AGNICO EAGLE

Design Report

Whale Tail Dike West Abutment Thermal Berm

12/16/2022

Approved by	Title	Date
Pierre McMullen	General Superintendent, Technical Services Meadowbank	2022-12-16

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1.0 INTRODUCTION

Agnico Eagle Mines Limited, Meadowbank Complex (AEM) is operating the Whale Tail Mine as a satellite deposit of the Meadowbank Mine.

The Whale Tail Mine is located in the Kivalliq Region of Nunavut, Canada, centered at approximately latitude 65° 24' 36" N, longitude 96° 41' 41" W. The Whale Tail Mine site is a 408 km^2 site located on Inuit Owned Land approximately 150 km north of the hamlet of Baker Lake and northwest of the Meadowbank Mine.

Whale Tail Dike is an infrastructure that isolate Whale Tail Pit from Whale Tail Lake South (Figure 1). The structure was constructed in the fall of 2018 and commissioned following completion of dewatering in 2020.

In August 2022, it was observed that the natural soil on the Eastern abutment had settled allowing water to ingress further into the East abutment which led to rapid thawing of the Eastern abutment foundation and the development of cracks on the crest and sloughing of the dike slope in that area. AEM initiated in the fall of 2022 the construction of an Eastern abutment thermal berm to stabilize the dike and re-establish permafrost in that sector. This plan was strongly supported by the Meadowbank Dike Review Board (MDRB) as per their recommendation received on September 16, 2022. More details can be found in the letter '*Agnico Eagle Meadowbank Complex – Whale Tail Dike Remediation Work*' submitted to NWB and DFO on September 22, 2022.

As part of the MDRB recommendation following the 2022 meeting, AEM would like to construct a similar thermal berm at the Western abutment of Whale Tail Dike to prevent ingress of water that could lead to rapid thawing of the Western abutment foundation as observed in the Eastern abutment. This document presents the Whale Tail Dike Western Abutment Thermal Berm Design information as required by the Water License 2AM-WTP1830 Part D Item 1 and the DFO FAA 16-HCAA-00370 Condition 2.4.1.

Figure 1: Aerial View of Whale Tail Dike

2.0 WEST ABUTMENT THERMAL BERM DESIGN

Plans for a thermal berm located on the Eastern abutment were included in the *'Design Report of Whale Tail Dike'* approved by the NWB on July 16, 2018 as a potential mitigation in case of thawing of that sector due to permafrost degradation. A similar design will be used for the thermal berm that will be constructed on the Western abutment.

Appendix A show the construction drawings for the West Abutment Thermal Berm. The thermal berm will extend from the upstream causeway of the West abutment of Whale Tail Dike. The thermal berm will be 89 m long and 14 m wide. A length of 54 m of the berm will be constructed on land and a length of 35 m of the berm will be constructed in water having a maximum depth of 1.1m. Ice thickness will be confirmed in the work area prior to the beginning of rockfill placement.

The berm will be constructed of non-acid generating material (NAG), non-metal leaching waste rock determined as per the Operational ARD-ML Sampling and Testing Plan and obtained from mining operation.

The "in-water" portion of the thermal berm lies in an area of temporary flooding that was fully terrestrial under baseline conditions.

Specifically, the thermal berm lies on the south side of the Whale Tail Dike west abutment (*Figure 1*). It overprints part of the existing dike causeway and causeway access ramp, which were built on land in 2018-2019. The portion of the thermal berm footprint that will be constructed in-water is in a zone of temporary flooding that became inundated once the dike was fully advanced across the lake in 2019. This zone of temporary flooding which extends around Whale Tail South between approximately 153 masl (baseline) and 155 – 156 masl (current) is required for operational purposes and is scheduled to be drawn down to approximately 154 masl, in 2026 at closure.

This flooding and drawdown are fully described in the Fish Habitat Offsetting Plan for Whale Tail Pit (March, 2018), but for the purpose of net gain calculations, the temporary flood zone is not assumed to provide any habitat gains during the operations period.

3.0 CONSTRUCTION

The construction of the Western Thermal Berm is planned for March-April 2023 to maximize frost aggradation and the effectiveness of the thermal berm to maintain frozen conditions of the foundation.

It is estimated that 1,800 m^3 of NAG rockfill will be required for this structure. The rockfill will have a 0-1000 mm gradation and will be placed in lift having a maximum thickness of 2 m. Any oversized boulders will be removed and brought back to the waste rock facility. The passes of heavy construction equipment will compact the rockfill.

Ice will be removed prior to material placement in the flooded area of Whale Tail South and brought back to the nearest snow dump located within the Whale Tail Attenuation Pond. Due to the shallow depth of water and the winter construction period, it is not expected to encounter free water during the construction of the structure. As such, it is not expected that sediment control technique will be required during construction. If water is encountered during the construction, construction activities will either be put to a stop until the water freezes and work will then resume or will be completely stopped depending on the advancement of the works. Water quality monitoring for TSS will be performed during the work and compared to limit established in Part D, Item 7 of the Water License. Agnico Eagle will also performed weekly water quality monitoring in Whale Tail South during construction to ensure no sediment release. Post construction inspection will be performed as per the Freshet Action Plan. No blast will be required for construction.

4.0 QUALITY CONTROL (QC) AND QUALITY ASSURANCE (QA) PLAN

The controls to be undertaken during construction of the thermal berm will include the following:

- Confirmation that the thermal conditions of the foundation are satisfactory for the beginning of earthworks. The aim is to start construction when the surrounding instrumentation shows that the foundation is approaching near its yearly coldest state.
- Survey control to obtain as-built information and ensure the work respects the lines and grades as per the Design drawings
- Daily QA/QC field inspection from Environment technical personnel
- Photographic documentation of all work activity
- Construction Summary Report of the earthworks

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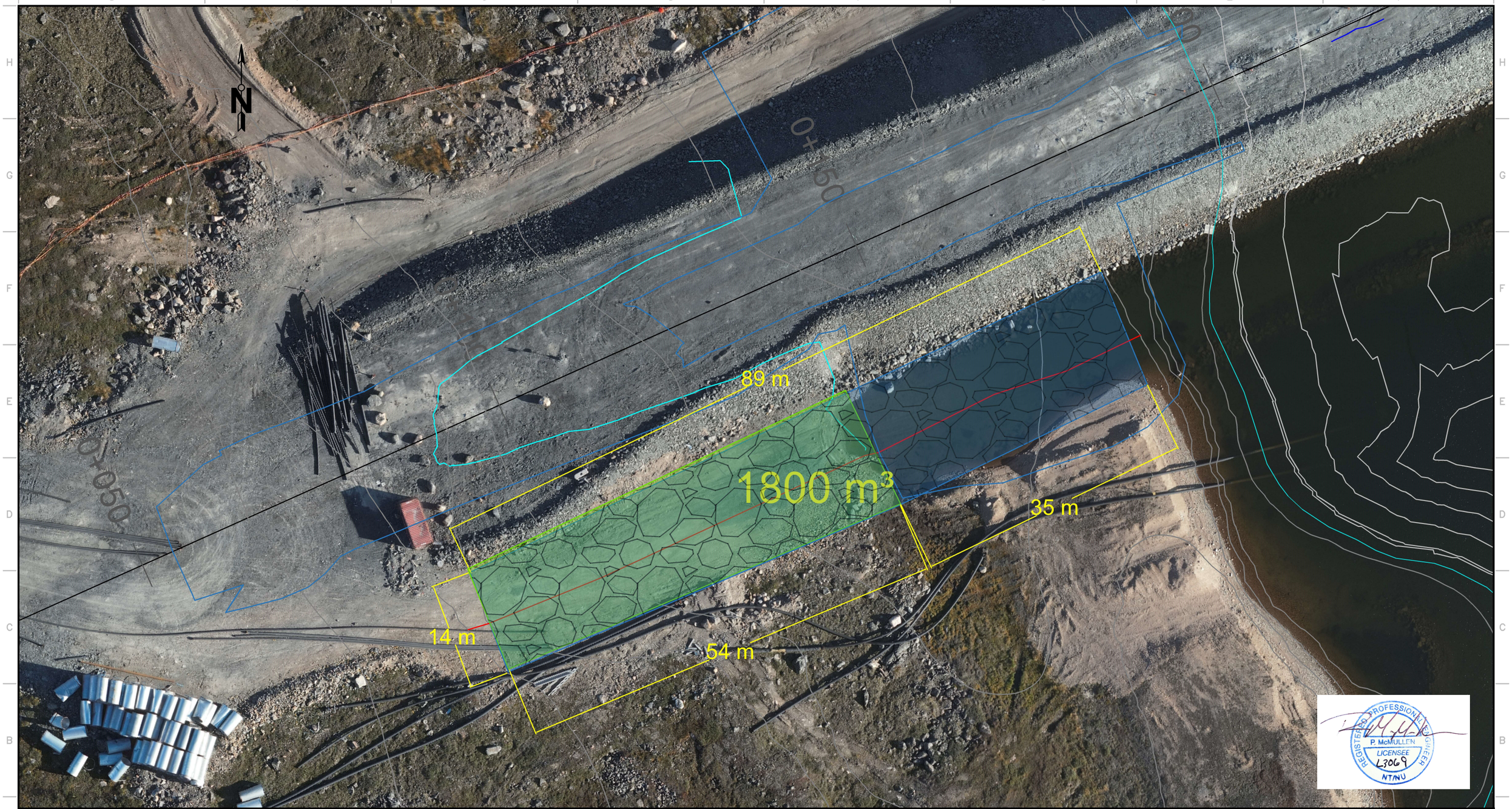
5.0 SIGNATURE

Pierre McMullen

General Superintendent, Technical Services Meadowbank

APPENDIX A: DRAWINGS

FORMAT ANSI B – LANDSCAPE



REGISTERED PROFESSIONAL ENGINEER
P. McMULLEN
LICENSEE
L3069
NT/NU

TECHNICAL SPECIFICATION

Only Run Of Mine NAG rockfill allowed for this construction

Oversize boulders to be sorted cut, 0-1000mm particl e size allowed

Ice to be removed and brought to the nearest Snow dump

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DRAWN BY P.Gagnon	DATE 2022-09-17	MODIFIED BY P.Gagnon	DATE 2022-12-10
SURVEY CHECK	DATE		
GEOLOGY CHECK	DATE		
ENGINEERING CHECK P.McMullen	DATE 2022-12-16		

MEADOWBANK DIVISION

ENGINEERING

WTD Thermal Capping
West Abutment

SCALE N.T.S. | DATE | FILE .DWG

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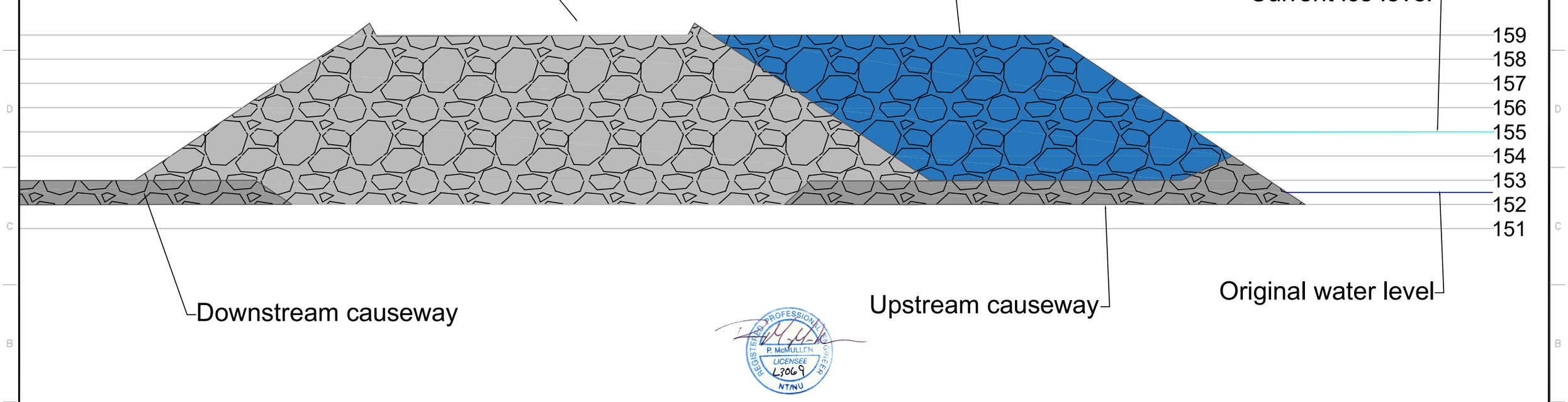

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GEOLOGY CHECK	DATE			WTD Thermal Capping	
ENGINEERING CHECK P.McMullen	DATE 2020-12-16			West Abutment Section	
				SCALE N.T.S.	DATE

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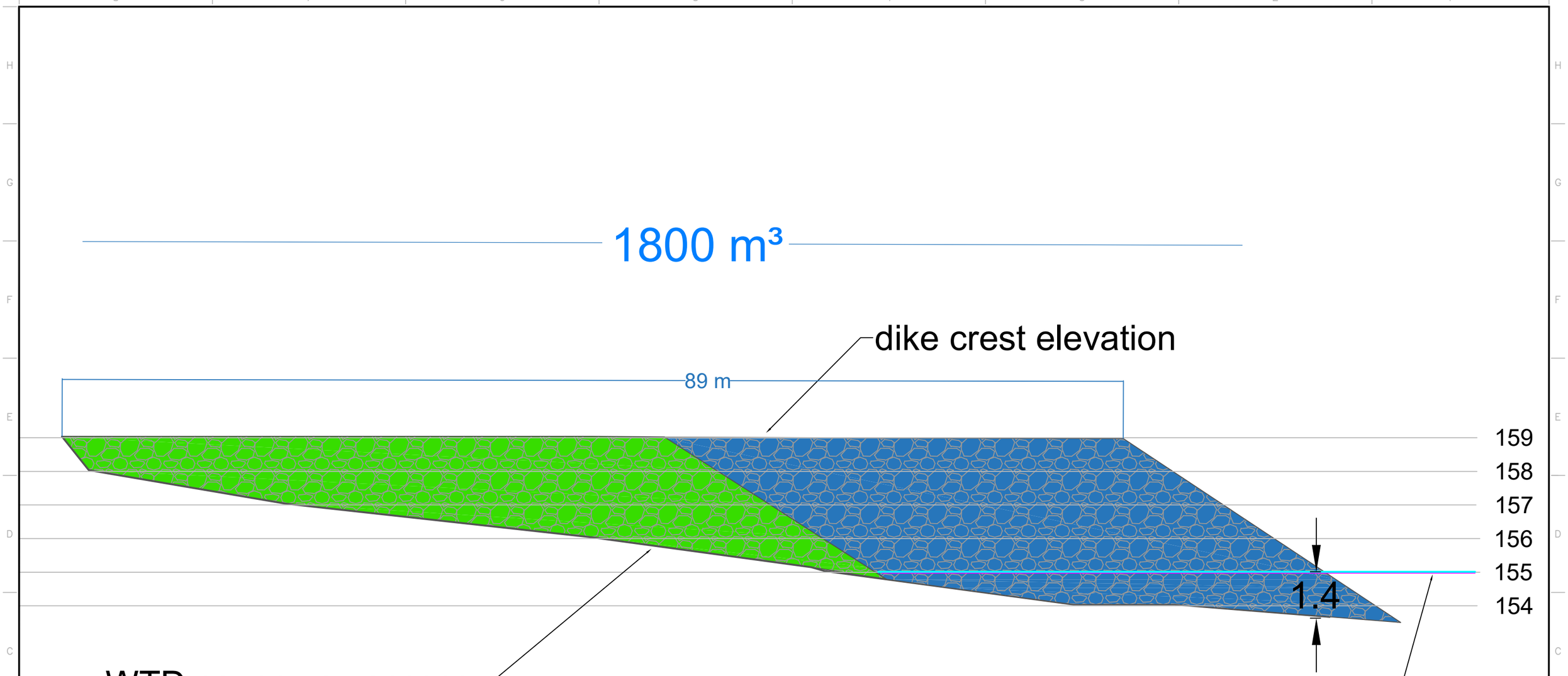

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ENGINEERING CHECK: P.McMullen	DATE: 2022-12-16			West Abutmt. Longitudinal	
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