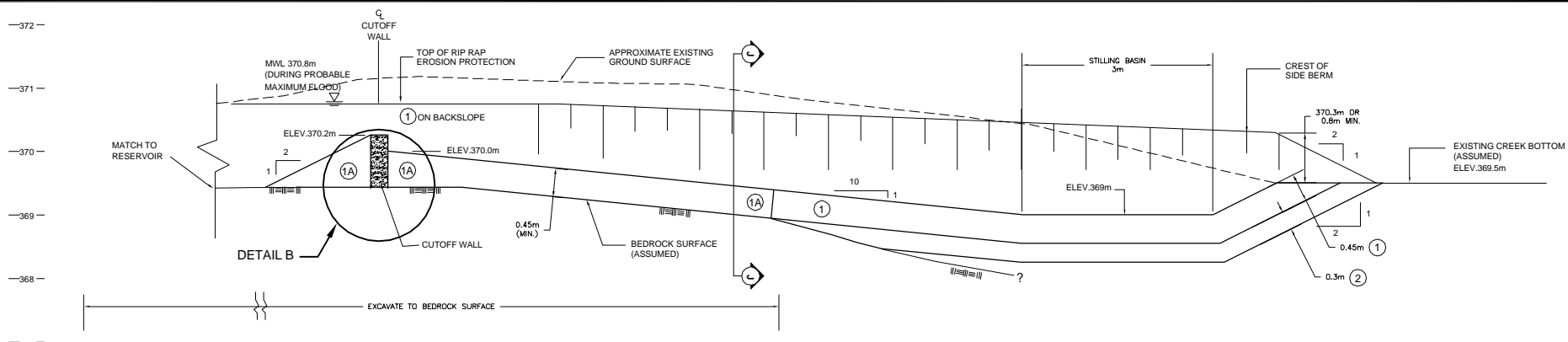
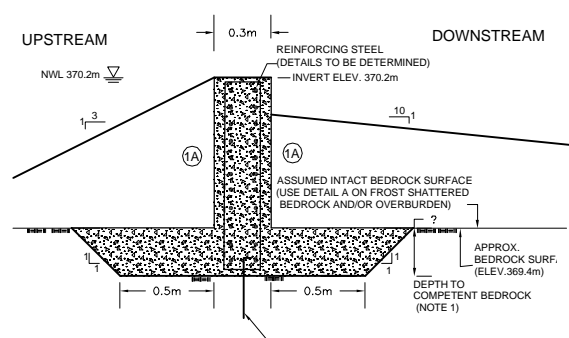


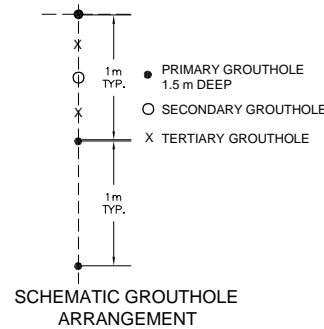
GENERAL ARRANGEMENT
OF OUTLET CONTROL CONSTRUCTION



LONGITUDINAL SECTION
THROUGH OUTLET



DETAIL B - CUTOFF WALL



SCHEMATIC GROUTHOLE
ARRANGEMENT

LEGEND

- BGC03-06 BOREHOLE LOCATION (2003 BGC INVESTIGATION)
- LWL LOW WATER LEVEL(m)
- NWL NORMAL WATER LEVEL (m)
- MWL MAXIMUM WATER LEVEL (m)
- 1A APPROX. EXTENT OF RIP RAP EROSION PROTECTION (WHERE BEDROCK IS NOT EXPOSED)

CONSTRUCTION MATERIALS

- 1 RIP RAP - D 50 SIZE = 300mm MIN.
- 1A RIP RAP - D 50 SIZE = 200mm MIN.
- 2 BEDDING - D 50 SIZE = 100mm MIN.
- 3 FILTER - SAND AND GRAVEL

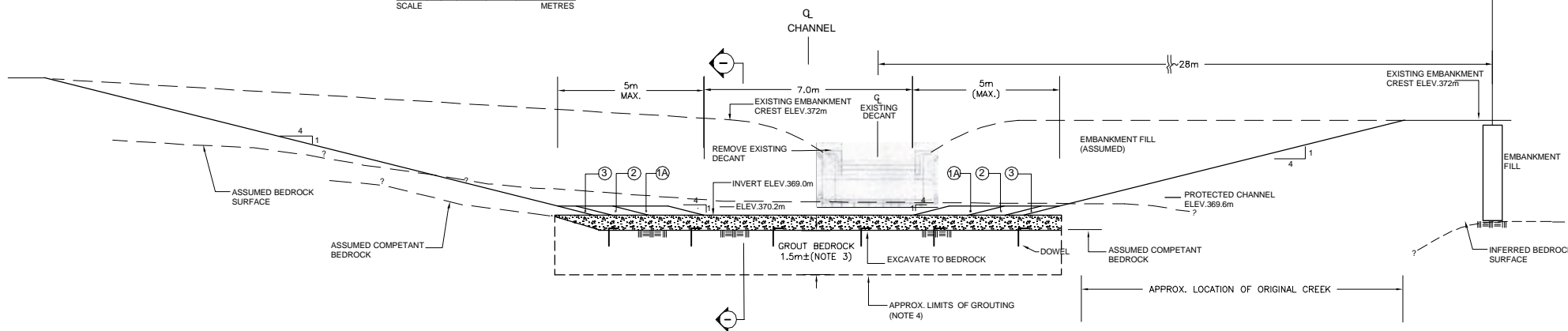
NOTES:

- CONCRETE WALL TO BE FOUNDED ON REASONABLY COMPETANT BEDROCK. DEPTH OF EXCAVATION TO BE DETERMINED BY ENGINEER IN THE FIELD.
- DOWELS TO BE GROUTED INTO INTACT BEDROCK WITH REQUIRED EMBEDMENT LENGTH BASED ON CONDITIONS ENCOUNTERED.
- DEPTH OF GROUTING IN WALL TRENCH TOO BE 1.5m MIN. IS TO BE BASED ON CONDITIONS OBSERVED IN GROUTHOLES. THE DEPTH MAY BE INCREASED TO 5m MAX.
- ALL GROUT TO BE FROST RESISTANT.
- ALL PRIMARY GROUTHOLES ARE TO BE DRILLED AND GROUTED TO A DEPTH OF 1.5m. SECONDARY AND TERTIARY HOLES ARE TO BE INSTALLED AT THE OPTION OF THE ENGINEER BASED ON CONDITION OF ROCK AND RESULTS IN PRIMARY GROUTHOLES.
- DETAILED SURVEY OF CREEK DOWNSTREAM OF OUTLET STRUCTURE TO BE DONE PRIOR TO CONSTRUCTION AND CREEK MODIFICATION DONE TO ENSURE NO BACKWATER EFFECTS AT OUTLET.

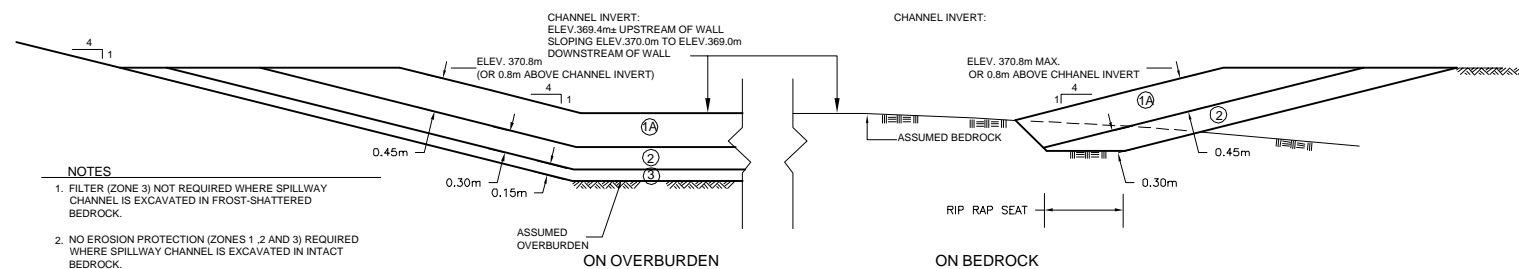
REFERENCES

1. BASEMAPPING WAS PROVIDED BY BGC IN DIGITAL FORMAT. FILENAME 0255-008-09 001 Figure_07_alt.dwg DATED 12/22/2003. BGC'S BASEMAPPING COMPILATION LISTS THE FOLLOWING SOURCES:

- A. RESERVOIR AND TEST CELL BATHYMETRY DERIVED FROM DRAWING New Final Bath V14.dwg SUPPLIED BY NML.
- B. SURFACE CELL, WEST TWIN OUTLET AND PROPOSED SPILLWAY AREA TOPOGRAPHY DERIVED FROM SURVEY CONDUCTED BY SUB-ARCTIC SURVEYS LTD. SEPTEMBER, 2003.
- C. BOREHOLE LOCATIONS ARE APPROXIMATE.



LONGITUDINAL SECTION
THROUGH CUTOFF WALL



SECTION THROUGH OUTLET CHANNEL

NOTES

- FILTER (ZONE 3) NOT REQUIRED WHERE SPILLWAY CHANNEL IS EXCAVATED IN FROST-SHATTERED BEDROCK.
- NO EROSION PROTECTION (ZONES 1, 2 AND 3) REQUIRED WHERE SPILLWAY CHANNEL IS EXCAVATED IN INTACT BEDROCK.



Golder Associates Ltd.
Mississauga, Ontario, Canada

PROJECT

BREAKWATER RESOURCES
NANISIVIK MINE
A DIVISION OF CANZINCO LTD.

TITLE

**WEST TWIN OUTLET CHANNEL PLAN,
SECTIONS AND DETAILS
WEST TWIN DISPOSAL
AREA CLOSURE PLAN**

PROJECT: 03-1118-049

FILE: 031118049D024.DWG

DATE: JANUARY, 2004

CAD: TDR

ENG: DGR

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