

TECHNICAL MEMORANDUM

DATE 18 August 2020

Reference No. 18105460-001-TM-Rev0

TO Lloyd Gruben, Water Resources Officer
Department of Environment & Natural Resources

FROM Brian Suen, Golder Associates Ltd.

EMAIL brian_suen@golder.com

RE: MODIFICATION – SUMP DECANT STRUCTURE – TUK BASE

Imperial Oil (Imperial) and Golder Associates Ltd. (Golder) have been working at the Tuk Base Project Site (the Project) during the summer 2020 field season. The Project operates under the Inuvialuit Water Board (IWB) Type B Water Licence (number N5L8-1841) (the Licence). The following presents a technical clarification to the Licence regarding the construction, maintenance, and winterization of Engineered Soil Staging Areas (ESSAs) at the Project.

Excavation of landfill soil and debris has been on-going throughout the 2020 summer construction season at the Project. The excavated material has been stockpiled in the ESSA as outlined in Figure 1. The soil staged in this area is contained by soil berms and the area will be winterized until the 2021 summer construction season. Winterization will involve reducing the height of the staged soil by spreading it out as flat as possible between the soil berms to minimize the amount of snow accumulation. There are two lined sumps which are designed to contain water runoff from within the berms during operations. During construction of the sumps, it was identified that the sumps could be built much larger than anticipated to contain significantly more water should it be required. As a preventative measure, Golder constructed the sumps approximately three times wider and twice as tall as originally designed; however, the risk of water filling the sumps and overtopping, causing erosion of the berms during spring snow melt cannot be completely eliminated due to the remote inaccessible site conditions. To prevent erosion and allow the sump water a designated path to travel if the sumps fill to capacity during spring snow melt, decant structures will be constructed this summer to allow water to flow from the sumps. Water will only be able to exit the sumps if it reaches 0.3 m from the crest of the berms. The sumps will act as settling ponds, capturing suspended sediment from any water flowing from within the ESSAs and the decant would significantly reduce the risk of failure of the berms due to over topping. Failed berms could cause undesirable movement of soil outside the designated berms. All decant structures built on site will only allow water to exit the decant with a travel path of a minimum of 100 m from the nearest water body and where possible, the water will be directed to a contained location such as the former Sewage Lagoon. Figure 2 highlights the design of the decant structures.

In addition, decant structures will be constructed at the sump in the South Landfill and Soil Treatment Cell in a similar fashion. No other alterations to the sumps has been deemed necessary at this point.

Should you have any questions or require further information please do not hesitate to contact the undersigned.

Golder Associates Ltd.



Brian Suen
Project Manager
Golder Associates Ltd.
Vancouver, BC



Kevin Rattray
Environmental Engineer
Golder Associates Ltd.
Yellowknife, NT

BS/KR/lmk

Attachments: Figure 1 - Engineered Soil Staging Area Locations
Figure 2 - Sump Decant Structures

\p\proj\2020\1805460\1805460.dwg [AutoCAD 2018] User: S.McLean Date: 2020-05-01 10:00:00 AM Plot Date: 2020-05-01 10:00:00 AM Plot Scale: 1:1000



LEGEND

- LEASE BOUNDARY
- ROAD
- AUGUST 2015 PRE-CONSTRUCTION SURVEY GROUND CONTOURS (0.5 m INTERVAL)
- 2019 RECORD SURVEY GROUND CONTOURS (0.5 m INTERVAL)
- PROPOSED ENGINEERED SOIL STAGING AREA
- PROPOSED SUMP LOCATION

- NOTES**
1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
 2. COORDINATE SYSTEM IS UTM ZONE 8 NAD 83.
 3. ELEVATIONS ARE REFERRED TO ACP TUKT (M039007) AND ARE ORTHOMETRIC.

- REFERENCES**
1. PRE-CONSTRUCTION SURVEY CONDUCTED BY INUKSHUK GEOMATICS INC. DATED: 25-29 AUGUST 2015, PROVIDED BY IMPERIAL OIL LIMITED. RECEIVED: 4 MARCH 2016.
 2. RECORD SURVEY CONDUCTED BY INUKSHUK GEOMATICS INC. SUMMARIZING CONSTRUCTION ACTIVITIES UP TO 24 SEPTEMBER 2019. PROVIDED BY GOLDR CONSTRUCTION INC., RECEIVED: 2 DECEMBER 2019.

DISCLAIMER

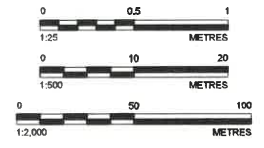
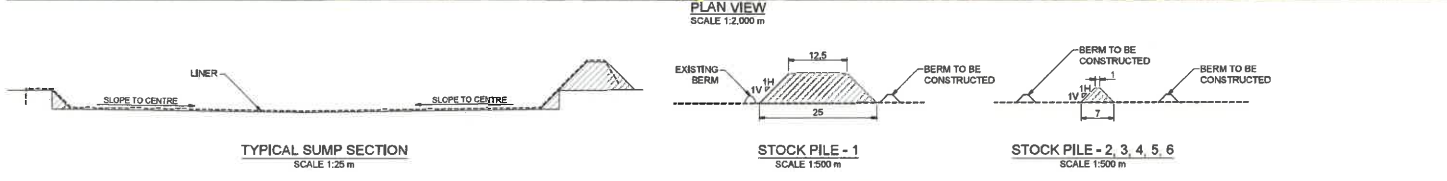
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GOLDR ASSOCIATES LTD.

Signature

Date Aug 18, 2020

PERMIT NUMBER: P 049
NT/NU Association of Professional Engineers and Geoscientists



REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2020-08-18	ISSUED FOR PERMITTING	S.McLEAN	A.WANG	L.HADERLEIN	K.RATTRAY
A	2020-05-01	FOR REVIEW	S.McLEAN	J.HOPSON	L.HADERLEIN	K.RATTRAY

SEAL

CLIENT
IMPERIAL OIL LTD.

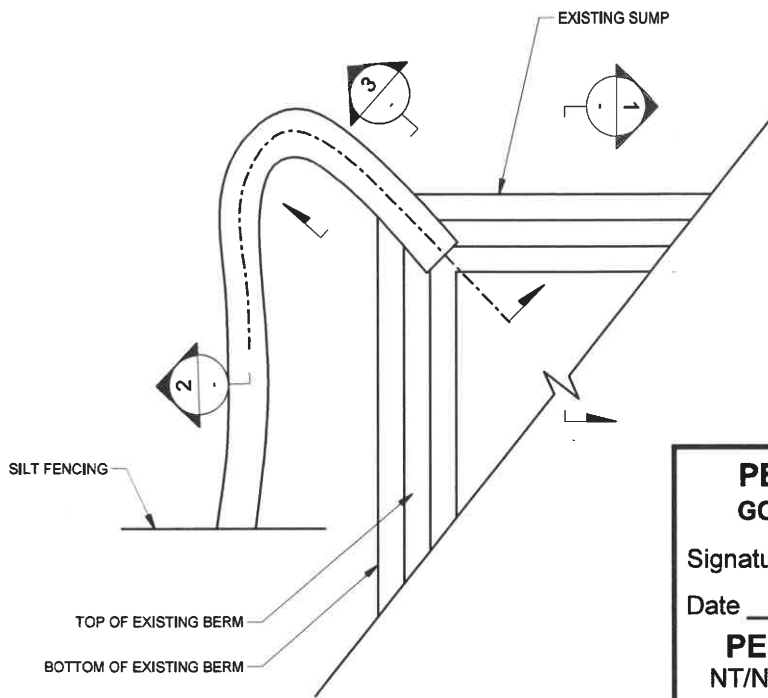
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PROJECT
TUK BASE REMEDIATION

TITLE
2020 EXISTING ENGINEERED SOIL STAGING AREA LOCATIONS

PROJECT NO.	PHASE/TASK	REV.	1 of 1	DRAWING
18105460	1000/1001	0		01

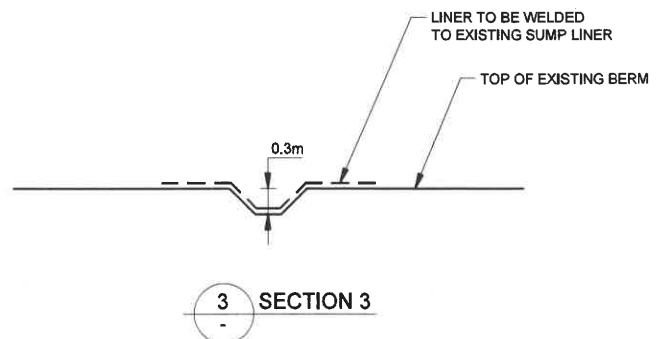
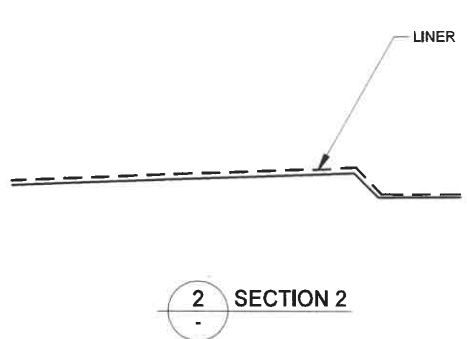
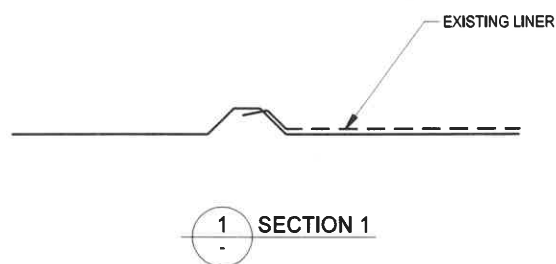


**PERMIT TO PRACTICE
GOLDER ASSOCIATES LTD.**

Signature [Signature]

Date Aug 18, 2020

PERMIT NUMBER: P 049
NT/NU Association of Professional
Engineers and Geoscientists



NOTES
1. ALL SLOPES TO BE 2:1 OR LESS.

CLIENT
IMPERIAL OIL LTD.

PROJECT
**TUK BASE REMEDIATION
TUKTOYAKTUK, NWT**

CONSULTANT	YYYY-MM-DD	2020-08-18
DESIGNED	S. McLEAN	
PREPARED	A. WANG	
REVIEWED	L. HADERLEIN	
APPROVED	K. RATTRAY	

TITLE	PROJECT NO.	PHASE/TASK	REV.	DRAWING
2020 ESSA/SOIL TREATMENT CELL WINTERIZATION - EROSION CONTROL STRUCTURE	18105460	1000/1001	0	02



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25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A