NORWEST
CORPORATION

Suite 1830, 1066 W. Hastings St.
Vancouver, BC V6E 3X2
(604) 602-8992
www.norwestcorp.com

Memorandum

To	Daniel Lefebvre (KGHM)	**Project #**	809-3
CC	Clyde Gillespie (KGHM)	**Date**	April 9, 2015
From	Greg Lewsley, Chris Klassen (Norwest)		
Subject	Jacko Lake Preliminary Pit Slope Offset and Overburden Slope Guidelines		
KGHM Doc.	C135-KA39-MEM-00-005	**Revision**	A

SUMMARY

Norwest Corporation (Norwest) developed minimum offset and overburden slope guidelines to assist KGHM with mine planning adjacent to Jacko Lake. The offset and overburden slope guidelines are supported by slope stability analyses, which were based on descriptive information collected during the 2014 Klohn Crippen Berger hydrogeology site investigation (KCB, 2014). Pit slope stability beneath the overburden has been carried out by others. The minimum pit slope offset configuration is summarized as follows:

- Minimum pit crest offset distance from Jacko Lake / Jacko Lake Dams: **40m**
- Minimum overall overburden pit slope angle: **2.5H:1V**

These analyses are preliminary only, and will require additional site investigations, laboratory testing and pore pressure measurements to confirm design assumptions.

A summary of Norwest's recommendations for future work is provided below:

1. Focused site investigation along the slope to confirm soil stratigraphy and geotechnical properties complete with pore pressure measurements and laboratory testing.

2. Develop a slope drainage plan to control the water table in the slope. This will require input from the site wide hydrogeology model to determine the operational and long term water table. The slope drainage plan may include drainage measures such as:

    - Depressurization of the sand /gravel layers using pumping wells.
    - Horizontal drains at the base of exposed sand / gravel deposits.
    - Perimeter drainage ditches.
    - Seepage cutoff

3. Review pit slope stability below the surficial soils to confirm adequate short term and long term stability.

4. Develop a monitoring plan to measure slope performance as the pit slope advances towards the lake.

Memorandum

1. SCOPE

Norwest was retained by KGHM to complete the design for water management structures at Jacko Lake. The current design plan includes several dams located at the west, northeast and southeast arms of Jacko Lake. The design of these dams and the stability of Jacko Lake will be impacted by the proposed open pit, which is located on the east side of Jacko Lake. A significant deposit of overburden (up to 40m) was also identified during site investigations in the area. Based on this thickness of overburden, KGHM require guidance on a suitable pit crest offset distance from Jacko Lake along with a recommended overall pit slope in order to assist with their development of the open pit. This memorandum provides preliminary offset and slope criteria along with supporting analysis and additional recommendations for future work.

The geotechnical information used to support this study is based on the Klohn Crippen Berger (KCB) site investigation report (KCB, 2014). It should be noted that this report was in draft at this time of this study.

2. CURRENT JACKO LAKE DESIGN CONFIGURATION

Engineered dams will be constructed to provide flood containment on the Northeast, Southeast and Western arms of Jacko Lake. The dams are designed to store the probable maximum flood (PMF) along with an additional freeboard of 1.5m. These structures are planned to be constructed prior to production and will be left in place for mine closure. Key elevations for the current Jacko Lake water management plan are:

- Normal water level: 892m.
- Design flood level: 893m.
- Dam Crest elevation: 894.5m (1.5m freeboard).

3. SITE INVESTIGATION INFORMATION

A drilling investigation was completed by Klohn Crippen Berger (KCB, 2014) between February and May 2014 as part of a hydrogeological assessment for the design of a dam on the Northeast arm of Jacko Lake (Northeast Dam). The 2014 KCB investigation comprised of five drill hole locations with standard penetration profiles (KAX-14-107, 108, 114, 121 and 128). Standpipe piezometers provide the static water level. No laboratory information was available at the time of this study. This information was used to characterize the overburden that exists between Jacko Lake and the proposed open pit.

3.1. Overburden

Overburden thickness in the area varies between approximately 10m in the north (near the Northeast arm of Jacko Lake) to almost 40m (near the Southeast arm of Jacko Lake). KCB reported that the “overburden comprises of clay till, with sand/gravel layers of varying thickness” and that “horizons that

Memorandum

contain sand and gravel typically have higher hydraulic conductivity than silt and clay dominated horizons". The drill holes indicate that the majority of the overburden is of glacial origin.

The KCB site investigation was mainly focused on bedrock hydrogeology and a summary of the overburden stratigraphy detail was not provided. Norwest reviewed the overburden drill hole logs (KAX-14-107, 108, 114, 121 and 128) and identified the main units that are typically present throughout each hole:

<u>Topsoil</u>

Topsoil is described as a thin organic silt (OL) layer less than 0.1m thick.

<u>Upper Sand/ Gravel Unit (Inferred Glacial Till)</u>

The upper sand / gravel unit is typically described as compact to dense, well graded, fine to coarse grained sand or sand and gravel (SW, SM, SC), and is likely of glacial origin. Occasional gravel or silt dominated layers are present within the logs. Standard Penetration Test (SPT) blow counts are typically in range N = 28 to 65, with an average of N = 40. The upper sand/gravel unit ranges from about 7 to 14 m in thickness.

<u>Silt / Clay Unit (Inferred Glacial Till)</u>

The silt /clay unit is generally described as a firm to very stiff, low to high plasticity clay (CL) with some sand and gravel overlying a stiff to very stiff homogeneous low plasticity silt (ML). This unit is likely to be a glacial deposit. SPT blow counts are typically in range N = 20 to 70, with an average of N = 45. Firm, high plasticity clay was noted in borehole KAX-14-114, with blow counts in the range N = 8 to 40. The silt / clay unit typically ranges from about 3 to 12 m in thickness.

<u>Lower Sand / Gravel Unit (Inferred Glacial Till)</u>

The lower sand and gravels are typically described as very dense, well graded, fine to coarse grained sandy gravel or gravelly sand (GM, GP, SM, SW), and has been identified as a glacial deposit. SPT's blow counts are typically advanced to refusal. The lower sand/gravel unit typically ranges from about 10 to 21 m in thickness, with a thinner deposit noted in borehole KAX-14-121. This unit overlies bedrock.

Norwest have developed simplified stratigraphy in accordance with representative sections through Jacko Lake and the proposed pit (Sections A, B, and C). The stratigraphy for each section has been adjusted to accommodate information from nearby drill holes. Drawing C135-KA39-5620-00-004 shows each section along with the locations of the KCB drill holes.

Memorandum

3.2. Groundwater conditions

KCB installed a number of standpipes within the overburden in drill holes KAX-14-107, 108, 114, and 128. Table 1 summarizes the static water level measurements (taken May 7, 2014). The groundwater table conforms closely with the Jacko Lake surface (El. 892m).

Table 1

Standpipe Water Level Measurements in Overburden[1]

Drill Location	Water Level (masl)
KAX-14-107	893.3
KAX-14-108	892.1
KAX-14-114	893.0
KAX-14-121	no data
KAX-14-128	892.1

1. Measurements taken on May 7, 2014.

4. PRELIMINARY OVERBURDEN SLOPE GUIDELINES

A preliminary pit crest offset and overburden slope configuration has been developed to assist KGHM with development of the open pit and to maintain a reasonable offset distance from Jacko Lake. Discussion of the pit crest offset and overburden slope guideline is presented below, along with recommendations for slope drainage and pore pressure monitoring.

4.1. Pit Crest Offset Distance and Overall Slope Guidelines

Drawing C135-KA39-5620-00-004 shows a plan of the pit offset limits along with representative design sections (Sections A, B and C). The offset configuration has been determined based on slope stability analysis as detailed further in Section 5. The pit offset configuration will should be refined as more geotechnical information becomes available. Bench configuration has not been provided at this stage.

The pit crest offset and overburden overall slope guidelines are presented below:

- Minimum pit crest offset distance from Jacko Lake / Jacko Lake Dams: **40m**
- Overall overburden slope angle: **2.5H:1V**

These preliminary guidelines assume that the slope can be adequately drained to prevent a daylighted seepage face. Drainage measures will probably be required to do so, and could include:

Memorandum

- **Depressurization of the sand /gravel layers using pumping wells.** These can be used to control pore pressures during development of the open pit. Depressurization wells can be used control pore pressures during development of the open pit and during operations.

- **Horizontal drains at the base of exposed sand / gravel deposits.** Installation of permanent sub-horizontal drains at the base of the sand / gravel deposits to maintain long term slope stability. Horizontal drains may be necessary control pore pressures and minimize sloughing and progressive slope failure during operations and into closure.

- **Perimeter drainage ditches.** Excavation of a perimeter drainage ditch around the open pit can be used to reduce the groundwater table in areas where the static water table is near surface.

- **Seepage Control.** Installation of an upstream seepage blanket or a slurry cutoff wall to reduce the water table on the slope face.

5. SLOPE STABILITY ANALYSIS

Norwest completed a preliminary slope stability analyses to estimate an appropriate offset from Jacko Lake. The analysis is based on descriptive information from five drill holes; there of which are outside the slope itself. The analysis is confined to surficial soils only. There is no consideration for excess pore pressures from seismic loading (i.e. liquefaction) or pit wall blasting.

5.1. Potential Failure Modes and Target Factor of Safety Criteria

Norwest have considered the following failure modes in the analysis:

- **Shallow Slope Failure.** This failure mechanism considers a localized rotational slope failure within the overburden pit slope under both static and pseudostatic conditions.

- **Deep-seated Slope Failure.** This failure mechanism considers a deep slope failure that intercepts Jacko Lake or the Jacko Lake dam structures under both static and pseudostatic conditions.

Pseudostatic stability was assessed based on a seismic co-efficient of k_h = 0.16. This represents a value 2/3 of the peak ground acceleration (PGA) for a “Very High” consequence dam as defined in the Canadian Dam Association Dam Safety Guidelines (CDA, 2013). The PGA for this preliminary study was determined to be 0.24g (for a Very High consequence dam).

Bench scale stability has not been considered in the analyses. Bench scale stability should be considered in future stability analyses once more detailed information is available through additional site investigations.

Memorandum

5.2. Slope Stability Parameters

Slope stability parameters were developed based on regional experience and using the descriptions provided in the KCB drill hole logs (KCB, 2014). Table 2 shows a summary of the material parameters used in the stability analyses. No laboratory strength testing has been conducted on the overburden materials to date. Strength testing will be required as the design advances to the next stage.

Table 2
Slope Stability Parameters

Material		Bulk Unit Weight (kN/m^3)	Effective Friction Angle (°)	Cohesion (kPa)
Fill	Compacted Fill	20	30	0
Foundation	Upper Sand/Gravel Till Unit	20	33	0
	Silt / Clay Unit	20	30	0
	Lower Sand / Gravel Till Unit	20	35	0
	Bedrock	Impenetrable		

5.3. Stability Analysis Results

The analyses were undertaken using the two dimensional limit equilibrium modelling software SLOPE/W (Geo-Slope International Ltd., 2012). Factor of safety values were calculated using the Spencer method. Target factors of safety under static conditions are 1.3 for shallow slope failure and 1.5 for deep-seated failures that intercept the lake. Target factors of safety under pseudostatic conditions are 1.0. Results of the analysis are presented in Table 3. Stability outputs are attached for reference (Figures 1 to 12).

Table 3
Slope Stability Analysis Results

Slip Surface	Loading Condition	Factor of Safety (FOS) Results			Required FOS	Meets Criteria
		Section A	Section B	Section C		
Shallow	Static	1.73	1.57	1.48	1.3	YES
	Pseudostatic	1.16	1.05	1.00	1.0	YES
Deep Seated	Static	2.84	2.00	1.79	1.5	YES
	Pseudostatic	1.55	1.19	1.10	1.0	YES

1. Slope stability outputs are attached (Figures 1 to 12).

Memorandum

6. CLOSURE

This report has been prepared for KGHM to provide them preliminary pit crest offsets and overburden slope guidelines. As mutual protection to KGHM, the public, and ourselves, this report, its figures and appendices are submitted for exclusive use by KGHM. We specifically disclaim any responsibility for losses or damages incurred through the use of our work for a purpose other than as described in the report. Our report and recommendations should not be reproduced in whole or in part without our express written permission.

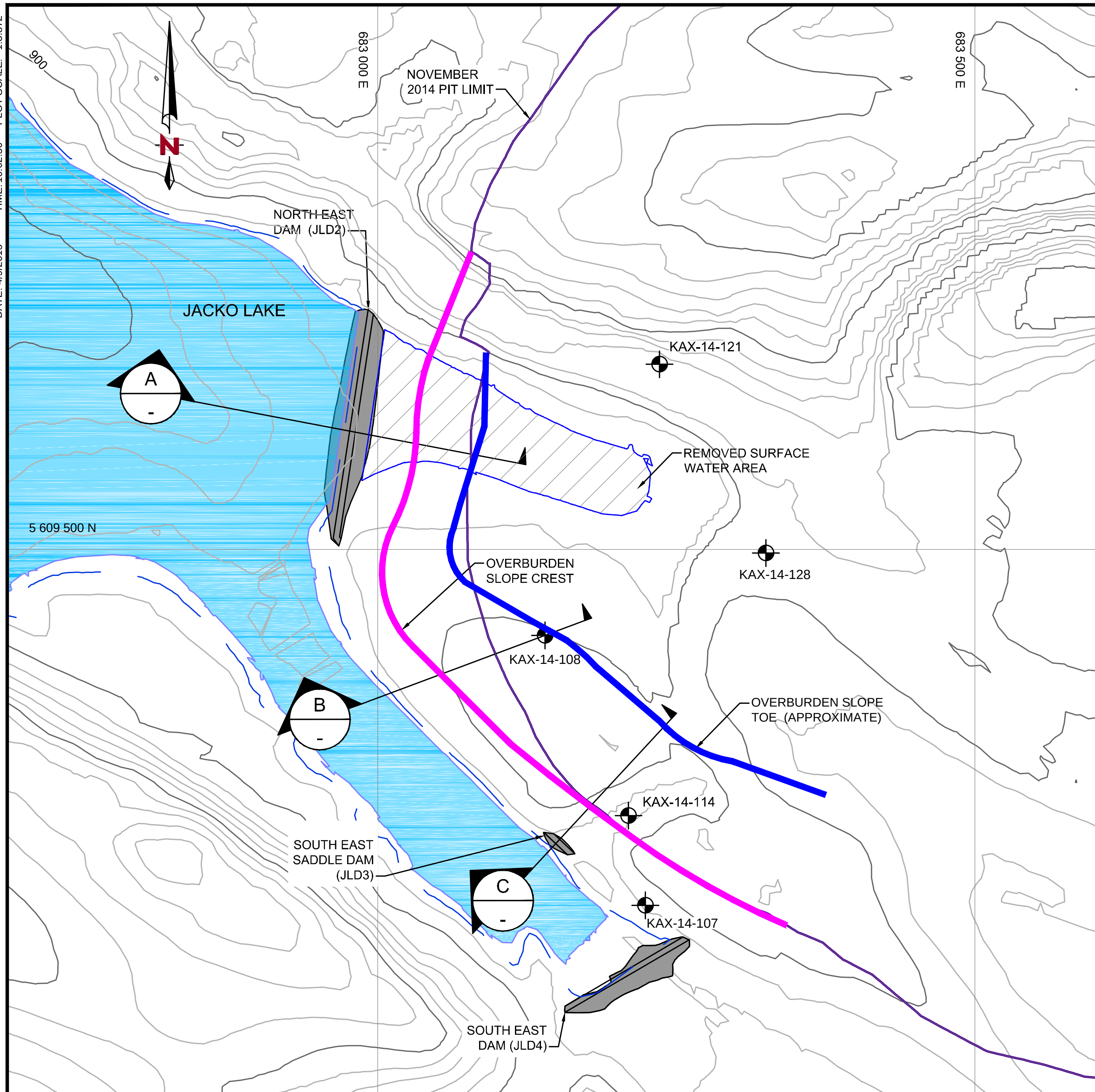
7. REFERENCES

Canadian Dam Association (2013). Dam Safety Guidelines 2007 (Revised 2013).

Klohn Crippen Berger (2014). Ajax Mine – Jacko Hydrogeology Assessment. Site Investigation Report (DRAFT). July 2014.

8. ATTACHMENTS

Drawing C135-KA39-5620-00-004
Slope Stability Outputs (Figures 1 to 12)



PLAN

SCALE 1:5000

SCALE 1:5000

NOTES:

1. JACKO LAKE DAM LAYOUTS ARE CONCEPTUAL DESIGNS.
2. OVERBURDEN TOE IS BASED ON LIMITED GEOTECHNICAL INFORMATION AND IS APPROXIMATE ONLY.
3. THIS DRAWING SHOULD BE ACOMPANIED BY TECHNICAL MEMORANDUM C135-KA39-RPT-00-011.

REFERENCES:

1. ALL DESIGN COORDINATES PROVIDED ARE IN METRES.
2. THE COORDINATE SYSTEM IS IN UTM NAD 83 ZONE 10.
3. TOPOGRAPHY DATA BASED ON APRIL 2013 LIDAR PROVIDED BY KGHM.
4. BATHYMETRY SURVEY BASED ON DATA PROVIDED BY KGHM ON JANUARY 13, 2015.

LEGEND:

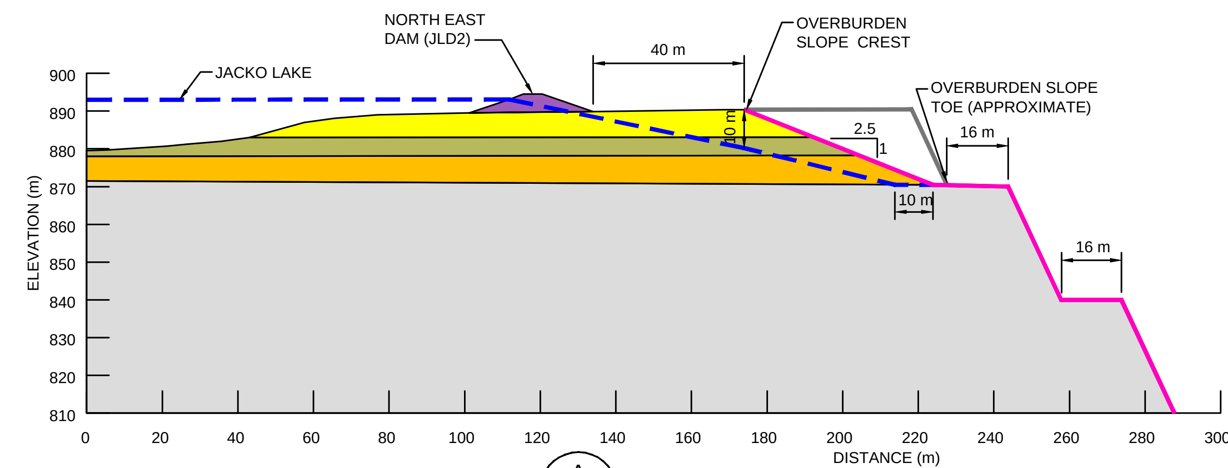
KAX-14-107 — KCB HYDROGEOLOGY DRILLHOLES

OVERBURDEN SLOPE CREST

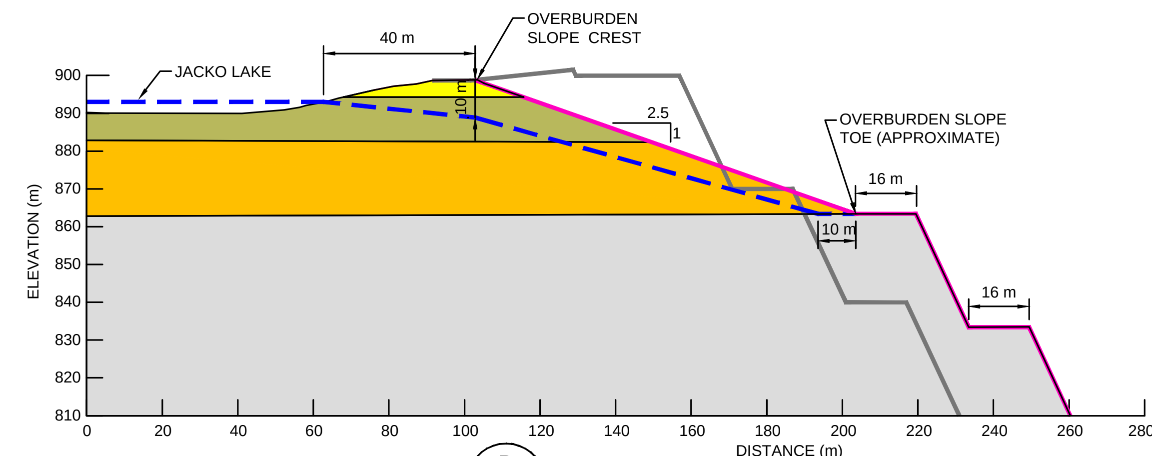
OVERBURDEN SLOPE TOE

TABLE 1:

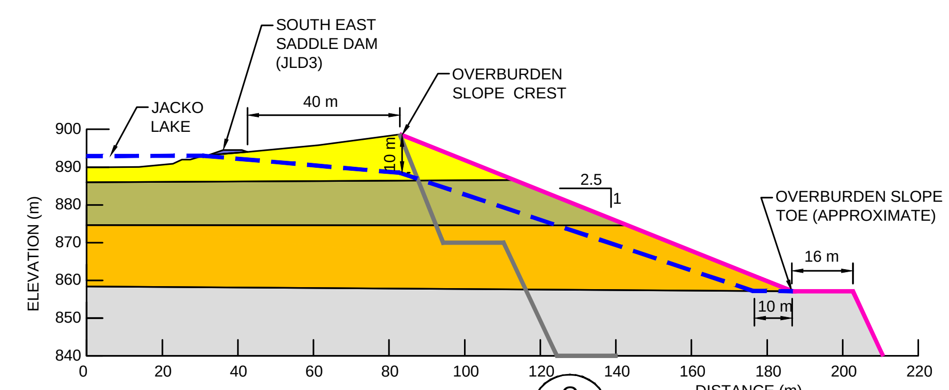
NORMAL WATER LEVEL EL.	892.0 m
MAX. WATER LEVEL EL.	893.0 m
DAM CREST EL.	894.5 m



SECTION A - SCALE 1:2000



SECTION B - SCALE 1:2000



SECTION C - SCALE 1:2000

SCALE 1:2000

LEGEND:

- NOVEMBER 2014 PIT
- ASSUMED WATER TABLE
- PROPOSED PIT LIMIT
- UPPER SAND /GRAVEL TILL UNIT
- SILT / CLAY TILL UNIT
- LOWER SAND / GRAVEL UNIT
- BEDROCK

DRAFT NOT FOR CONSTRUCTION

SCALES INDICATED BASED ON AN 11"x17" PLOT CONFIGURATION

REV.	DATE	DESCRIPTION	DWN	DSG	CHK	APR
A	2015-04-09	ISSUED FOR REVIEW	VG	GL	CK	RD

SCALE:	AS SHOWN		
DATE:	2015-04-08		
CO-ORD. SYS.:	UTM- NAD83 ZONE 10		
DRW'N BY:	VG	REV'D BY:	CK
DSG'N BY:	GL	APP'D BY:	RD

KGHM Ajax Mining Inc

KGHM AJAX MINING INC

AJAX PROJECT

PRELIMINARY PIT SLOPE OFFSET AND OVERBURDEN SLOPE GUIDE LINES

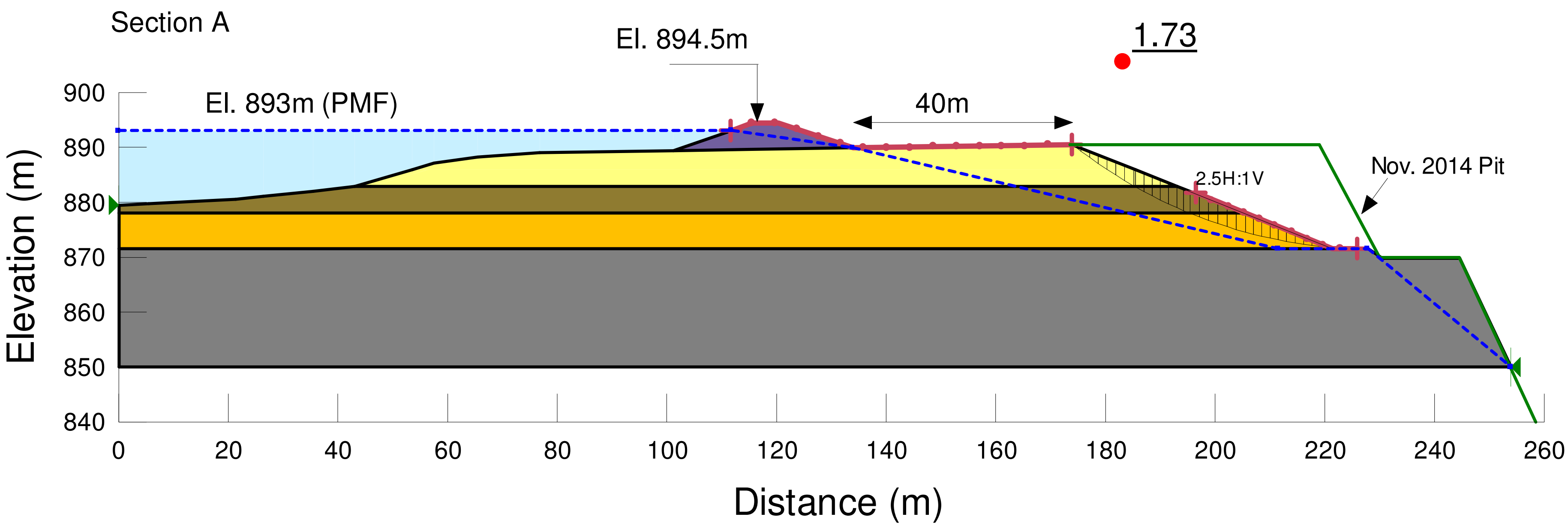
NORWEST

DRAWING NO.: C135-KA39-5620-00-004

REV.: A

PLOT SCALE: 1:3.872 TIME: 10:02:50 DATE: 4/9/2015
FILENAME: \\NORWESTCORP.NET\VANCOUVER\PROJECTDATA\KGHM AJAX_809\809-3_JACKO LAKE\DISC\DRAFTING\PRODUCTION\JACKO LAKE - WEST PIT WALL LIMITS\150408 WEST PIT WALL LIMITS - PLAN.DWG
XREF FILE(S): Topo_Large_contours_5m_25m index; Topo and Bathimetry5m; 150323-Jacko Lake_Conceptual Dykes and Pond; 2015-03-31 Nov 2014 Base_Case_Final_Pit Outline -; 150407 Open Pit New limits
IMAGE FILE(S):

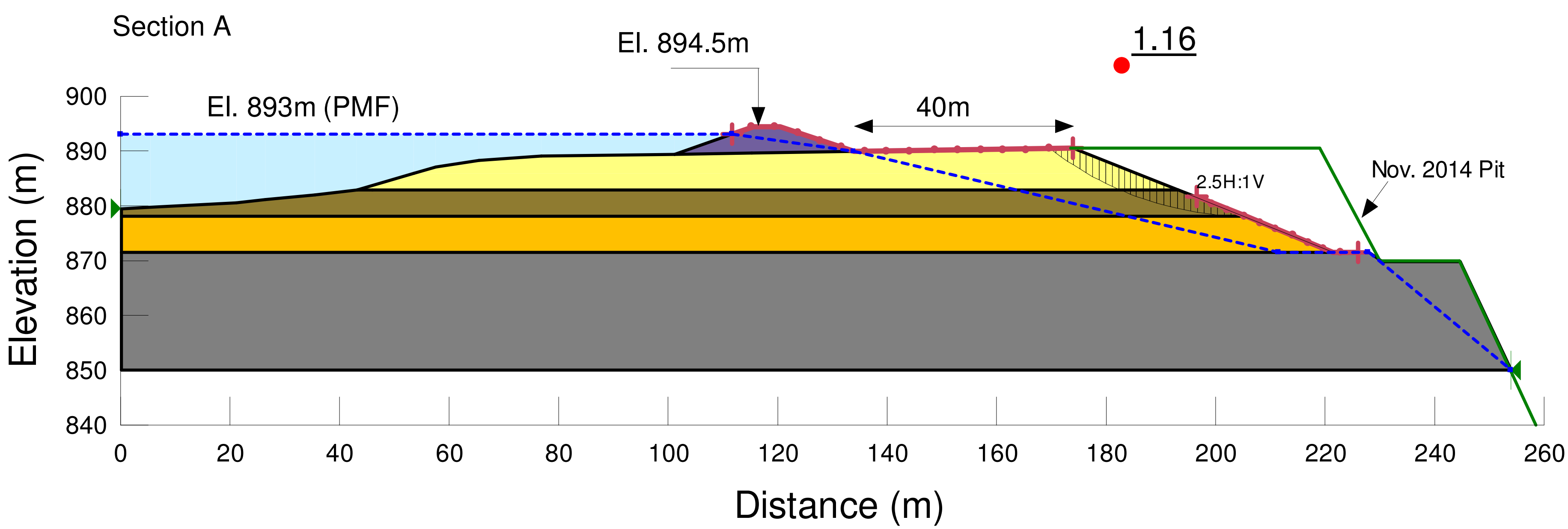
	Material Type	Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.		
	AJAX PROJECT		
Pit Offset Stability Analysis Section A Static – Shallow Failure			
NORWEST	809-3	FIGURE 1	REV. A

	Material Type	Unit Weight (kN/m³)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

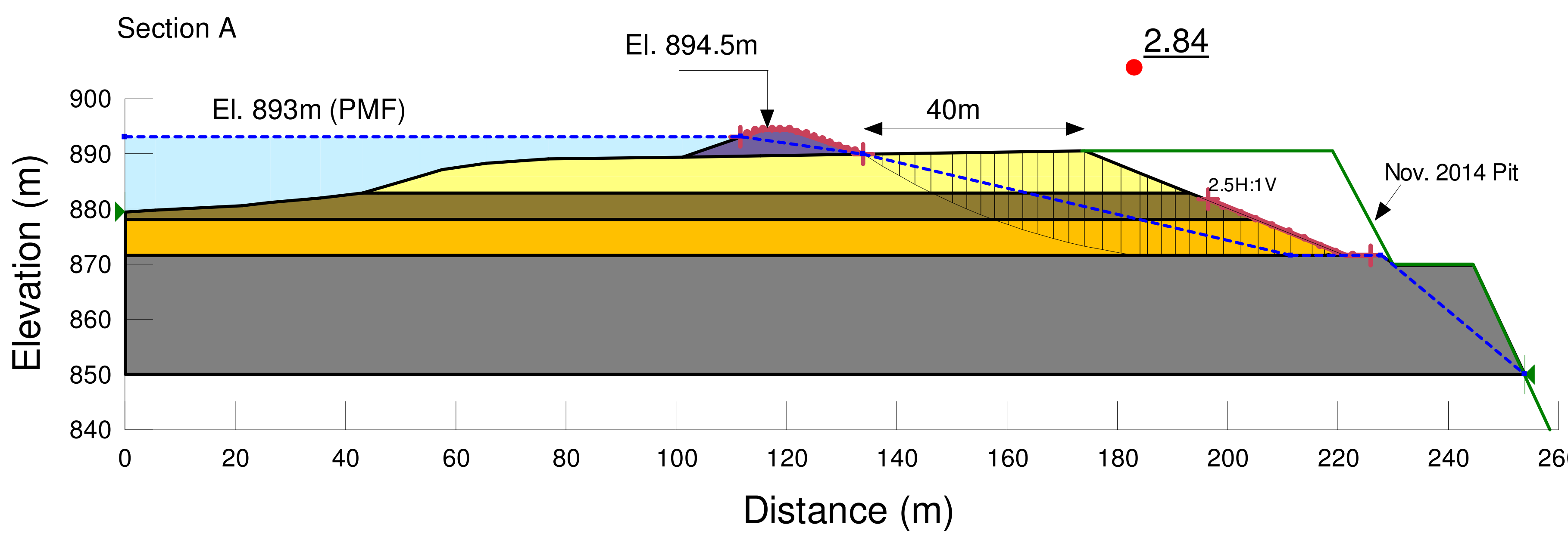
KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.
	AJAX PROJECT

Pit Offset Stability Analysis
Section A
Pseudostatic – Shallow Failure

NORWEST	809-3	FIGURE 2	REV. A

\\Norwestcorp.net\vancouver\PROJECTDATA\KGHM Ajax_809\809-3_Jacko Lake\Disc\Geotech\Task 3.3 - Phase 1 - Preliminary Design\WF07 - Pit Offset Stability Analysis\Rev F\Final

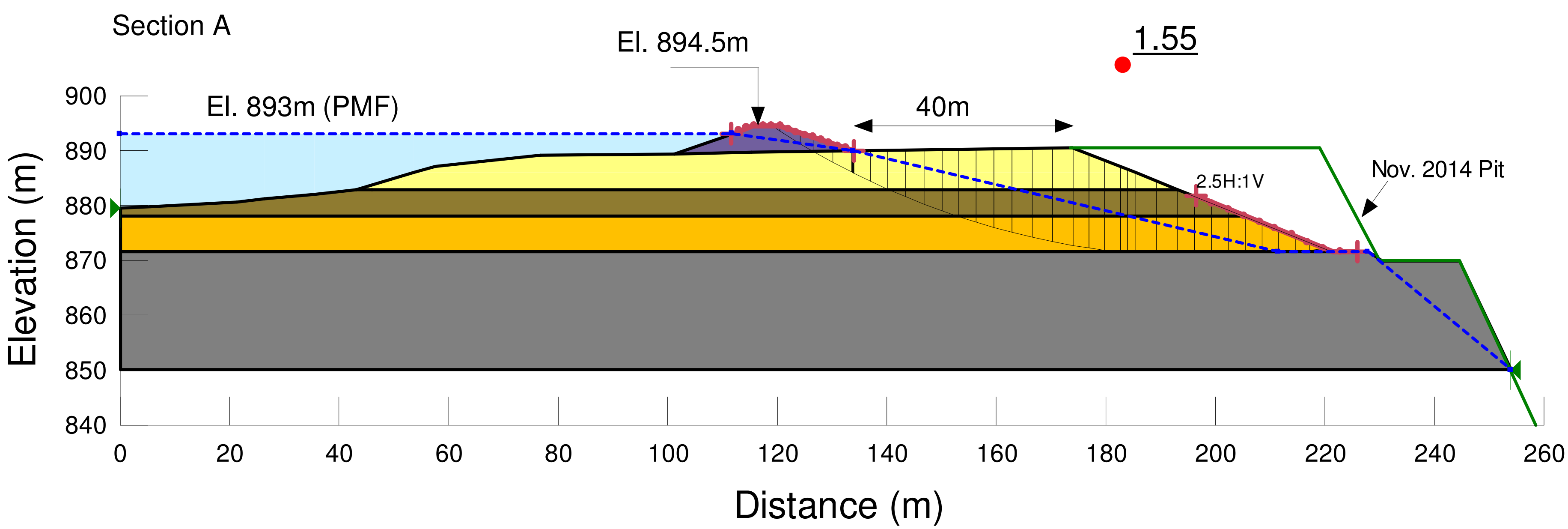
Material Type		Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.		
	AJAX PROJECT		
Pit Offset Stability Analysis Section A Static – Deep Seated Failure			
NORWEST	809-3	FIGURE 3	REV. A

Material Type		Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



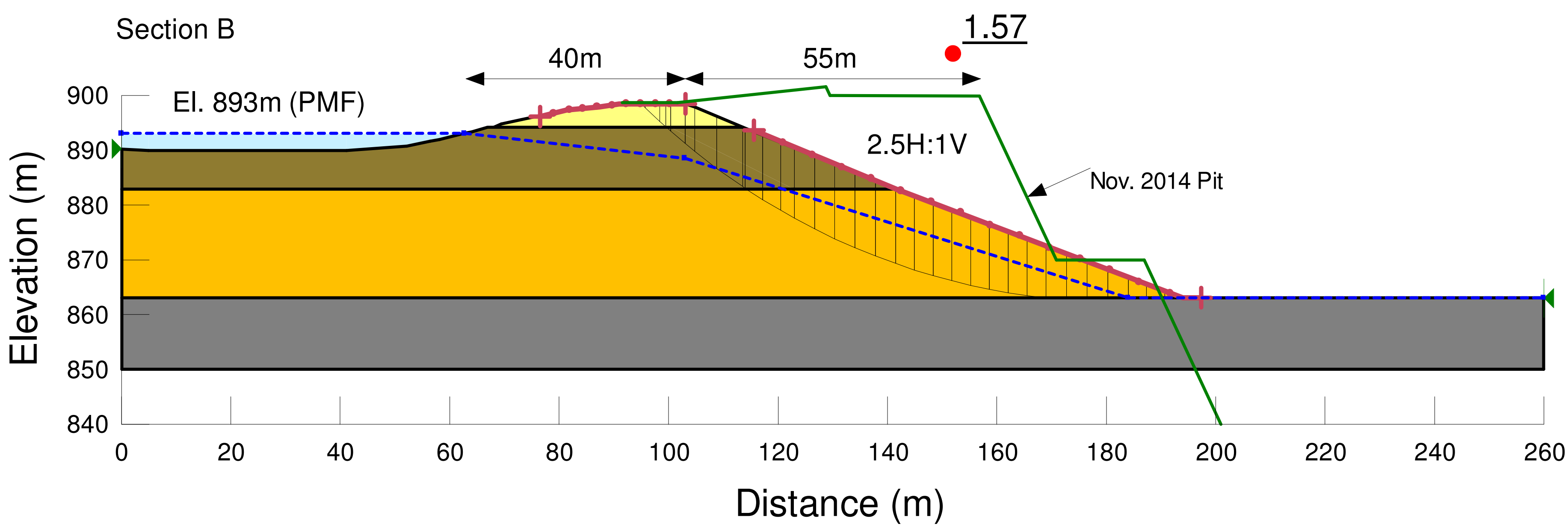
NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.
	AJAX PROJECT

Pit Offset Stability Analysis
Section A
Pseudostatic – Deep Seated Failure

NORWEST	809-3	FIGURE 4	REV. A

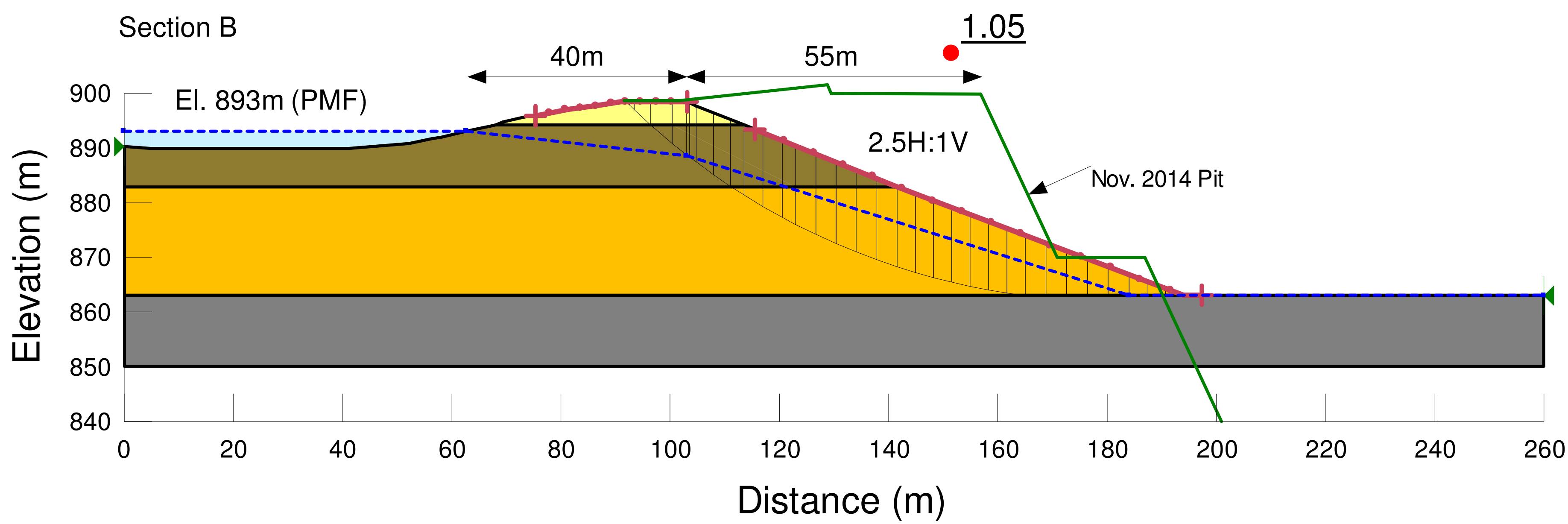
	Material Type	Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.		
	AJAX PROJECT		
Pit Offset Stability Analysis Section B Static – Shallow Failure			
NORWEST	809-3	FIGURE 5	REV. A

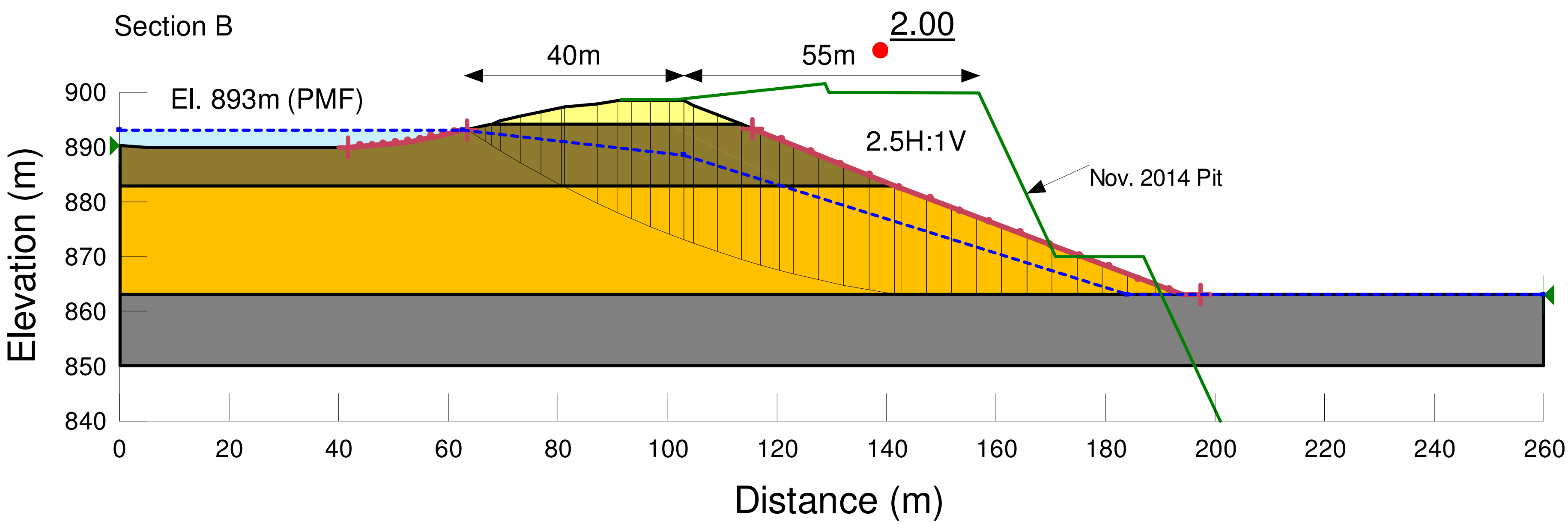
Material Type		Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.		
	AJAX PROJECT		
Pit Offset Stability Analysis Section B Pseudostatic – Shallow Failure			
NORWEST	809-3	FIGURE 6	REV. A

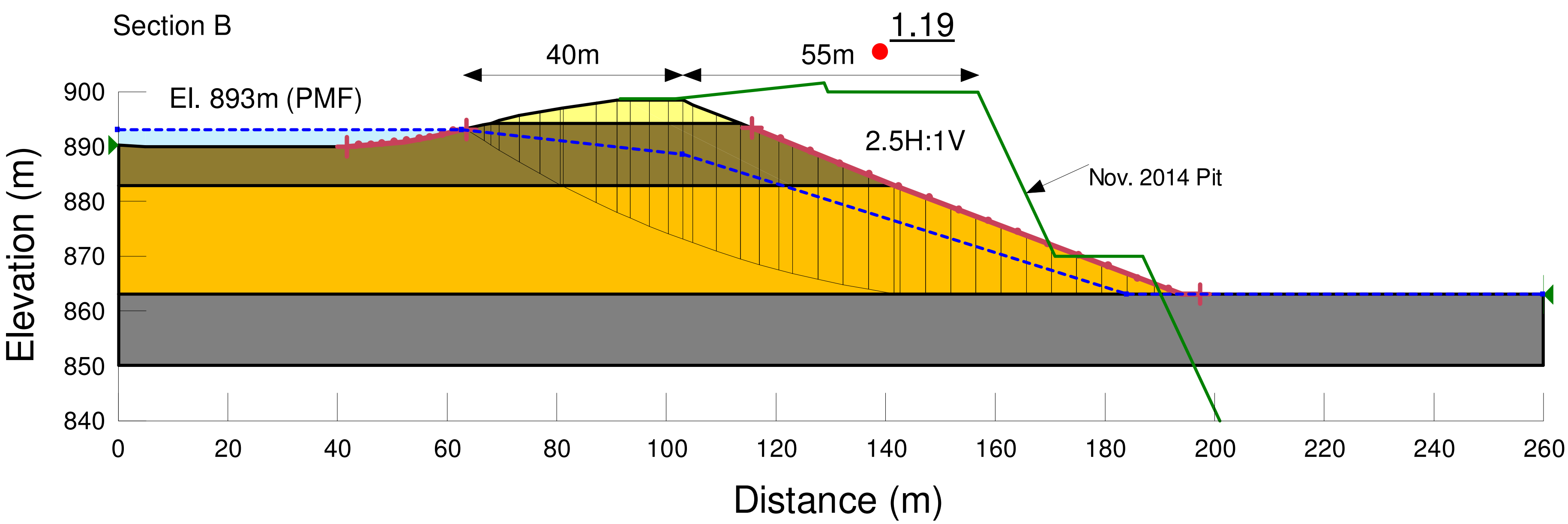
Material Type		Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.		
	AJAX PROJECT		
Pit Offset Stability Analysis Section B Static – Deep Seated Failure			
NORWEST	809-3	FIGURE 7	REV. A

Material Type	Unit Weight (kN/m^3)	Strength Parameters
Dam Fill	20	φ' = 30°, c' = 0 kPa
Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
Bedrock	Bedrock (Impenetrable)	



NOTES:
1. Issued with C135-KA39-RPT-00-011 (April 9, 2015).

KGHM Ajax Mining Inc.

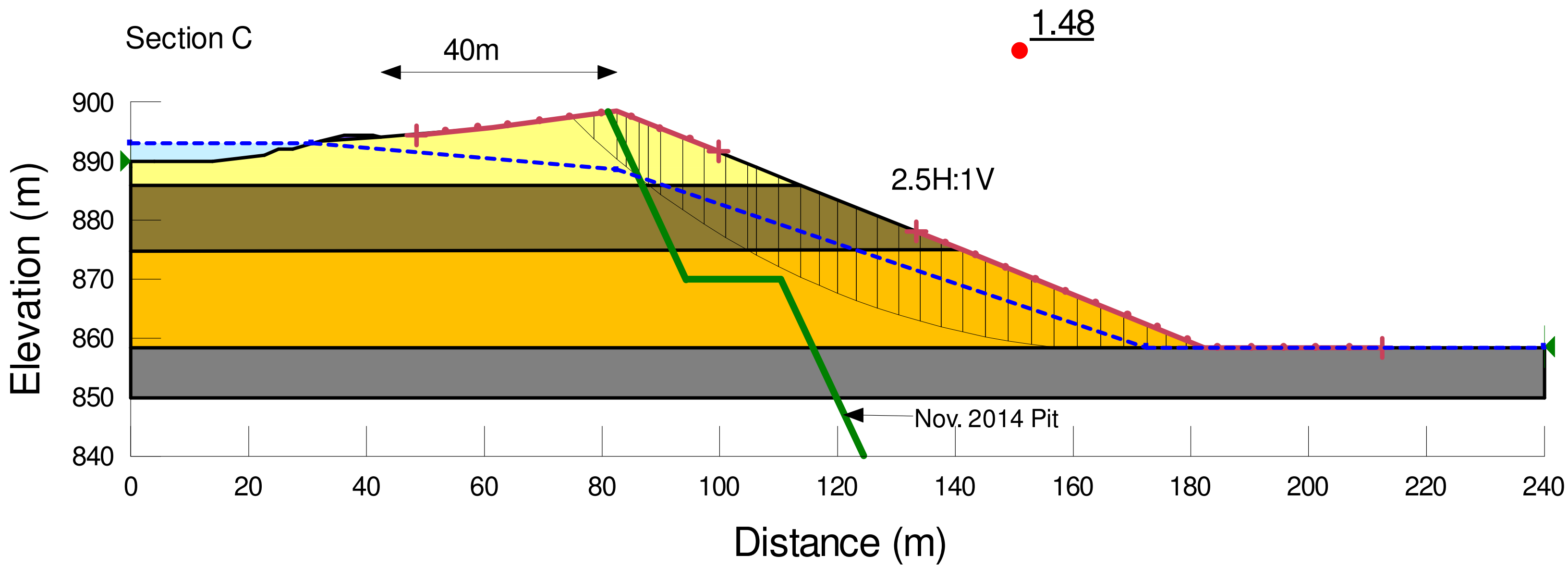
KGHM AJAX MINING INC.

AJAX PROJECT

Pit Offset Stability Analysis
Section B
Pseudostatic – Deep Seated Failure

NORWEST | 809-3 | FIGURE 8 | REV. A

Material Type	Unit Weight (kN/m^3)	Strength Parameters
Dam Fill	20	φ' = 30°, c' = 0 kPa
Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
Bedrock	Bedrock (Impenetrable)	

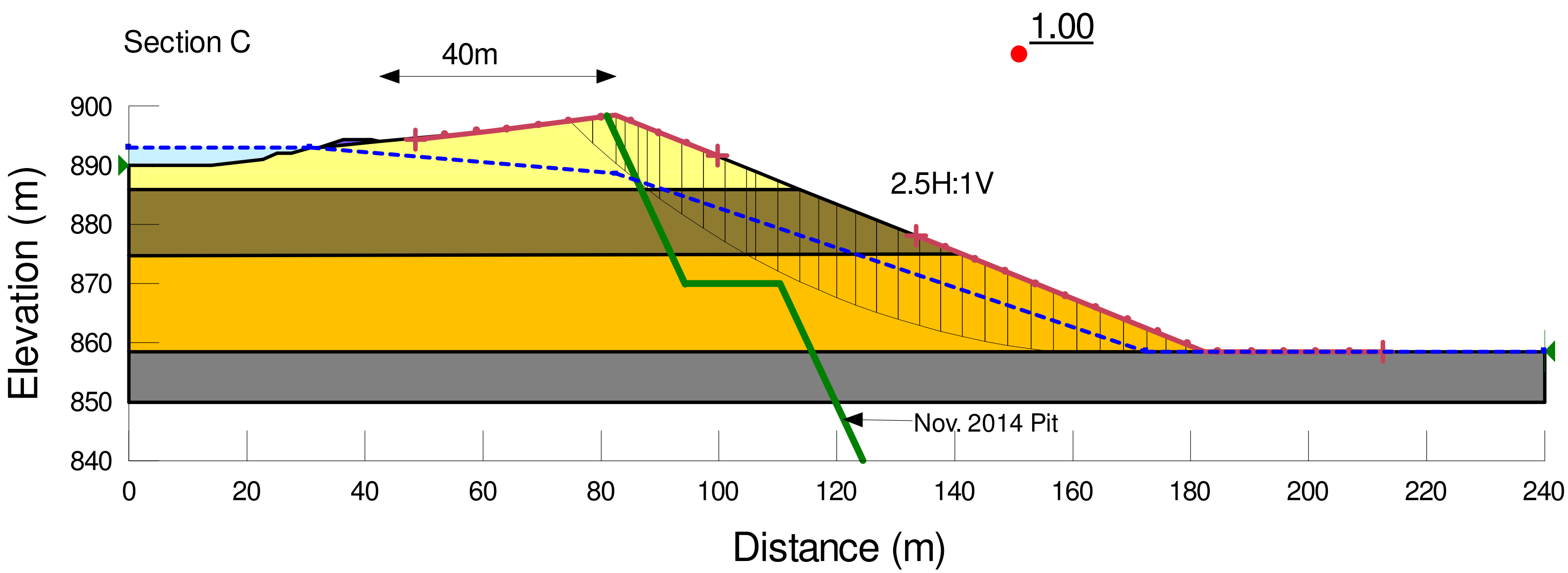


NOTES:

1. **Issued with C135-KA39-RPT-00-011 (April 9, 2015).**

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC. / AJAX PROJECT
Pit Offset Stability Analysis Section C Static – Shallow Failure	
NORWEST | 809-3	FIGURE 9 | REV. A

Material Type		Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



KGHM Ajax Mining Inc.

KGHM AJAX MINING INC.

AJAX PROJECT

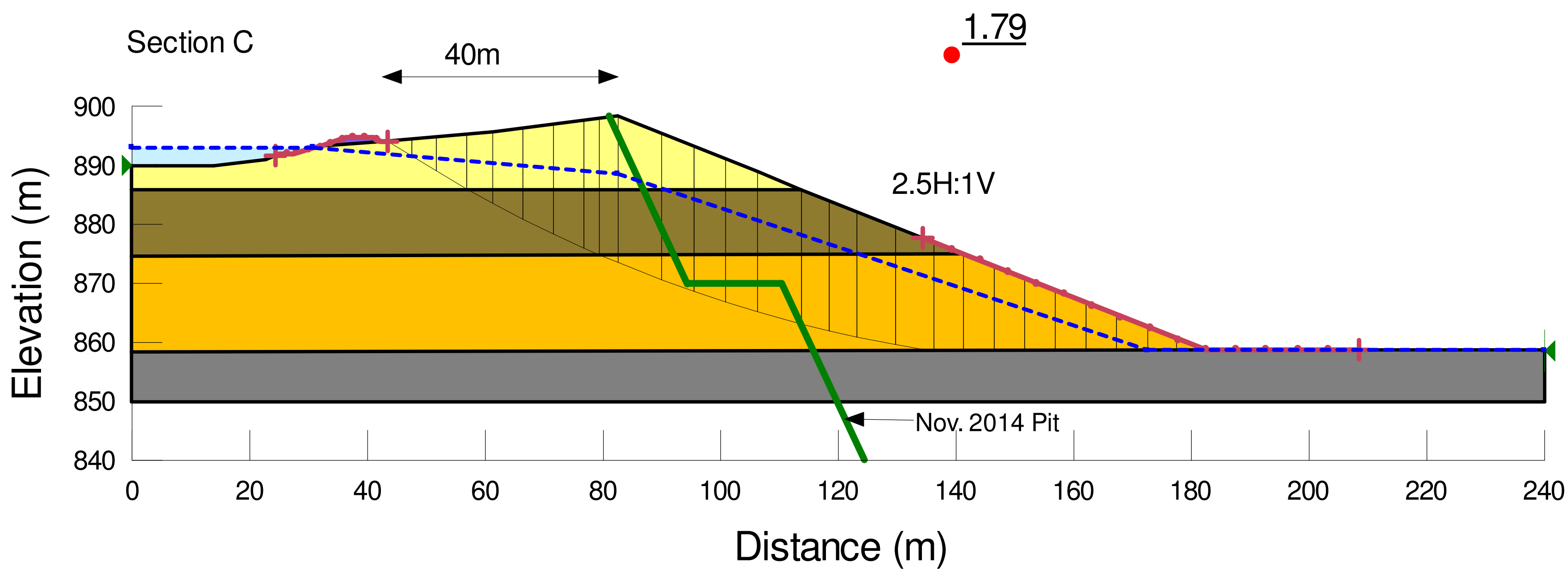
Pit Offset Stability Analysis
Section C
Pseudostatic – Shallow Failure

NORWEST | 809-3 | **FIGURE 10** | REV. A

NOTES:

1. **Issued with C135-KA39-RPT-00-011 (April 9, 2015).**

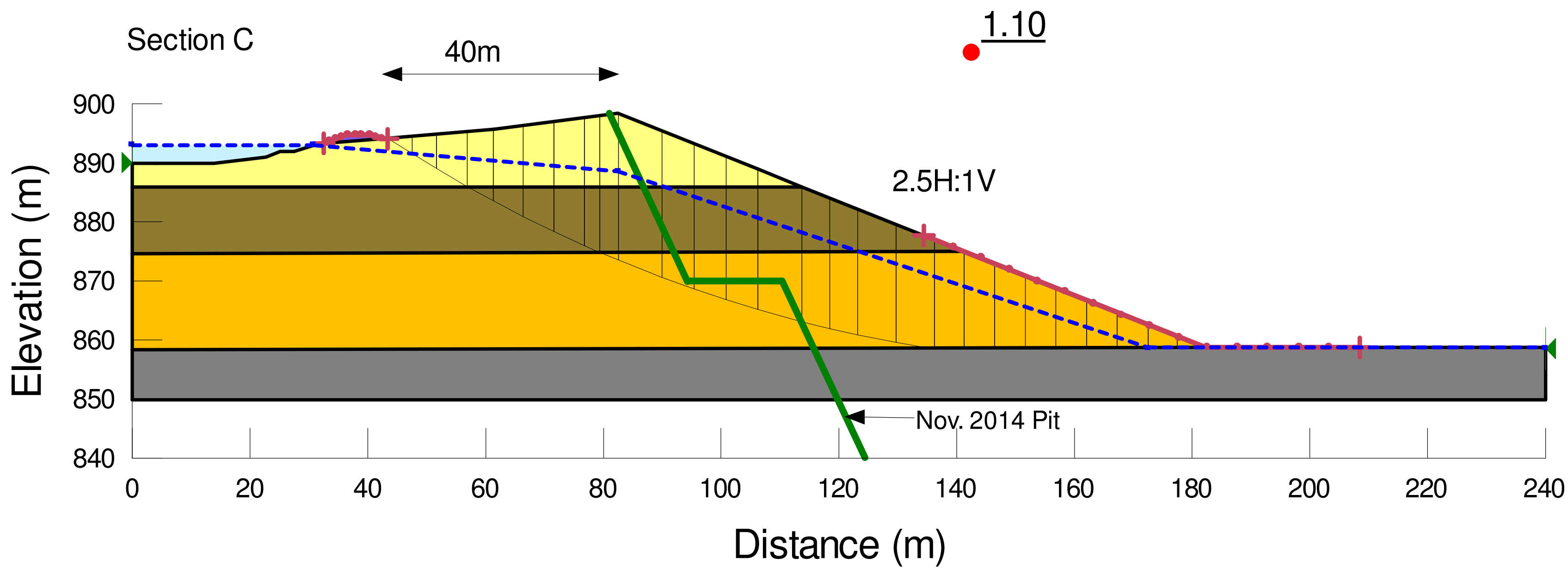
Material Type		Unit Weight (kN/m³)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:
1. **Issued with C135-KA39-RPT-00-011 (April 9, 2015).**

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.	
	AJAX PROJECT	
Pit Offset Stability Analysis Section C Static – Deep Seated Failure		
NORWEST	809-3	FIGURE 11	REV. A

Material Type		Unit Weight (kN/m^3)	Strength Parameters
	Dam Fill	20	φ' = 30°, c' = 0 kPa
	Upper Sand & Gravel Till	20	φ' = 33°, c' = 0 kPa
	Silt / Clay Till	20	φ' = 30°, c' = 0 kPa
	Lower Sand & Gravel Till	20	φ' = 35°, c' = 0 kPa
	Bedrock	Bedrock (Impenetrable)	



NOTES:

1. **Issued with C135-KA39-RPT-00-011 (April 9, 2015).**

KGHM Ajax Mining Inc.	KGHM AJAX MINING INC.		
	AJAX PROJECT		
Pit Offset Stability Analysis **Section C** **Pseudostatic – Deep Seated Failure**			
NORWEST	809-3	**FIGURE 12**	REV. A