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April 23, 2026

[redacted]

RE: SLOPE STABILITY ASSESSMENT
PROPOSED SINGLE FAMILY DWELLING AND ONSITE SEPTIC SYSTEM
JAMES NAISMITH WAY, PART 9 OF LOT 21, CONCESSION 9, PLAN 27R-8748,
MISSISSIPPI MILLS, LANARK COUNTY, ONTARIO

This letter reports the results of a slope stability assessment for the property known as Part 9 of Lot 21, Concession 9, James Naismith Way, Mississippi Mills, Ontario. The purpose of the slope stability assessment was to:

- Assess the condition of the existing slopes at the site in order to determine if a slope stability setback distance is required;
- Assess of the stability of the slope with respect to the construction of a single family dwelling and onsite septic system and verify that the proposed development will not have a detrimental impact to the stability of the slopes at the site.

A topographic survey of the site was completed by Kollaard Associates Inc. The topographic survey provided existing grade elevations, top and bottom of slope locations, centreline of existing ditches, and elevations along the shoreline of the Mississippi River (see Kollaard Associates DWG 210120-SLP1 attached following the text of this letter). Existing subsurface conditions at the site were determined via the advancement of four (4) test holes at the site.

The proposed building site is located on a ~1.4 hectare parcel of land along the Mississippi River approximately 3 kilometres northwest of the town of Almonte. For the purposes of this letter, the Mississippi River is considered to be oriented on a northwest-southeast axis adjacent to the site. The property known as Part 9 of Lot 21, Concession 9, James Naismith Way, Mississippi Mills, ON is located on the south and west side of the Mississippi River and extends approximately 175 metres to a road allowance (Part 1, Plan 27R-6180 and Part 10, Plan 27R-8748) projecting northwest from James Naismith Way. The proposed dwelling will be located approximately 80 metres southwest from the shoreline of the Mississippi River. An existing drainage ditch cuts through the property to the southwest of the proposed dwelling location and then changes direction to the northeast to outlet near the bottom of the slope leading down to the Mississippi River.

The proposed development at the site will consist of the construction of single family dwelling with a walkout basement at the top and along the face of the existing slope leading down to the Mississippi, and an onsite septic system. A site plan prepared by Valley Drafting and Design (Project Description: New House, 92 James Naismith Way, Almonte; Sheet A1.0: Proposed Site Plan, Dated: October 2025) was provided to Kollaard Associates Inc. by the client and has been attached in the Appendix following the text of this letter. The height and inclination of the existing drainage ditch and the slope adjacent to the proposed dwelling location were determined from a topographic survey completed by Kollaard Associates Inc. during a site visit on April 23, 2021. An additional site visit was completed April 17, 2026 to verify conditions of the slope.

The following is based on the topographic survey and site observations:

- The edge of water of the Mississippi River was located approximately 79 metres from the proposed dwelling location at the time of the site visit.
- At the time of survey on April 23, 2021, the water level in the Mississippi River was at an elevation of about 96.03 metres.
- The defined slope in the vicinity of the proposed dwelling location has a total height of about 10 metres.
- The steeper portions of the drainage ditch adjacent to the proposed dwelling location are inclined at an angle that varies between 34 and 35 degrees from horizontal, with a total height that ranges between 2.75 and 3.20 metres from the top of slope to the ditch centreline.
- In general, the ground surface at the property has a downward slope from the southwest to the northeast. The ground surface beyond the toe of the defined valley slope is inclined at about 2% towards the riverbank of the Mississippi River.
- The face of the defined slope is well vegetated (heavy shrubs and forested with young to mature trees).
- There was no groundwater seepage observed at the site.
- There is no indication of historic instability at the site.

Geotechnical Information

A review of available surficial geological maps of the area indicates that the site is underlain by paleozoic bedrock.

The subsurface conditions at the site were determined by means of four (4) test holes (labelled as TP1, TP2, TP3, and TP4 on Kollaard Associates Inc. DWG 210120-SLP1) advanced on the top, bottom, and face of the existing slope in the vicinity of the proposed dwelling location.

The results of the test holes indicate that the subsurface conditions at the site generally consist of about a 0.25 metre thick layer of topsoil overlying silty clay with cobbles and boulders. The silty clay encountered in the test holes consisted of weathered stiff to very stiff crust material. The test holes were advanced to a depth of about 1.8 to 1.9 metres below the ground surface before encountering refusal on rock. Groundwater intrusion was encountered in the test hole advanced at the bottom of the slope, labelled as TP3, at a depth of about 0.60 meters below the ground surface at the time of the site visit. The soil and groundwater conditions encountered at the test hole locations, put down

during the limited subsurface investigation, can be found on Table 1: Record of Test Holes in the Appendix following the text of this letter.

Upon review of available well records in the vicinity of the site, the subgrade is expected to consist of a stiff clay overburden with depth varying between 2 to 10 feet (0.61 – 3.05 metres) below the ground surface, followed by sandstone bedrock. Available well records have been attached in the Appendix following the text of this letter.

The groundwater conditions described in this letter refer only to those observed at the location and date of observations noted in the letter. Groundwater conditions may vary seasonally, or may be affected by construction activities on or in the vicinity of the site.

Based the subsurface conditions encountered at the site, it is considered that there are no subsurface conditions that would preclude the construction of a single family dwelling and onsite septic system in the proposed locations.

Slope Conditions and Assessment

In general, the topographic survey information and sections indicate that the ground surface on the tableland above the slope in the area of the proposed development is relatively flat. The surficial drainage across the tableland is directed both towards Mississippi River at the rear of the property and towards the drainage ditch adjacent to the proposed dwelling location. Based on visual observations during the site visit and on the information obtained from the topographic survey, three sections were selected to be representative of the critical slope conditions at the site. Full profiles of each critical slope section have been shown on Kollaard Associates Inc. DWG 210120-SLP2 in the Appendix following the text of this letter.

The steeper sections of the slope, as represented by Section 1, are inclined downward from horizontal at an angle varying between 18 and 23 degrees. The defined slope in Section 1 has an average angle of inclination of about 15.6 degrees from horizontal over a height of about 10.0 metres.

Sections 2 and 3 were selected to assess the height and inclination of the side slopes of the existing drainage ditch adjacent to the proposed septic area. The side slope of the drainage ditch, as represented by Section 2, has angle of inclination of about 34.5 degrees from horizontal and a total height of 2.75 metres from the top of slope to the centreline of the ditch. The side slope of the drainage ditch, as represented by Section 3, has angle of inclination of about 35.3 degrees from horizontal and a total height of 3.22 metres from the top of slope to the centreline of the ditch.

The details of the required investigation have been defined based on Table 4.2 (slope stability rating chart) of the MNR's "Technical Guide River & Stream Systems: Erosion Hazard Limit".

From Table 4-2

Category	Criteria	Rating
1. Slope Inclination	More than 26 degrees (Ditch side slopes)	16
2. Soil Stratigraphy	Clay, Silt	12
3. Seepage from Slope Face	none observed	0

4. Slope Height	<10.0 m	4
5. Vegetation	Well vegetated	0
6. Table Land Drainage	Minor Drainage over slope no active erosion	2
7. Proximity to Watercourse to Toe of Slope	Greater than 15 m	0
8. Previous Landslide Activity	No	0
Total		34
25 - 35 ~ Slight Potential = Site Inspection and surveying, preliminary study, detailed report		

The following is considered to be a professional assessment of the stability of the slope at the site and is reviewed by the undersigned qualified professional civil and geotechnical engineer.

For the purposes of this slope stability assessment:

Under Static conditions:

Slopes with a factor of safety of 1.1 to 1.3 are considered marginally stable, slopes with a factor of safety of greater than 1.3 are considered stable, and slopes with a factor of safety of 1.4 to 1.5 and greater are considered to be adequately stable for dwellings or structures located close to or on the slope.

Under seismic conditions:

Slopes with a minimum factor of safety of 1.1 are considered to be stable.

The soil conditions used in the stability analyses were based, in part, on the results of the test holes advanced across the site. The stability analyses were carried out using parameters for silty clay followed by bedrock based on the results of the geotechnical investigation as well as our experience in the vicinity of the subject site and surficial geology maps of the area. As a conservative approach, the stability analyses were completed using a minimum clay overburden depth of approximately 3.0 metres below the ground surface.

The following table summarizes the soil parameters used in the analysis:

Soil Type	**Effective Angle of Internal Friction (degrees)**	**Effective Cohesion (kPa)**	**Unit Weight kN/m^3**
Silty Clay*	33	8	18
Bedrock	Infinite	-	-

* Soil Strength properties obtained from the City of Ottawa Slope Stability Guidelines Section 4.4 - Table 2. It is noted that the effective angle of internal friction, cohesion, and bulk unit weight values selected are within the range of typical values.

The results of the stability analyses are dependent on the assumed groundwater conditions. As previously indicated, groundwater was encountered at a depth of about 0.60 metres below the

ground surface at the toe of the defined slope. There was no evidence of groundwater intrusion in the test holes advanced on the tableland above the slope and on the face of the slope. The slope stability analyses were completed using a ground water level of about 0.60 metres below the ground surface at the toe of the slope and 1.0 to 1.2 metres below the ground surface on the face of the slope and on the tableland above the slope to represent near saturated conditions.

The stability assessment was completed using GeoStudio: Slope/W (2019 R2) slope stability software for both static and seismic conditions. The results of the slope stability assessment for each section under both static and seismic conditions are provided in the Appendix.

Seismic Stability was modelled using a seismic coefficient of k = 0.14 where k is equal to one half of the Peak (horizontal) Ground Acceleration at 2% probability of exceedance in 50 years. A PGA of 0.276 was obtained for the site from the 2025 National Building Code Seismic Hazard Calculation (attached following the text of this letter).

The following table summarizes the minimum factor of safety for each analyzed section:

Section	**Minimum Factor of Safety**	
	Static	Seismic
Section 1 – Valley Slope	2.18	1.46
Section 1 – Riverbank Slope	4.84	2.55
Section 2	2.50	1.91
Section 3	1.95	1.51

The figures in the Appendix show the minimum factors of safety and the location of the slip surface resulting in the minimum factor of safety. The figures also provide a slip surface colour map. The colour contours indicate the origin and location of every slip surface calculated during the stability modeling that result in a factor of safety within the range indicated by the respective colour. If a colour indicated on the factor of safety colour legend does not appear on the section, the factor of safety either does not occur (the lowest factor of safety is greater than the range indicated by the colour) or is greater than that indicated by the preceding colour shown.

The analysis was completed assuming near saturated slope conditions. Near saturated slope conditions represent a conservative estimation of the groundwater level as no groundwater was encountered at the top of on the face of the slope. The near saturated conditions will take into account any seasonal fluctuations in the ground water level or any additional loading from the proposed septic system.

The slope stability analysis completed on each of the sections indicated that the slope represented by each section is stable, having factors of safety of much greater than 1.5 under static conditions and 1.1 under seismic conditions. There are no conditions at which the defined valley slope or the side slopes of the drainage ditch are less than stable. As such, there is no requirement for a stable slope setback and the construction of a single family dwelling and onsite septic system in the locations specified will have no effect on the stability of the slope.

Any runoff generated during or following the construction of the proposed development should be directed towards the rear portion of the property or towards the drainage ditch as per the existing grading conditions. It is noted that concentrated flow should be dispersed along the face of the

slope by means of landscaping and appropriately placed vegetation to avoid erosion along the slope faces. It is noted that should erosion occur along the faces of the slopes as a result of concentrated flow, it will not significantly affect the slope stability. It is considered that vegetated areas disturbed during construction should be re-vegetated as soon as reasonably possible.

Setback Requirements

For unstable slopes, the distance from the unstable slope to the safe setback line is called the 'Erosion Hazard Limit' (or Limit of Hazard Lands Setback) In accordance with the Ontario Ministry of Natural Resources Technical Guide - River & Stream Systems: Erosion Hazard Limit 2002 [MNR Technical Guide], the Erosion Hazard Limit consists of three components: (1) Toe Erosion Allowance, (2) Stable Slope Allowance and (3) Erosion Access Allowance as illustrated in the following Figure 115b copied below from the MNR Technical Guide.

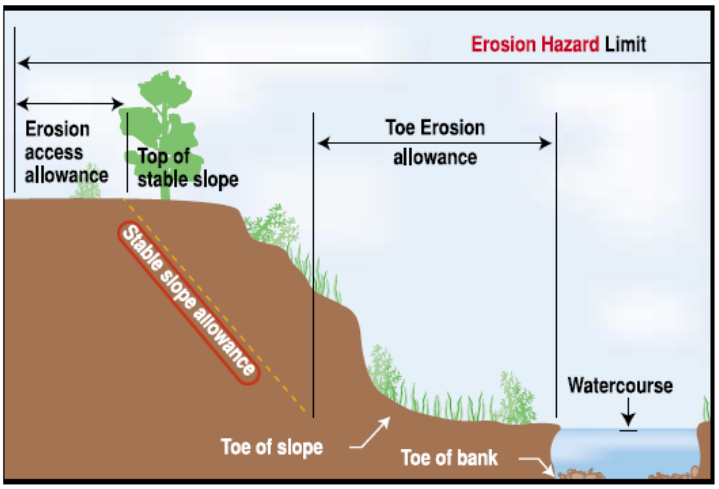


Figure 115 b - Stable Slope Allowance
(toe of valley slope ≤15m from watercourse)

Component 1) Toe Erosion Allowance

The minimum toe erosion allowance for a slope adjacent a river is defined by Table 3: Determination of Toe Erosion Allowance in the MNR Technical Guide copied below.

Table 3: Determination of Toe Erosion Allowance

MINIMUM TOE EROSION ALLOWANCE - River Within 15 m of Slope Toe*

Type of Material Native Soil Structure	**Evidence** of Active Erosion** OR Bankfull Flow Velocity > Competent Flow Velocity***	**No evidence** of Active Erosion** OR Bankfull Flow Velocity <Competent Flow Velocity***		
	RANGE OF SUGGESTED TOE **EROSION ALLOWANCES**	Bankfull Width < 5m	5-30m	> 30m
1.Hard Rock (granite) *	0 - 2 m	0 m	0 m	1 m
2.Soft Rock (shale, limestone) Cobbles, Boulders *	2 - 5 m	0 m	1 m	2 m
3.Stiff/Hard Cohesive Soil (clays, clay silt), Coarse Granular (gravels) Tills *	5 - 8 m	1 m	2 m	4 m
4.Soft/Firm Cohesive Soil, loose granular, (sand, silt) Fill *	8 - 15 m	1-2 m	5 m	7 m

As previously indicated, the subgrade at the site consists of a mixture of silt and clay (condition 3) and there is potential for the riverbank to be subjected to active erosion during high flow events. The bank full width of the Mississippi River in the area of the site ranges between 58 and 100 metres. Based on the observed conditions, the range of suggested toe erosion allowance is 5 to 8 metres. As a conservative approach, a toe erosion allowance of 8 metres will be applied to the Erosion Hazard Limit for the purposes of this assessment.

Component 2) Stable Slope Allowance

The stable slope allowance corresponds to the minimum set back distance such that the minimum factor of safety originating for any slip surface originating at or beyond the setback distance is greater than 1.5 under static conditions and 1.1 under seismic conditions.

The slope stability analysis completed on the sections indicates that the slope can be considered stable having factors of safety of greater than 1.95 under static conditions and greater than 1.58 under seismic conditions. Therefore, there is no stable slope setback distance and a stable slope allowance equal to zero will be considered in the limit of hazard lands setback.

Component 3) Erosion Access Allowance

The MNR technical Guide suggests that the erosion access allowance for river and stream systems be 6 metres. From the MNR Technical Guide, three main principles support the inclusion of the erosion access allowance:

- Providing for emergency access to erosion prone areas;
- Providing for construction access for regular maintenance and access to the site in the event of an erosion event or failure of a structure;
- Providing protection against unforeseen or predicted external conditions which could have an adverse effect on the natural conditions or processes acting on or within an erosion prone area of provincial interest.

Erosion Hazard Limit

Based on the results of the slope stability assessment and the considerations above with respect to the toe erosion allowance and the erosion access allowance at the site, the maximum Erosion Hazard Limit for the site is as follows:

Erosion Hazard Limit = Toe Erosion Allowance + Stable Slope Allowance + Erosion Access Allowance

Erosion Hazard Limit = 8 + 0 + 6 = 14 metres from the toe of the riverbank.

A setback distance of 14 metres from the toe of the bank of the Mississippi River has been overlain on Kollaard Associates DWG 210120-SLP1. The maximum Erosion Hazard Limit for the site defines the limit of hazard lands setback from the toe of the riverbank and has been based on the scope of work mandated for a slope with slight potential for instability.

Onsite Septic System

A properly designed and constructed Class 4 septic system will not result in saturation of the ground. However, unforeseen circumstances could result in near saturation or elevated ground water levels in a portion of the slope. The completed slope stability modelling included near saturated conditions across the entire slope. As such, the potential for elevated groundwater conditions have been accounted for in the analyses.

The MNR Technical Guide in section 4.3.3.1 Design Minimum Factors of Safety recommends a minimum factor of safety of 1.2 to 1.3 for land use involving a tile bed (onsite septic system). The results of the slope stability analyses indicate that the side slopes of the existing drainage ditch in the vicinity of the proposed septic bed exceed the minimum factor of safety requirements. It is recommended that a 2 metre setback from the top of slope to the edge of the weeping tile be maintained to ensure adequate spacing is available for future grading in the area of the septic bed.

There are no topographic constraints that would prevent the construction of a septic system in the vicinity of the proposed dwelling location.

Any septic system should be designed and installed in accordance with Part 8 of the Ontario Building Code.

The slope can be considered stable from a long term perspective. For this reason, the slope can be considered stable from a long term perspective.

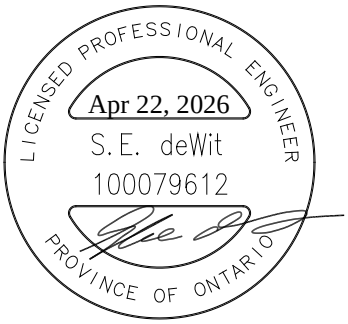
Conclusions / Recommendations

- It is the professional opinion of the undersigned geotechnical engineer that the slopes at the site are stable from a long term perspective and that there are no slope conditions which would prevent the construction of a single family dwelling at the location specified.
- There are no subsurface soils conditions or topographical constraints at the site that would prevent the construction of an onsite septic system.
- The engagement of the services of the geotechnical consultant during construction is recommended to confirm that the subsurface conditions throughout the proposed development

do not materially differ from those given in this letter and that the construction activities do not adversely affect the intent of the design.

We trust this letter provides sufficient information for your present purposes. If you have any questions concerning this letter please do not hesitate to contact our office.

Best Regards,
KOLLAARD ASSOCIATES INC.



Steven deWit, P.Eng.

TABLE I

RECORD OF TEST HOLES
JAMES NAISMITH WAY, PART 9 OF LOT 21, MISSISSIPPI MILLS, ONTARIO

TEST HOLE NUMBER	DEPTH (METRES)	DESCRIPTION
TP1 Ground Surface Elevation: 106.80	0.00 – 0.30	Topsoil
	0.30 – 1.40	Grey Brown, Silty CLAY w/ cobbles and boulders
	1.40*	End of test hole

*probed to a total depth of 1.90 meters
Test Hole Dry, April 23, 2021

TP2 Ground Surface Elevation: 103.09	0.00 – 0.20	Topsoil
	0.20 – 1.00	Grey Brown, Silty CLAY w/ cobbles and boulders
	1.00*	End of test hole

*probed to a total depth of 1.90 meters
Test Hole Dry, April 23, 2021

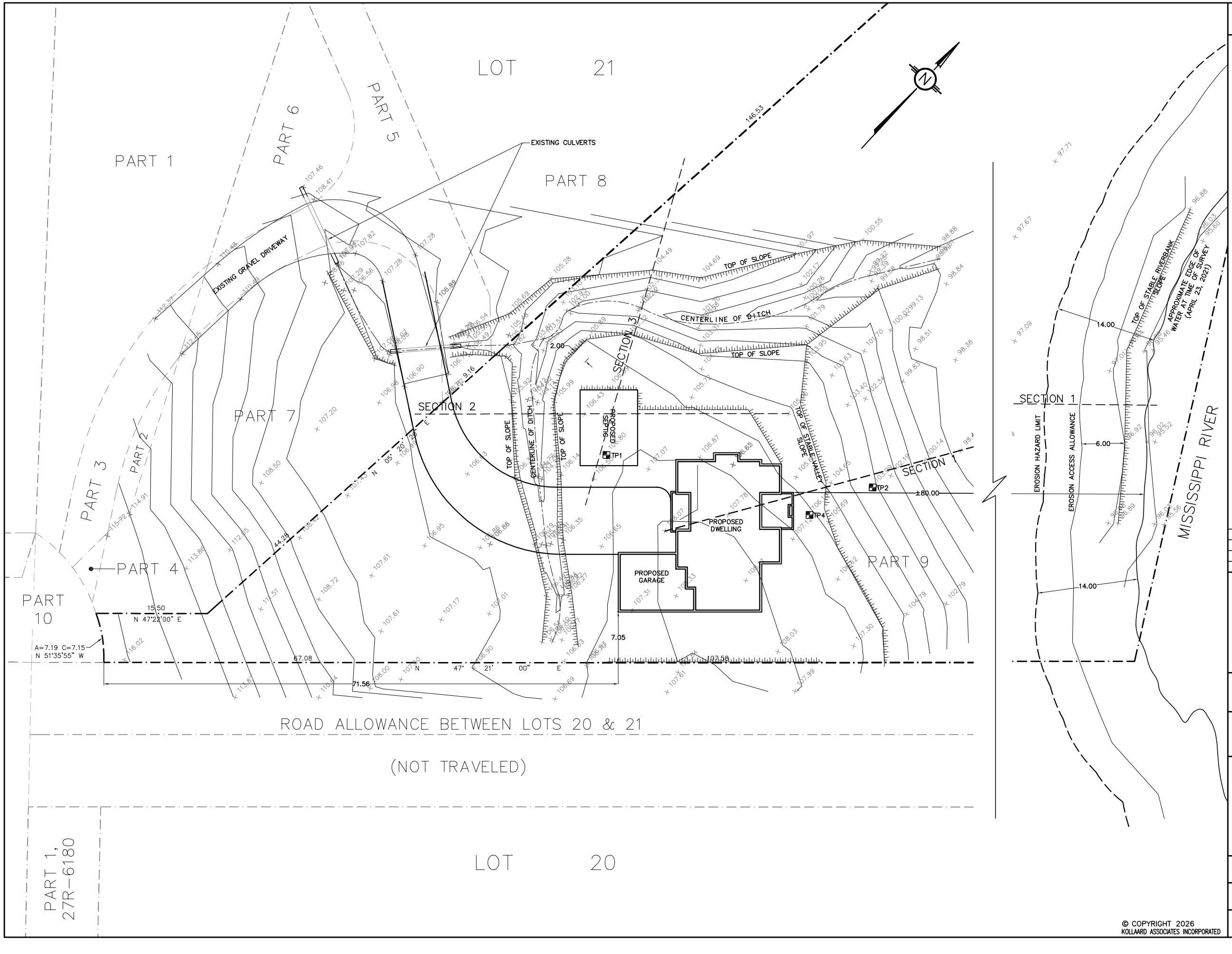
TP3 Ground Surface Elevation: 97.71	0.00 – 0.25	Topsoil
	0.25 – 0.80	Grey Brown, Silty CLAY w/ cobbles and boulders
	0.80*	End of test hole

*probed to a total depth of 1.80 meters
Water encountered in test hole at a depth of 0.60 metres, April 23, 2021

TABLE I *(continued)*

TP4	0.00 – 0.30	Topsoil
Ground Surface Elevation: 106.10	0.30 – 1.40	Grey Brown, Silty CLAY w/ cobbles and boulders
	1.40*	End of test hole

*probed to a total depth of 1.80 meters
Test Hole Dry, April 23, 2021



DRAWING NUMBER: 210120–SLP1

GENERAL NOTES

1. Dimensions and elevations are in metric as shown. The approximate shape and inclination of the slope were measured via topographical survey by Kollaard Associates Inc.

2. This drawing is not a site plan or a legal survey and to be used for slope stability purposes only.
See Proposed Site Plan prepared by Brent Kelly Design Services (Dated: 12/15/20)

3. Any changes made to drawings must be verified and approved by Kollaard Associates Inc.

4. This drawing is intended to indicate the location of the proposed construction relative to the existing slope as well as the section locations for the slope stability assessment.

5. There was no groundwater observed in the test holes advanced at the site.

6. This drawing is intended to be read in conjunction with the slope stability assessment letter prepared by Kollaard Associates Inc for this site File #210120.

LICENSED PROFESSIONAL ENGINEER
22.APR.2026
S. E. deWit
100079612
PROVINCE OF ONTARIO

REV.	NAME	DATE	DESCRIPTION

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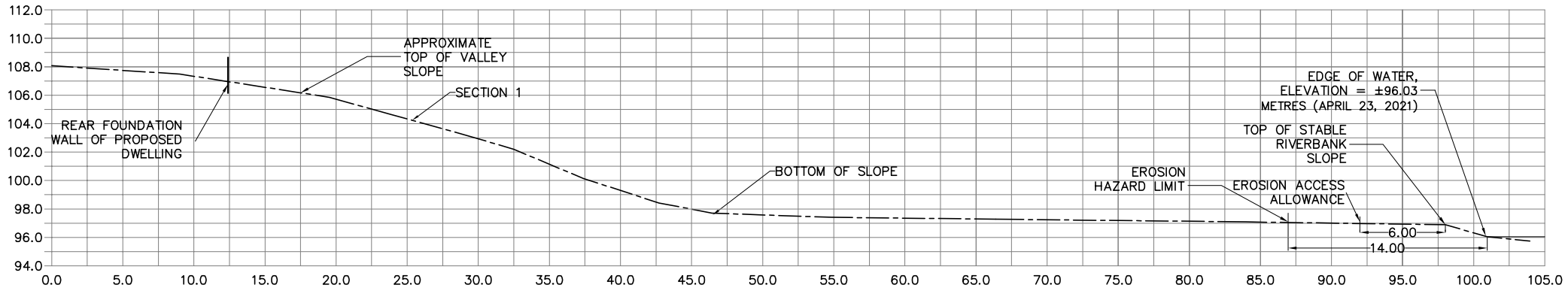
CLIENT: BLAIR WALKER

PROJECT: SLOPE STABILITY ASSESSMENT

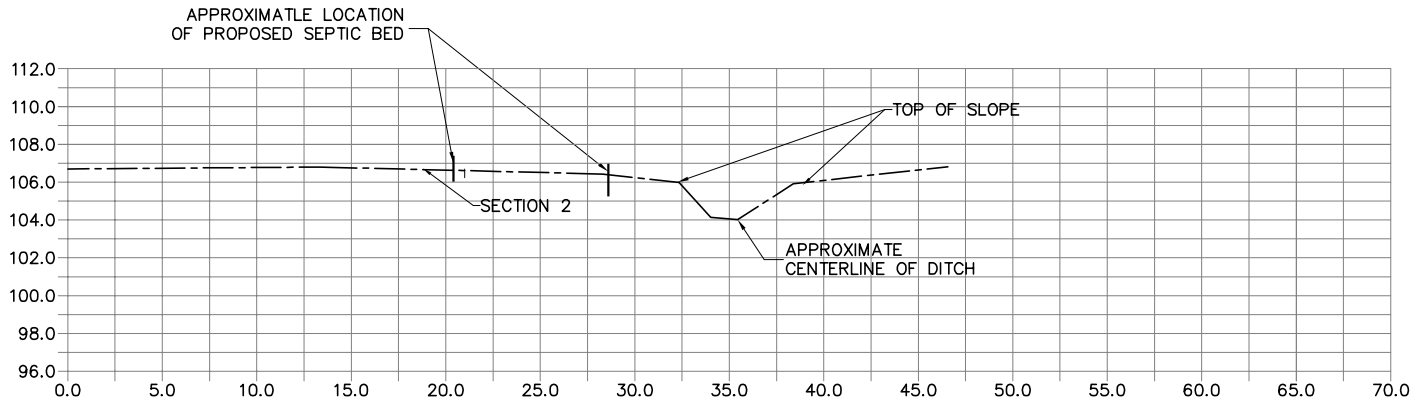
LOCATION: JAMES NAISMITH WAY, PART 9 OF LOT 21, CON. 9, PLAN 27R-8748, MISSISSIPPI MILLS, LANARK COUNTY, ONTARIO

DESIGNED BY:	DATE:
IB	MAR 17, 2026
DRAWN BY:	SCALE:
IB	1:500

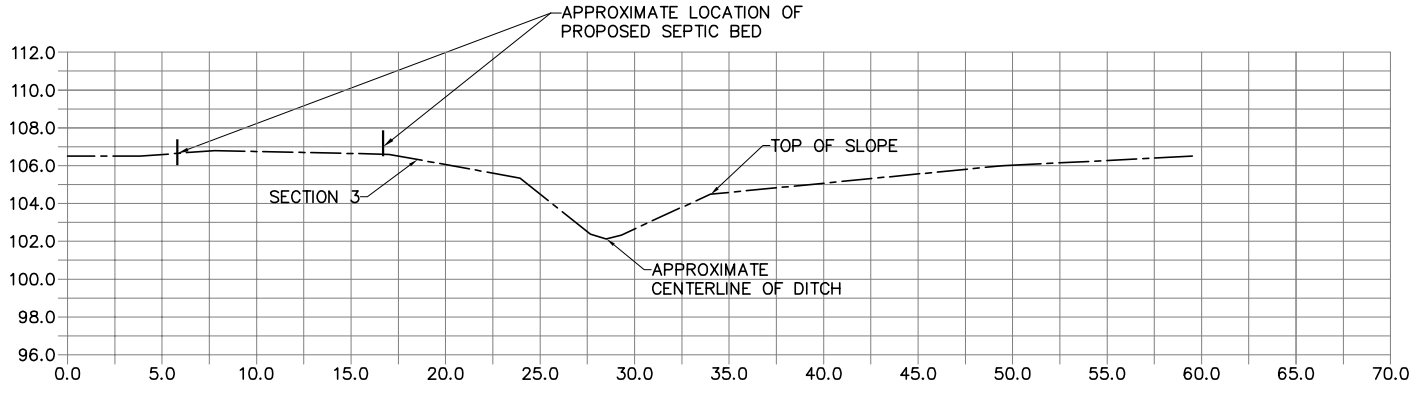
KOLLAARD FILE NUMBER: 210120



SLOPE SECTION 1



SLOPE SECTION 2



SLOPE SECTION 3

DRAWING NUMBER: 210120–SLP2

GENERAL NOTES

1. Dimensions and elevations are in metric as shown. The approximate shape and inclination of the slope were measured via topographical survey by Kollaard Associates Inc.

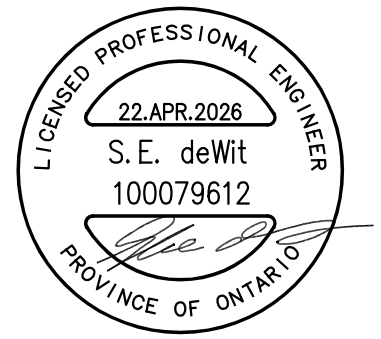
2. This drawing is not a site plan or a legal survey and to be used for slope stability purposes only.

3. Any changes made to drawings must be verified and approved by Kollaard Associates Inc.

4. This drawing is intended to indicate the location of the proposed construction relative to the existing slope as well as the section locations for the slope stability assessment.

5. There was no groundwater observed in the test hole advanced into the table land. *Test hole locations are approximated.

6. This drawing is intended to be read in conjunction with the slope stability assessment letter prepared by Kollaard Associates Inc for this site File #210120.



REV.	NAME	DATE	DESCRIPTION

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CLIENT: BLAIR WALKER

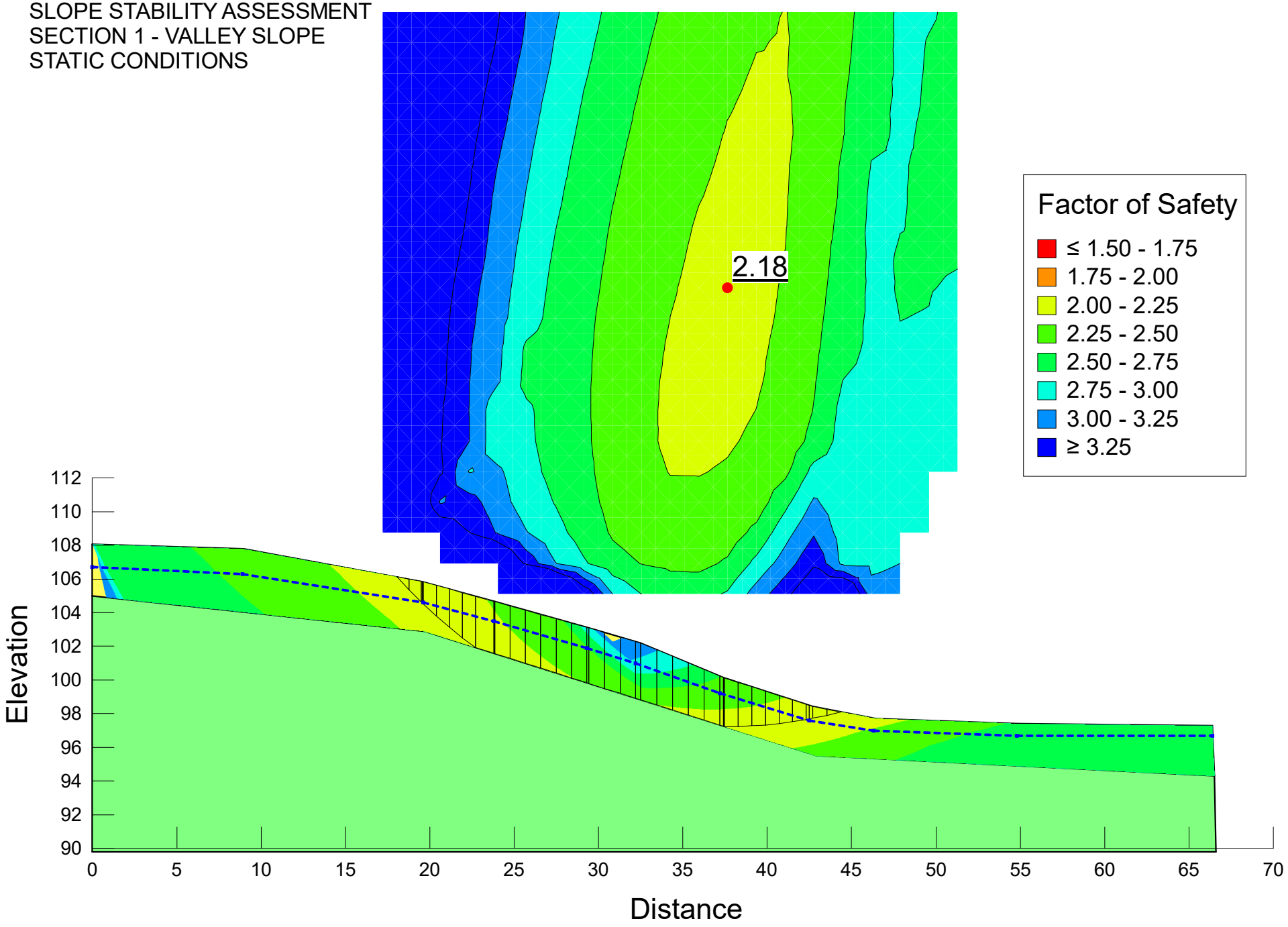
PROJECT: SLOPE STABILITY ASSESSMENT

LOCATION: JAMES NAISMITH WAY, PART 9 OF LOT 21, CON. 9, PLAN 27R–8748, MISSISSIPPI MILLS, LANARK COUNTY, ONTARIO

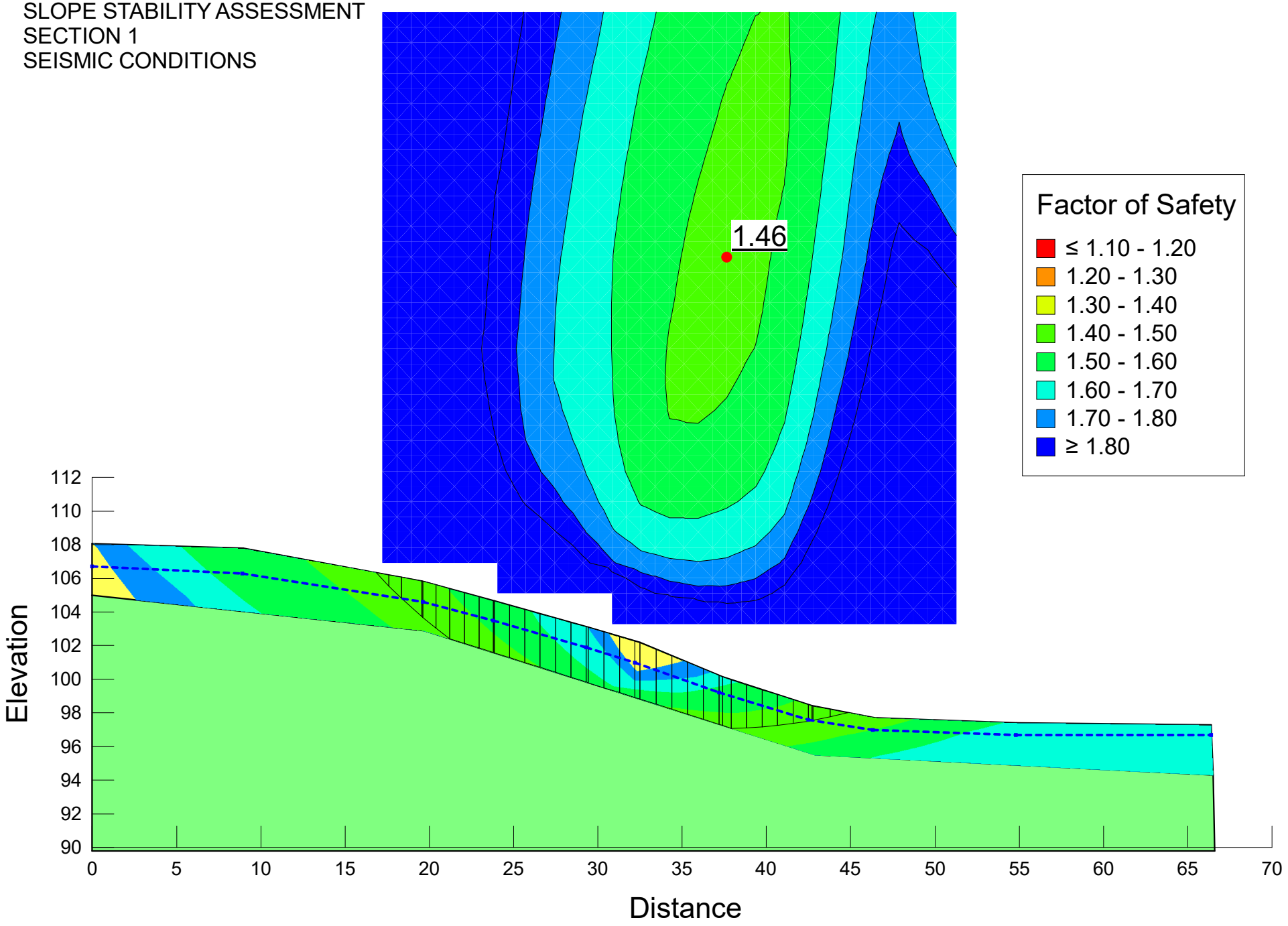
DESIGNED BY:	*DATE:*
IB	MAR 17, 2026
DRAWN BY:	*SCALE:*
IB	AS NOTED

KOLLAARD FILE NUMBER: 210120

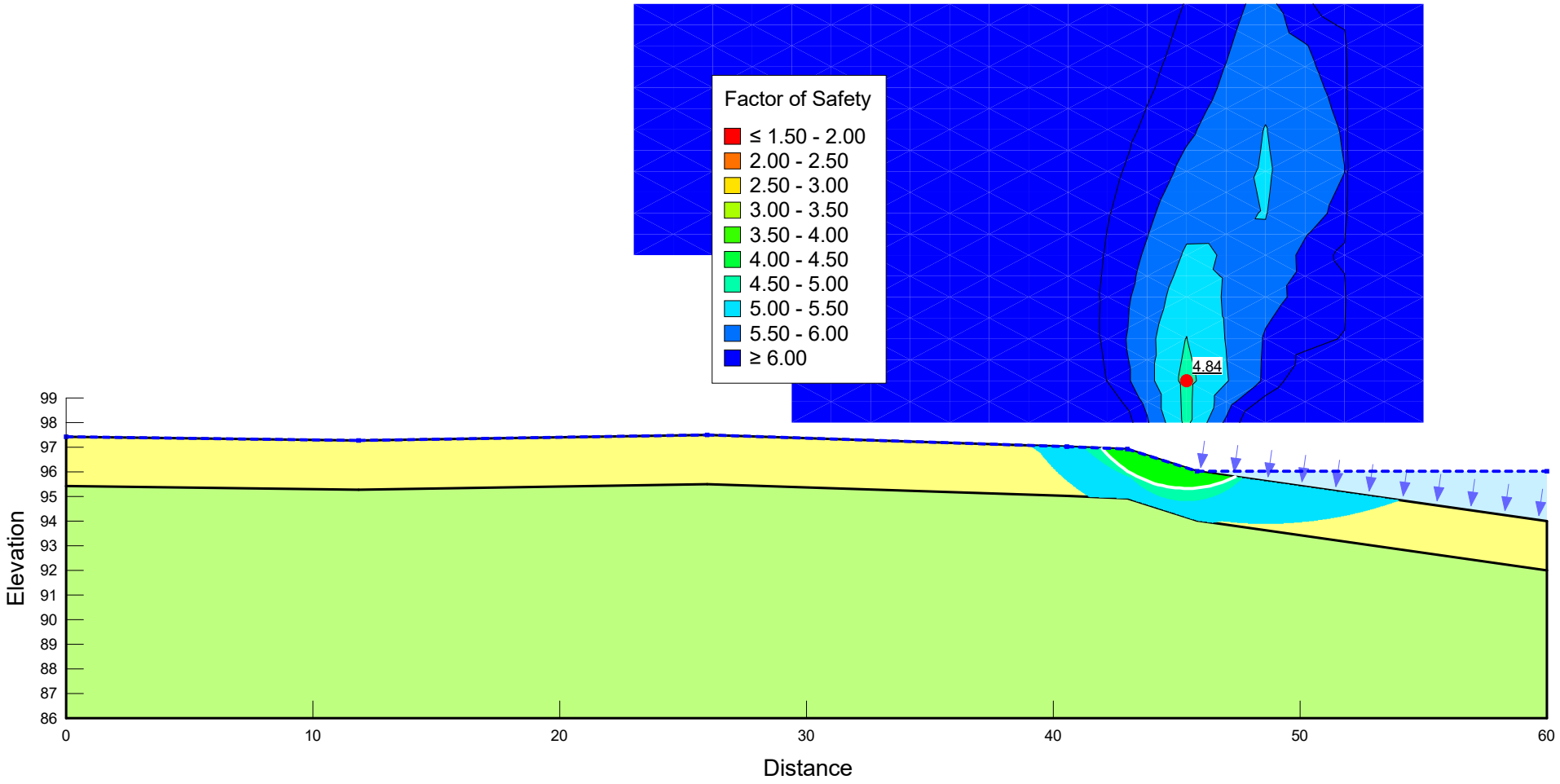
SLOPE STABILITY ASSESSMENT
SECTION 1 - VALLEY SLOPE
STATIC CONDITIONS



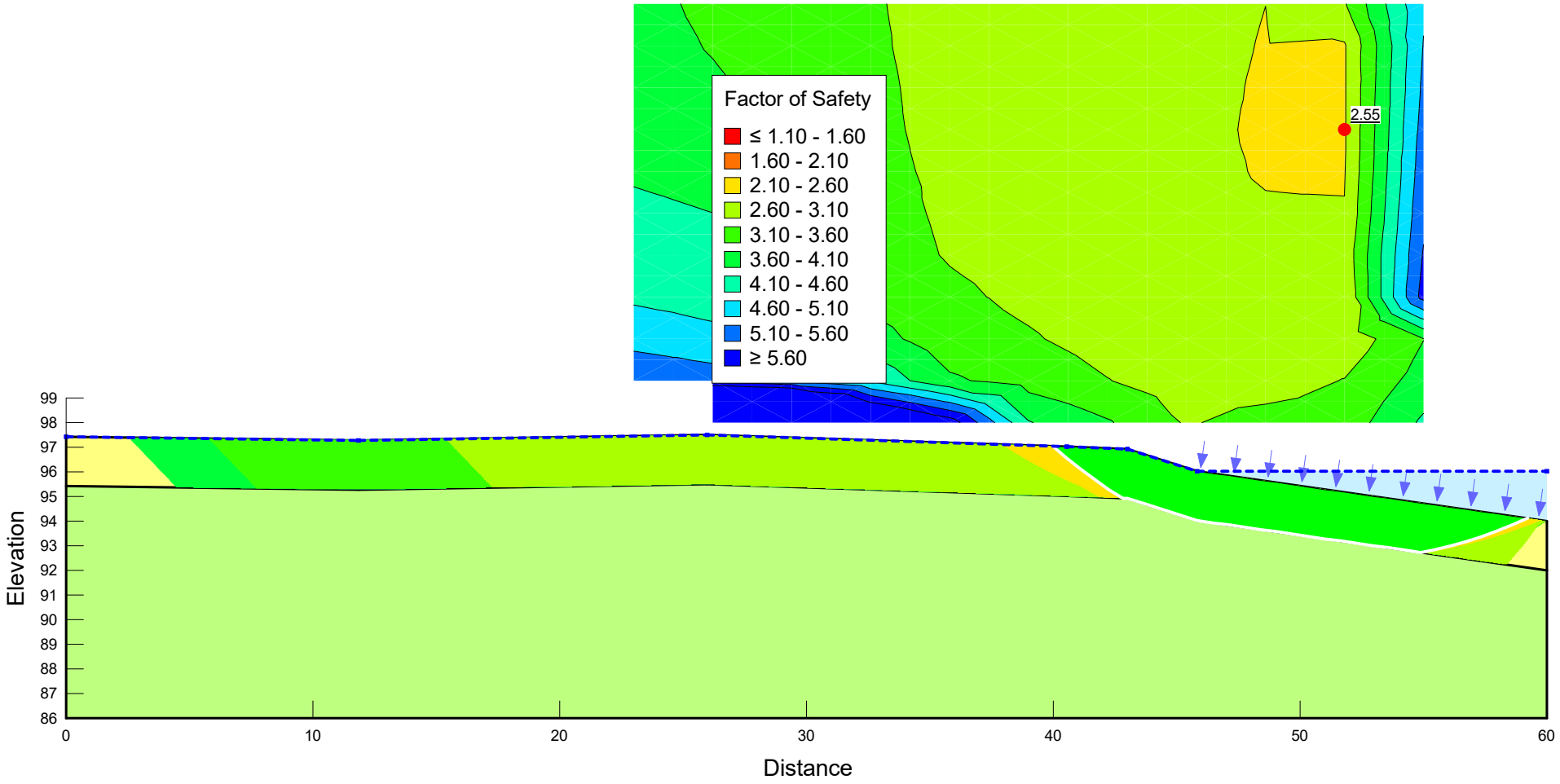
SLOPE STABILITY ASSESSMENT
SECTION 1
SEISMIC CONDITIONS



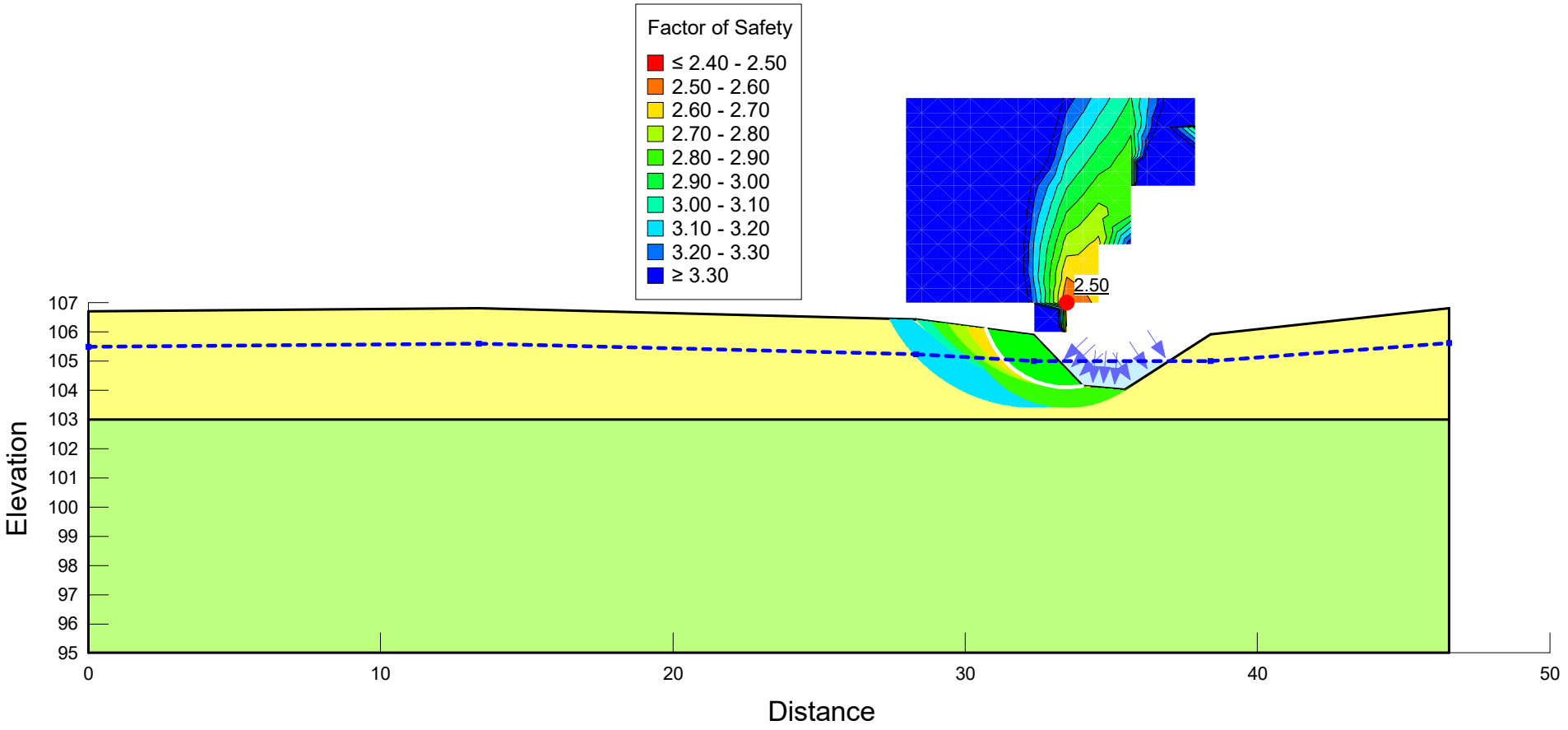
SLOPE STABILITY ASSESSMENT
SECTION 1 - RIVERBANK SLOPE
STATIC CONDITIONS



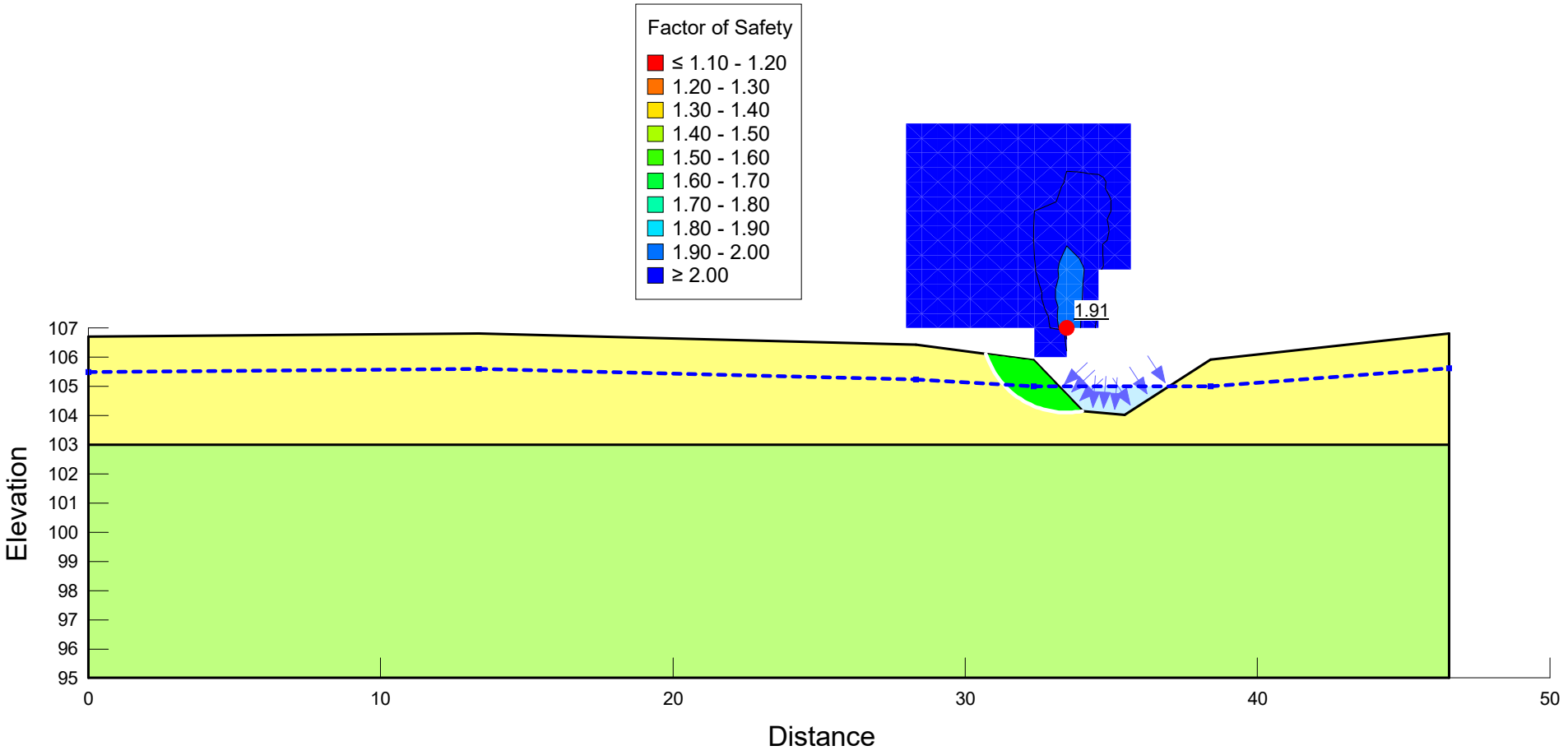
SLOPE STABILITY ASSESSMENT
SECTION 1 - RIVERBANK SLOPE
SEISMIC CONDITIONS



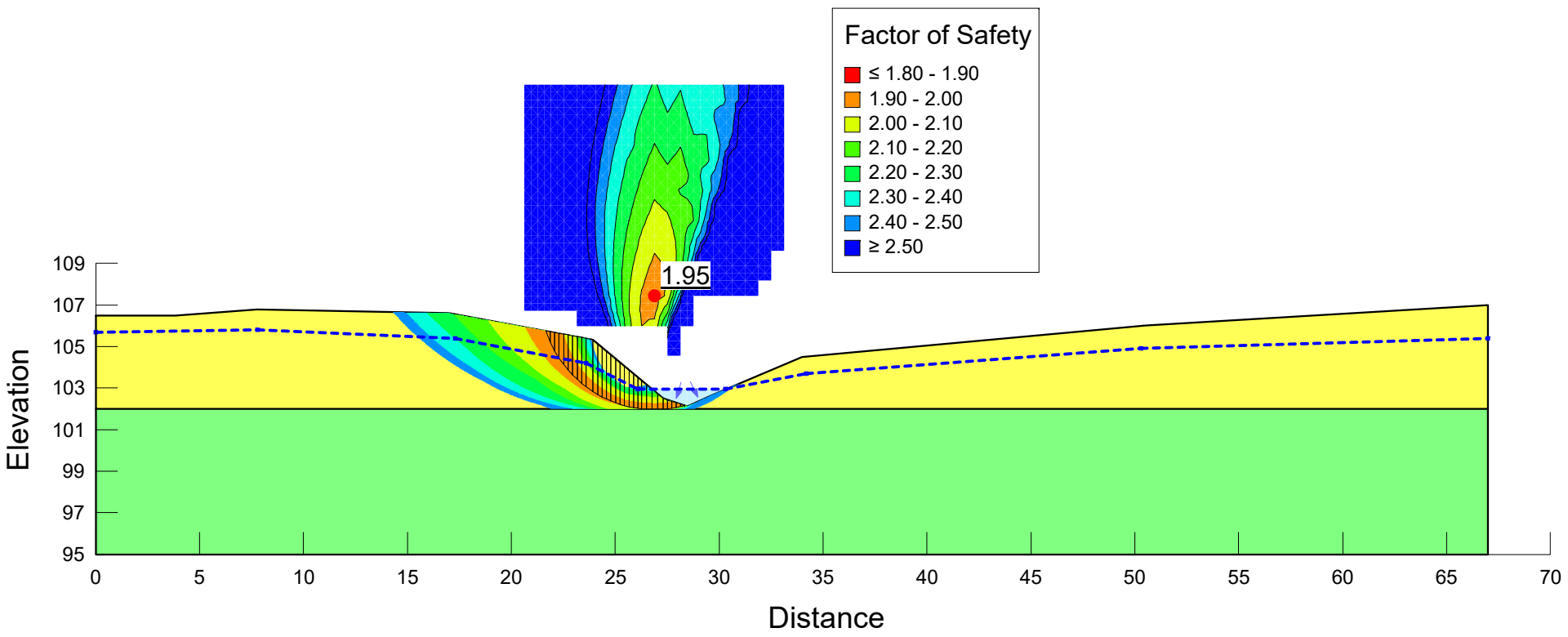
SLOPE STABILITY ASSESSMENT
SECTION 2
STATIC CONDITIONS



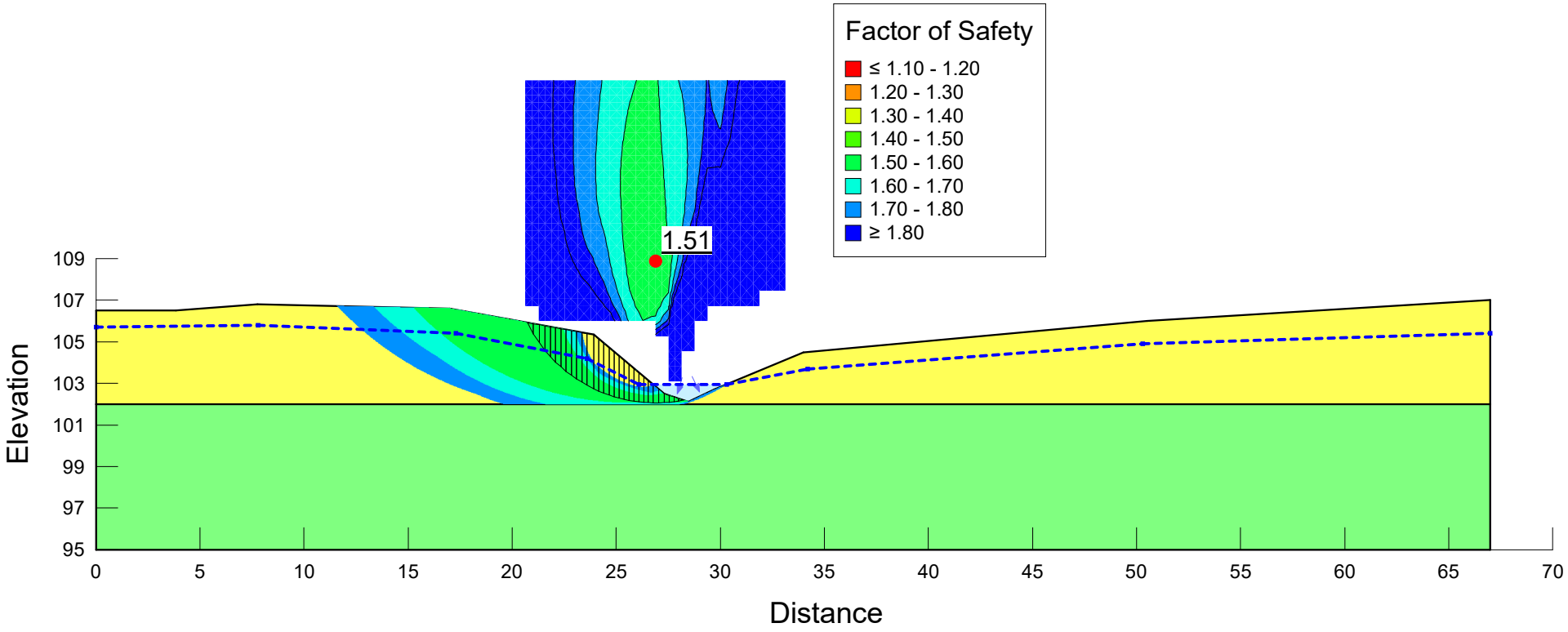
SLOPE STABILITY ASSESSMENT
SECTION 2
SEISMIC CONDITIONS



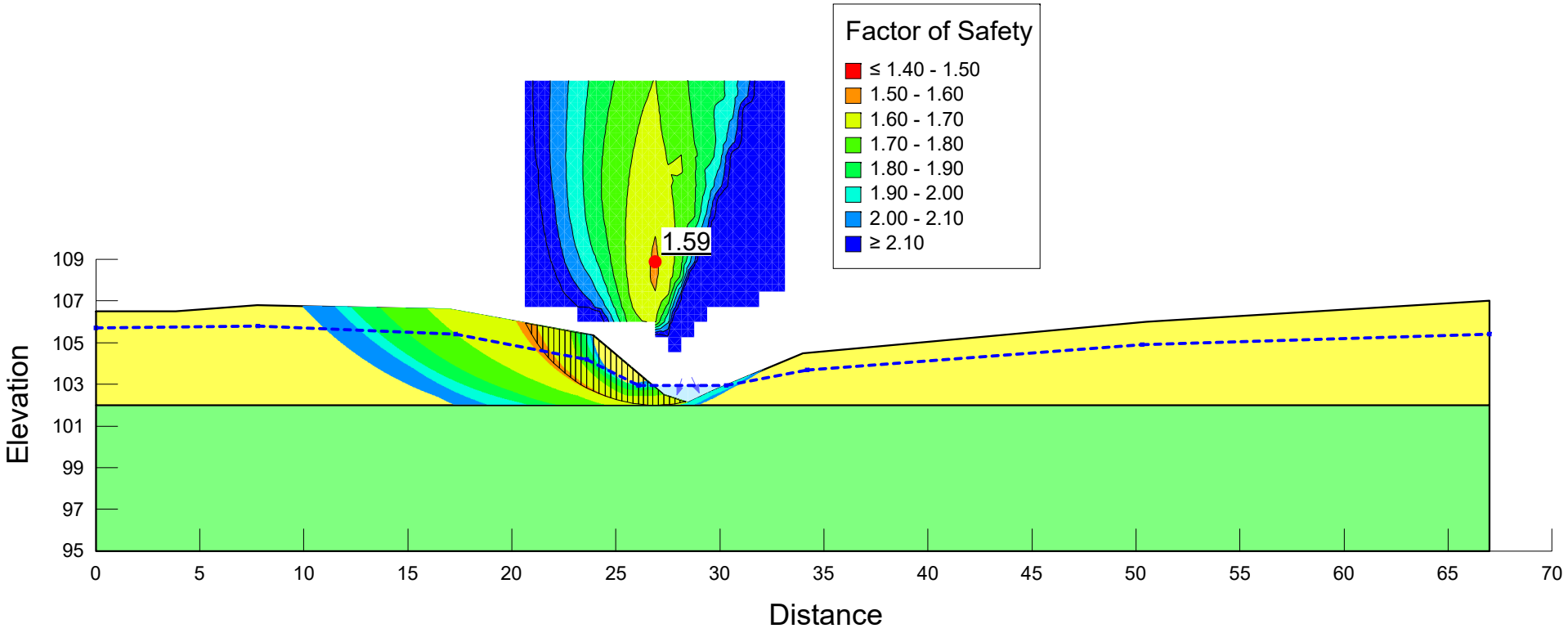
SLOPE STABILITY ASSESSMENT
SECTION 3
STATIC CONDITIONS

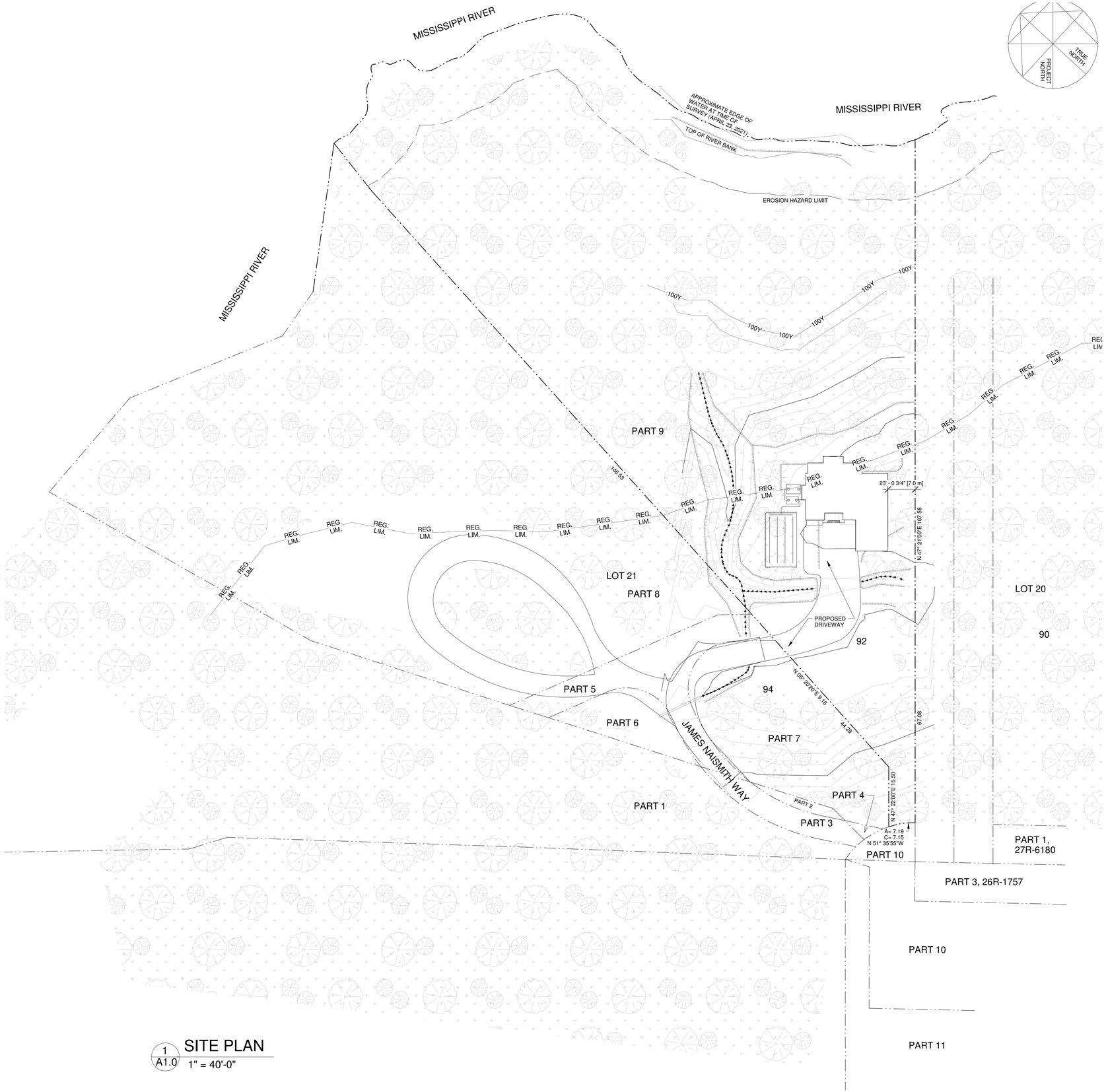


SLOPE STABILITY ASSESSMENT
SECTION 3
SEISMIC CONDITIONS



SLOPE STABILITY ASSESSMENT
SECTION 3
SEISMIC CONDITIONS





1 A1.0 SITE PLAN
1" = 40'-0"

SITE PLAN LEGEND:

- APPROX. PROPERTY LINE LOCATION
- APPROX. ADJACENT PROPERTY LINE LOCATION
- APPROX. SETBACK LOCATION
- REG. LIM. / REG. LIM. - C.A. REGULATION LIMIT
- 100Y / 100Y - C.A. 100 YEAR FLOOD PLAIN
- SLOPE DIRECTION
- FLOW PATH

ZONING INFORMATION:

ZONE: RURAL (RU)

APPLICABLE ZONE PROVISIONS:	REQUIRED	PROVIDED
LOT FRONTAGE	45m/147'-8"(MIN)	00.0m/0'-0"
FRONT YARD SETBACK	9m/29'-6"(MIN)	00.0m/0'-0"
EXTERIOR SIDE YARD SETBACK	9m/29'-6"(MIN)	N/A
INTERIOR SIDE YARD SETBACK (A)	6m/19'-8"(MIN)	00.0m/0'-0"
INTERIOR SIDE YARD SETBACK (B)	6m/19'-8"(MIN)	00.0m/0'-0"
REAR YARD SETBACK	9m/29'-6"(MIN)	00.0m/0'-0"
BUILDING HEIGHT	11m/36'-1"(MAX)	00.0m/0'-0"
LOT COVERAGE	15% (MAX)	00.0%

VALLEY DRAFTING + DESIGN
142 EBERT ROAD, PERTH, ONTARIO, K7H 3C3
ADMIN@VALLEYDAD.CA
WWW.VALLEYDAD.CA
613.913.8322

GENERAL NOTES

1) MATERIAL, SYSTEMS, APPLICATIONS AND CONSTRUCTION PRACTICES SHALL CONFORM TO THE CURRENT EDITION OF THE O.B.C.

2) THE AUTHORITIES HAVING JURISDICTION SHALL BE CONSULTED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION OR MATERIAL ALTERATION

3) DO NOT SCALE DRAWINGS

4) ANY DISCREPANCIES ARE TO BE REVIEWED WITH VALLEY DESIGN + DRAFTING PRIOR TO CONSTRUCTION

5) REFER TO SHEET A4.1 FOR ALL NOTES, LEGENDS & SCHEDULES

REVISIONS

ITEM	DATE	#
PRELIM 1 - ISSUED FOR CLIENT REVIEW	25/11/17	1
PRELIM 2 - ISSUED FOR CLIENT REVIEW	26/01/06	2
PRELIM 3 - ISSUED FOR FINAL REVIEW	26/01/14	3

CLIENT
BLAIR & JENNIFER WALKER

PROJECT
NEW HOUSE

92 JAMES NAISMITH WAY, ALMONTE, ON, K0A 1A0

DRAWING TITLE
PRELIMINARY SITE PLAN

SCALE
As indicated

DATE
OCTOBER 2025

FILE NUMBER
2540

SHEET
A1.0

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

Ontario ✓ 31F/1E

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 3504390 | MUNICIP 35012 | CON. CON 09

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
[redacted]	[redacted]	9	020

[redacted] Almonte, Ont | DATE COMPLETED DAY 02 MO. 07 YR. 76

[redacted] 0,1,0250 | RC 5 | ELEVATION 0395 | RC 5 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BLUE	CLAY			0	10
BRWN	SANDSTONE			10	30
WHITE	SANDSTONE			30	60

31 | 0010305 | 0030618 | 0060118

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0030	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
0055	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 / 6 1/4	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	0188	0	0025 / 25
06 / 6 1/8	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		25	0060 / 60
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	21 0021 GPM	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY — 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
024 FEET	FEET	024 FEET	FEET	FEET	FEET

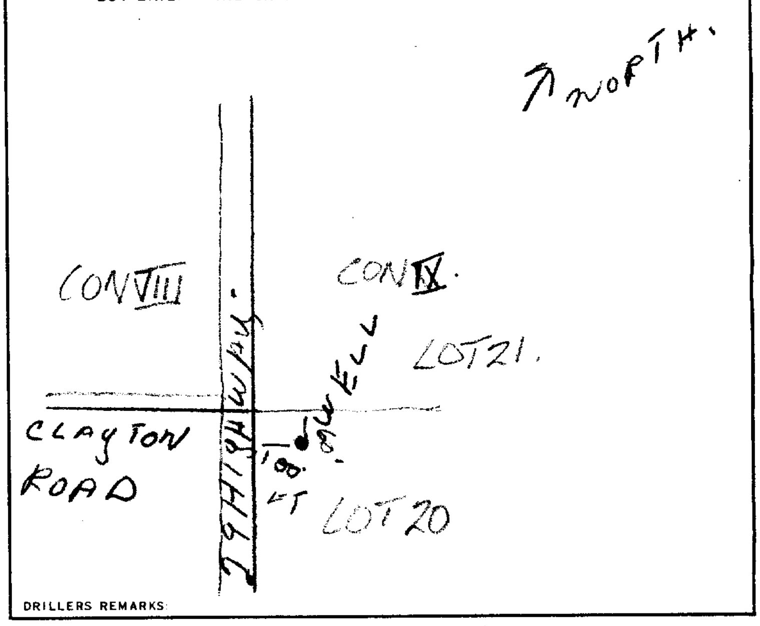
IF FLOWING, GIVE RATE: GPM | PUMP INTAKE SET AT: 60 FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 055 FEET | RECOMMENDED PUMPING RATE: 0008 GPM

50-53 ______ GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 0310

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL	1
	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE	01
	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING	1
	1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Wilmer John Wark | LICENCE NUMBER: 5411

ADDRESS: [illegible], Ont

NAME OF DRILLER OR BORER: Wilmer John Wark | LICENCE NUMBER: 5411

SIGNATURE OF CONTRACTOR: Wilmer John Wark | SUBMISSION DATE DAY 5 MO. 7 YR. 76

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 5411 | DATE RECEIVED 080776

DATE OF INSPECTION 17/09/76 | INSPECTOR [illegible]

REMARKS: CSS.S8 | P | WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 3510749 | MUNICIP 3501 2 | CON. 09 | LOT PLAN/RP 26R-2265

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON	BLOCK, TRACT, SURVEY, ETC	LOT
[redacted]	RAMSAY	9		21

[redacted], BOX 1991, ALMONTE, ONT.

DATE COMPLETED: DAY 31 MO 5 YR 93

RC: KDJA | BASIN CODE: TAD

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
GREY	CLAY		PACKED	0	5'
YELLOW	SANDSTONE		POROUS	5'	15'
WHITE/GREY	SANDSTONE		HARD	15'	64'
GREEN	SANDSTONE		POROUS	64'	90'
GREY/WHITE	SANDSTONE		POROUS	90'	125'

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
86	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
122	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERALS 6 ☐ GAS

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC	1.84	0	22
6"			22	125
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
2	21	HOLE PLUG
		TYPE 10 PORTLAND.

71 PUMPING TEST

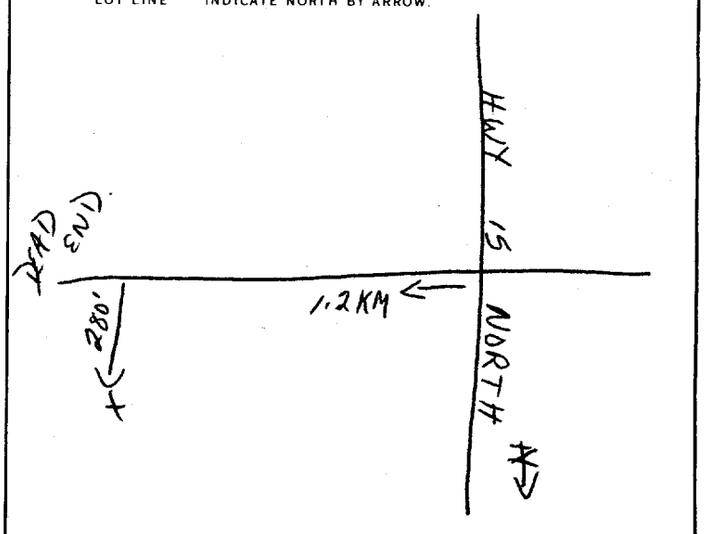
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE: 25 GPM
DURATION OF PUMPING: 2 HOURS ___ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
35 FEET	70 FEET		70 FEET	70 FEET	70 FEET	70 FEET

IF FLOWING GIVE RATE: ___ GPM
PUMP INTAKE SET AT: ___ FEET
WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 100 FEET
RECOMMENDED PUMPING RATE: 9 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS: 125381

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED ☐ DEWATERING

WATER USE

1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF CONSTRUCTION

1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING ☐ DIGGING ☐ OTHER

CONTRACTOR

NAME OF WELL CONTRACTOR: M. KAVANAGH & SON WELL DRILLING
WELL CONTRACTOR'S LICENCE NUMBER: 3142
ADDRESS: RR 2 CARLETON PLACE
NAME OF WELL TECHNICIAN: MIKE KAVANAGH
WELL TECHNICIAN'S LICENCE NUMBER: T-0194
SIGNATURE OF TECHNICIAN/CONTRACTOR: Michael Kavanagh
SUBMISSION DATE: DAY 2 MO 6 YR 93

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR: 3142 | DATE RECEIVED: JUL 13 1993
DATE OF INSPECTION | INSPECTOR
REMARKS: CSSES

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) FORM 9

Ontario — Ministry of the Environment

Well Tag Number (Leave and print number below) A026107
A026107

Well Record
Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only
MUN | CON | LOT

[redacted]

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Lanark	Mississippi Mills - Ramsay	20	9

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
51 James Naismith Way	Almonte	

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	18	40 42 69	50 10 7 63	Garmin	☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
Brown	Soil			0	.60
Gray & White	Sandstone	Brown Layers		.60	35.05

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	6.40	22.75
6.40	35.05	15.07

Water Record

Water found at ___ Metres	Kind of Water
31.39	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: not tested
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☑ Clear and sediment free
☐ Other, specify

Chlorinated ☑ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
15.86	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	+ .45	6.40
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
15.07	☑ Open hole		6.40	35.05

Test of Well Yield

Pumping test method: submersible

Pump intake set at - (metres) 30.47
Pumping rate - (litres/min) 54.6
Duration of pumping 2 hrs + ___ min
Final water level end of pumping 10.84 metres
Recommended pump type. ☐ Shallow ☑ Deep
Recommended pump depth. 30.47 metres
Recommended pump rate. 45.5 (litres/min)
If flowing give rate - (litres/min)
If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		7.17		
1	1	8.40	1	9.17
2	2	8.95	2	8.48
3	3	9.27	3	8.23
4	4	9.45	4	8.12
5	5	9.64	5	8.08
10	10	10.05	10	7.87
15	15	10.21	15	7.77
20	20	10.31	20	7.69
25	25	10.39	25	7.65
30	30	10.44	30	7.61
40	40	10.53	40	7.55
50	50	10.59	50	7.51
60	60	10.66	60	7.46

Plugging and Sealing Record
☑ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
6.40	0	Grouted - Cement Slurry	.21m3

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☑ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

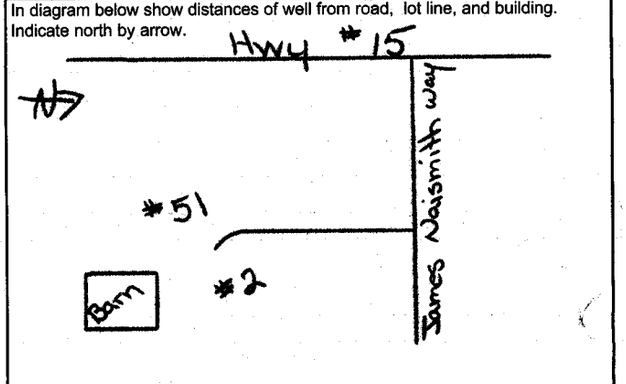
☑ Domestic ☐ Industrial ☐ Public Supply ☑ Other
☐ Stock ☐ Commercial ☐ Not used discharge
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 27047

Date Well Completed: YYYY 2005 MM 6 DD 13

Was the well owner's information package delivered? ☑ Yes ☐ No

Date Delivered: YYYY 2005 MM 6 DD 16

Well Contractor/Technician Information

Name of Well Contractor: Capital Water Supply Ltd.
Well Contractor's Licence No.: 1558
Business Address (street name, number, city etc.): P.O. Box 490 Stittsville, Ontario K2S 1A6
Name of Well Technician (last name, first name): Miller, Stephen
Well Technician's Licence No.: T0097
Signature of Technician/Contractor: X
Date Submitted: YYYY 2005 MM 6 DD 16

Ministry Use Only

Data Source
Contractor 1558
Date Received: JUL 25 2005
Date of Inspection: YYYY MM DD
Remarks
Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐ *Cette formule est disponible en français*

Ontario Ministry of the Environment

Well Tag No. *(Place Sticker and/or Print Below)* A051515 A 051515

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

[redacted]

51 James Naismith Way | Mississippi Mills - Ramsay | Lot: 20 | Concession: 9

County/District/Municipality: Lanark | City/Town/Village: Almonte | Province: Ontario | Postal Code:

UTM Coordinates: NAD 83 | Zone: 18 | Easting: 404334 | Northing: 5010736 | GPS Unit Make: | Model: Garmin | Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Overburden and Bedrock Materials *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (Metres) From	Depth (Metres) To
Brown	Rock		Loose	0	.91
Gray & White	Sandstone		Hard	.91	12.19
Gray & White	Sandstone		Medium	12.19	35.05

Annular Space/Abandonment Sealing Record

Depth Set at (Metres) From	To	Type of Sealant Used (Material and Type)	Volume Placed (Cubic Metres)
6.40	0	Grouted - Bemtonite Slurry	.110m3

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Rotary (Air) ☐ Digging ☒ Air percussion ☐ Boring ☐ Other, specify

Water Use

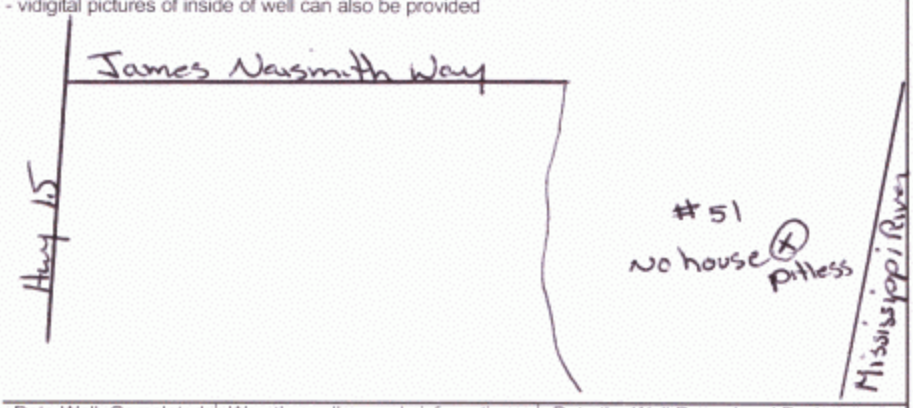
☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, specify

Status of Well

☒ Water Supply ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Replacement Well ☐ Abandoned, Insufficient Supply ☐ Alteration (Construction) ☐ Test Hole ☐ Abandoned, Poor Water Quality ☐ Other, specify ☐ Recharge Well ☐ Abandoned, other, specify

Location of Well

Please provide a map below showing:
- all property boundaries, and measurements sufficient to locate the well in relation to fixed points,
- an arrow indicating the North direction
- detailed drawings can be provided as attachments no larger than legal size (8.5" by 14")
- vidigital pictures of inside of well can also be provided



Date Well Completed (yyyy/mm/dd): 2008/5/21 | Was the well owner's information package delivered? ☒ Yes ☐ No | Date the Well Record and Package Delivered to Well Owner (yyyy/mm/dd): 2008/5/22

Well Contractor and Well Technician Information

Business Name of Well Contractor: Capital Water Supply Ltd. | Well Contractor's Licence No.: 1558

Business Address (Street No./Name, number, RR): Box 490 | Municipality: Stittsville

Province: Ontario | Postal Code: K2S1A6 | Business E-mail Address: office@capitalwater.ca

Bus.Telephone No. (inc. area code): 6138361766 | Name of Well Technician (Last Name, First Name): Miller; Stephen

Well Technician's Licence No.: 0097 | Signature of Technician | Date Submitted (yyyy/mm/dd): 2008/5/22

Results of Well Yield Testing

Check box if after test of well yield, water was:
☒ Clear and sand free
☐ Cannot develop to sand-free state

If pumping discontinued, give reason:

Pumping test method: submersible

Pump intake set at (Metres): 24.38

Pumping rate (Litres/min): 54.6

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (Metres): 10.98

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 22.85 Metres

Recommended pump rate (Litres/min): 45.5

If flowing give rate (Litres/min):

Draw Down Time (Min)	Draw Down Water Level (Metres)	Recovery Time (Min)	Recovery Water Level (Metres)
Static Level	8.98	Static Level	
1	9.32	1	10.57
2	9.39	2	10.50
3	9.47	3	10.45
4	9.51	4	10.43
5	9.55	5	10.40
10	9.77	10	10.30
15	9.96	15	10.21
20	10.13	20	10.12
25	10.25	25	10.05
30	10.36	30	9.99
40	10.56	40	9.86
50	10.82	50	9.79
60	10.98	60	9.70

Water Details

Water found at Depth		Kind of Water
32.61	Metres ☐ Gas	☐ Fresh ☐ Salty NOT TESTED ☐ Sulphur ☐ Minerals
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals
	Metres ☐ Gas	☐ Fresh ☐ Salty ☐ Sulphur ☐ Minerals

Casing Used

☐ Galvanized ☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete

Screen Used

☐ Galvanized ☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete

No Casing and Screen Used

☐ Open Hole

Disinfected? ☒ Yes ☐ No

Casing and Well Details

Diameter of the Hole (Centimetres): 15.23

Depth of the Hole (Metres): 35.05

Wall Thickness (Metres): .48

Inside Diameter of the Casing (Metres): 15.86

Depth of the Casing (Metres): + 1.37 to 6.40

Ministry Use Only

Audit No.: z 77361 | Well Contractor No.:

Date Received (yyyy/mm/dd): OCT 14 2008 | Date of Inspection (yyyy/mm/dd):

Remarks:

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Canada.ca › Natural Resources Canada › Earthquakes Canada

2025 - 2020 National Building Code of Canada Seismic Hazard Tool

This application provides seismic values for the design of buildings in Canada under Part 4 of the National Building Code of Canada (NBC) 2020 and 2025, as prescribed in Article 1.1.3.1. of Division B of the respective NBC editions.

Seismic Hazard Values

User requested values

Code edition	NBC 2025
Site designation X_S	X_C
Latitude (°)	45.245
Longitude (°)	-76.225

Please select one of the tabs below.

NBC 2025 | Additional Values | Plots | API | Background Information

The 5%-damped spectral acceleration ($S_a(T,X)$, where T is the period, in s, and X is the site designation) and peak ground acceleration (PGA(X)) values are given in units of acceleration due to gravity (g, 9.81 m/s^2). Peak ground velocity (PGV(X)) values are given in m/s. Probability is expressed in terms of percent exceedance in 50 years. Further information on the calculation of seismic hazard is provided under the *Background Information* tab.

The 2%-in-50-year seismic hazard values are provided in accordance with Article 4.1.8.4. of the NBC 2025. The 5%- and 10%-in-50-year values are provided for additional performance checks in accordance with Article 4.1.8.23. of the NBC 2025.

See the *Additional Values* tab for additional seismic hazard values, including values for other site designations, periods, and probabilities not defined in the NBC 2025.

NBC 2025 - 2%/50 years (0.000404 per annum) probability

$S_a(0.2, X_C)$	$S_a(0.5, X_C)$	$S_a(1.0, X_C)$	$S_a(2.0, X_C)$	$S_a(5.0, X_C)$	$S_a(10.0, X_C)$	$PGA(X_C)$	$PGV(X_C)$
0.534	0.326	0.177	0.0833	0.0226	0.00757	0.276	0.223

The log-log interpolated 2%/50 year $S_a(4.0, X_C)$ value is : **0.0311**

▶ Tables for 5% and 10% in 50 year values

Download CSV

← Go back to the seismic hazard calculator form

Date modified: 2026-01-21

APPENDIX B: SITE PHOTOS (APRIL 17, 2026)

Photo 1: Photo displaying the tableland in the area of the proposed single family dwelling

Photo 2: Photo displaying the well vegetated slope in the area of slope section 1

Photo 3: Photo displaying the shoreline of the Mississippi River

Photo 4: Photo displaying the ditch near the proposed development