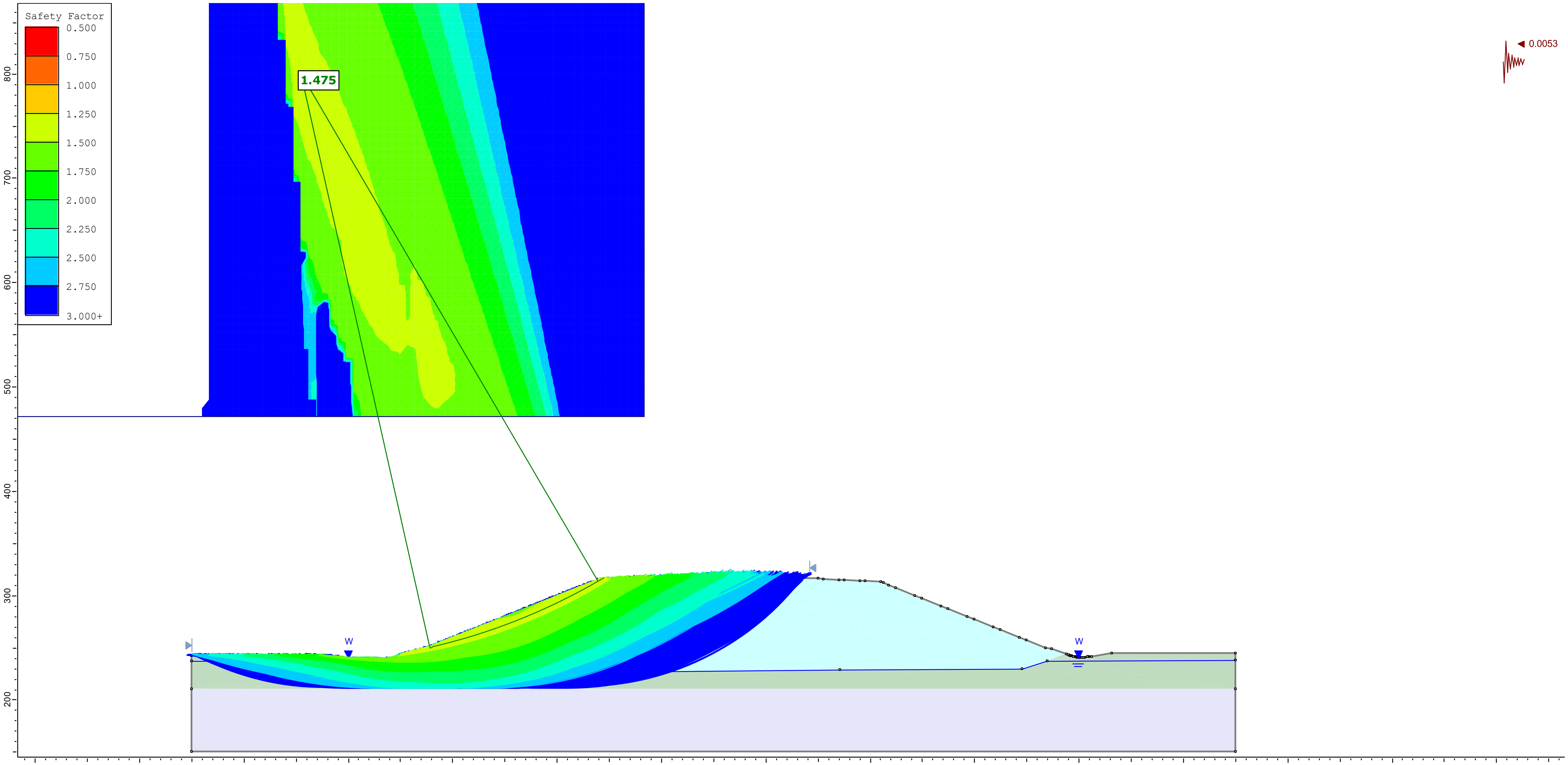
Client :	Waste Management of Canada Corporation	Figure 35
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 15 kN/m^3, static, S_u = 190 kPa	



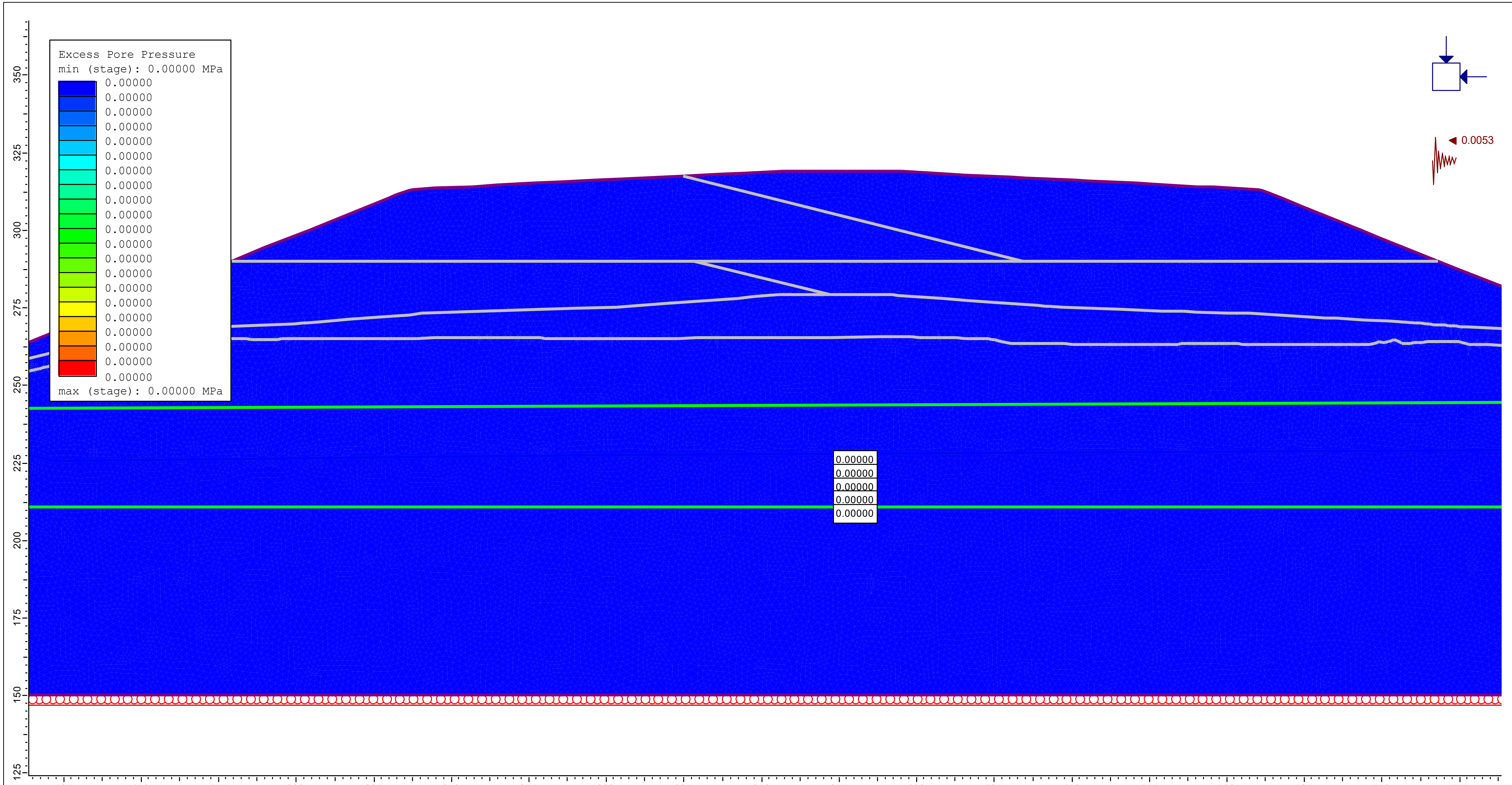
Client :	Waste Management of Canada Corporation	Figure 36
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 15 kN/m^3, seismic, S_u = 190 kPa	



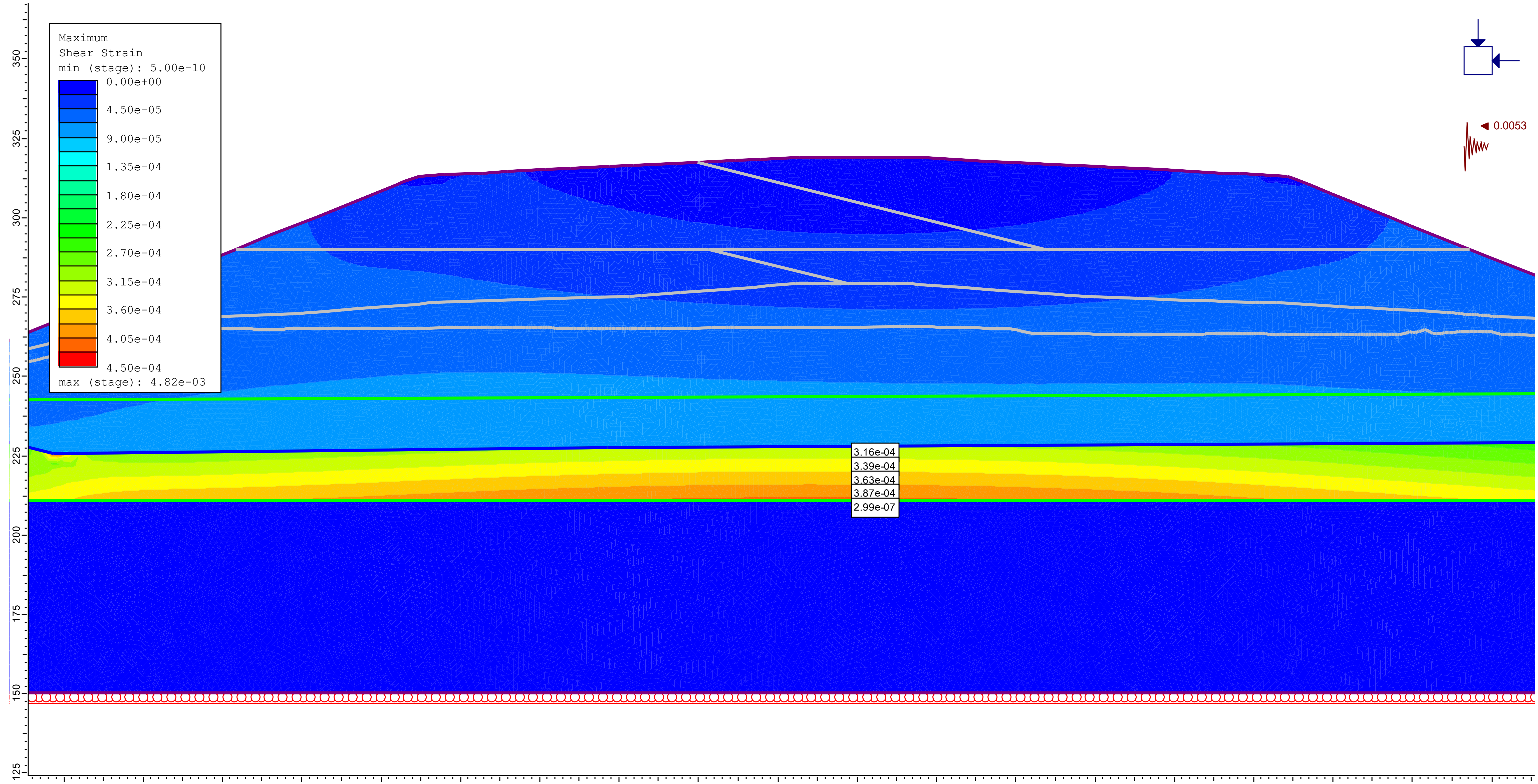
Client :	Waste Management of Canada Corporation	Figure 37
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 12 kN/m^3, seismic, drained	



Client :	Waste Management of Canada Corporation	Figure 38
Project :	Twin Creeks Environmental Centre Landfill Optimization	wsp
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Slide2 LE – Final Expansion Stage – Stability Safety Factor with waste at 15 kN/m^3, seismic, drained	



Client :	Waste Management of Canada Corporation	Figure 39
Project :	Twin Creeks Environmental Centre Landfill Optimization	
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Seismic Conditions – Final Expansion Stage – Excess pore water pressure with waste at 15 kN/m^3	



Client :	Waste Management of Canada Corporation	Figure 40
Project :	Twin Creeks Environmental Centre Landfill Optimization	wsp
Location :	Proposed Landfill Alternative Method 2 (See Conceptual Design Report 2024-11-15, Drawing 2.2)	
Analysis :	Seismic Conditions – Final Expansion Stage – Shear strain with waste at 15 kN/m^3	