

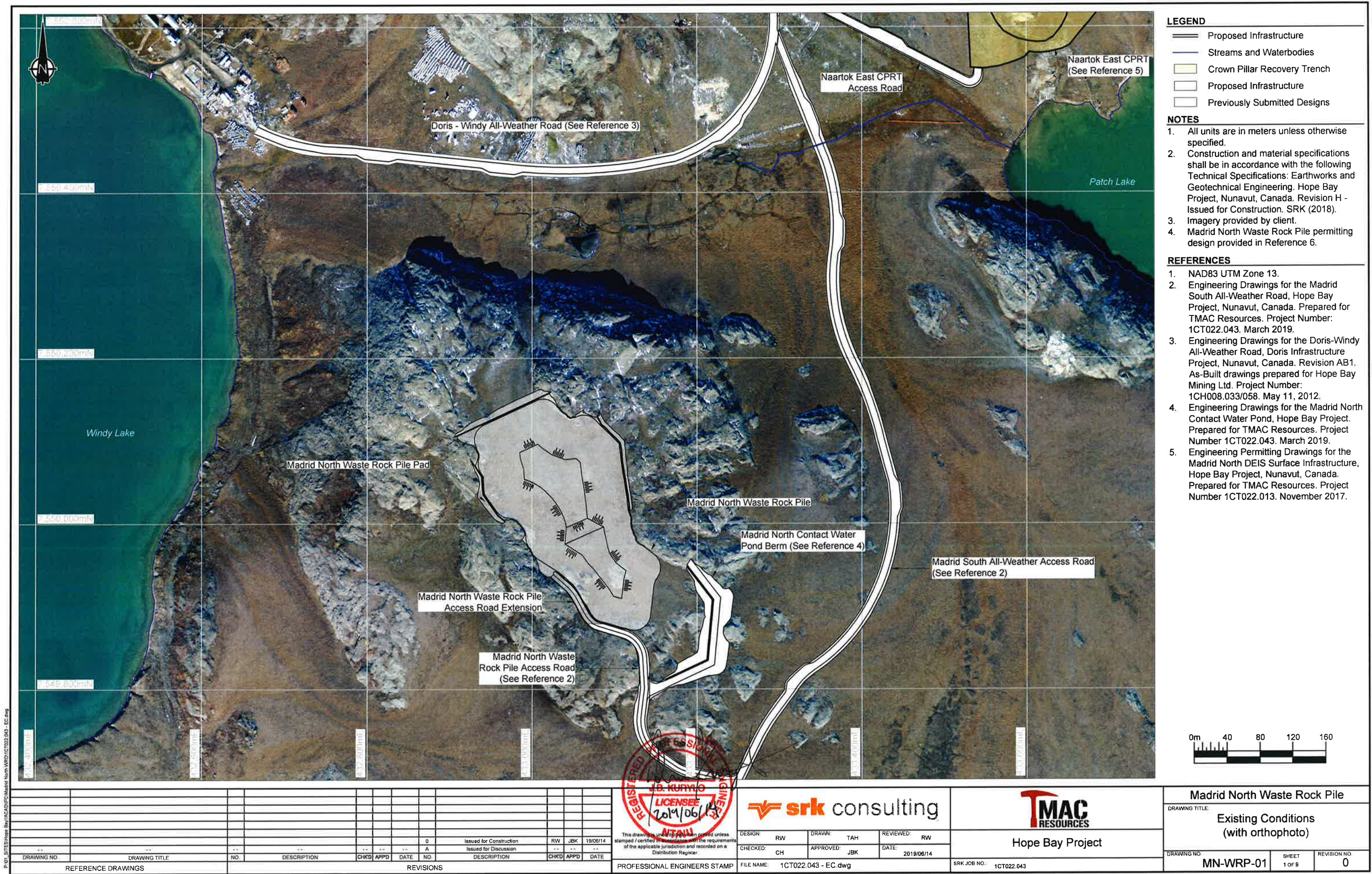
Engineering Drawings for the Madrid North Waste Rock Pile Hope Bay Project, Nunavut, Canada

Active Drawing Status

Drawing Number	Drawing Title	Issue	Date	Revision
MN-WRP-01	Existing Conditions (with orthophoto)	Issued for Construction	2019/06/14	0
MN-WRP-02	Existing Conditions	Issued for Construction	2019/06/14	0
MN-WRP-03	Existing Drainage Flowpaths	Issued for Construction	2019/06/14	0
MN-WRP-04	Waste Rock Pile Pad - Part 1	Issued for Construction	2019/06/14	0
MN-WRP-05	Waste Rock Pile Pad - Part 2	Issued for Construction	2019/06/14	0
MN-WRP-06	Waste Rock Pile Pad Sections	Issued for Construction	2019/06/14	0
MN-WRP-07	Waste Rock Pile	Issued for Construction	2019/06/14	0
MN-WRP-08	Waste Rock Pile Sections	Issued for Construction	2019/06/14	0
MN-WRP-09	Typical Details	Issued for Construction	2019/06/14	0



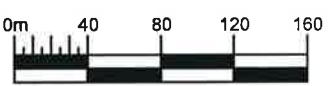
Project Number: 1CT022.043



- LEGEND**
- Proposed Infrastructure
 - Streams and Waterbodies
 - Crown Pillar Recovery Trench
 - Proposed Infrastructure
 - Previously Submitted Designs

- NOTES**
- All units are in meters unless otherwise specified.
 - Construction and material specifications shall be in accordance with the following Technical Specifications: Earthworks and Geotechnical Engineering. Hope Bay Project, Nunavut, Canada. Revision H - Issued for Construction. SRK (2018).
 - Imagery provided by client.
 - Madrid North Waste Rock Pile permitting design provided in Reference 6.

- REFERENCES**
- NAD83 UTM Zone 13.
 - Engineering Drawings for the Madrid South All-Weather Road, Hope Bay Project, Nunavut, Canada. Prepared for TMAC Resources. Project Number: 1CT022.043. March 2019.
 - Engineering Drawings for the Doris-Windy All-Weather Road, Doris Infrastructure Project, Nunavut, Canada. Revision AB1. As-Built drawings prepared for Hope Bay Mining Ltd. Project Number: 1CH008.033/058. May 11, 2012.
 - Engineering Drawings for the Madrid North Contact Water Pond, Hope Bay Project. Prepared for TMAC Resources. Project Number 1CT022.043. March 2019.
 - Engineering Permitting Drawings for the Madrid North DEIS Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Prepared for TMAC Resources. Project Number 1CT022.013. November 2017.



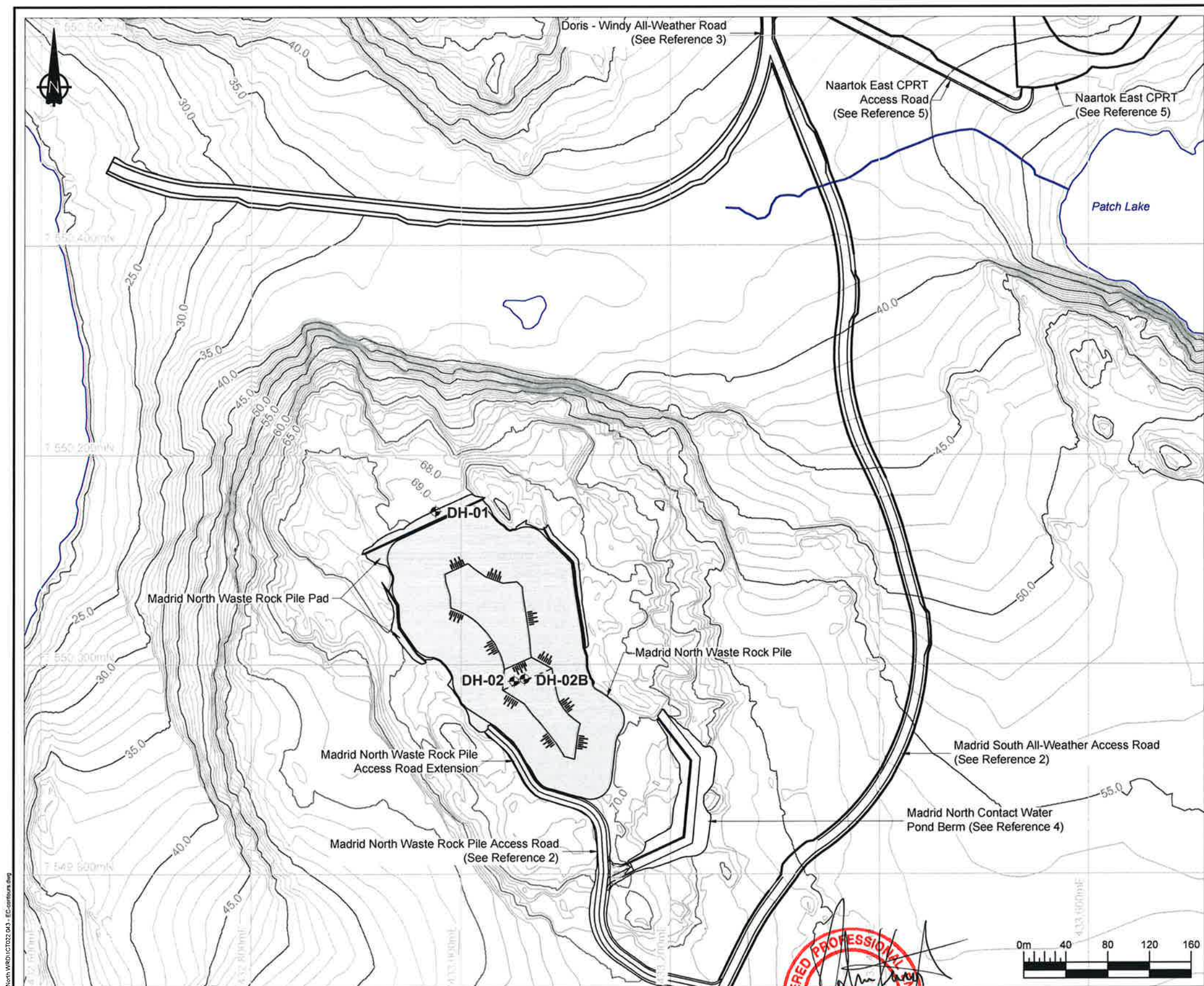
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Madrid North Waste Rock Pile		
DRAWING TITLE: Existing Conditions (with orthophoto)		
DRAWING NO: MN-WRP-01	SHEET 1 OF 9	REVISION NO: 0

DESIGN: RW	DRAWN: TAH	REVIEWED: RW
CHECKED: CH	APPROVED: JBK	DATE: 2019/06/14
FILE NAME: 1CT022.043 - EC.dwg	SRK JOB NO: 1CT022.043	



LEGEND

SRK 2018 Site Investigation Borehole

Proposed Road

Streams and Waterbodies

Proposed Infrastructure

- NOTES
1.

The designs are based on the contour information shown on these drawings. It is the Contractor's responsibility to confirm that the contours are a fair reflection of the ground levels in the vicinity of the works, and to advise the Construction Manager and Engineer of any differences.
2.

Contours shown at 1.0m intervals.
3.

All units shown in meters unless otherwise specified.
4.

Construction and material specifications shall be in accordance with the following Technical Specifications: Earthworks and Geotechnical Engineering. Hope Bay Project, Nunavut, Canada. Revision H - Issued for Construction. SRK (2018).
5.

Madrid North Waste Rock Pile permitting design provided in Reference 6.

- REFERENCES
1.

NAD83 UTM Zone 13.
2.

Engineering Drawings for the Madrid South All-Weather Road, Hope Bay Project, Nunavut, Canada. Prepared for TMAC Resources. Project Number: 1CT022.043. March 2019.
3.

Engineering Drawings for the Doris-Windy All-Weather Road, Doris Infrastructure Project, Nunavut, Canada. Revision AB1. As-Built drawings prepared for Hope Bay Mining Ltd. Project Number: 1CH008.033/058. May 11, 2012.
4.

Engineering Drawings for the Madrid North Contact Water Pond, Hope Bay Project, Prepared for TMAC Resources. Project Number 1CT022.043. March 2019.
5.

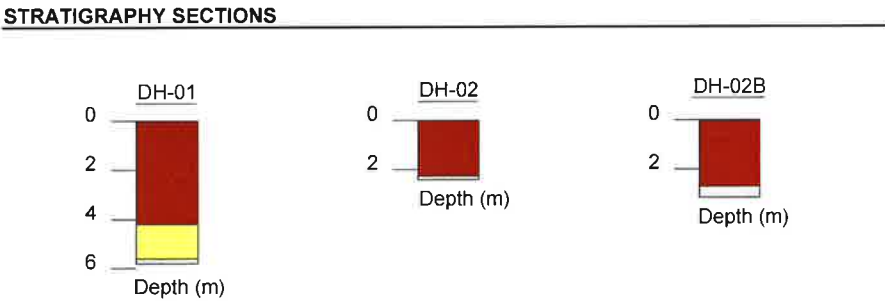
Engineering Permitting Drawings for the Madrid North DEIS Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Prepared for TMAC Resources. Project Number 1CT022.013. November 2017.

STRATIGRAPHIC LEGEND

Clay / Silt

Sand / Gravel

Bedrock



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REGISTERED PROFESSIONAL ENGINEER

J.B. KURYLO

LICENSEE

2019/06/14

NTNU

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PROFESSIONAL ENGINEERS STAMP

sk consulting

DESIGN: RW

CHECKED: CH

DRAWN: TAH

APPROVED: JBK

REVIEWED: RW

DATE: 2019/06/14

FILE NAME: 1CT022.043 - EC-contours.dwg

TMAC RESOURCES

Hope Bay Project

SRK JOB NO: 1CT022.043

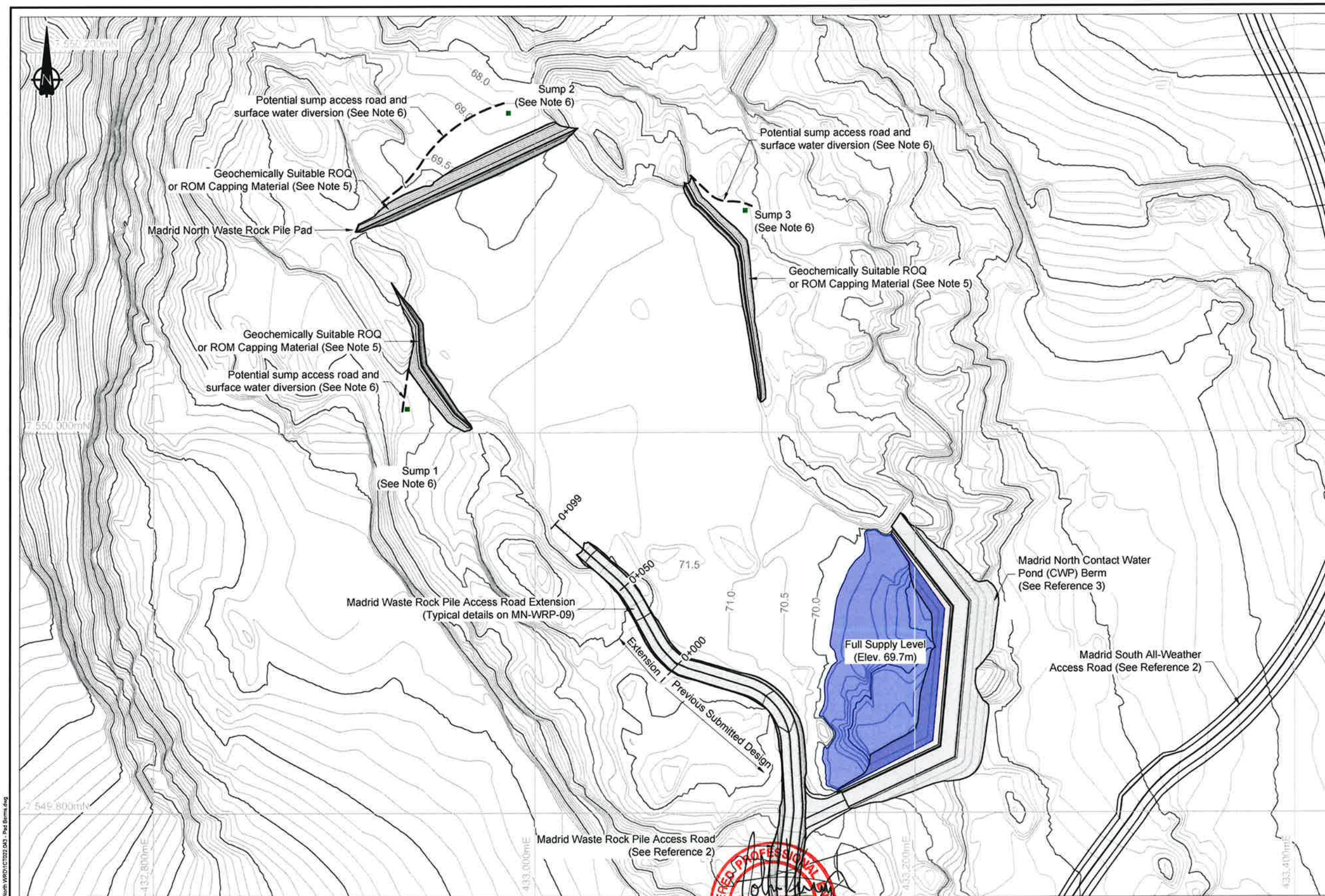
Madrid North Waste Rock Pile

DRAWING TITLE: Existing Conditions

DRAWING NO: MN-WRP-02

SHEET 2 OF 9

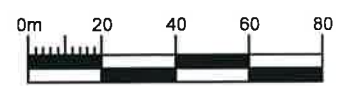
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- LEGEND**
- Proposed Sump Location
 - Potential Sump Access Road and Surface Water Diversion
 - Contact Water Pond
 - Geochemically Suitable Run of Quarry (ROQ) or Run of Mine (ROM) Material

- NOTES**
- The designs are based on the contour information shown on these drawings. It is the Contractor's responsibility to confirm that the contours are a fair reflection of the ground levels in the vicinity of the works, and to advise the Construction Manager and Engineer of any differences.
 - Contours shown at 0.5m intervals.
 - All units shown in meters unless otherwise specified.
 - Construction and material specifications shall be in accordance with the following Technical Specifications: Earthworks and Geotechnical Engineering. Hope Bay Project, Nunavut, Canada. Revision H - Issued for Construction. SRK (2018).
 - Geochemically suitable ROQ or ROM to be built as per ROQ technical specifications.
 - Sump locations, details and potential sump access roads to be finalized by the Engineer once survey information is received to confirm drainage paths.

- REFERENCES**
- NAD83 UTM Zone 13.
 - Engineering Drawings for the Madrid South All-Weather Road, Hope Bay Project, Nunavut, Canada. Prepared for TMAC Resources. Project Number: 1CT022.043. March 2019.
 - Engineering Drawings for the Madrid North Contact Water Pond, Hope Bay Project. Report prepared for TMAC Resources. Project Number 1CT022.043.



DRAWING NO. 19/06/14										DRAWING TITLE: Madrid North Waste Rock Pile									
NO. 0										Waste Rock Pile Pad - Part 1									
DESCRIPTION: Issued for Construction										DRAWING NO. MN-WRP-04									
CHKD APPD DATE NO. 19/06/14										SHEET 4 OF 9									
REVISIONS										REVISION NO. 0									

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REGISTERED PROFESSIONAL ENGINEER
J.B. KURKO
L10000
2019/06/14
NTNU

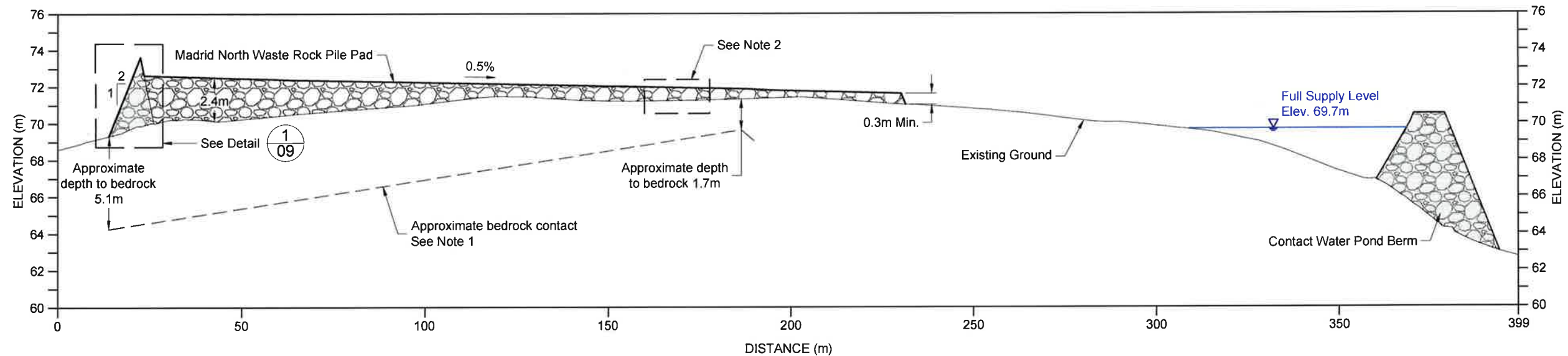
srk consulting

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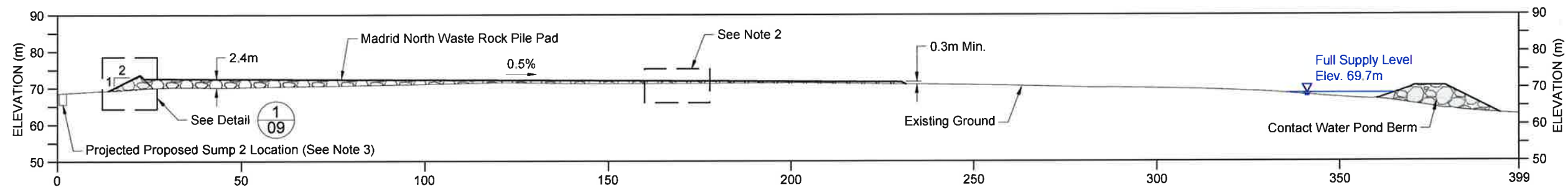
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SRK JOB NO.: 1CT022.043

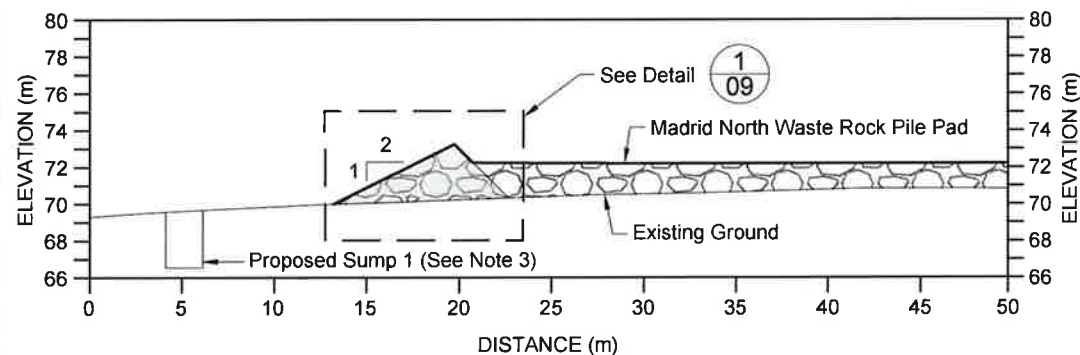
TMAC RESOURCES
Hope Bay Project



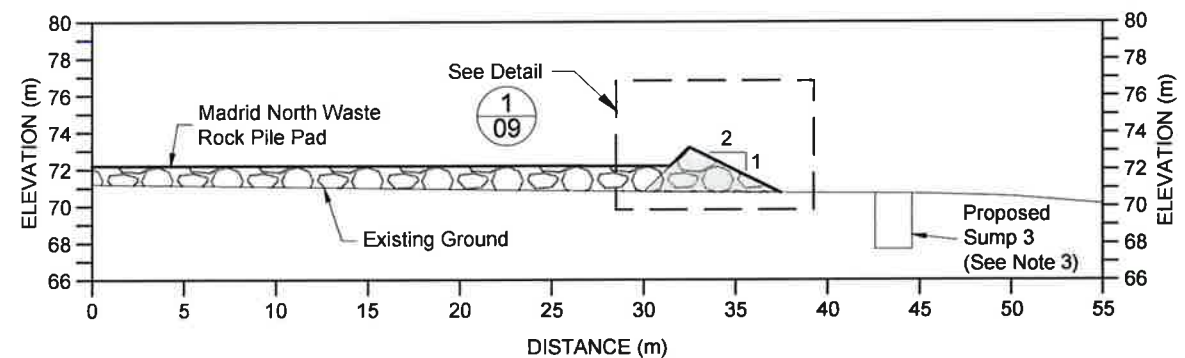
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5x Vertical Exaggeration



A
05
Cross Section A-A'
1x Vertical Exaggeration



B
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Cross Section B-B'



C
05
Cross Section C-C'

LEGEND

- Geochemically Suitable Run of Quarry (ROQ) or Run of Mine (ROM) Material
- Compacted and Sorted Run of Mine Material

NOTES

- Approximate bedrock contact based on 2018 borehole investigation locations shown on drawing MN-WRD-02.
- Pad thickness is less than maximum allowable particle size of 0.75m. Additional sorting will be required.
- Sump locations and details to be finalized by the Engineer once survey information is received to confirm drainage paths.
- Compacted and Sorted Run of Mine Material to be built as per ROQ technical specifications, with maximum particle size reduced to 0.75m.
- As-built survey of compacted pad layers is required. Final as-built survey of the pad and berms is required before waste rock for the waste rock pile can be placed.

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DRAWING NO.	DRAWING TITLE	NO.	DESCRIPTION	CHKD	APPD	DATE	NO.	DESCRIPTION	CHKD	APPD	DATE
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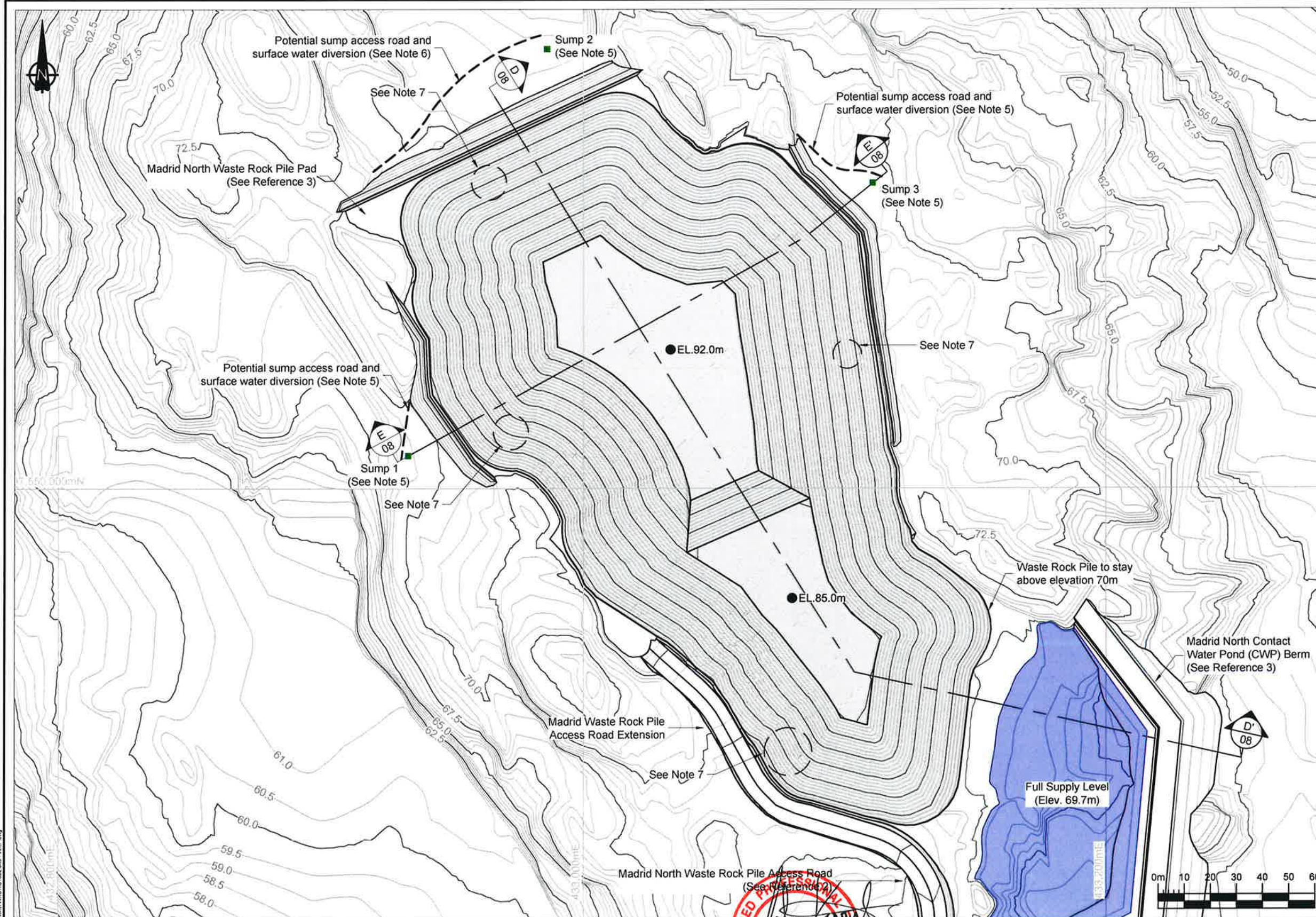






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FILE NAME:	1CT022.043 - GA-max.dwg				

SRK JOB NO:	1CT022.043
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Madrid North Waste Rock Pile		
DRAWING TITLE:		
Waste Rock Pad Sections		
DRAWING NO.	SHEET	REVISION NO.
MN-WRD-06	6 OF 9	0



- LEGEND**
- | | |
|---|--|
|  | Proposed Sump Location |
|  | Potential Sump Access Road and Surface Water Diversion |
|  | Proposed Contact Water Pond |
|  | Waste Rock Pile |

NOTES

1. The designs are based on the contour information shown on these drawings. It is the Contractor's responsibility to confirm that the contours are a fair reflection of the ground levels in the vicinity of the works, and to advise the Construction Manager and Engineer of any differences.
2. Contours shown at 0.5m intervals.
3. All units shown in meters unless otherwise specified.
4. Construction and material specifications shall be in accordance with the following Technical Specifications: Earthworks and Geotechnical Engineering. Hope Bay Project, Nunavut, Canada. Revision H - Issued for Construction. SRK (2018).
5. Sump locations, details and potential sump access roads to be finalized by the Engineer once survey information is received to confirm drainage paths.
6. Final as-built survey of the pad and berms is required before waste rock for the waste rock pile can be placed.
7. Waste Rock Pile designed in accordance with Reference 4. Waste Rock Pile benches and access ramps to be determined by TMAC during operations. Bench heights, widths and slope angles as per Reference 4.

REFERENCES

1. NAD83 UTM Zone 13.
2. Engineering Drawings for the Madrid South All-Weather Road, Hope Bay Project, Nunavut, CanadaP prepared for TMAC Resources. Project Number: 1CT022.043. March 2019.
3. Engineering Drawings for the Madrid North Contact Water Pond, Hope Bay Project. Report prepared for TMAC Resources. Project Number 1CT022.043. March 2019.
4. Hope Bay Project, Geotechnical Design Parameters and Overburden Summary Report. Prepared for TMAC Resources. Project Number 1CT022.013. November 2017.

MATERIALS LIST AND QUANTITIES

Waste Rock Pile Pad
Berms: 3,800m³
Fill: 32,700m³
Access Road Extension:
Surfacing: 100m³
ROQ: 250m³
Waste Rock Pile: 361,500m³

All volumes reported are calculated to neat lines. No bulking / shrinking factors have been utilized in volume determination.
Losses into the Tundra are not accounted for.
Waste Rock Pile volume calculated on the 3D model shown. No benching or ramps included.

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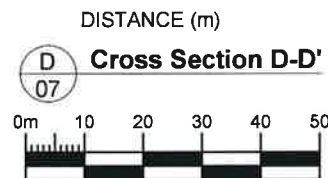
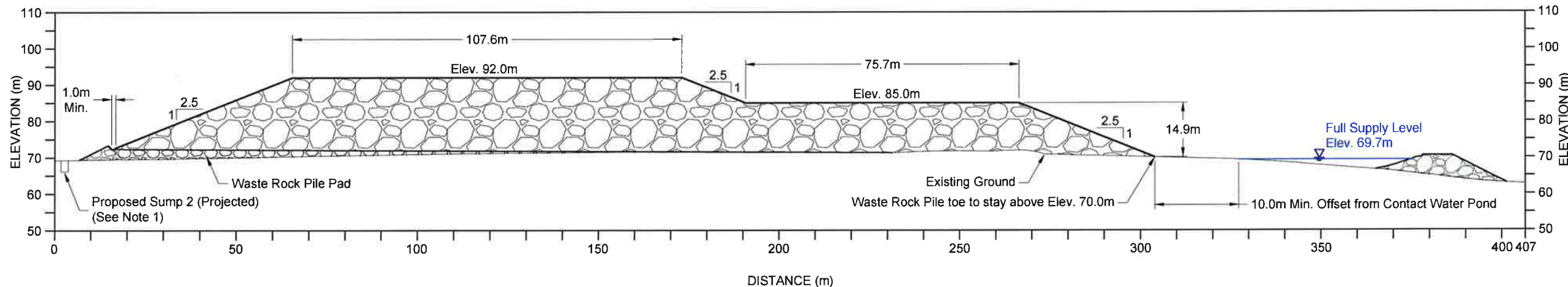
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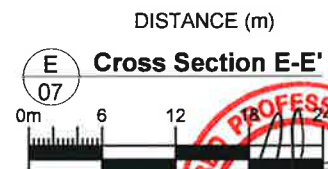
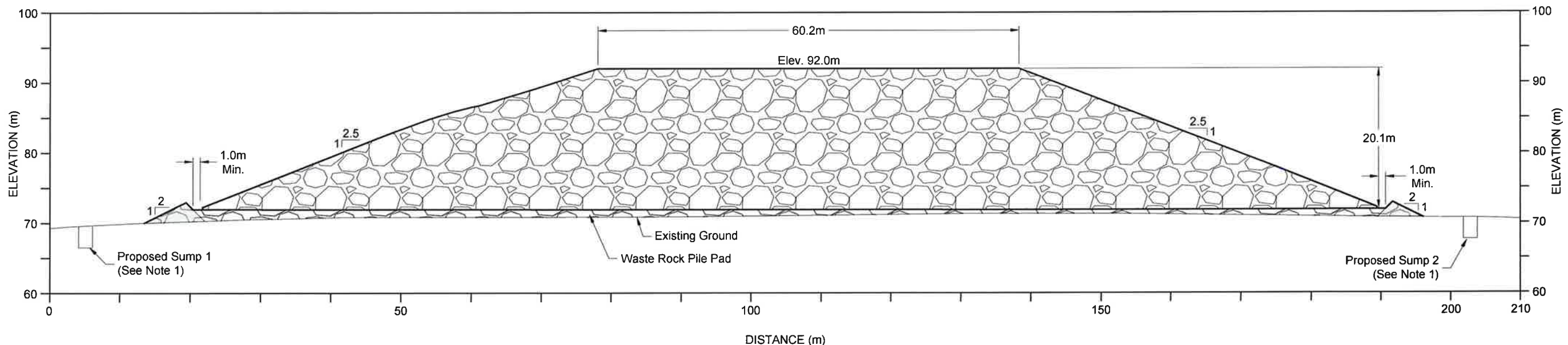
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- LEGEND**
- Geochemically Suitable Run of Quarry (ROQ) or Run of Mine (ROM) Material
 - Compacted and Sorted Run of Mine Material
 - Bulk Waste Rock Material

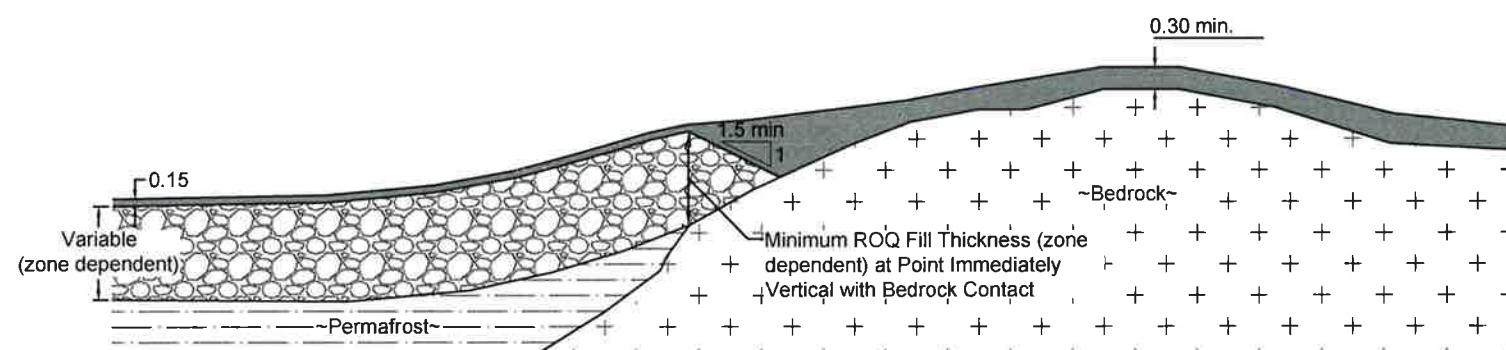
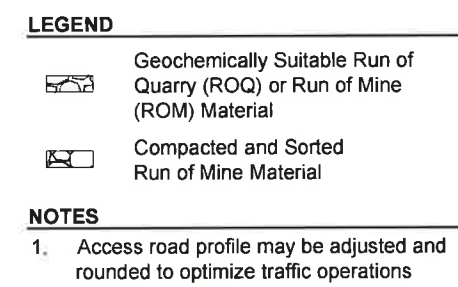
- NOTES**
- Sump locations, details, and potential sump access roads to be finalized by the Engineer once survey information is received to confirm drainage paths.
 - Final as-built survey of the pad and berms is required before waste rock for the waste rock pile can be placed.
 - Waste Rock Pile designed in accordance with Reference 1. Waste Rock Pile benches and access ramps to be determined by TMAC during operations. Bench heights, widths, and slope angles as per Reference 1.

- REFERENCE**
- Hope Bay Project, Geotechnical Design Parameters and Overburden Summary Report. Prepared for TMAC Resources. Project Number 1CT022.013. November 2017.

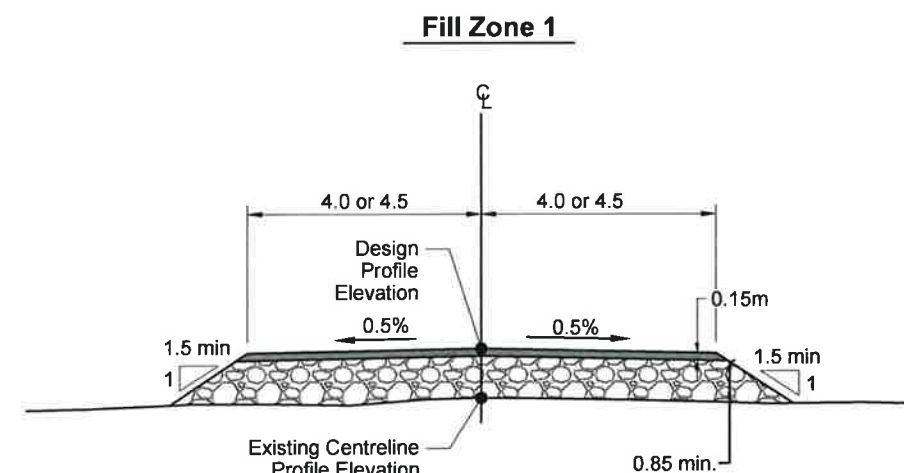
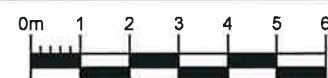


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Hope Bay Project										DRAWING NO. MN-WRD-08		
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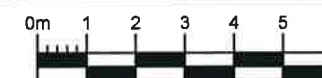
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All-Weather Road Profile Transition from Permafrost to Bedrock



Typical All-Weather Road Section

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