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REPORT ON

All Weather Access Road Meliadine Gold Project Feasibility Level Design

Submitted to:
Agnico-Eagle Mines Ltd.
Suite 400 – 543 Granville Street
Vancouver, British Columbia
V6C 1X8

Attention: Mr. Bertho Caron, P.Eng.

REPORT

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1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was originally retained by Comaplex Minerals Corporation (Comaplex) to carry out a feasibility level route alignment study for the proposed All Weather Access Road (AWAR) connecting Rankin Inlet, Nunavut to the Meliadine Gold Project (the Project) as shown on Figure 1-1. The results of the study were presented in a draft report titled "All Weather Access Road, Meliadine Gold Project, Feasibility Level Design", dated 04 June 2010 (Document Control Number: 085 Ver. C). Comaplex was acquired by Agnico-Eagle Mines Limited (AEM) on July 6, 2010. AEM has requested that Golder finalize the draft report and issue it as final. This report is the final feasibility study report for the proposed AWAR.

Currently, a road exists between Rankin Inlet and Meliadine River, a distance of approximately 8 km. It is planned to cross the Meliadine River by bridge. The design for the Meliadine River bridge will be by others. The proposed AWAR alignment will extend northward from the Meliadine River to the Project area.

The Meliadine Gold Project consists of several gold deposits in proximity to each other. These are:

- The Tiriganiaq Deposit;
- The F-Zone Deposit; and
- The Discovery Deposit.

The Tiriganiaq and F-Zone Deposits are located approximately 25 km north and the Discovery Deposit is located approximately 18 km north of Rankin Inlet, Nunavut, as shown on Figure 1-1. The proposed AWAR is a private road between the deposits and an existing road near Rankin Inlet. This report presents the feasibility study level design for the proposed AWAR.

1.1 Objectives and Scope of Work

The scope of work for this study is based on the "Work Plan for Proposed Geotechnical Studies" dated June 30, 2009 (Golder 2009a). The objectives of this study are as follows:

- Optimise the road alignment with respect to the following:
  - Potential quarry locations;
  - Archaeology;
  - Minimise watercourse crossings;
  - Terrain conditions and geomorphology; and
  - Geometric road design parameters.
- Provide recommendations for the following:
  - Vertical and horizontal road alignments;
  - Typical road cross-sections;
  - General fill and surfacing materials gradations;

- Typical culvert and bridge watercourse crossing designs; and
- Construction material quantity estimates.

1.2 Site Description

1.2.1 Climate

The climatic conditions at Meliadine and at nearby Rankin Inlet A climate station are reported in the draft "Meliadine Gold Project Aquatic Baseline Synthesis Report" (Golder 2009b) and summarized here. The Meliadine Gold Project site lies within the Arctic Climatic Region where daylight reaches a minimum of 4 hours per day in winter and a maximum of 20 hours in summer. The climate is extreme with long, cold winters and very short, cool summers. Temperatures are cool, with mean temperatures of 12°C in July and -31°C in January. The mean annual air temperature at the site is approximately - 10°C.

Winds at the nearby Rankin Inlet A weather station are moderate to strong and generally originate from the north-northwest and north. The wind speeds from the north-northwest and the north can range from calm winds (less than 1 m/s) to winds speeds stronger than 15 m/s. Generally, the average the wind speed ranges between 4 m/s to 8 m/s.

The average annual precipitation for the Rankin Inlet A climate station was estimated to be 306 mm with approximately 60% as rainfall (181 mm) and 40% as snowfall (129 mm water equivalent). Snow falls in every month, and rain generally only occurs between May and October.

A summary of climate data, as recorded by the nearest long-term climate station to Meliadine (Rankin Inlet A, MSC Station 2303401), for the years 1981 to 2009 are presented in Table 1-1 (Golder 2009b).

Table 1-1: Annual Data from Rankin Inlet A Climate Station

Average Temperature	- 10 °C
Maximum Temperature	15 °C
Minimum Temperature	- 37 °C
Average Number of Days with Temperatures Below Zero	265 days
Average Precipitation	306 mm

Table 1-2 summarizes ground temperatures and mean monthly air temperatures measured at Meliadine and Rankin Inlet weather station (MSC Station number 2303401). Figure 1-2 shows the mean monthly air and ground temperatures. Table 1-3 summarizes the monthly precipitation from approximately 1998 to 2009 measured at the Rankin Inlet A weather station (MSC Station number 23030401).

Table 1-2: Mean Monthly Air and Ground Temperatures for Rankin Inlet A and Meliadine Project Weather Stations

	Air Temperature, °C		Ground Temperature, °C
	Rankin Inlet A Weather Station, 1981-2008	Meliadine Project Weather Station, 1997-2001	Measured at 5 cm depth at Meliadine Project Site, 1997-2001
Month	**Mean**	**Mean**	**Mean**
January	-31.0	-31.4	-25.3
February	-30.2	-27.8	-24.3
March	-25.0	-21.7	-19.5
April	-15.9	-14.0	-14.5
May	-5.6	-3.8	-6.9
June	4.2	5.0	2.5
July	10.5	12.1	8.4
August	9.7	10.7	7.9
September	3.7	4.3	4.0
October	-4.7	-5.0	-1.3
November	-17.3	-15.1	-8.2
December	-25.8	-24.9	-17.9
Annual Average	**-10.6**	**-9.3**	**-7.9**

Table 1-3: Mean Monthly Precipitation for Rankin Inlet A Weather Station

Month	Rainfall (mm)	Snowfall (water equivalent) (mm)	Precipitation (mm)
January	0.0	8.6	8.4
February	0.0	8.7	8.4
March	0.0	12.4	12.2
April	1.2	19.2	20.0
May	6.8	12.8	19.1
June	23.4	4.7	28.0
July	38.7	0.1	38.8
August	56.4	0.2	56.5
September	40.0	3.8	43.8
October	13.7	24.6	37.9
November	0.3	22.2	21.6
December	0.0	12.6	12.0
Annual Average	**180.7**	**128.8**	**305.5**

1.2.2 Permafrost

The Meliadine Gold Project is located within the Southern Arctic terrestrial ecozone, one of the coldest and driest regions of Canada, in a zone of continuous permafrost (Figure 1-3). Continuous permafrost to depths of between 430 m and 470 m is expected based on historical and recent ground temperature data from thermistors installed near Tiriganiaq, F-Zone and Discovery deposits (Golder 2010c and 2010d). The ground temperature data indicates that the active layer is 1.2 m to 2.7 m in areas of shallow overburden and away from the influence of lakes. It is anticipated that the active layer adjacent to lakes or below a body of moving water such as a stream will be deeper. Taliks or zones of permanently unfrozen ground, extending through the permafrost will exist below larger water bodies.

2.0 RELEVANT STUDIES

2.1 Terrain Conditions and Geomorphology

A terrain mapping study based on air photo interpretation and field assessment was carried out by Golder to describe the geomorphology and surficial geology along the preliminary AWAR alignment (Golder, 2010a). In general the terrain mapping study is applicable for the proposed AWAR alignment. However, the proposed Discovery road alignment from CH. 44+000 to CH. 45+100 was not assessed with respect to geomorphology. This section of the road deviates considerably from a preliminary alignment provided by Comaplex and therefore was not analysed in the terrain mapping study.

The proposed AWAR alignment crosses an area of low relief, which is generally gently to moderately sloping with short steep slopes occurring locally on some glaciofluvial, wave-washed bedrock surfaces. The terrain is dominated by veneers and blankets of washed till and shallow lakes.

Marine sediments comprising both beach and deltaic deposits occur locally and are extensive in some areas. Weathered (frost-shattered) bedrock (felsenmeer) and unweathered bedrock outcrops occur locally. There are limited areas of glaciofluvial materials and shallow, discontinuous organic veneers occur in some poorly and very poorly-drained areas.

Periglacial processes are most evident in areas underlain by morainal deposits and are typical of areas underlain by continuous permafrost. Surface expression is subdued in areas where there is a relatively thin cover of surficial materials over bedrock and in areas of well-drained granular sediments.

The terrain mapping study indicated that freeze and thaw induced displacement of soil can be expected along the proposed AWAR alignment, although these displacements are more likely to occur in imperfectly to poorly-drained materials underlain by fine-grained morainal sediments. Physical weathering (frost wedging and frost shattering) is evident on exposed bedrock surfaces and in areas of rubbly, weathered bedrock. The terrain mapping along the proposed AWAR alignment is provided in Figures A-1 to A-12 in Appendix A.

The study was used to optimize the AWAR alignment with respect to the following:

- Regions of high ground relief (higher elevations) were sought to provide better drainage conditions, to minimize the potential for snow drifting and to avoid organic depressions and/or other poor ground conditions which are more abundant in the low lying areas.
- Fine-grained, poorly drained, ice-rich, frost susceptible soil conditions as noted by geomorphologic mapping were avoided where possible due to susceptibility to thaw related settlement.

2.1.1 Topography Data

The project area is covered by National Topographic System (NTS) map sheets 055K16, 055J13, 055N01, and 055O04 (Golder 2010a). The contours in these map sheets are provided at 7.7 m intervals.

Comaplex retained Schlencker Mapping Pty Ltd. to survey part of the area covered in Map Sheet 055K16 in May 1998. The Schlencker data provided contours at 1 m intervals. Details are available in Golder (2010a)

Detailed topographic surveys are recommended for the remaining areas covered only by the NTS map sheets in order to further optimise the horizontal and vertical alignments, watershed extents and construction volumes.

2.1.2 Potential Quarry Locations

Bedrock outcrops were identified by Comaplex and by Golder during the geomorphology and soil assessment along the proposed AWAR alignment (Golder 2010a). These bedrock outcrops, shown on Figure 2-1, may be potential quarry locations for general fill and surfacing materials. The materials at the bedrock outcrops have not been characterized geotechnically. Regional geologic mapping indicates that the bedrock along the proposed AWAR alignment is dominated by mafic volcanic and metasediments with lesser areas of intrusive and felsic volcanic rocks.

Comaplex sampled some of the potential quarry locations and submitted the samples for metal leaching and acid base accounting analyses. The scope of work for the feasibility road design does not include geochemical analyses of the potential rock quarries. Further geochemical characterization may be required in the detailed design phase. Layouts for the quarries are not part of this report.

2.2 Archaeology

An Archaeological Impact Assessment (AIA) was carried out by Golder for the proposed AWAR alignment corridor and potential quarry locations (Golder 2008). The AIA identified 30 archaeological sites, shown on Figure 2-1.

The proposed AWAR alignment near the Meliadine River crossing is less than 30 m from two archaeological sites, KfJm 172 and KfJm 169. It is understood from discussions with Comaplex and AEM that the location of the watercourse crossing at Meliadine River should not be modified during the route alignment study. Therefore, these two archaeological sites may require mitigation if the location of the Meliadine River crossing is not modified.

3.0 DESIGN CRITERIA

Comaplex and AEM have indicated that the proposed AWAR will be a two-way private road with no turnouts during operations and the largest vehicle which will travel on the proposed AWAR frequently will be a B-Train tractor-trailer unit.

The geometric design of the road is based on the criteria included in the Transport Association of Canada Geometric Design Guide for Canadian Roads (TAC 2007) and in the Nunavut/Northwest Territories Mine Health and Safety Act (NWT 1994) and Regulations (NWT 1995). All segments are designed for two way traffic.

The summary of the design criteria are summarized in Table 3-1.

Table 3-1: Design Criteria

Design Element	Criteria	Source/ Comments
Widest Vehicle on Road	B-Train (2.4 m wide)	▪ Comaplex
Longest Vehicle on Road	B-Train (25.0 m long)	▪ TAC 2007
Maximum Design Speed	50 km/h	▪ Based on similar projects
Minimum Road Width (2 way road, not including the shoulders)	7.5 m road width (plus 2 m width per safety berm where required)	▪ Meets or exceeds NWT 1995 and TAC 2007[1] ▪ Based on 2.4 m (96") vehicle width, 1.1 m tire height, NWT 1995 p. 35 and TAC 2007 p. 2.2.2.1[1]
Road Alignment at Watercourse Crossings	Perpendicular to watercourse	▪ Based on similar projects. ▪ Crossing structures may consist of culverts, bridges or causeways.
Road Section Method (Cuts and Fills)	Fill (No cuts)	▪ Based on similar projects. ▪ Selective use of quarry materials to minimize acid rock drainage and metal leaching.
Minimum Stopping Distance	110 m	▪ Based on trucks with conventional braking systems, TAC 2007. 1.2.5.4 ▪ For comparison, 65 m for trucks with antilock braking systems.
Super-elevation	None	▪ Based on similar projects.
Minimum Radius of Curvature	165 m	▪ Based on 50 km/h maximum design speed and 0.12 coefficient of friction between road surface and vehicle tire, TAC 2007 p. 2.1.2.7.
Maximum Slope Gradient	8%	▪ TAC 2007 p. 2.1.3.2.
Minimum Sag Curve "K" Value	12	▪ Based on stopping distance, TAC 2007 p. 2.1.3.8.
Minimum Crest Curve "K" Value	9	▪ Based on stopping distance, TAC 2007 p. 2.1.3.5.
Emergency Shelter Frequency	Maximum 10 km spacing	▪ Based on similar projects.
Emergency Shelter Pad Dimensions	45 m by 5 m	▪ Based on similar projects to accommodate a parked vehicle and a shelter structure.

Design Element	Criteria	Source/ Comments
Drainage Culvert or French Drain Frequency (for planning purposes, actually number to be determined in the field)	Every 50 m for low ground; may not apply for high ground.	▪ Based on similar projects.
Offset from Archaeological Sites	30 m	▪ NU 2003 Appendix K Section 10(a).

1. NWT 1995 regulation states that for single lane traffic the minimum width is twice the width of the widest haulage vehicle used on the road and for double lane traffic the minimum width is three times the width of the widest haulage vehicle. NWT 1995 also states that a shoulder barrier of at least three-quarters the height of the largest tire on any vehicle using the road is required wherever a drop-off greater than 3 m exists.

Additional design criteria for the watercourse crossings are listed in Section 5.0.

4.0 ROAD DESIGN

4.1 Horizontal and Vertical Alignments

The proposed AWAR horizontal and vertical alignments are shown on the Figures A-1 to A-12 and Table A-1 included in Appendix A. The horizontal and vertical alignments were optimised with respect to the following:

- Potential quarry locations;
- Archaeological sites;
- Watercourse crossings;
- Terrain conditions and geomorphology; and
- Geometric road design criteria.

The locations of the watercourse crossings, the archaeological sites, and the potential quarry locations are shown on the Figures A-1 to A-12 and summarized in Appendix B.

4.2 Typical Cross Sections

The recommendations for the road section based on the thermal analyses and fill placement in cold temperatures on frozen ground are summarized in Table 4-1 and shown in the typical road sections presented in Figure 4-1.

Table 4-1: Recommended Road Sections

Subgrade Conditions	Side Slopes	Minimum Road Width (m)	Minimum Type 1 Fill Thickness (m)	Minimum Type 2 Fill Thickness (m)	Total Minimum Fill Thickness (m)
Thaw Susceptible Soil	2H:1V	7.5	0.15	1.15	1.3
Thaw Stable Soil	2H:1V	7.5	0.15	0.85	1.0

4.3 Construction Materials

Sources of granular aggregate for the road construction are relatively small and are scarce along the proposed road alignment (Golder, 2010a). It is understood that rock quarries will be developed along the road to provide a source of road fill material. Geochemistry of the rock quarries and the potential for acid rock drainage and metal leaching should be assessed prior to road construction.

Two structural fill types are proposed to be used to construct the access road:

- Type 1 Fill: Minus 75 mm; and
- Type 2 Fill: Minus 300 mm.

It is assumed that the proposed AWAR will be built during winter or in cold temperatures and that geotextile placement may be omitted during the winter construction. However, the road project should have on site a reasonable quantity if the construction carries on in thaw season. A geotextile fabric should be installed in areas with thaw-susceptible sub-grades. The geotextile should be non-woven needle punched with a minimum mass of 200 g/m^2.

4.3.1 Type 1 Fill

Type 1 Fill should consist of crushed gravel particles of hard, durable rock and meet the gradation specification in Table 4-2 and shown on Figure 4-2.

Table 4-2: Type 1 Fill Specification

Sieve Size (mm)	Percent by Weight Passing
75	100
50	70-100
25	50-100
4.75	25-100
2.00	10-80
0.075	0-5

4.3.2 Type 2 Fill

Type 2 Fill should consist of select native granular mineral soil, imported granular borrow and /or quarried rock fill materials excavated from cut areas or local borrow areas. The maximum particle diameter should be 300 mm, and meet the gradation specification in Table 4-3 and on Figure 4-2.

Table 4-3: Type 2 Fill Specification

Sieve Size (mm)	Percent by Weight Passing
300	100
150	75-100
80	58-100
4.75	25-60
0.85	10-30
0.075	0-10

4.4 Thermal Analyses

Ice-rich subgrade soil may be subject to decrease in bearing capacity and severe differential settlements upon thawing. Therefore, it is recommended that the subgrade soil be maintained in a frozen state and the construction fill be placed on frozen ground during cold conditions. Thermal analyses were carried out to determine the minimum fill thickness required to preserve the subgrade soil in a frozen condition and to assess the creep of the frozen soil during operations.

The subgrade soil along the proposed AWAR alignment is highly variable and was classified by displacement hazard ratings. Low to medium displacement hazard ratings were considered “thaw stable” and included well drained soil, ice poor to frost shattered bedrock material. Medium-high to very high displacement hazard ratings were considered “thaw susceptible” and included poorly-drained, ice-rich, organic or bog material.

The thermal analyses considered subgrade soils that were ice poor (thaw-stable) and ice rich (thaw-susceptible).

The thermal analyses were carried out using TEMP/W, a two-dimensional (2-D) finite element thermal modeling package produced by GEOSLOPE International Ltd. (GEOSLOPE 2008). The thermal analysis was based on the following:

- Estimated thermal properties of the construction materials;
- Estimated boundary conditions; and
- A simplified cross-section at a typical location.

Thermal material properties in Table 4-4 were estimated using Johansen’s method presented in Andersland and Ladanyi (2004) given gravimetric moisture content, dry density, specific gravity, void ratio and degree of saturation, and estimated based on past project experience (Golder 2010e).

Table 4-4: Material Properties for Thermal Analysis

Material	Gravimetric Moisture Content (%)	Dry Density (kg/m^3)	Specific Gravity (-)	Void Ratio (-)	Porosity (%)	Degree Of Saturation (%)	Volumetric Water Content (mL/mL)	Thermal Conductivity (W/m °C)		Volumetric Heat Capacity (MJ/m^3 °C)	
								Frozen	Unfrozen	Frozen	Unfrozen
Road Fill	2.1	1830	2.65	0.45	31	12.4	0.04	1.0	0.9	1.5	1.5
Ice Poor Soil	13.6	1971	2.70	0.37	27	100	0.27	2.8	1.9	1.9	2.5
Ice Rich Soil	40.0	1300	2.70	1.08	52	100	0.52	2.5	1.2	1.9	3.0
Fractured Bedrock	-	-	-	-	-	100	0.12	2.9	2.9	2.4	2.4
Bedrock	-	-	-	-	-	100	0.02	2.9	2.9	2.4	2.4

Two sections through the proposed AWAR extending to a depth of 50 m were analysed based on previous investigations (Golder 2010c and 2010d). The ground was assumed to be symmetric about the centreline of the road allowing the model to be half the width of the road as shown on Figure 4-3.

The following boundary conditions were applied:

- A lower boundary geothermal flux of 0.052 W/m^2 based on a bedrock thermal conductivity of 2.9 W/m ^{o}C and a geothermal gradient 0.018 ^{o}C/m.
- A ground surface temperature function based on the site measured ground temperature at 5 cm depth with a mean annual ground temperature of -7.9°C.

Initial thermal ground conditions were established by applying the ground surface temperature function for 5 annual cycles. The road section was then added to the model and analysed for another 10 years to estimate the depth of the active layer. It was assumed that road fill would be placed in cold temperature with an initial temperature of -5 °C. Construction in the summer was not modelled.

The maximum thaw depth at the center of the road was estimated one year and ten years after road fill placement. The estimated maximum thaw depth in the road fill is 1.0 m for the ice rich subgrade soils and 0.85 m for the ice poor subgrade soils after the first year and after ten years.

The thermal modeling indicated a minimum road fill thickness of 1 m is required above ice poor subgrade soil to maintain the soil in a frozen condition. Similarly, a minimum road fill thickness of at least 1.3 m is required above ice rich subgrade soil.

The potential for climate change was not considered in the analysis as the road design life is less than 20 years. It should be noted that the thermal analyses were conducted based on estimated material properties and a series of assumptions. Neither sensitivity analyses nor model calibration were included in this study. It is considered that this level of detail is appropriate for a feasibility level study, but the analyses should be reviewed during the detailed design to refine the model results based on calibration and sensitivity analysis.

4.5 Ice Creep and Potential Thaw Consolidation Assessment

The potential of the subgrade soil to experience ice creep or thaw consolidation is dependent on the ice content of the soil and thaw conditions. Ice rich soils are expected to have high water contents and may experience excess pore water pressures upon thaw. The excess pore water pressures will contribute to strength loss in the soil, and could result in local bearing capacity failures.

The subgrade soil near the toe of the road fill may experience deeper thaw penetration during each subsequent summer/spring season, which may lead to thaw consolidation. Thaw consolidation in ice rich soil at the toe of the embankment will result in the formation of tension cracks and small grabens inside the shoulder area. The side slopes of the road fill on ice poor soil are unlikely to be susceptible to bearing capacity failure. Therefore, a 2H:1V side slope is recommended to allow for potential settlement and slumping that may occur at the road fill toe and maintain a road width of 7.5 m.

The recommended road fill thickness provided here are minimum values based on assumptions and generalized conditions. Maintenance will likely be required during operations to fix thaw related settlement.

4.6 Watercourse Crossings

The proposed AWAR has 12 watercourse crossings along the alignment, as shown on Figure 2-1, Figures A1 to A12 in Appendix A, and tabulated in Appendix B. The crossing location for each watercourse was assessed in a preliminary study (Golder 2010b) with respect to relevant regulations. Recommendations for crossing structures are based on Golder (2010b) and hydraulic analyses. The crossing structure design at Meliadine River will be designed by others and is outside the scope of the present report. It is also noted that the crossings examined in this report are for a preliminary road alignment, and that detailed design should consider watercourse crossings for the final road alignment.

4.6.1 Preliminary Study of Relevant Regulatory Acts

Golder (2010b) assessed potential watercourse crossings for the following:

- Presence of fish and fish habitat (Golder 2009b) based on the Fisheries Act administered by Fisheries and Oceans Canada (DFO 2009); and
- Potential for classification as navigable waters based on the Navigable Waters Protection Act (1985) (NWPA) administered by Transport Canada.

The potential for the crossing structure design to be influenced by the NWPA was assessed based on crossing descriptions and photographs in the Meliadine Gold Project Aquatic Baseline Synthesis Report (Golder 2009a). Navigable waters are defined by the NWPA as any body of water capable of being navigated by any type of floating vessel for the purpose of transportation, recreation, or commerce. To comply with the NWPA, the design of structures over navigable waters should provide sufficient span and clearance to allow vessels to navigate through the watercourse safely.

The potential for the design of the crossing structures to be influenced by the Fisheries Act was assessed using available fisheries data presented in Golder (2009b). Crossings for watercourses with fish or fish habitat should be designed as clear spanning structures (DFO 2007) were possible to avoid harmful alteration, disruption, or destruction (HADD). A HADD authorization will be required and will include the development of a fish habitat compensation plan for crossings with HADD.

Table 4-5 summarizes the watercourse crossing with respect to the applicable regulatory Acts.

Table 4-5: Summary of Watercourse Crossings

Watercourse Crossing	Considered Navigable Under Navigable Waters Protection Act[1]	Considered Fisheries Habitat under the Fisheries Act[2]
M3.0	No	Yes
M3.9	No	No
M5.0	Yes	Yes
M6.7	No	No
M8.6	No	No
M11.5	No	Yes
M13.3	No	Yes
M22.6	No	Yes
M23.7	No	Yes
D1.2	No	Yes
D5.8	No	Yes
D5.8B	No	Yes
D6.7	No	No

Note 1 Based on preliminary assessment by Golder. Detailed assessment is required and should include input form Transport Canada.

Note 2 Criteria: Fish and/or fish habitat observed

A detailed assessment should be carried out specific to the watercourse crossings along the alignment selected during detailed design since the information provided in Golder (2009b) is based on a limited number of observations at crossings along a preliminary road alignment.

4.6.2 Hydraulic Analyses

A hydraulic analysis was carried out to recommend a crossing structure for each watercourse crossing. Watercourse crossings requiring more than 5 culverts were assumed to be best accommodated using a bridge structure for reasons of practical construction. Based on the results of the hydraulic analyses and preliminary observations of the channel characteristics at each watercourse crossing, a total of 5 bridges and 7 culvert crossings are recommended.

The proposed AWAR has 12 watercourse crossings along the proposed alignment requiring crossing structures. Two options for crossing structures were examined including culverts and bridges. While pipe arches, as an alternative to circular culverts and bridges, provide a large flow area and base width with minimal rise, these structures were not considered for the road due to difficulties in constructing proper foundations in areas of permafrost. Culvert crossings are comparatively easy to construct but have limited flow capacity in areas with relatively flat topography and often require multiple stacked culvert designs to allow for potential ice build-up and to pass the design flow event. Bridge crossings provide large spans over wide watercourses with minimal disturbance to the watercourse footprint but may be more expensive than culvert installations.

4.6.2.1 Peak Flow Calculations

The sizing of the culvert and bridge crossings was based on an estimated peak flow at each crossing. Due to a lack of site specific hydrometric data for the study area, the peak flows for each crossing were estimated based on the 1:25 year 24 hour rainfall (52.3 mm) derived using rainfall data from Chesterfield Inlet (MSC Station Number 2300707), which is located approximately 80 km north of the Project Site. The 1:25 year rainfall event was selected for analysis given the proposed mine life of 10 years and the general absence of additional public infrastructure located along the proposed AWAR.

Peak flows were estimated using the HEC-HMS (USACE, 2009) modeling software. A curve number (CN value) of 91 was used as a model input for each watershed based on the characteristics of the land use, soil, and frozen conditions during a freshet. Lag time was calculated based on the watershed characteristics using the Soil Conservation Service (SCS) (USDA 1986) formula. In addition, the SCS Type II Storm distribution and Antecedent Moisture Condition II (*i.e*., average amount of rainfall preceding the storm and near saturation of the soil) were assumed for each watershed. Where applicable, the first lake located upstream of a crossing was included in the model in order to account for potential peak flow attenuation effects.

Watershed areas are shown on Figures 4-4 and 4-5. Given the lack of detailed topographic information within certain watersheds, the peak flow estimates should be re-evaluated as additional topographic information becomes available.

4.6.2.2 Culvert Design

A total of 11 non-navigable stream crossing locations were identified along the proposed AWAR alignment (Golder 2009b). For non-navigable stream crossing locations, it was initially assumed that multiple full-rounded corrugated steel pipe culverts with nominal sizes of 0.7 m, 1.0 m, and 1.3 m (internal diameter) would be used to pass the design flow. It was further assumed that a minimum of two culverts placed in an “offset stacked” configuration would be used to enable flow conveyance before complete ice break-up within the watercourse. As part of the “offset stacked” configuration the lowest culvert will be embedded into the watercourse to provide low water fish passage the required culvert capacity and number of culverts at each of these locations was assessed using HY-8 culvert modeling software (FHWA 2009). The sizing of the culverts was based on the estimated peak flow at each watercourse crossing assuming a H/D ratio of 1 for the highest culvert to maintain minimal backwater conditions upstream of the crossings at the design discharge. For each fish bearing crossing, a hydraulic analysis was also conducted to confirm that estimated culvert flow velocities do not exceed 0.8 m/s during the 1:10 yr 3-day event as outlined in the Guide to Bridge Hydraulics (TAC 2001).

Figure 4-6 and Table 4-6 outline typical culvert crossing details for each of the 11 non-navigable cross-sections. For the ease of construction and maintenance, it is recommended that bridges crossings be implemented at locations where more than 5 culverts are required to pass the design flow event (*i.e*., Crossings D1.2, D5.8, and D6.7). Depending on the anticipated relative construction and maintenance cost and ease of culvert versus bridges, consideration may also be given to implementing bridge crossings at Crossings M3.9, and M8.6.

Table 4-6: Culvert Crossing Details

River Crossing	Drainage Area (ha)	Peak Flow (m³/s)	Considered Fisheries Habitat under the Fisheries Act[A]	Typical Cross Section Layout	Number of Culverts with Diameter D_1	Number of Culverts with Diameter D_2	Number of Culverts with Diameter D_3
M3.0	277	1.5	Yes	B	1 culvert x 1.0 m diameter	1 culvert x 1.0 m diameter	1 culvert x 0.7 m diameter
M3.9	182	4.7	No	D[C]	2 culverts x 1.3 m diameter	2 culverts x 1.3 m diameter	1 culvert x 0.7 m diameter
M6.7	82	3.1	No	C	1 culvert x 1.3 m diameter	2 culverts x 1.0 m diameter	1 culvert x 0.7 m diameter
M8.6	140	4.0	No	D[C]	2 culverts x 1.3 m diameter	2 culverts x1.3 m diameter	1 culvert x 0.7 m diameter
M11.5	138	1.2	Yes	B	1 culvert x 1.0 m diameter	1 culvert x 1.0 m diameter	1 culvert x 0.7 m diameter
M13.3	16	0.4	Yes	A	1 culvert x 0.7 m diameter	0	1 culvert x 0.7 m diameter
M22.6	97	0.5	Yes	B	1 culvert x 1.3 m diameter	1 culvert x 1.0 m diameter	1 culvert x 0.7 m diameter
M23.7	362	0.5	Yes	B	1 culvert x 1.3 m diameter	1 culvert x 1.0 m diameter	1 culvert x 0.7 m diameter
D1.2	329	5.0	Yes	N/A[2]	3 culverts x 1.3 m diameter	3 culverts x 1.3 m diameter	1 culvert x 1.0 m diameter
D5.8	330	5.6	Yes	N/A[B]	3 culverts x 1.3 m diameter	3 culverts x 1.3	1 culvert x 1.0 m diameter
D6.7	1431	6.8	No	N/A[B]	3 culverts x 1.3 m diameter	3 culverts x 1.3 m diameter	1 culvert x 1.0 m diameter

[A]Golder 2009b

[B]Not applicable (N/A) since greater than 5 culverts required to pass design flow event; recommend bridge crossing

[C]Consideration may be given to using bridge crossing

[D]See Figure 4-6 for typical layout

The minimum cover thickness for the culvert installations should be 0.6 m, as specified in the Handbook of Steel Drainage and Highway Construction Products (CSPI 2002). The distance between rounded culverts, from edge to edge, should be at least half the diameter of the larger culvert.

It is recommended that information presented in Table 4-6 be re-evaluated as further topographic information is collected at each of the culvert crossing locations.

4.6.2.3 Bridge Abutment Design

Of the 12 stream crossings evaluated in this analysis, one (M5.0) was identified as having navigable waters (Golder 2010b) and was therefore selected as a proposed bridge crossing site. Based on the culvert analysis results described above, a further three to five crossings (M3.9, M8.6, D1.2, D5.8, and D6.7) are also recommended to have bridge crossings due to the large number of culverts required to pass the design flow event.

Hydraulic analyses were completed to determine the capacity, flow depth and water velocity at the design peak flow at each bridge crossing location, and to compute stable riprap diameters for protection of bridge abutments. The corresponding bridge crossing details, including span lengths and bridge heights (including 1.0 m of freeboard) above the watercourse bed are summarized in the Table 4-7 and Figure 4-7. As described above for the culvert crossings, a hydraulic analysis was conducted for each fish bearing bridge crossing to confirm that flow velocities do not exceed 0.8 m/s during a 1:10 yr 3-day event as outlined in the Guide to Bridge Hydraulics (TAC 2001). Detail structural design for the bridges is not included within the scope of this report.

Table 4-7: Bridge Crossing Details

River Crossing	Drainage Area (ha)	Peak Flow (m^3/s)	Span (m)	Base Width (m)	Width at Top of Water (m)	Bridge Height including 1 m Freeboard (m)
M3.9	182	4.7	12	6.8	7.73	1.62
M5.0	1102	9.1	30	15.0	16.22	1.81
M8.6	140	4.0	12	6.8	7.66	1.57
D1.2	329	5.0	12	6.8	7.76	1.64
D5.8	330	5.6	12	6.8	7.81	1.67
D6.7	1431	6.8	12	6.8	7.91	1.74

5.0 MATERIAL QUANTITY ESTIMATES

5.1 Preliminary Alignment

A preliminary AWAR alignment, approximately 39.5 km, was provided by Comaplex to Golder in December 2009 as shown on Figure 5-1. The proposed AWAR alignment, shown on Figure 5-1, is approximately 4.3 km shorter than the preliminary Comaplex alignment. The proposed and Comaplex preliminary AWAR alignments can be divided into six segments. Table 5-1 summarizes the segment lengths for the alignments. Alternative alignments shown on Figures A1, A2, and A5 in Appendix A are not included in volume calculations. These alternative alignments have been identified in the detail design process and have been included in this report for reference during the permitting process.

Table 5-1: Segment Lengths for Road Alignments

Segment Number	Location	Approximate Length (m)	
		Preliminary Comaplex AWAR (2008)	Proposed AWAR (2010)
1	Existing public road to Meliadine River crossing	2,100	1,900
2	Meliadine River Crossing to Discovery Turnoff	12,400	12,000
3	Discovery Road	10,200	9,500
4	Discovery Turnoff to F-Zone Turnoff	10,300	9,000
5	F-Zone Road	2,300	1,400
6	F-Zone Turnoff to Tiriganiaq	2,200	1,400
Total		**39,500**	**35,200**

5.2 Fill Volumes

The estimated fill volume required for the construction of the proposed AWAR was based on the vertical and horizontal alignment, shown on figures included in Appendix A, base mapping to 1 m contours and 7.7 m contours and the road sections shown on Figure 4-1. Approximately 505,000 m^3 of Type 2 fill and 40,000 m^3 of Type 1 fill will be required for the road embankment construction, excluding the turnouts. Table 5-2 summarizes the volume of road fill per segment length.

Table 5-2: Estimated Fill Quantity per Segment Lengths

Segment Number	Location	Approximate Chainage		Estimated Fill Volume (m^3)
		To (m)	From (m)	
1	Existing public road to Meliadine River crossing	1+000	2+900	25,400
2	Meliadine River Crossing to Discovery Turnoff	2+900	14+300	196,400
3	Discovery Road	40+000	49+489	132,800
4	Discovery Turnoff to F-Zone Turnoff	14+300	23+300	152,900
5	F-Zone Road	60+000	61+327	17,400
6	F-Zone Turnoff to Tiriganiaq	23+300	24+727	19,800
Total				**544,700**

The estimated volume of the road by chainage, excluding the emergency shelter pads, is provided in Appendix C.

6.0 RECOMMENDATIONS

The following are general recommendations for construction and maintenance of the proposed AWAR:

- Construction should be scheduled during the winter season so that fill is placed on frozen ground.
- Road fill material should be placed directly over the existing soil layer without cut, stripping or grubbing to avoid disturbing the fragile subgrade soils along the proposed AWAR alignment.
- Only thick drifted snow should be removed before the road fills are placed.
- Continuous road inspection and maintenance work should be carried out during mine operation since seasonal freeze and thaw adjacent to the toe of the road embankment is expected and may lead to longitudinal cracking and thaw settlement especially for portions of the road founded on ice rich soil.

The following future studies are recommended as part of the detail design phase:

- Geotechnical and geochemical characterization the potential quarry locations.
- Detailed survey at the potential watercourse crossings based on the final alignment.
- Geotechnical characterization of foundation materials at bridge abutments.
- Monitoring of flows and water levels at the watercourse crossings.
- Terrain mapping of Discovery Road (Segment 3) from approximate CH 44+000 to CH 45+100.
- Detailed aerial survey to provide 1.0 m contours in areas with limited topography data including the area with only 7.7 m contour intervals.

7.0 CLOSURE

This report should be read in conjunction with the included "**Study Limitations**" located at the beginning of the report. The reader's attention is specifically drawn to this information, as it is essential that it be followed for the proper use and interpretation of this report.

We trust that the above meets your current requirements. Should you have any questions or require further details please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED

Anu Saini, EIT (BC)
Geotechnical Engineer

ORIGINAL SIGNED

Ben Wickland, Ph.D., P.Eng. (NWT, NU)
Geotechnical Engineer

ORIGINAL SIGNED AND SEALED

John Hull, P.Eng (BC, NWT, NU)
Principal, Project Director

THE ASSOCIATION OF
PROFESSIONAL ENGINEERS,
GEOLOGISTS and GEOPHYSICISTS
OF THE NORTHWEST TERRITORIES
PERMIT NUMBER
P 049
GOLDER
ASSOCIATES LTD.

AS/BEW/CJC/mrb/aw

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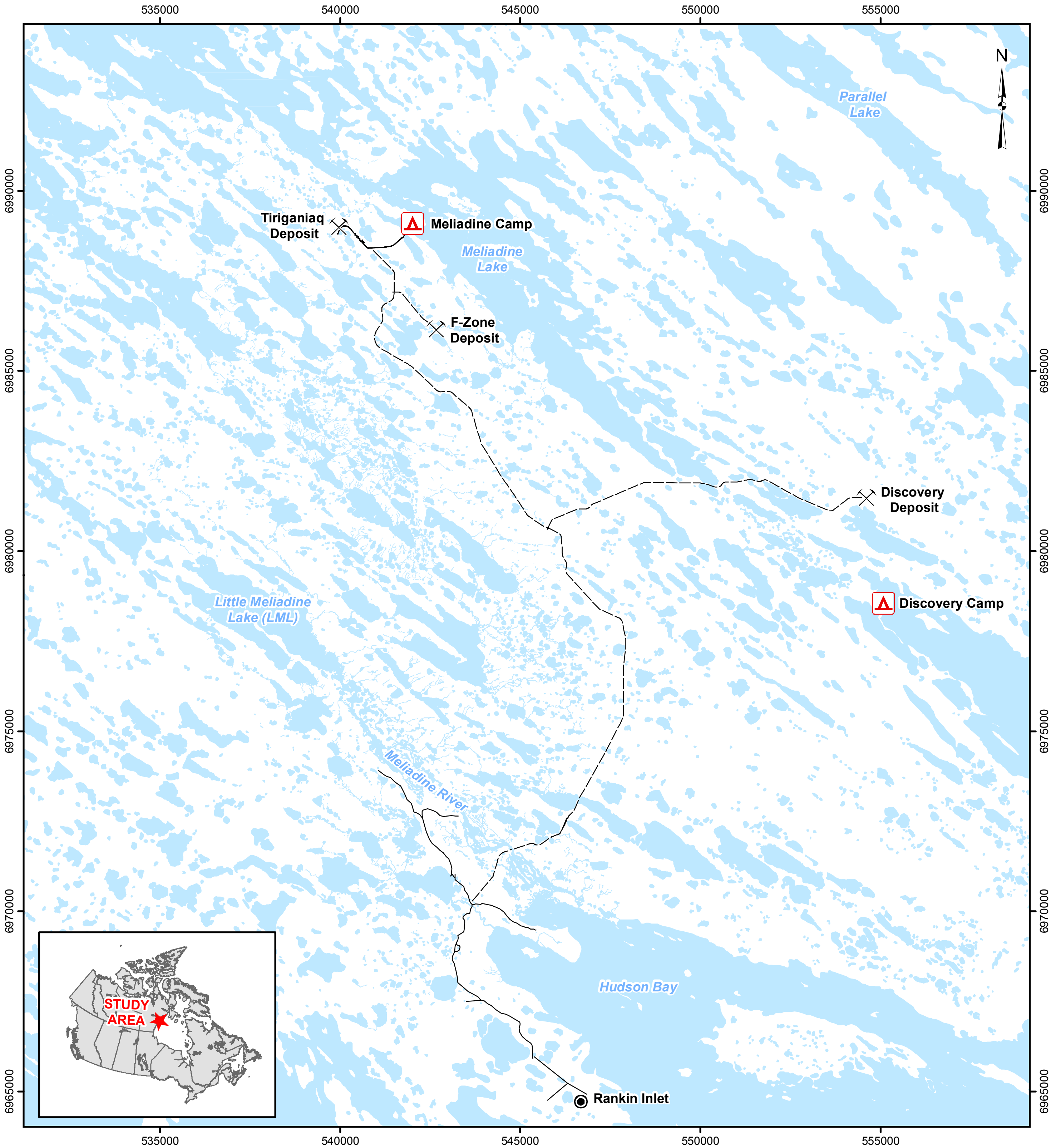

2,500 0 2,500

SCALE 1:150,000 METRES

LEGEND

- Camp
- Proposed Mine Site
- Road - Existing
- Proposed Road
- Watercourse
- Waterbody

REFERENCE

Base data obtained from Comaplex Minerals Corporation.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

SITE PLAN

Golder Associates
Greater Vancouver Office, BC

PROJECT NO. 09-1426-0015			PHASE No. 4700	
DESIGN	AS	26 Apr. 2010	SCALE AS SHOWN	REV. 0
GIS	JW	26 Apr. 2010	FIGURE 1-1	
CHECK	CJC	19 Nov. 2010		
REVIEW	JAH	19 Nov. 2010		

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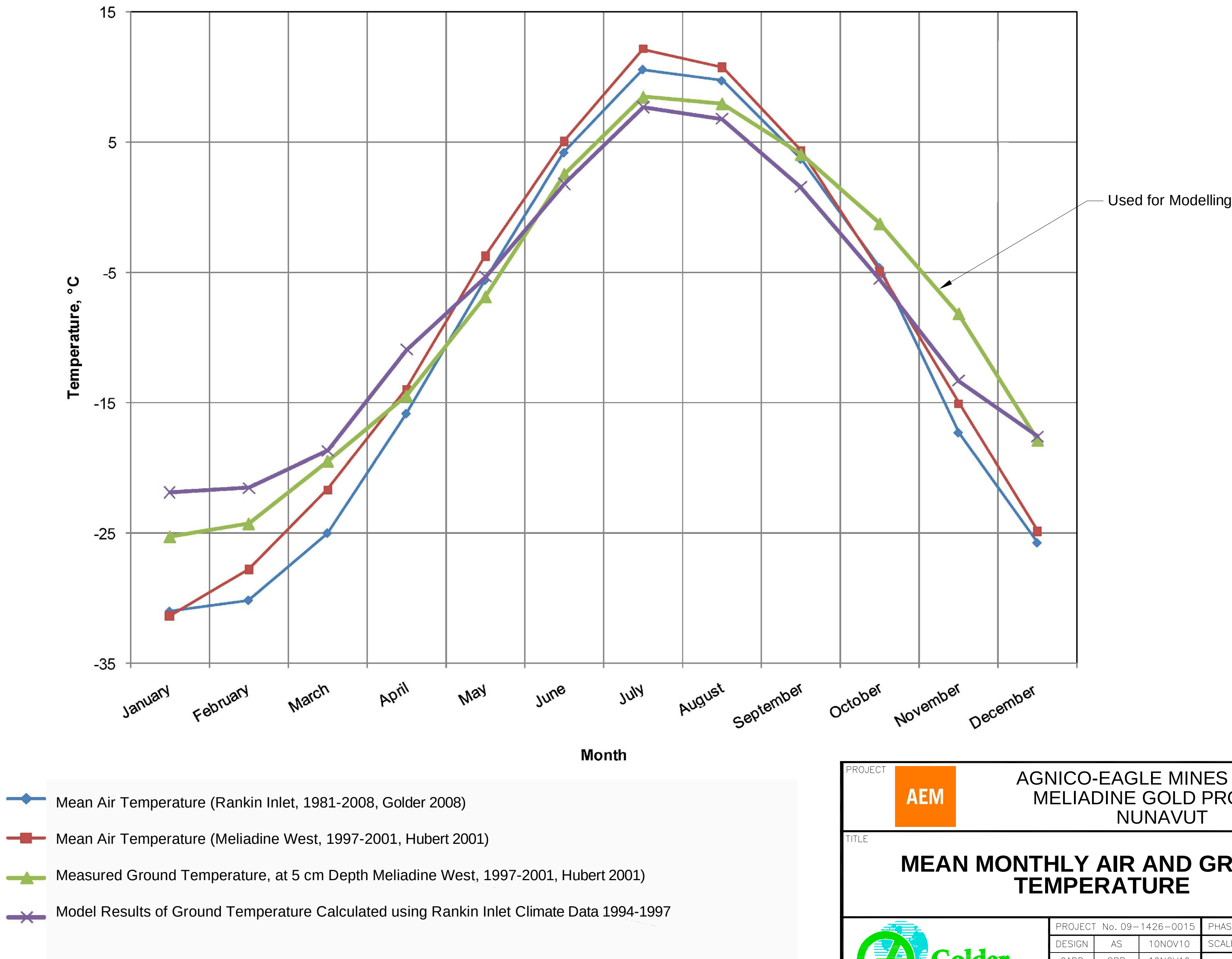

PROJECT
AEM
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
MEAN MONTHLY AIR AND GROUND TEMPERATURE

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No.	4700
DESIGN	AS	10NOV10	SCALE AS SHOWN	REV. 1
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CHECK	CJC	19JAN11	**FIGURE 1-2**	
REVIEW	JAH	19JAN11		

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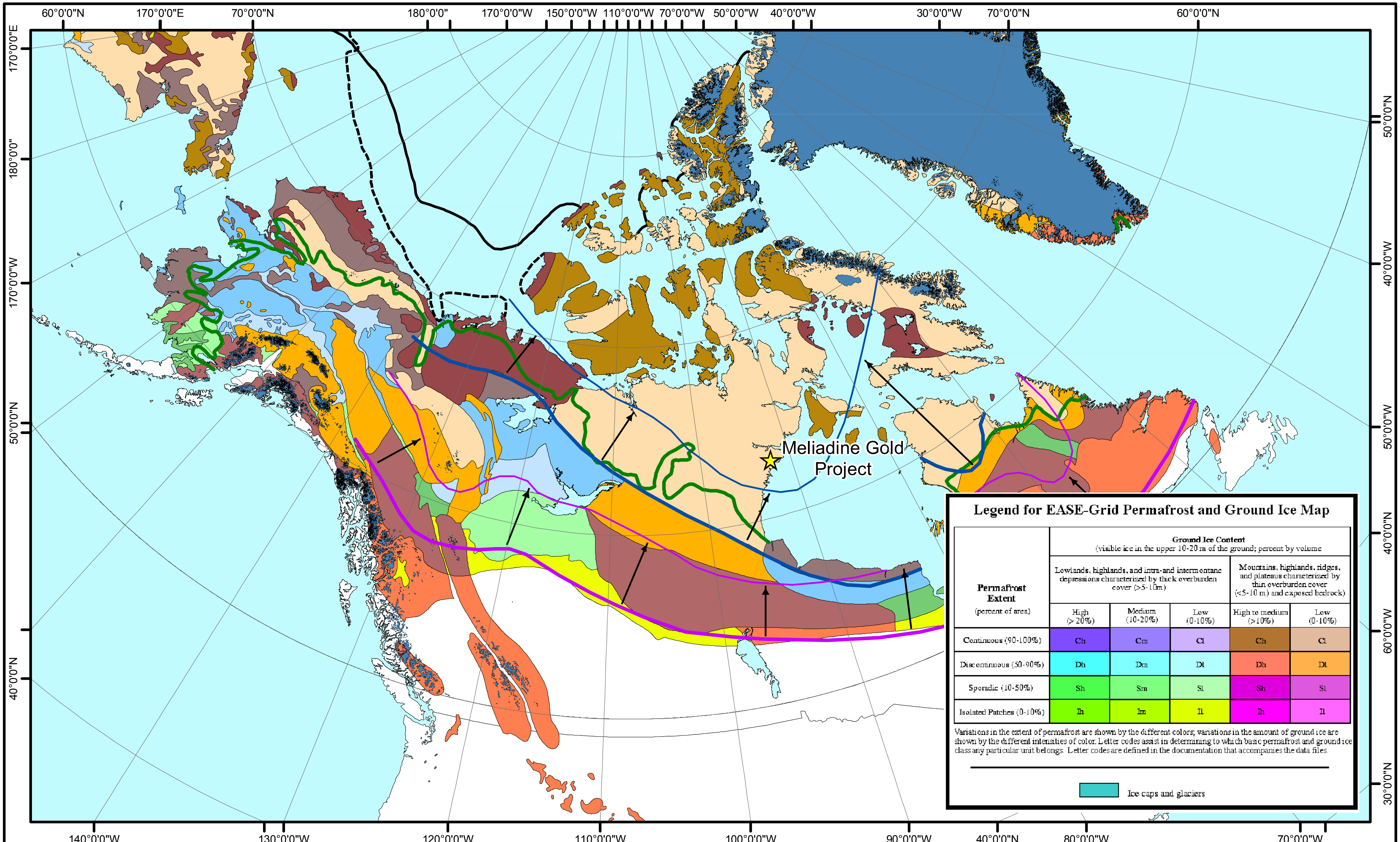

LEGEND

- Treeline
- Sea-ice Edge Limit
- Subsea Permafrost Limit
- Southern boundary of discontinuous permafrost - Present
- Southern boundary of discontinuous permafrost - Predicted
- Southern boundary of continuous permafrost - Present
- Southern boundary of continuous permafrost - Predicted
- Predicted movement of permafrost boundaries

REFERENCE

Brown, J., O.J. Ferrians Jr., J.A. Heginbottom, and E.S. Melnikov. 1998. Circum-Arctic Map of Permafrost and Ground-Ice Conditions. Boulder, CO: National Snow and Ice Data Center/World Data Center for Glaciology. Digital Media. Predicted permafrost boundaries based on Woo et al., 1992.
Projection: Lambert Azimuthal Equal Area

600 0 600

SCALE 1:30,000,000 KILOMETRES

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PERMAFROST MAP OF CANADA

Golder Associates
Greater Vancouver Office, B.C.

PROJECT NO. 09-1426-0015			PHASE No. 4700	
DESIGN	CJC	10FEB09	SCALE AS SHOWN	REV. 0
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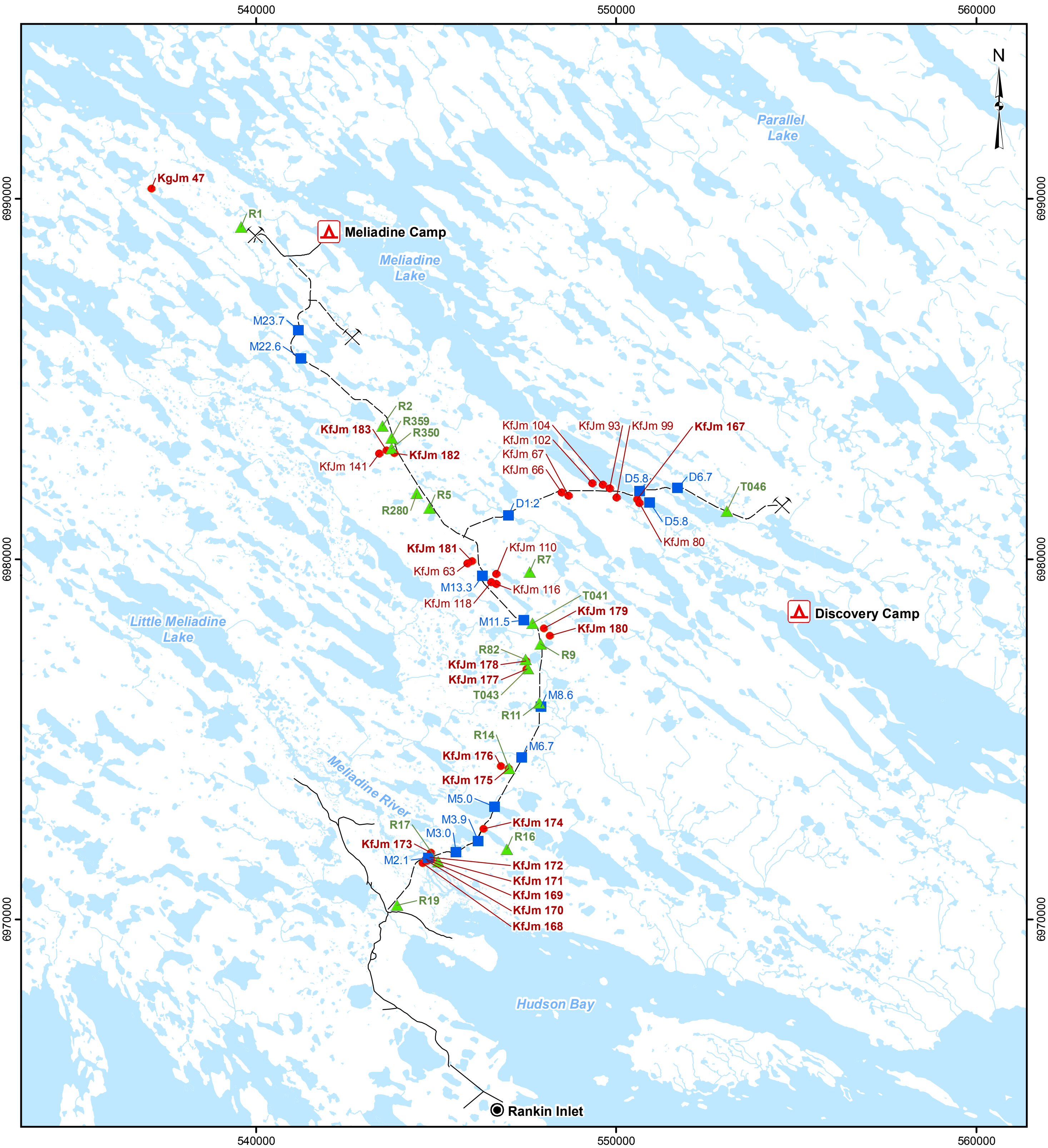
REVIEW	JAH	19NOV10		



LEGEND

- Watercourse Crossing
- Potential Quarry Location
- Archaeological Site
- Camp
- Proposed Mine Site
- Proposed Road
- Road - Existing
- Watercourse
- Waterbody

3 0 3

SCALE 1:150,000 KILOMETRES

NOTE

See Appendix B for coordinates of watercourse crossings, archaeological sites and potential quarry locations.
Water crossing sites investigated in June 2008.

REFERENCE

Project Infrastructure provided by Comaplex Minerals Inc. Base data obtained from the Government of Canada, Natural Resources Canada, Centre for Topographic Information (1:50,000).
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

LOCATIONS OF WATERCOURSE CROSSINGS, ARCHAEOLOGICAL SITES AND POTENTIAL QUARRIES

Golder Associates
Greater Vancouver Office, B.C.

PROJECT NO. 09-1426-0015			PHASE No. 4700
DESIGN	AS	6 Jan. 2010	SCALE AS SHOWN REV. 0
GIS	JW	3 Jun. 2010	
CHECK	CJC	19 Nov. 2010	**FIGURE 2-1**
REVIEW	JAH	19 Nov. 2010	

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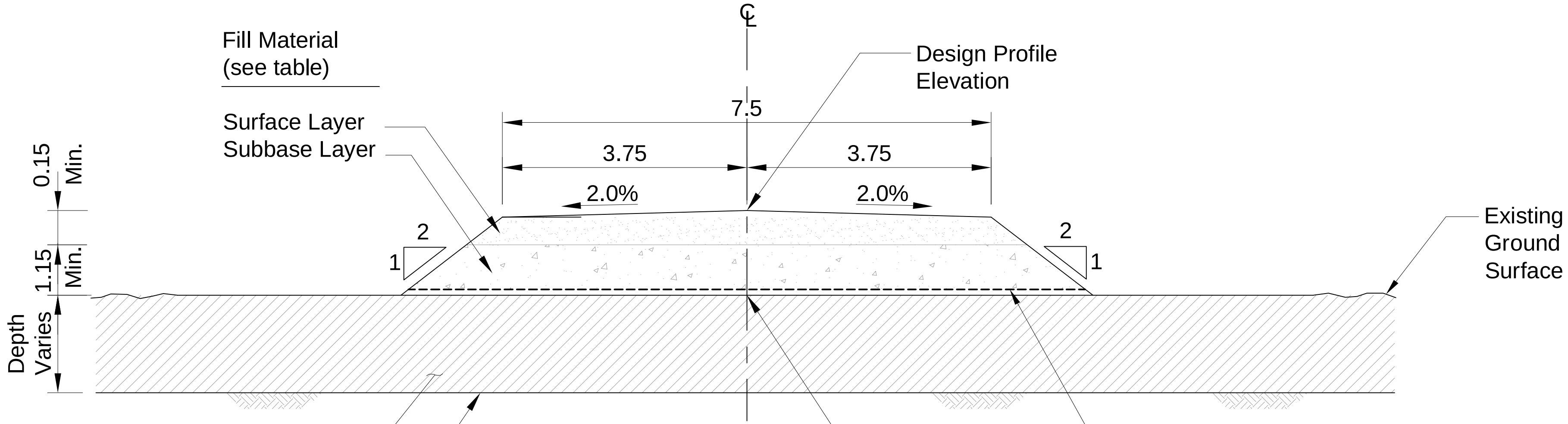
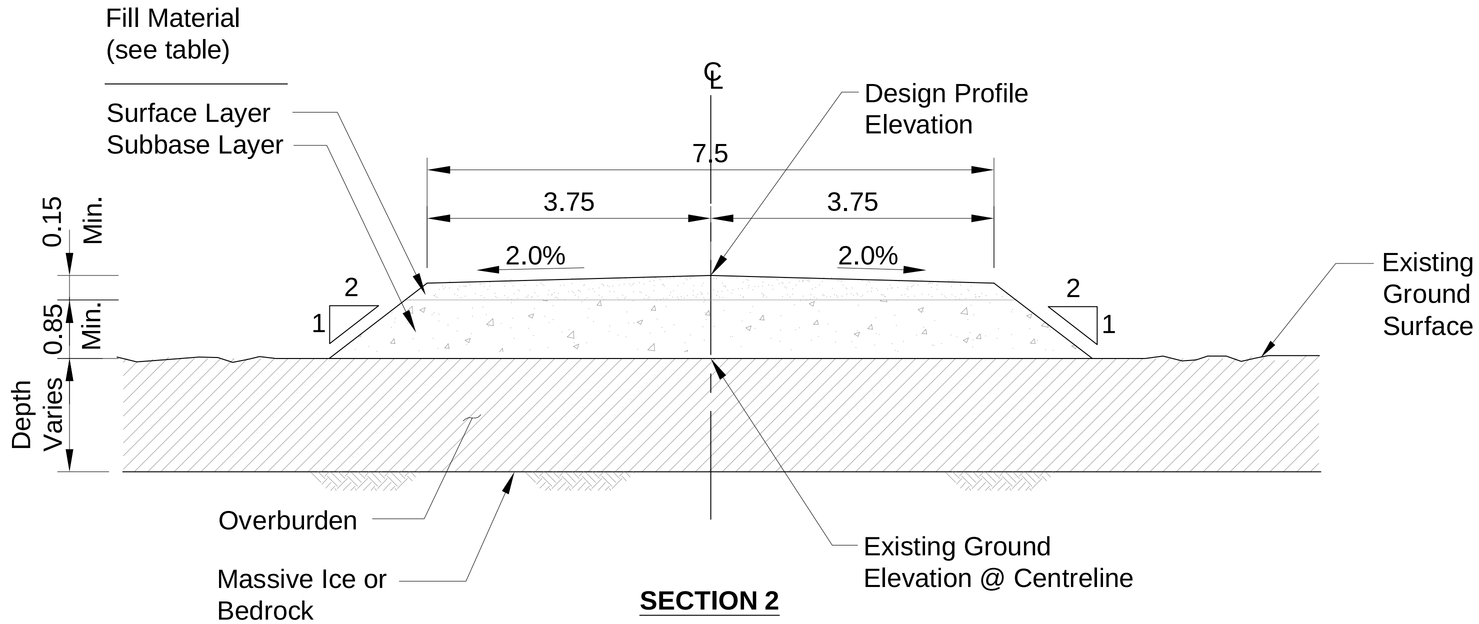


SECTION 1
Thaw Susceptible Soil
(See Note 1)



SECTION 2
Thaw Stable Soil
(See Note 2)

0 1 2 3 4 5
SCALE IN METRES

Layer	Minimum thickness	Material description
Surface	150mm	Type 1
Subbase	1150mm-on "thaw susceptible" soil 850mm-on "thaw stable" soil	Type 2

NOTES

1) Soils relatively susceptible to freeze and thaw induced settlement where thawing of the near-surface subgrade is expected to result in significant strength loss and excessive settlements.

2) Soils relatively unsusceptible to freeze and thaw settlement where thawing of the near-surface subgrade is expected to result in minimal strength loss and tolerable settlements.

3) All dimensions in metres, unless noted otherwise.

NOT FOR CONSTRUCTION

PROJECT
AEM
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
TYPICAL CROSS SECTIONS

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No. 4700
DESIGN	AS	10NOV10	SCALE AS SHOWN REV. 1
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CHECK	CJC	19JAN11	**FIGURE 4-1**
REVIEW	JAH	19JAN11	

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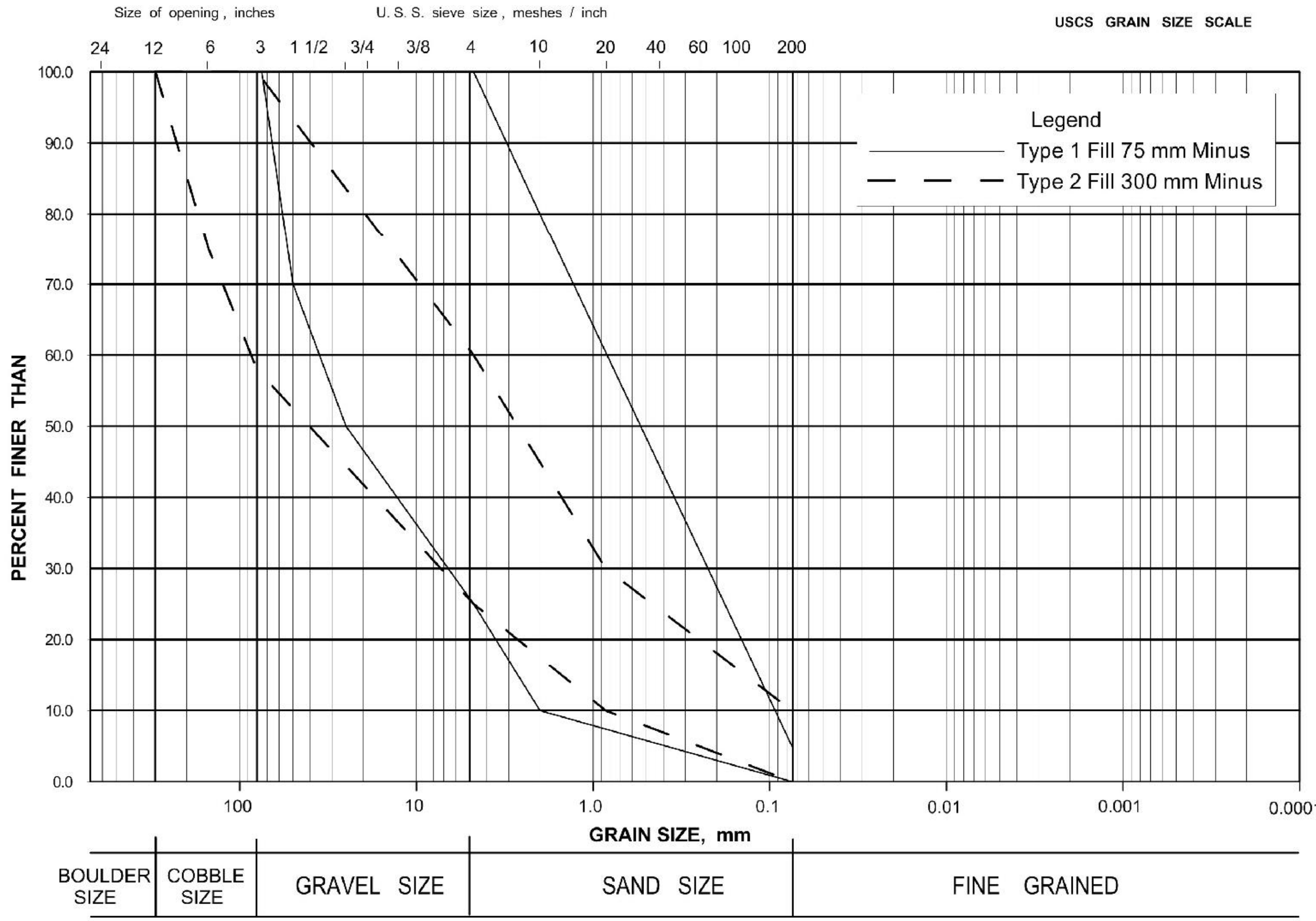

PROJECT AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

GRAIN SIZE DISTRIBUTION

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No. 4700	
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CHECK	CJC	19JAN11	**FIGURE 4-2**	
REVIEW	JAH	19JAN11		

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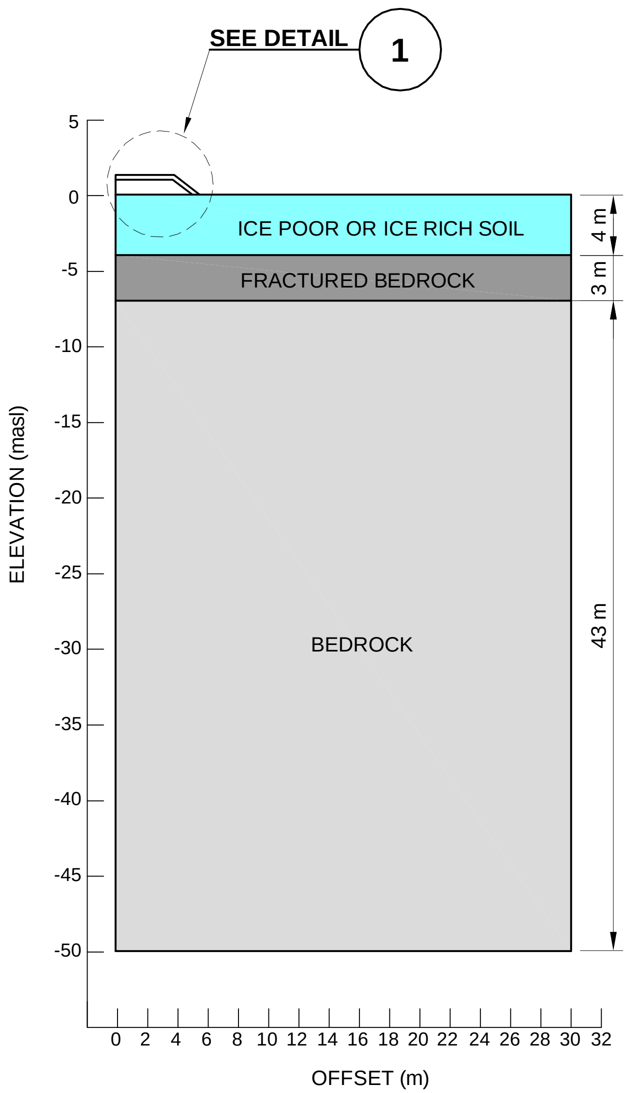

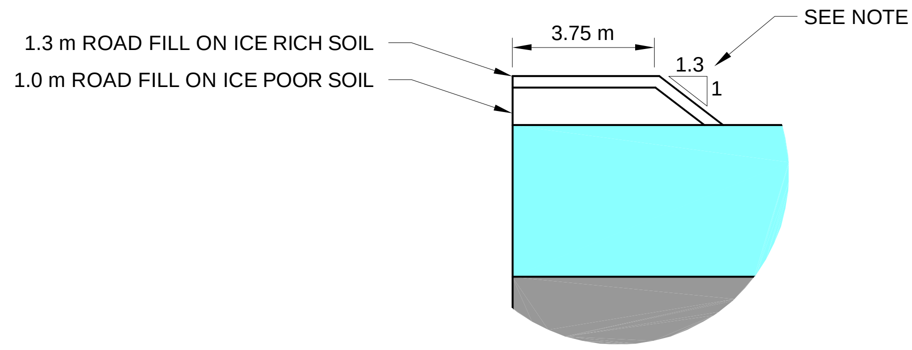

1 DETAIL
SCALE 1:200

NOTE

1. RECOMMENDED DESIGN SIDE SLOPE IS 2H:1V.

PROJECT
AEM
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

CROSS SECTION FOR THERMAL ANALYSIS

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No.	4700
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CHECK	CJC	19JAN11		
REVIEW	JAH	19JAN11		

FIGURE 4-3

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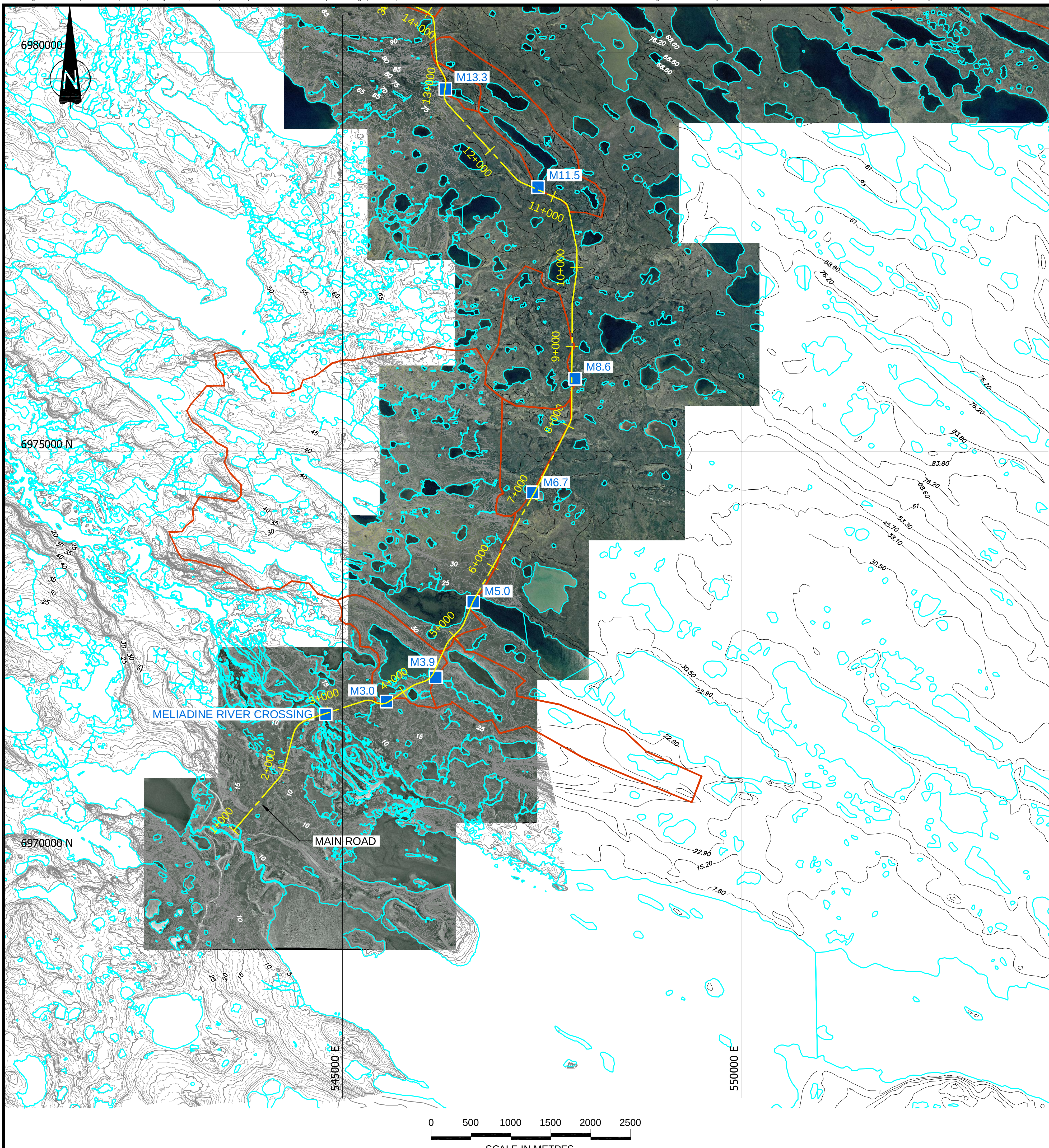

LEGEND

WATERSHED BOUNDARY

PROPOSED CROSSING LOCATIONS

REFERENCE

BASE DATA OBTAINED FROM COMAPLEX MINERALS CORPORATION.
PROJECTION: UTM ZONE 15   DATUM: NAD 83

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

WATERSHEDS AND WATERCOURSE CROSSINGS CH. 1+000 TO CH. 14+000

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015		PHASE No.	4700
DESIGN	MLP	10NOV10	SCALE AS SHOWN	REV. 1
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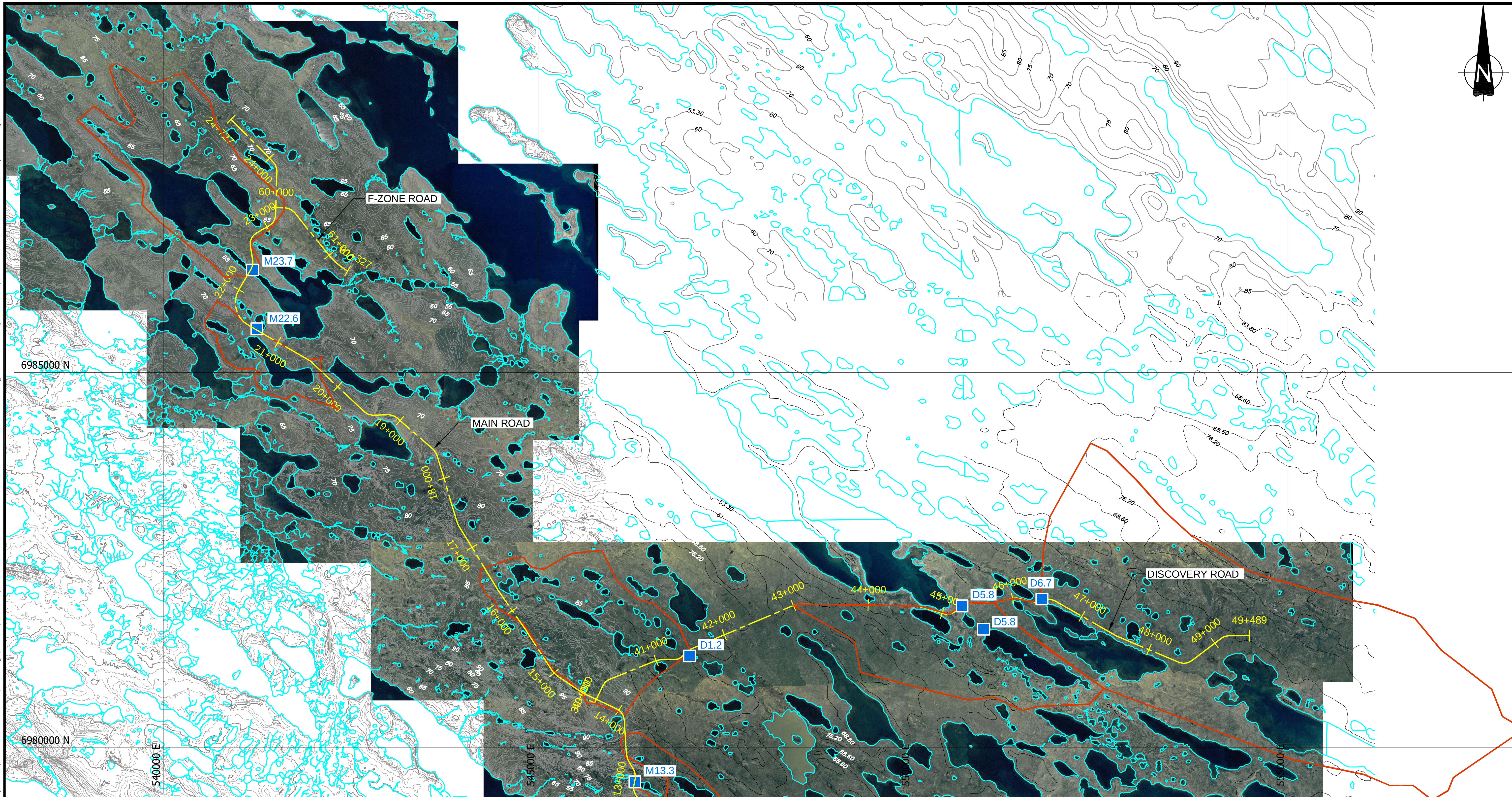
REVIEW	JAH	19JAN11	



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SCALE IN METRES

LEGEND

WATERSHED BOUNDARY

PROPOSED CROSSING LOCATIONS

REFERENCE

BASE DATA OBTAINED FROM COMAPLEX MINERALS CORPORATION.
PROJECTION: UTM ZONE 15 DATUM: NAD 83

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

WATERSHEDS AND WATERCOURSE CROSSINGS CH. 14+000 TO CH. 24+727

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No.	4700
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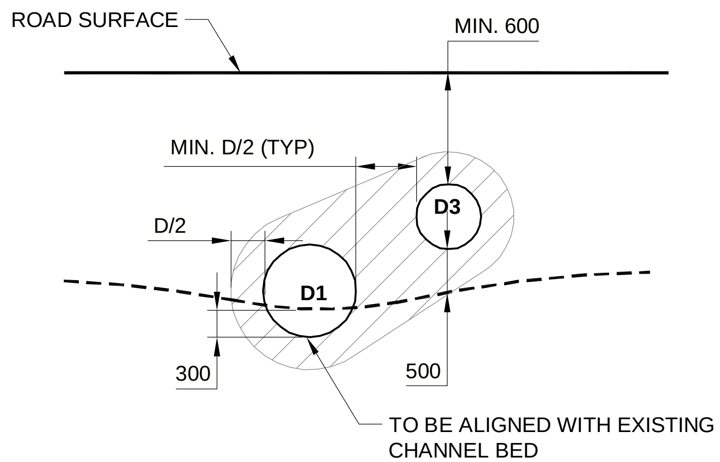
REVIEW	JAH	19JAN11		

Drawing File: N:\Bur-Graphics\Projects\2009\1426\09-1426-0015\Drafting\4700\Rev-0\0914260015-4700-1000-C3D_4-4 to 4-5.dwg Wednesday, January 19, 2011 5:37:15 PM By: sreddy



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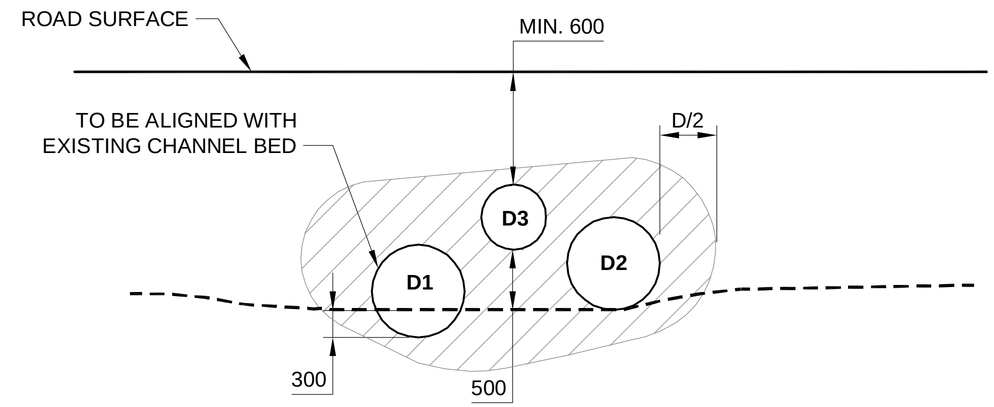

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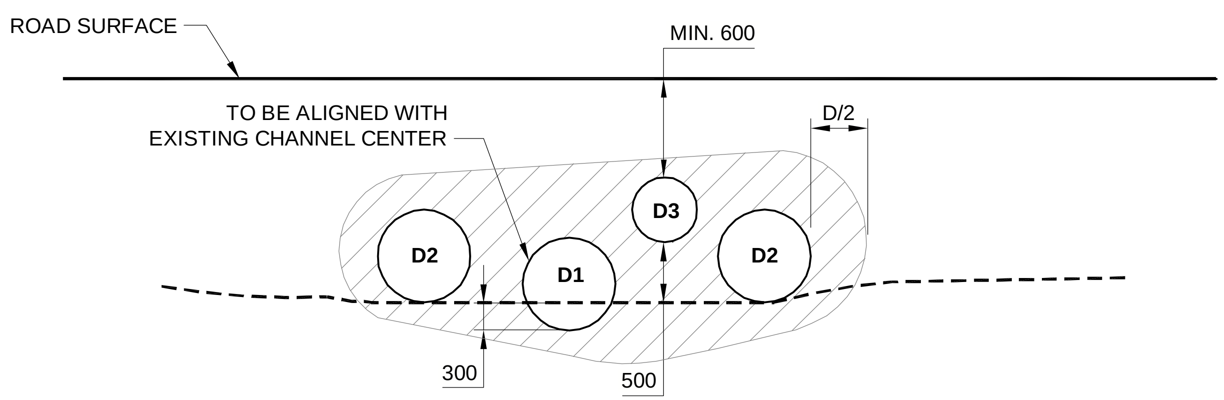

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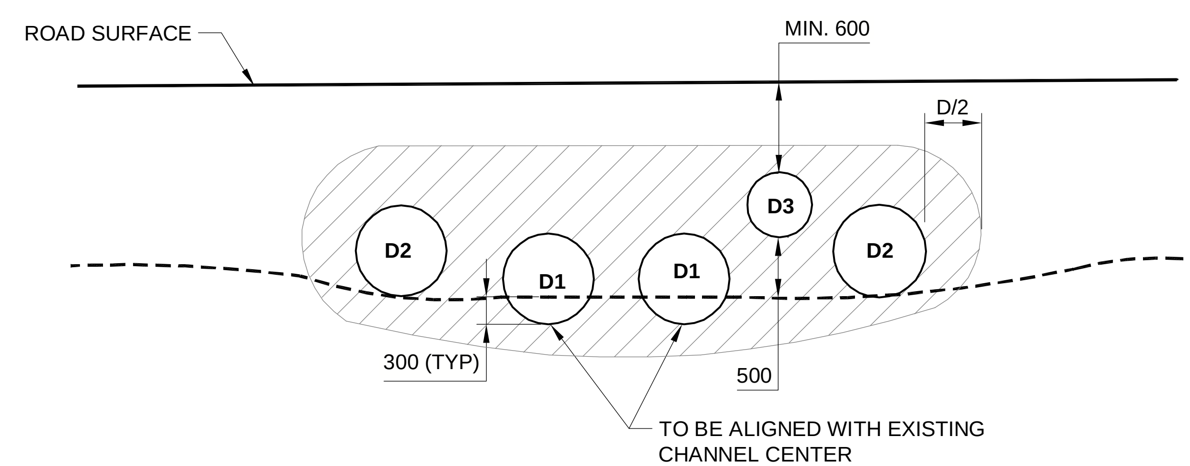
NTS



TYPICAL SECTION DESIGN D
NTS

LEGEND

- ROAD SURFACE (solid line)
- EXISTING GROUND (dashed line)
- WELL COMPACTED TYPE 1 FILL 75mm MINUS (hatched)

NOTES

1. ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.

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PROJECT
AEM
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

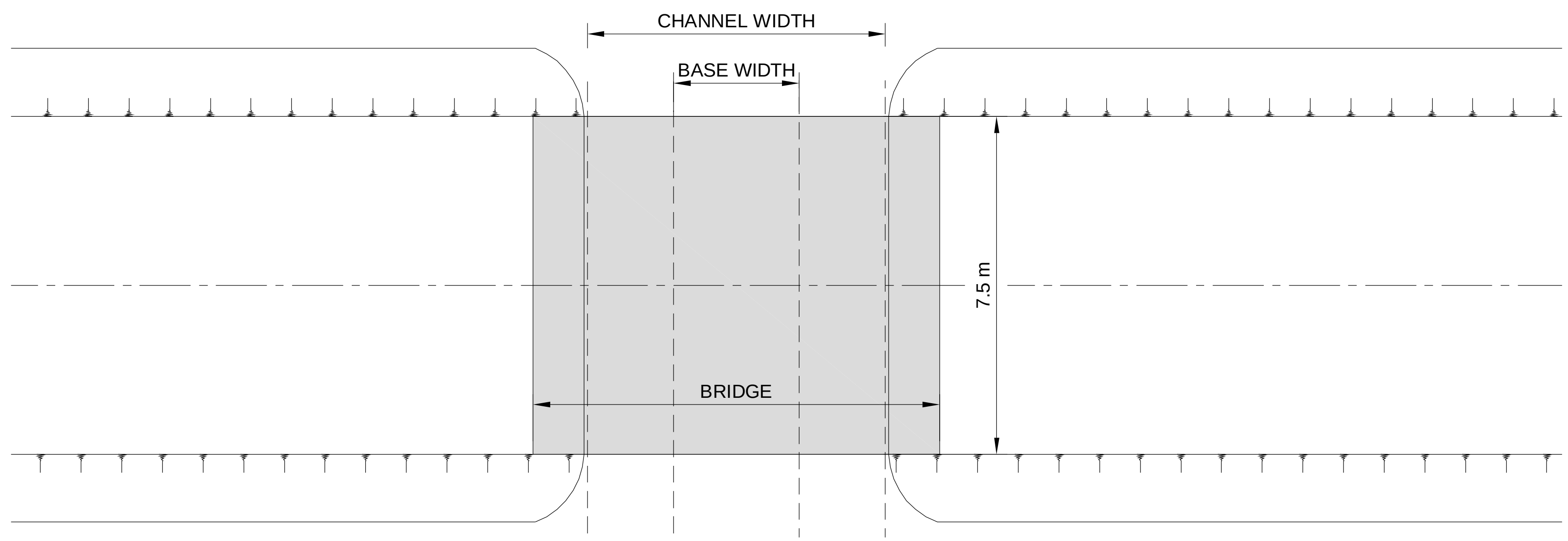
TITLE
TYPICAL CULVERT DESIGN CROSS SECTIONS

Golder Associates
Greater Vancouver Office, BC

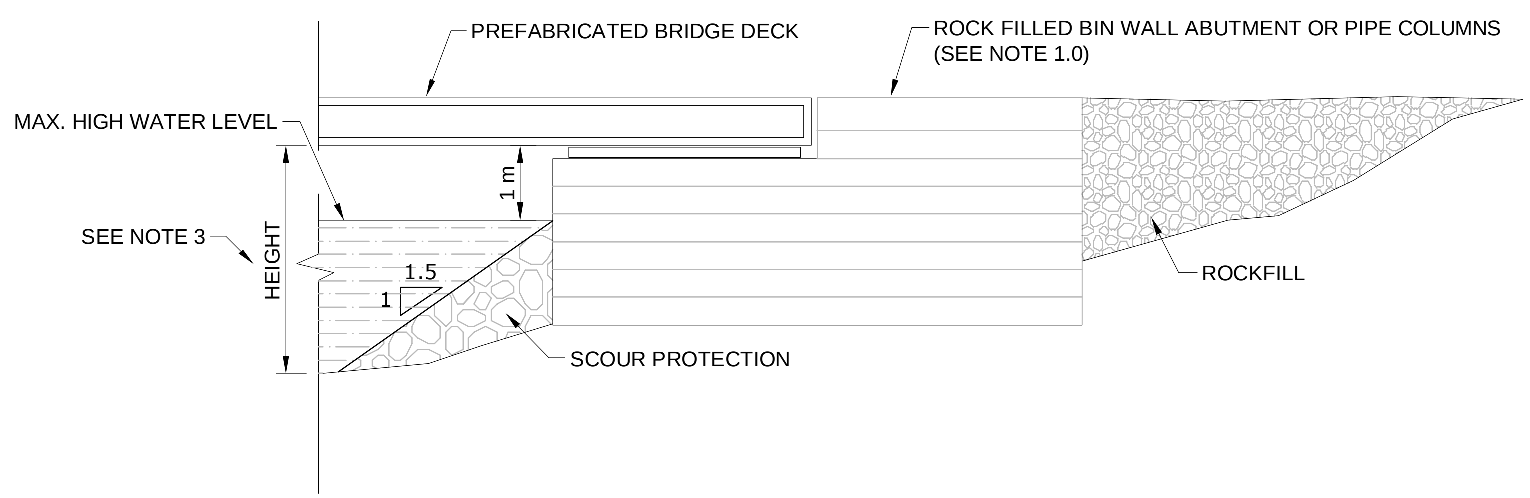
PROJECT No. 09-1426-0015		
DESIGN	MLP	10NOV10
CADD	SRR	10NOV10
CHECK	CJC	19JAN11
REVIEW	JAH	19JAN11

PHASE No. 4700
SCALE AS SHOWN REV. 1

FIGURE 4-6



TYPICAL PLAN
NTS



TYPICAL BIN WALL SECTION
NTS

NOTES

1. BIN WALL ABUTMENT FOR 30 m (100FT) SPANS, PIPE COLUMN ABUTMENT FOR 12 m SPAN (TO BE DESIGNED AT DETAIL DESIGN STAGE).
2. ROAD ALIGNMENT AND CROSSING LOCATIONS TO BE REVISED BASED ON FIELD CONSTRUCTION BETWEEN SETBACK POINTS.
3. FROM GROUND SURFACE BESIDE/AT CREEK TO UNDERSIDE OF BRIDGE DECK.

ESTIMATED EDGE OF ABUTMENTS (SEE NOTE 2)

	Northing	Easting	Comments	Northing	Easting	Comments	Span (m)
M3.9	546122	6972194	Edge of North Abutment	546118	6972188	Edge of South Abutment	12
M5.0	546638	6973134	Edge of North Abutment	546632	6973120	Edge of South Abutment	30
M8.6	547869	6975818	Edge of North Abutment	547869	6975811	Edge of South Abutment	12
D1.2	546961	6981236	Edge of East Abutment	546957	6981258	Edge of West Abutment	12
D5.8	550609	6981865	Edge of East Abutment	550605	6981859	Edge of West Abutment	12
D6.7	551689	6981946	Edge of East Abutment	551683	6981943	Edge of West Abutment	12

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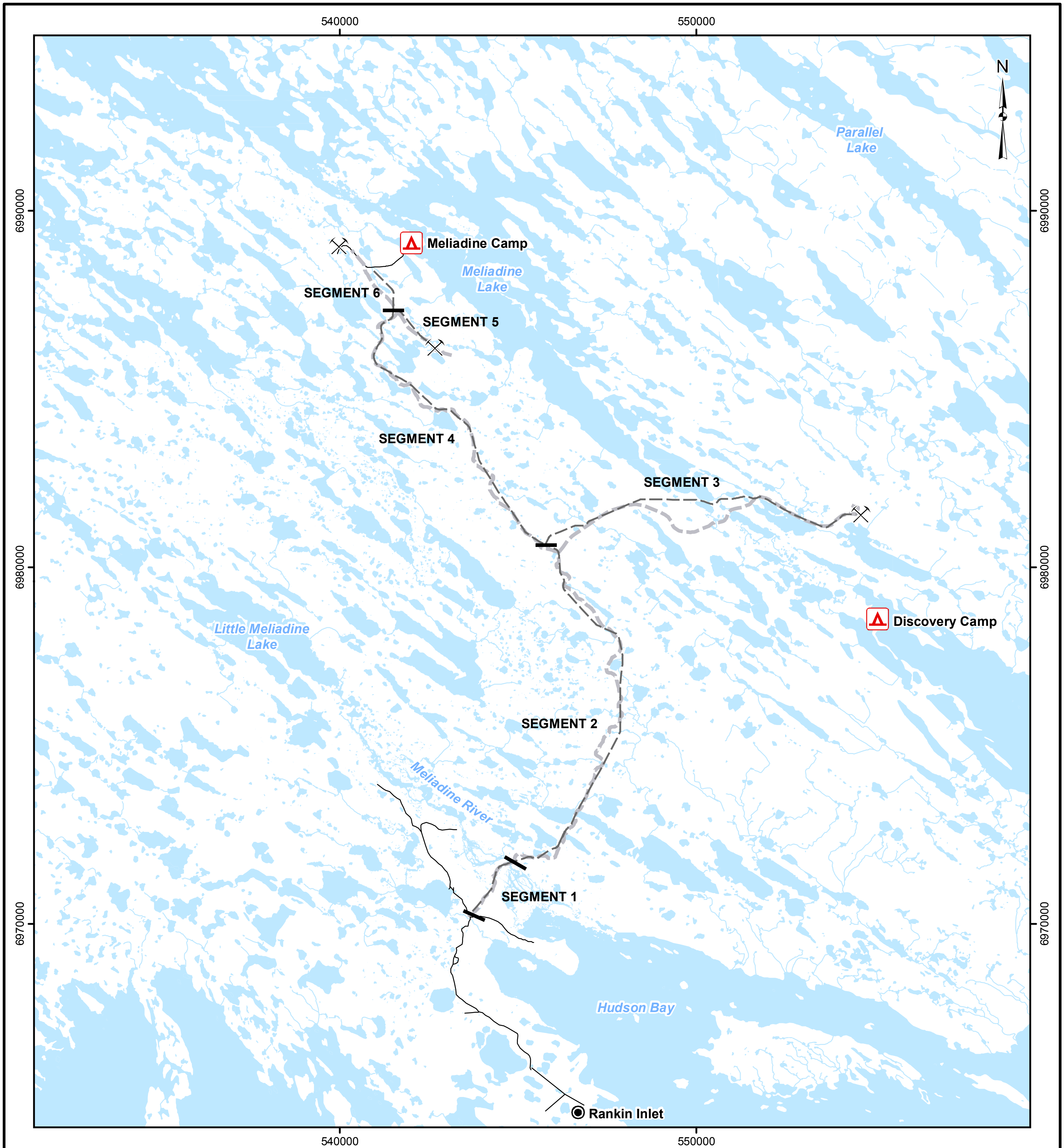
TITLE
TYPICAL BRIDGE ABUTMENT DESIGN

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No. 4700	
DESIGN	MLP	10NOV10	SCALE AS SHOWN	REV. 1
CADD	SRR	10NOV10		
CHECK	CJC	19JAN11	**FIGURE 4-7**	
REVIEW	JAH	19JAN11		



LEGEND

- Camp
- Proposed Mine Site
- Preliminary Road (December 2009)
- Proposed Road
- Road - Existing
- Watercourse
- Waterbody

3 0 3
SCALE 1:150,000 KILOMETRES

REFERENCE

Project Infrastructure provided by Comaplex Minerals Inc. Base data obtained from the Government of Canada, Natural Resources Canada, Centre for Topographic Information (1:50,000).
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PRELIMINARY AND PROPOSED ROAD ALIGNMENTS

Golder Associates
Greater Vancouver Office, B.C.

PROJECT NO. 09-1426-0015			PHASE No. 4700	
DESIGN	AS	26 Apr. 2010	SCALE AS SHOWN	REV. 0
GIS	JW	26 Apr. 2010	**FIGURE 5-1**	
CHECK	CJC	19 Nov. 2010		
REVIEW	JAH	19 Nov. 2010		

N:\Bur-Graphics\Projects\2010\1426\10-1426-0029\GIS\projects\4000\figure-05-01_proposed-road.mxd

APPENDIX A

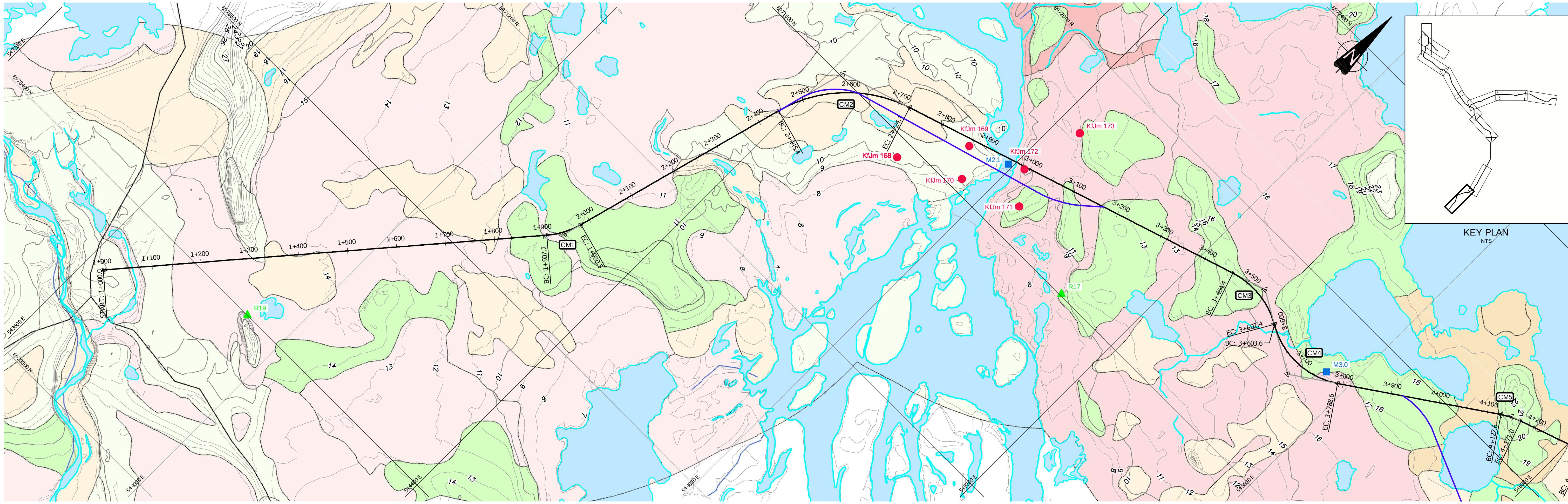
Proposed AWAR Plan and Profile

NOT FOR CONSTRUCTION

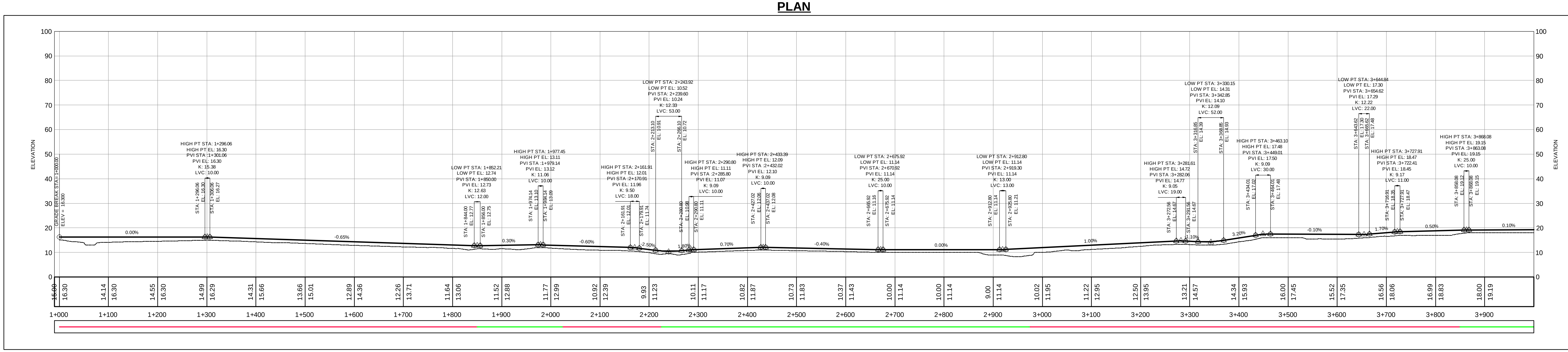
Table A-1. Summary of Horizontal Curve Data

CURVE ID	RADIUS	ARC LENGTH	DELTA ANGLE	START POINT		START CHAINAGE	END POINT		END CHAINAGE	POINT OF INTERSECTION		CENTER OF CURVE	
CM1	165.0	73.3	25°27'06"	N 6970946.68	E 544227.50	1+907.23	N 6971010.99	E 544261.40	1+980.52	N 6970975.01	E 544251.71	N 6971053.89	E 544102.08
CM2	280.0	278.7	57°01'54"	N 6971459.89	E 544382.29	2+445.42	N 6971653.54	E 544566.62	2+724.13	N 6971606.79	E 544421.86	N 6971387.08	E 544652.66
CM3	165.0	137.9	4°53'44"	N 6971881.02	E 545271.11	3+464.44	N 6971866.90	E 545404.31	3+602.37	N 6971903.54	E 545340.85	N 6971724.00	E 545321.81
CM4	165.0	185.1	6°15'45"	N 6971866.29	E 545405.37	3+603.59	N 6971872.81	E 545580.76	3+788.65	N 6971814.47	E 545495.11	N 6972009.18	E 545487.87
CM5	165.0	43.4	15°04'27"	N 6972063.62	E 545860.87	4+127.57	N 6972083.09	E 545899.53	4+170.98	N 6972075.91	E 545878.91	N 6971927.25	E 545953.76
CM6	165.0	133.7	4°25'46"	N 6972130.85	E 546036.79	4+316.32	N 6972218.57	E 546132.84	4+450.02	N 6972154.11	E 546103.63	N 6972286.69	E 545982.56
CM7	165.0	59.4	20°37'51"	N 6972592.90	E 546302.51	4+861.01	N 6972641.49	E 546336.15	4+920.42	N 6972620.26	E 546314.91	N 6972524.79	E 546452.79
CM8	165.0	64.2	22°17'07"	N 6972781.33	E 546476.05	5+118.24	N 6972834.28	E 546511.60	5+182.42	N 6972804.31	E 546499.04	N 6972898.03	E 546359.41
CM9	165.0	19.2	6°40'39"	N 6973116.63	E 546629.87	5+488.54	N 6973133.90	E 546638.31	5+507.77	N 6973125.51	E 546633.59	N 6973052.89	E 546782.06
CM10	165.0	6.8	2°21'06"	N 6974482.67	E 547398.47	7+056.00	N 6974488.64	E 547401.67	7+062.77	N 6974485.62	E 547400.13	N 6974563.68	E 547254.73
CM11	165.0	77.1	26°46'33"	N 6975364.37	E 547848.91	8+046.10	N 6975438.62	E 547866.96	8+123.21	N 6975399.35	E 547866.77	N 6975439.42	E 547701.97
CM12	165.0	22.6	7°50'21"	N 6976857.46	E 547873.84	9+542.06	N 6976879.95	E 547875.49	9+564.64	N 6976868.76	E 547873.89	N 6976856.66	E 548038.84
CM13	200.0	28.6	8°10'40"	N 6977269.88	E 547931.10	9+958.52	N 6977298.34	E 547933.11	9+987.06	N 6977284.04	E 547933.12	N 6977298.12	E 547733.11
CM14	165.0	33.2	11°31'41"	N 6977524.70	E 547932.87	10+213.42	N 6977557.67	E 547929.50	10+246.62	N 6977541.35	E 547932.85	N 6977524.52	E 547767.87
CM15	165.0	157.9	54°49'16"	N 6978035.66	E 547831.48	10+734.56	N 6978153.72	E 547735.88	10+892.43	N 6978119.48	E 547814.29	N 6978002.51	E 547669.85
CM16	165.0	68.5	23°46'35"	N 6978373.55	E 547232.46	11+441.75	N 6978413.01	E 547177.10	11+510.23	N 6978387.45	E 547200.63	N 6978524.77	E 547298.49
CM17	165.0	150.2	52°10'15"	N 6979350.00	E 546314.48	12+783.83	N 6979489.09	E 546273.15	12+934.07	N 6979409.43	E 546259.77	N 6979461.75	E 546435.87
CM18	165.0	113.9	39°32'14"	N 6979595.31	E 546291.00	13+041.77	N 6979705.14	E 546271.17	13+155.63	N 6979653.79	E 546300.82	N 6979622.64	E 546128.28
CM19	165.0	76.1	26°24'55"	N 6979834.20	E 546196.66	13+304.65	N 6979906.38	E 546174.88	13+380.72	N 6979867.74	E 546177.30	N 6979916.70	E 546339.55
CM20	165.0	176.9	61°26'18"	N 6980372.61	E 546145.67	13+847.86	N 6980511.86	E 546050.67	14+024.79	N 6980470.46	E 546139.54	N 6980362.29	E 545980.99
CM21	200.0	30.4	8°42'30"	N 6980713.48	E 545617.84	14+502.27	N 6980728.35	E 545591.37	14+532.66	N 6980719.91	E 545604.04	N 6980894.77	E 545702.30
CM22	165.0	67.4	23°23'17"	N 6980963.35	E 545238.82	14+956.35	N 6981010.96	E 545191.84	15+023.71	N 6980982.29	E 545210.40	N 6981100.64	E 545330.33
CM23	165.0	5.5	1°54'52"	N 6981543.57	E 544846.92	15+658.25	N 6981548.15	E 544843.85	15+663.77	N 6981545.89	E 544845.42	N 6981453.89	E 544708.43
CM24	200.0	12.3	3°31'14"	N 6982098.23	E 544460.95	16+333.99	N 6982108.53	E 544454.24	16+346.28	N 6982103.28	E 544457.44	N 6982212.49	E 544625.10
CM25	165.0	41.6	14°25'39"	N 6982960.06	E 543936.09	17+343.07	N 6982997.88	E 543919.16	17+384.62	N 6982977.90	E 543925.23	N 6983045.83	E 544077.04
CM26	165.0	92.4	32°04'10"	N 6983896.56	E 543646.25	18+323.82	N 6983973.07	E 543596.70	18+416.17	N 6983941.93	E 543632.47	N 6983848.61	E 543488.37
CM27	165.0	122.6	42°34'09"	N 6984393.20	E 543114.03	19+056.08	N 6984433.68	E 543001.29	19+178.67	N 6984435.40	E 543065.55	N 6984268.74	E 543005.70
CM28	165.0	129.3	44°54'48"	N 6984428.19	E 542796.02	19+384.02	N 6984473.21	E 542678.27	19+513.36	N 6984426.37	E 542727.84	N 6984593.14	E 542791.61
CM29	165.0	38.7	13°25'45"	N 6985126.09	E 541987.43	20+463.89	N 6985149.13	E 541956.48	20+502.56	N 6985139.43	E 541973.32	N 6985006.17	E 541874.10
CM30	350.0	558.1	91°21'46"	N 6985622.63	E 541134.78	21+450.93	N 6986107.80	E 541010.52	22+009.03	N 6985801.59	E 540824.23	N 6985925.89	E 541309.53
CM31	165.0	114.1	39°36'18"	N 6986367.18	E 541168.32	22+312.65	N 6986476.73	E 541190.64	22+426.70	N 6986417.94	E 541199.20	N 6986452.94	E 541027.36
CM32	165.0	198.2	68°50'01"	N 6986689.90	E 541159.58	22+642.12	N 6986857.36	E 541241.71	22+840.34	N 6986801.77	E 541143.28	N 6986713.69	E 541322.85
CM33	165.0	170.2	59°05'34"	N 6986954.04	E 541412.91	23+036.95	N 6987093.54	E 541496.72	23+207.13	N 6987000.04	E 541494.35	N 6987097.71	E 541331.77
CM34	165.0	133.1	46°13'11"	N 6987680.00	E 541511.58	23+793.78	N 6987800.38	E 541463.77	23+926.89	N 6987750.39	E 541513.36	N 6987684.18	E 541346.63
CD1	165.0	124.4	43°11'09"	N 6980827.00	E 545860.49	40+205.37	N 6980910.49	E 545948.69	40+329.73	N 6980886.20	E 545888.07	N 6980757.33	E 546010.06
CD2	165.0	62.9	21°50'13"	N 6981160.77	E 546573.25	41+002.58	N 6981172.61	E 546634.63	41+065.47	N 6981172.61	E 546602.80	N 6981007.61	E 546634.63
CD3	165.0	159.2	55°17'13"	N 6981172.61	E 546810.76	41+241.60	N 6981243.64	E 546946.39	41+400.81	N 6981172.61	E 546897.18	N 6981337.61	E 546810.76
CD4	165.0	93.2	32°21'21"	N 6981251.11	E 546951.56	41+409.89	N 6981309.11	E 547022.91	41+503.07	N 6981290.46	E 546978.82	N 6981157.14	E 547087.20
CD5	165.0	68.4	2°44'22"	N 6981898.90	E 548417.04	43+016.82	N 6981911.92	E 548483.65	43+085.19	N 6981912.41	E 548448.98	N 6981746.94	E 548481.32
CD6	840.0	249.7	17°02'01"	N 6981891.24	E 549949.31	44+551.00	N 6981850.93	E 550194.83	44+800.72	N 6981889.47	E 550075.09	N 6981051.32	E 549937.46
CD7	164.9	216.5	75°13'31"	N 6981782.09	E 550408.69	45+025.39	N 6981850.18	E 550598.11	45+241.89	N 6981743.16	E 550529.63	N 6981939.06	E 550459.22
CD8	165.0	165.3	57°23'00"	N 6981850.24	E 550598.15	45+241.97	N 6981926.30	E 550737.13	45+407.22	N 6981926.30	E 550646.83	N 6981761.30	E 550737.13
CD9	165.0	35.0	12°08'18"	N 6981926.30	E 551034.58	45+704.67	N 6981929.99	E 551069.27	45+739.62	N 6981926.30	E 551052.12	N 6982091.30	E 551034.58
CD10	165.0	78.2	27°08'18"	N 6981987.54	E 551336.82	46+013.28	N 6981985.60	E 551414.22	46+091.43	N 6981995.91	E 551375.75	N 6981826.22	E 551371.51
CD11	165.0	126.3	43°51'58"	N 6981939.21	E 551587.37	46+270.69	N 6981954.09	E 551709.73	46+397.02	N 6981922.01	E 551651.54	N 6982098.59	E 551630.07
CD12	165.0	167.8	58°16'24"	N 6981958.93	E 551718.51	46+407.04	N 6981958.17	E 551879.18	46+574.86	N 6982003.33	E 551799.05	N 6981814.43	E 551798.16
CD13	165.0	19.2	6°39'42"	N 6981479.04	E 552729.25	47+550.66	N 6981470.61	E 552746.48	47+569.84	N 6981474.32	E 552737.62	N 6981622.78	E 552810.27
CD14	165.0	173.1	60°07'03"	N 6981134.69	E 553547.75	48+438.69	N 6981155.73	E 553711.70	48+611.82	N 6981097.77	E 553635.82	N 6981286.85	E 553611.55
CD15	165.0	106.8	37°05'05"	N 6981457.10	E 554106.28	49+108.32	N 6981490.97	E 554205.60	49+215.11	N 6981490.69	E 554150.26	N 6981325.97	E 554206.43
CF1	165.0	142.3	49°24'30"	N 6987190.43	E 541620.63	60+121.42	N 6987129.63	E 541744.43	60+263.71	N 6987188.51	E 541696.52	N 6987025.48	E 541616.45
CF2	733.3	270.7	21°09'04"	N 6986540.06	E 542224.25	61+023.85	N 6986366.03	E 542429.58	61+294.55	N 6986433.88	E 542310.67	N 6987002.92	E 542792.98

1. All units are in meters unless otherwise noted
2. UTM Zone 15 NAD 83
3. Refer to Figures A-1 to A-12 for location of curves in plan



PLAN



PROFILE

0 40 80 120 160 200
HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping
- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

NOTES

1. ROAD WIDTH, FILL AND EMERGENCY SHELTER LOCATIONS ARE NOT SHOWN FOR CLARITY.
2. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
3. ROAD SECTIONS ARE PROVIDED ON FIGURE 4-1.
4. AT CENTER LINE OF ROAD, ADD THICKNESS FOR DRAINAGE/ROAD CROWN.
5. WATERCOURSE CROSSING LOCATIONS TO BE UPDATED DURING DETAILED DESIGN.

REFERENCES

1. BASE DATA OBTAINED FROM COMAPLEX MINERALS CORPORATION. BASE INFRASTRUCTURE AND PITS FROM COMAPLEX 04/12/09 (MELIADINE_PPD_SHAPEFILES_DEC09) AND TIRIGANIAQ PIT IS W24 PIT PROVIDED BY COMAPLEX, FEB 2010. DISPLACEMENT HAZARD MAPPING PROVIDED BY TERRY ROLLERSON (GOLDER, JULY 2009). PROJECTION: UTM ZONE 15 DATUM: NAD 83
2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PLAN AND PROFILE CH. 0+000 TO CH. 4+000

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No. 4700
DESIGN	AS	10NOV10	SCALE AS SHOWN REV. 1
CADD	SRR	10NOV10	
CHECK	CJC	19JAN11	FIGURE A-1
REVIEW	JAH	19JAN11	

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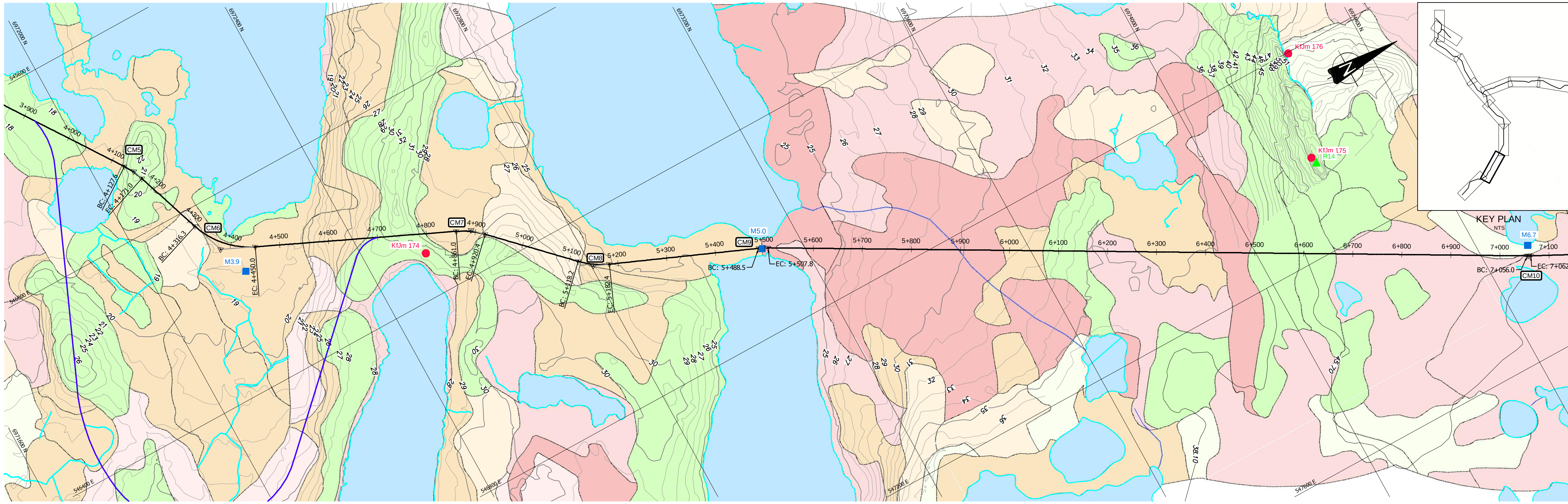
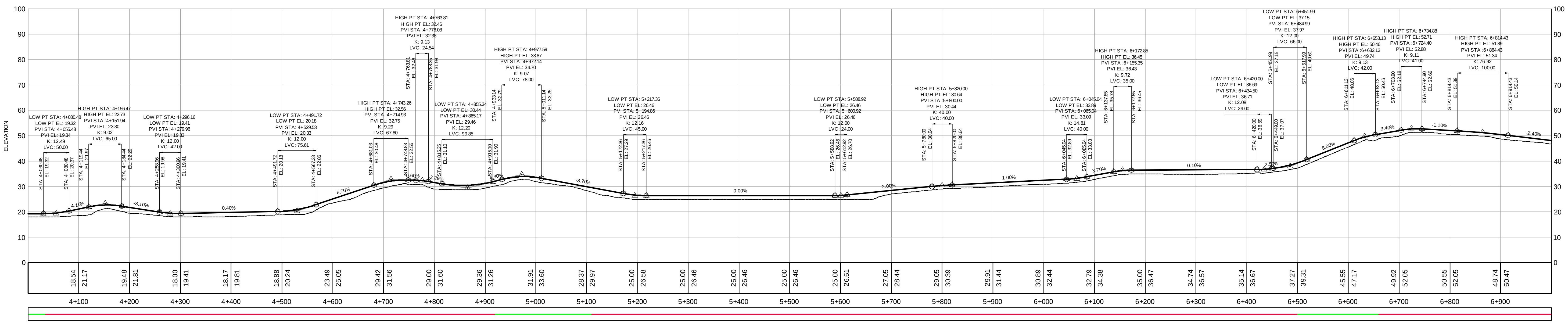


PLAN



PROFILE

0 40 80 120 160 200
HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping
- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

NOTES

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NOT FOR CONSTRUCTION

PROJECT

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

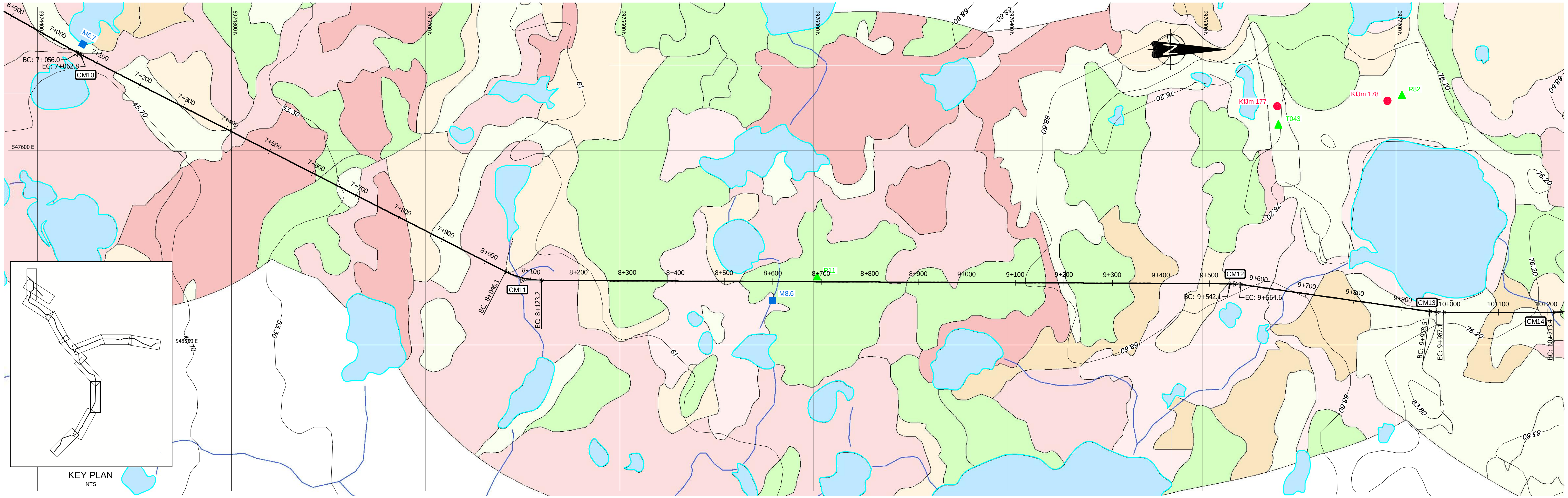
PLAN AND PROFILE
CH. 4+000 TO CH. 7+000

Golder Associates
Greater Vancouver Office, BC

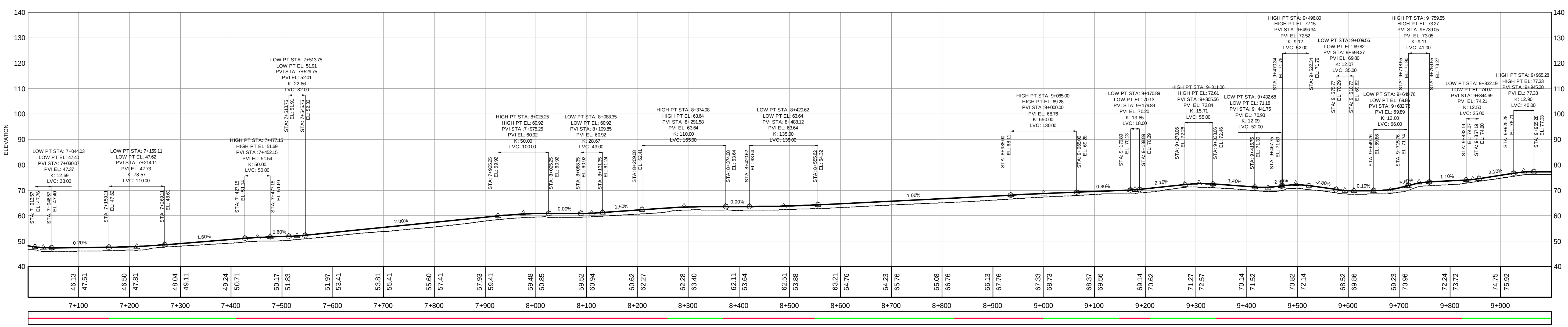
PROJECT No. 09–1426–0015		
DESIGN	AS	10NOV10
CADD	SRR	10NOV10
CHECK	CJC	19JAN11
REVIEW	JAH	19JAN11

PHASE No. 4700
SCALE AS SHOWN REV. 1

FIGURE A-2



PLAN



PROFILE

0 40 80 120 160 200
HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping

- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

NOTES

1. ROAD WIDTH, FILL AND EMERGENCY SHELTER LOCATIONS ARE NOT SHOWN FOR CLARITY.
2. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
3. ROAD SECTIONS ARE PROVIDED ON FIGURE 4-1.
4. AT CENTER LINE OF ROAD, ADD THICKNESS FOR DRAINAGE/ROAD CROWN.
5. WATERCOURSE CROSSING LOCATIONS TO BE UPDATED DURING DETAILED DESIGN.

REFERENCES

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2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PLAN AND PROFILE
CH. 7+000 TO CH. 10+000

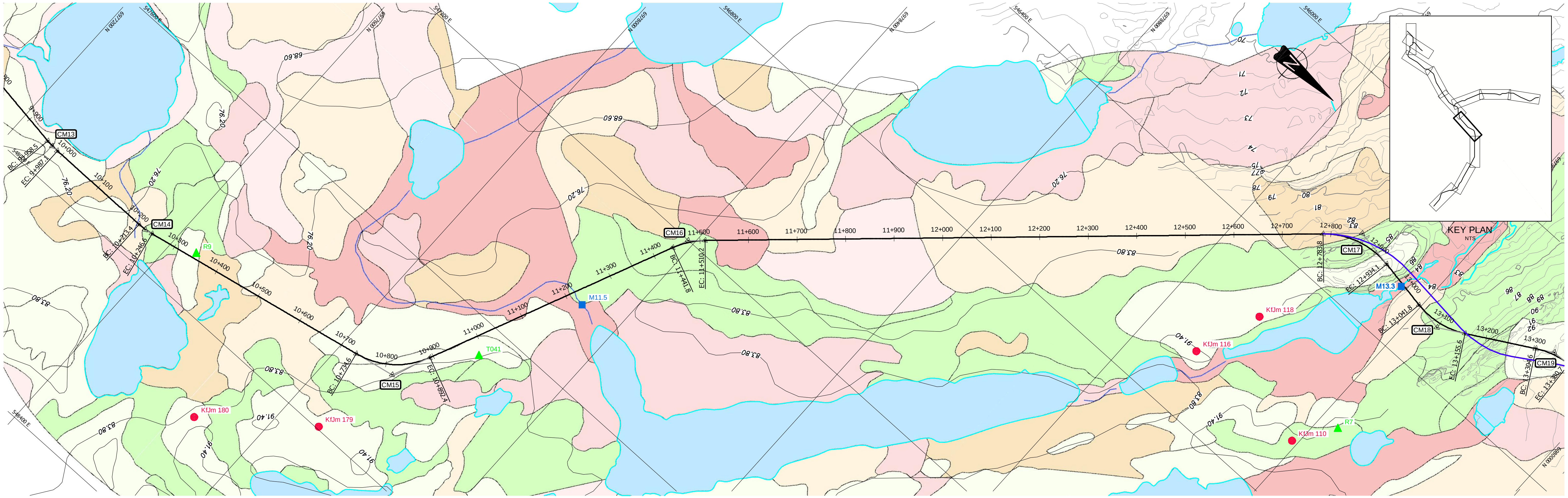
Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015		
DESIGN	AS	10NOV10
CADD	SRR	10NOV10
CHECK	CJC	19JAN11
REVIEW	JAH	19JAN11

PHASE No. 4700
SCALE AS SHOWN REV. 1

FIGURE A-3

Drawing File: N:\Bur-Graphics\Projects\2009\1426\09-1426-0015\Drafting\4700\Rev-0\0914260015-4700-1000-C3D_A-1 to A-12.dwg Wednesday, January 19, 2011 4:35:47 PM By: sreddy



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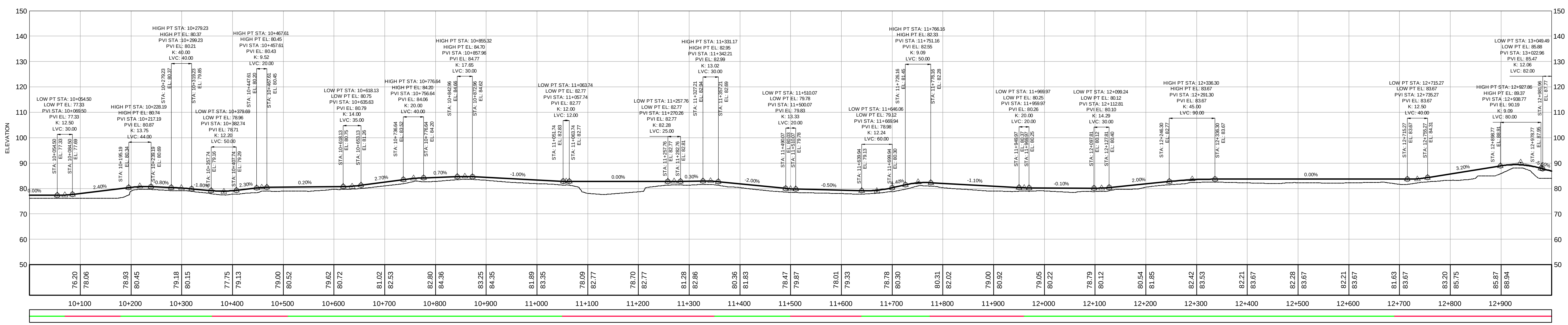

PROFILE

0 40 80 120 160 200

HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping

- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

NOTES

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2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT

AEM

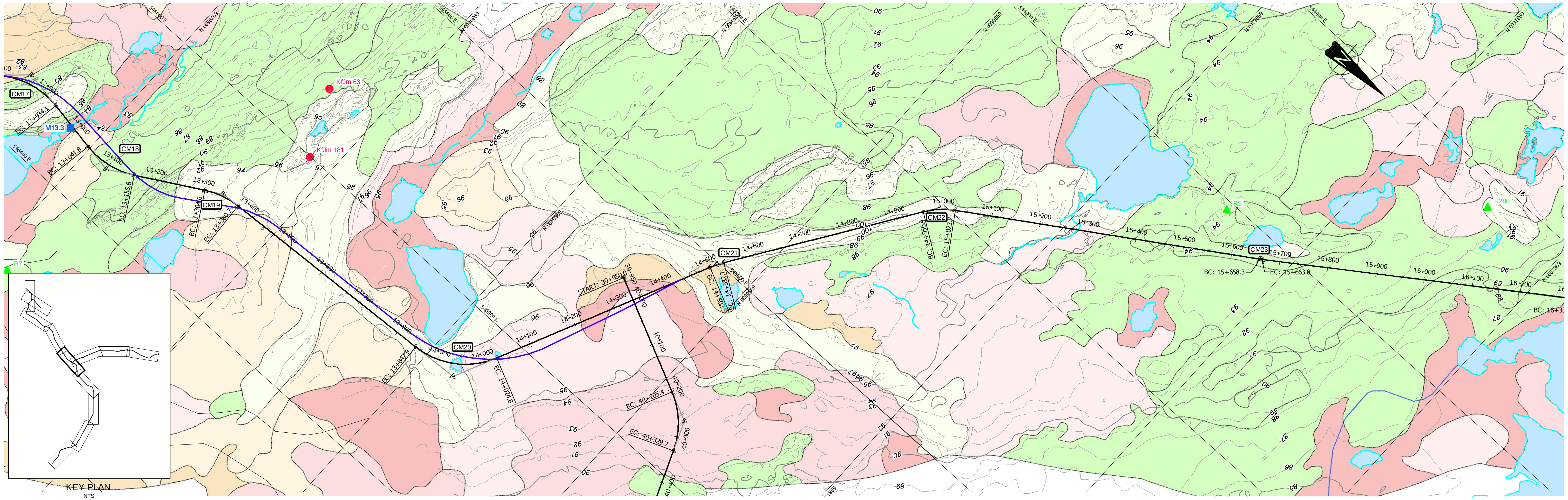
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PLAN AND PROFILE
CH. 10+000 TO CH. 13+000

PROJECT No. 09-1426-0015			PHASE No. 4700
DESIGN	AS	10NOV10	SCALE AS SHOWN REV. 1
CADD	SRR	10NOV10	
CHECK	CJC	19JAN11	FIGURE A-4
REVIEW	JAH	19JAN11	

Golder Associates
Greater Vancouver Office, BC



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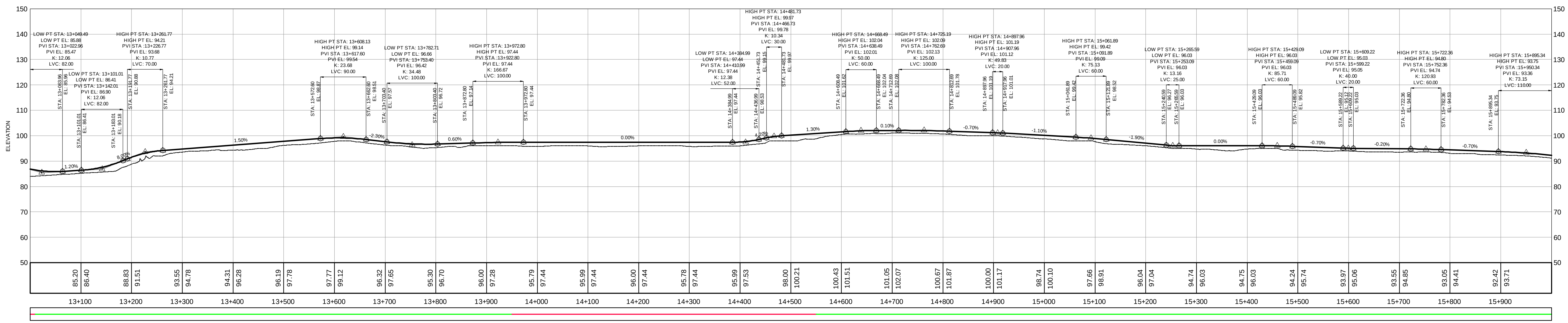

PROFILE

0 40 80 120 160 200
HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping
- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

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2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT
AEM
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
PLAN AND PROFILE
CH. 13+000 TO CH. 16+000

Golder Associates
Greater Vancouver Office, BC

PROJECT	No. 09-1426-0015		PHASE No.	4700
DESIGN	AS	10NOV10	SCALE AS SHOWN	REV. 1
CADD	SRR	10NOV10		
CHECK	CJC	19JAN11	FIGURE A-5	
REVIEW	JAH	19JAN11		

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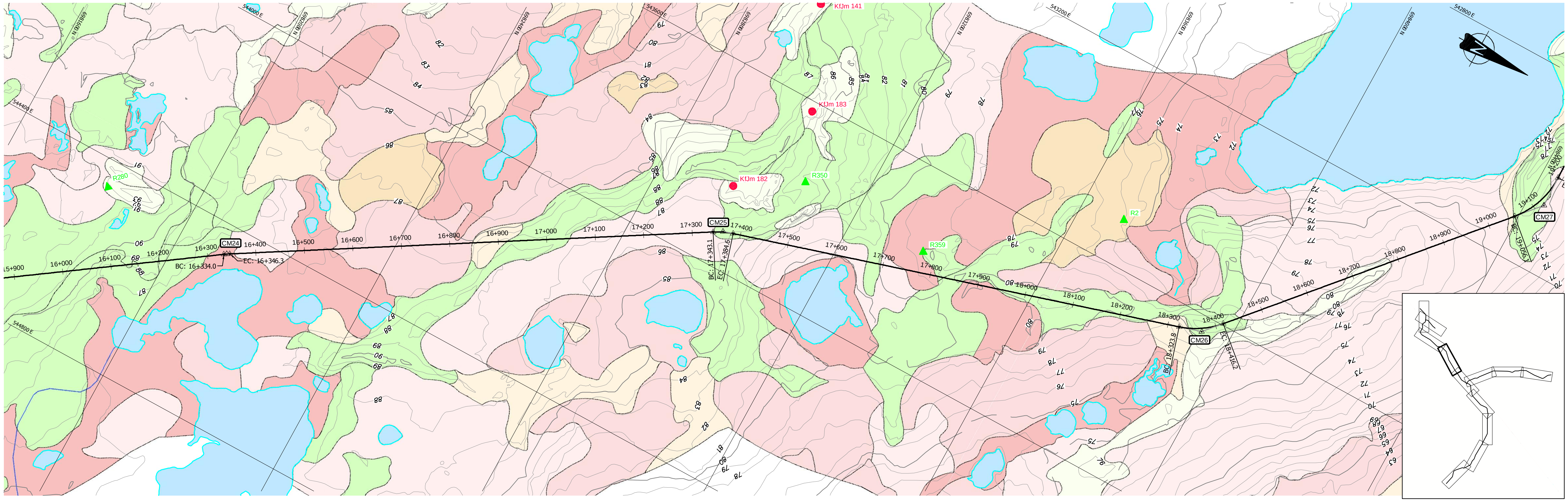
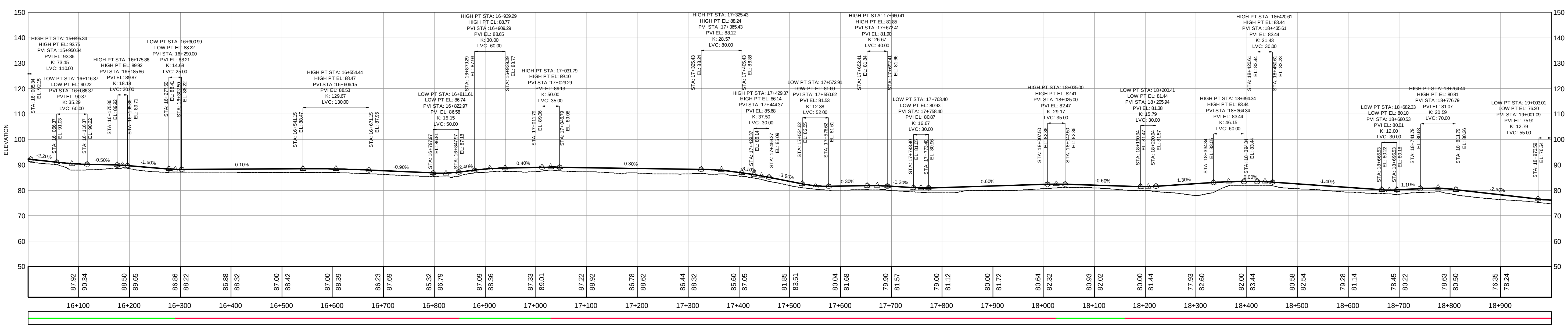


PLAN

KEY PLAN

NTS



PROFILE

0 40 80 120 160 200

HORIZONTAL SCALE IN METRES

VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping

- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

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2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PLAN AND PROFILE CH. 16+000 TO CH. 19+000

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No. 4700	
DESIGN	AS	10NOV10	SCALE AS SHOWN	REV. 1
CADD	SRR	10NOV10	FIGURE A-6	
CHECK	CJC	19JAN11		
REVIEW	JAH	19JAN11		

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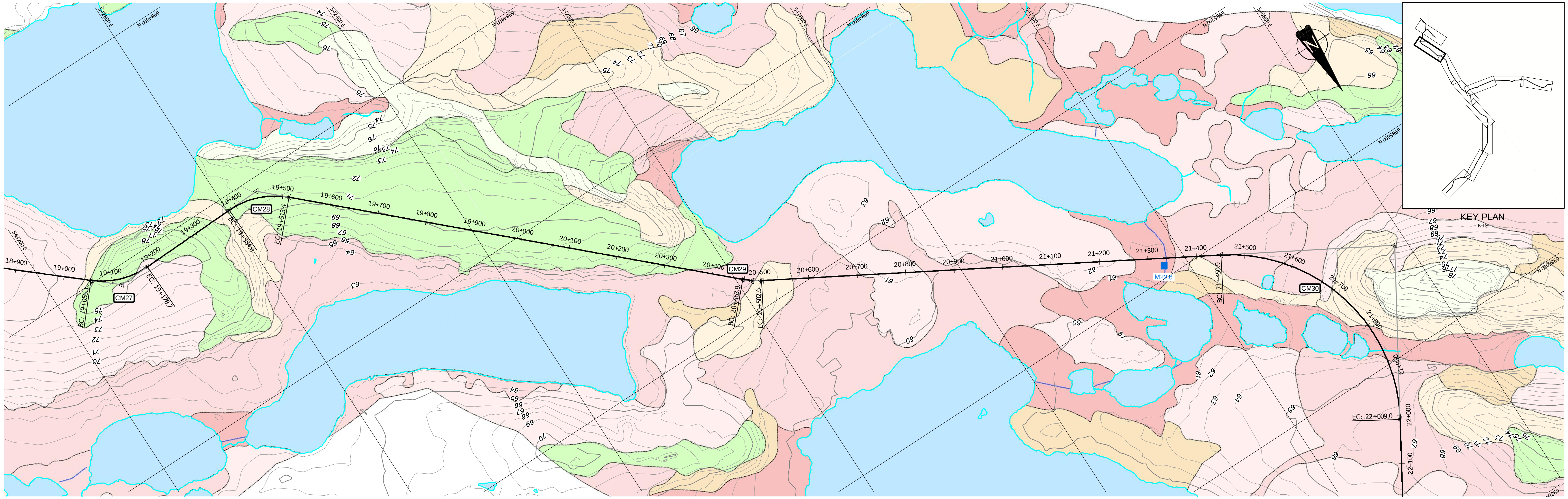

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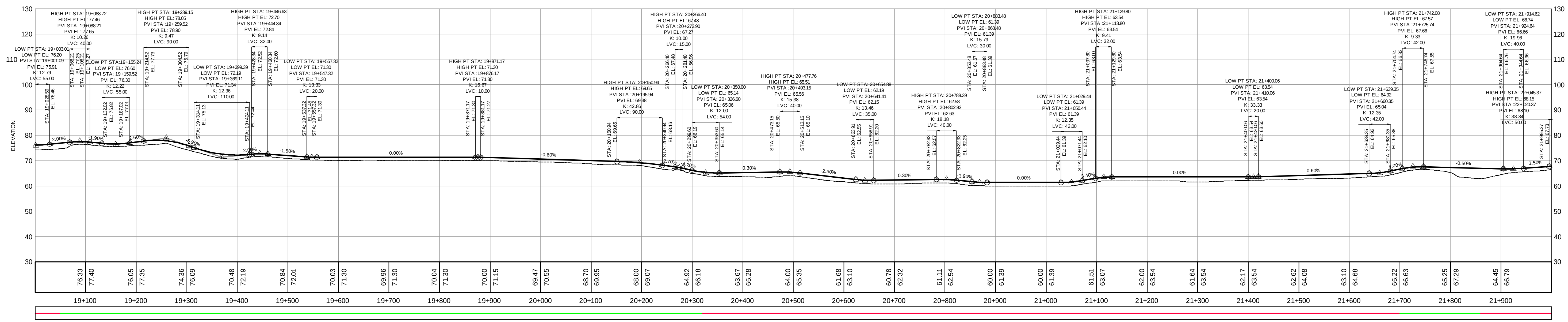

PROFILE

0 40 80 120 160 200
HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping
- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
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- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

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2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

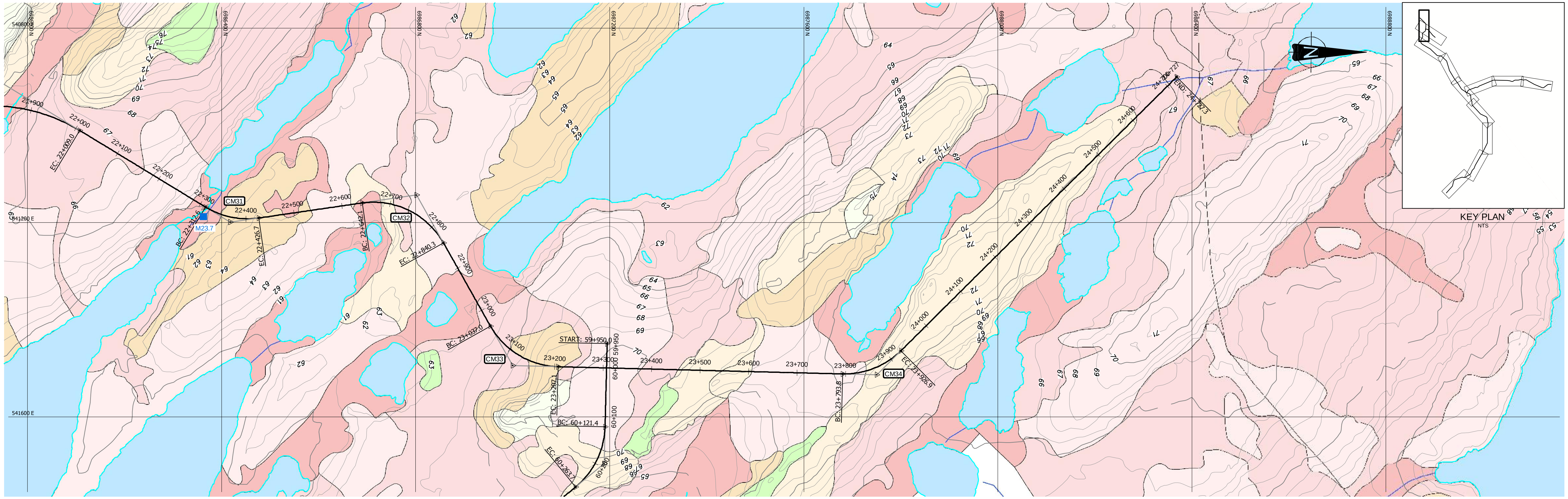
TITLE
PLAN AND PROFILE
CH. 19+000 TO CH. 22+000

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015		
DESIGN	AS	10NOV10
CADD	SRR	10NOV10
CHECK	CJC	19JAN11
REVIEW	JAH	19JAN11

PHASE No. 4700
SCALE AS SHOWN REV. 1

FIGURE A-7



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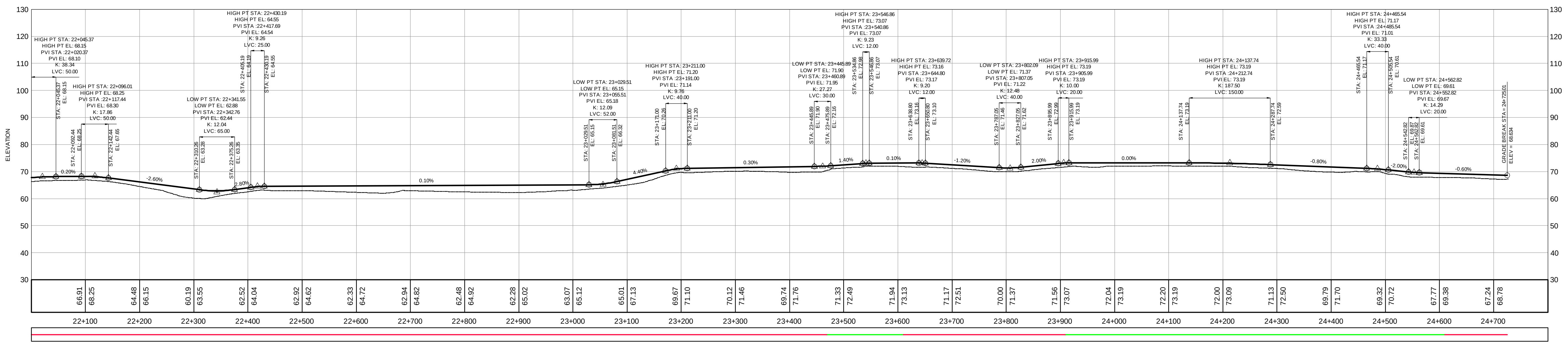

PROFILE

0 40 80 120 160 200

HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping
- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
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- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

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NOT FOR CONSTRUCTION

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PLAN AND PROFILE
CH. 22+000 TO CH. 24+725.01

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No.	4700
DESIGN	AS	10NOV10	SCALE AS SHOWN	REV. 1
CADD	SRR	10NOV10		
CHECK	CJC	19JAN11	FIGURE A-8	
REVIEW	JAH	19JAN11		

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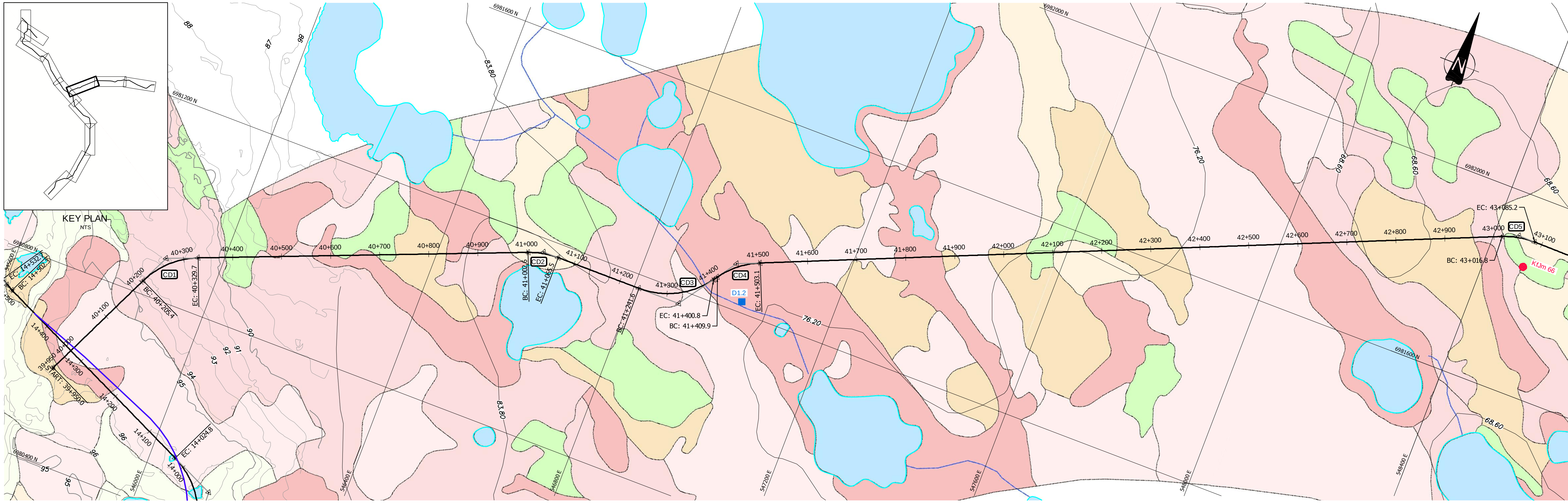
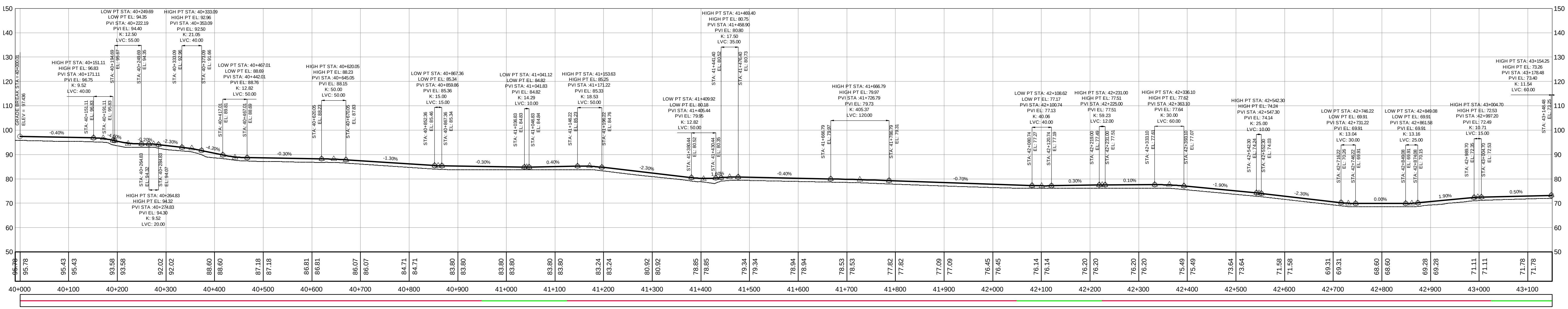


PLAN



PROFILE

0 40 80 120 160 200

HORIZONTAL SCALE IN METRES

VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping

- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

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- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

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NOT FOR CONSTRUCTION

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

PLAN AND PROFILE CH. 40+000 TO CH. 43+150

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015			PHASE No.	4700
DESIGN	AS	10NOV10	SCALE AS SHOWN	REV. 1
CADD	SRR	10NOV10		
CHECK	CJC	19JAN11	FIGURE A-9	
REVIEW	JAH	19JAN11		

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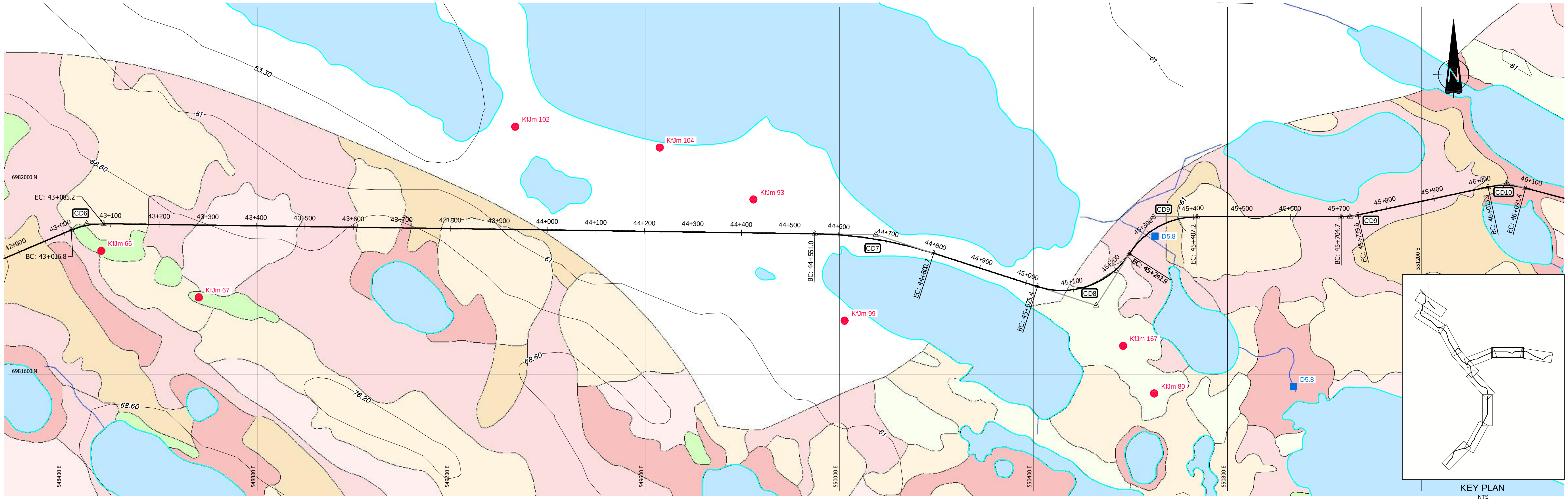

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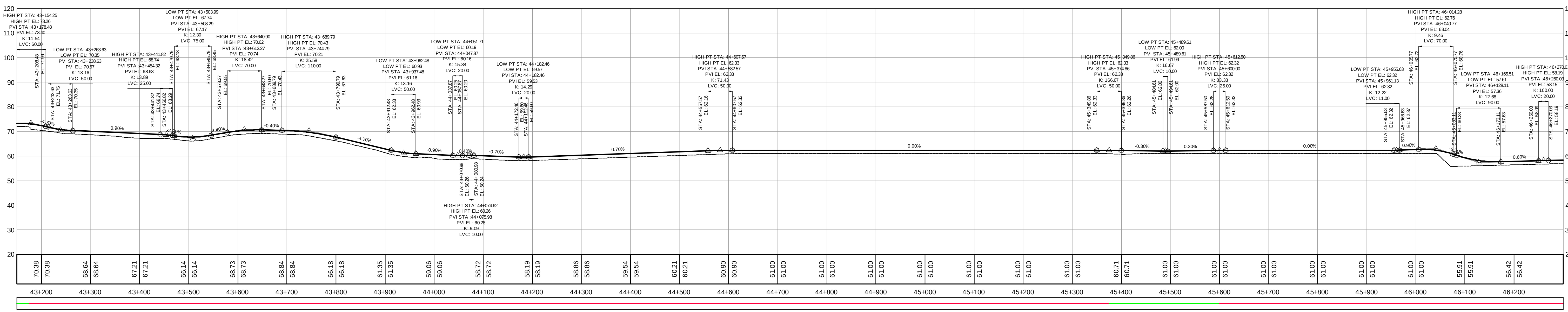

PROFILE

0 40 80 120 160 200
HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse

Displacement Hazard Mapping
- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
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- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

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2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
PLAN AND PROFILE
CH. 43+150 TO CH. 46+300

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09-1426-0015		
DESIGN	AS	10NOV10
CADD	SRR	10NOV10
CHECK	CJC	19JAN11
REVIEW	JAH	19JAN11

PHASE No. 4700
SCALE AS SHOWN REV. 1

FIGURE A-10

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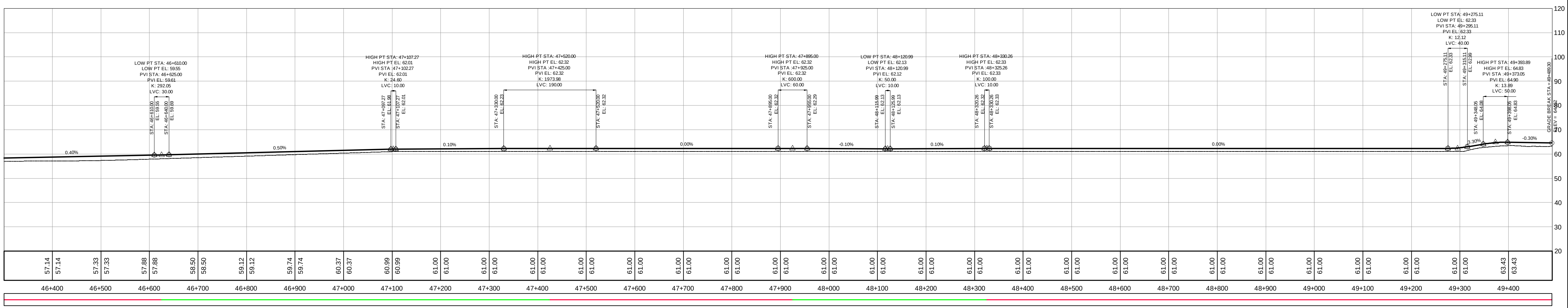
PLAN



PROFILE

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse
- Proposed Open Pit
- Proposed Tailings

Displacement Hazard Mapping

- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

NOTES

1. ROAD WIDTH, FILL AND EMERGENCY SHELTER LOCATIONS ARE NOT SHOWN FOR CLARITY.
2. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
3. ROAD SECTIONS ARE PROVIDED ON FIGURE 4-1.
4. AT CENTER LINE OF ROAD, ADD THICKNESS FOR DRAINAGE/ROAD CROWN.
5. WATERCOURSE CROSSING LOCATIONS TO BE UPDATED DURING DETAILED DESIGN.

REFERENCES

1. BASE DATA OBTAINED FROM COMAPLEX MINERALS CORPORATION. BASE INFRASTRUCTURE AND PITS FROM COMAPLEX 04/12/09 (MELIADINE_PPD_SHAPEFILES_DEC09) AND TIRIGANIAQ PIT IS W24 PIT PROVIDED BY COMAPLEX, FEB 2010. DISPLACEMENT HAZARD MAPPING PROVIDED BY TERRY ROLLERSON (GOLDER, JULY 2009). PROJECTION: UTM ZONE 15 DATUM: NAD 83
2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT

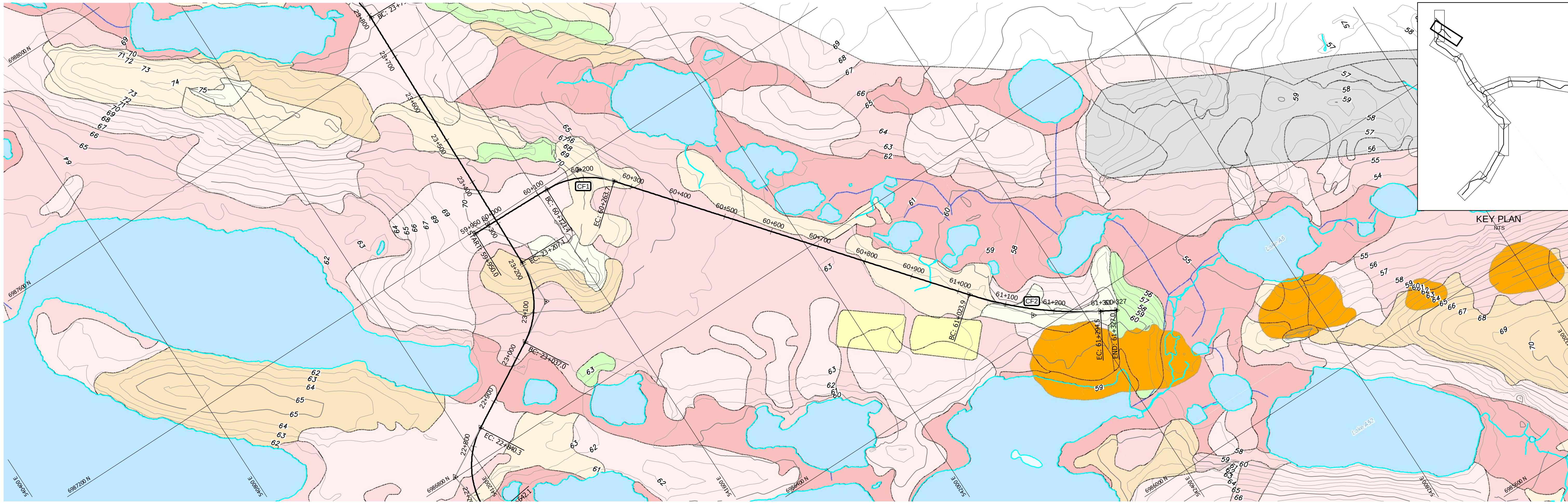
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE

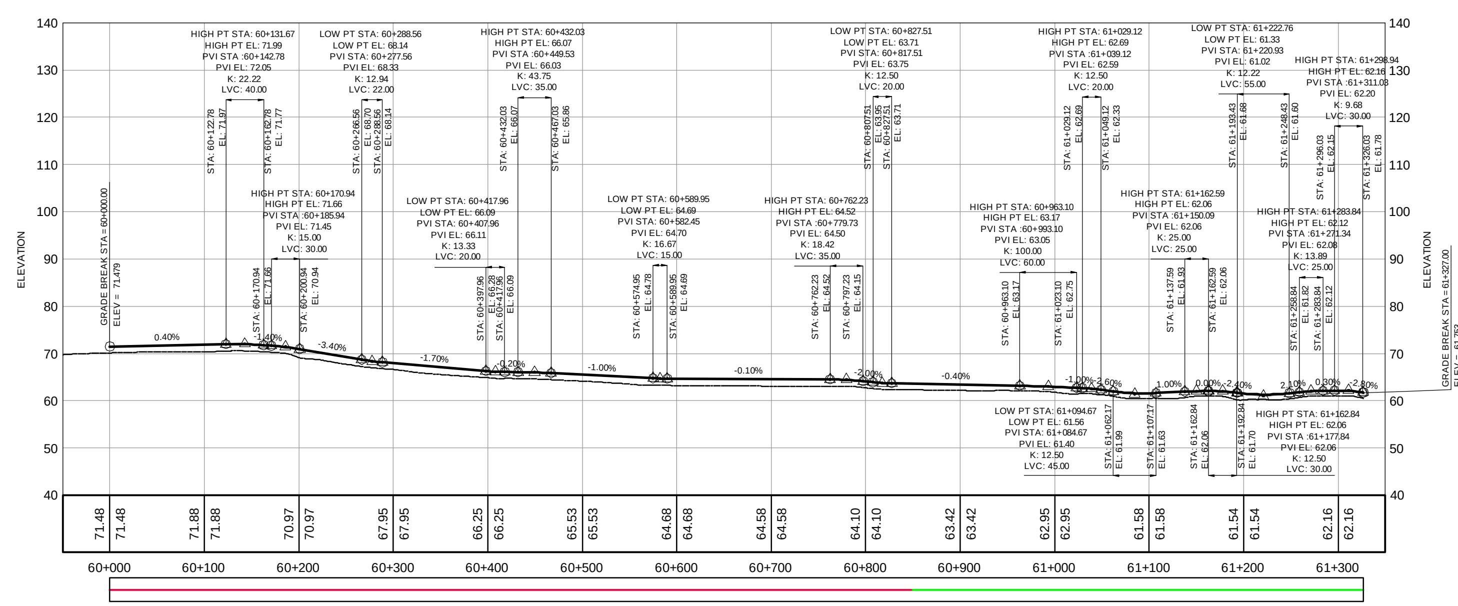
PLAN AND PROFILE
CH. 46+300 TO CH. 49+489.30

Golder Associates
Greater Vancouver Office, BC

PROJECT No. 09–1426–0015			PHASE No.	4700
DESIGN	AS	10NOV10	SCALE AS SHOWN	REV. 1
CADD	SRR	10NOV10	FIGURE A-11	
CHECK	CJC	19JAN11		
REVIEW	JAH	19JAN11		



PLAN



PROFILE

HORIZONTAL SCALE IN METRES
VERTICAL SCALE (5x EXAGGERATION)

LEGEND

- Archaeology Site
- Potential Quarry Location
- Watercourse Crossing
- Watercourse
- Proposed Open Pit
- Proposed Ore Stockpiles
- Proposed Rock
- Storage Facility (RSF)

Displacement Hazard Mapping
- Low
- Low - Medium
- Medium
- Medium - High
- High
- High - Very high
- Very high
- Lake
- Waterbody

- EXISTING MAJOR CONTOUR (5m TOPO - SCHLENCKER DATA)
- EXISTING MINOR CONTOUR (1m TOPO - SCHLENCKER DATA)
- 7.7m EXISTING CONTOUR (NTS MAP SHEET DATA)
- MINIMUM 1.0m ROAD FILL PLACED OVER THAW STABLE SOIL
- MINIMUM 1.3m ROAD FILL PLACED OVER THAW SUSCEPTIBLE SOIL
- CX# HORIZONTAL CURVE ID
- ALTERNATIVE ALIGNMENT PROPOSED BY ASSOCIATED ENGINEERING

NOTES

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2. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS NOTED OTHERWISE.
3. ROAD SECTIONS ARE PROVIDED ON FIGURE 4-1.
4. AT CENTER LINE OF ROAD, ADD THICKNESS FOR DRAINAGE/ROAD CROWN.
5. WATERCOURSE CROSSING LOCATIONS TO BE UPDATED DURING DETAILED DESIGN.

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2. TOPOGRAPHY PROVIDED BY COMAPLEX AS A COMBINATION OF GOVERNMENT ISSUED NTS MAP SHEETS AND DETAIL AERIAL SURVEY (SCHLENCKER DATA).

NOT FOR CONSTRUCTION

PROJECT
AGNICO-EAGLE MINES LIMITED
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
PLAN AND PROFILE
CH. 60+000 TO CH. 61+327

PROJECT No. 09-1426-0015			PHASE No. 4700	
DESIGN	AS	10NOV10	SCALE AS SHOWN	REV. 1
CADD	SRR	10NOV10	FIGURE A-12	
CHECK	CJC	19JAN11		
REVIEW	JAH	19JAN11		

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APPENDIX B

Location of Potential Quarries, Archaeological Sites and Watercourse Crossings

Table B-1. Summary of Archaeological Site, Watercourse Crossings and Potential Quarry Locations

Site Description	Location Identifier	Approximate Chainage	Easting (m)	Northing (m)
Archaeological Sites	KfJm 168	2+750	544620	6971564
	KfJm 169	2+875	544708	6971684
	KfJm 170	2+900	544745	6971626
	KfJm 171	3+000	544867	6971669
	KfJm 172	3+075	544821	6971730
	KfJm 173	3+600	544849	6971862
	KfJm 174	4+800	546312	6972517
	KfJm 176	6+550	546802	6974254
	KfJm 175	6+600	547011	6974193
	KfJm 177	9+600	547508	6976955
	KfJm 178	9+800	547497	6977182
	KfJm 180	10+550	548152	6977875
	KfJm 179	10+750	547995	6978079
	KfJm 116	12+525	546669	6979318
	KfJm 118	12+650	546529	6979367
	KfJm 110	12+750	546674	6979588
	KfJm 63	13+375	545870	6979885
	KfJm 181	13+425	546001	6979949
	KfJm 182	17+375	543833	6982951
	KfJm 141	17+450	543417	6982929
	KfJm 183	17+500	543620	6983020
	KfJm 66	43+100	548479	6981856
	KfJm 67	43+250	548680	6981760
	KfJm 102	43+950	549332	6982112
	KfJm 104	44+225	549630	6982069
	KfJm 93	44+425	549823	6981962
	KfJm 99	44+600	550011	6981712
	KfJm 80	45+150	550649	6981562
	KfJm 167	45+150	550585	6981660
Potential Quarry Locations	R19	1+285	543911	6970400
	R17	3+172	545054	6971604
	R16	4+371	546961	6971947
	R14	6+623	547026	6974196
	R11	8+690	547861	6976006
	043	9+600	547548	6976957
	82	9+850	547487	6977212
	R9	10+345	547899	6977652
	041	10+975	547666	6978227
	R7	13+076	547593	6979642
	R5	15+575	544817	6981426
	280	16+100	544454	6981822
	350	17+500	543755	6983078
	359	17+750	543764	6983360
	R2	18+167	543508	6983691
	046	47+925	553066	6981335
	R1	Not applicable	539585	6989222
Watercourse Crossings Locations	M2.1	2+950	544790	6971714
	M3.0	3+775	545548	6971874
	M3.9	4+450	546167	6972178
	M5.0	5+500	546634	6973123
	M6.7	7+050	547380	6974493
	M8.6	8+600	547909	6975915
	M11.5	11+225	547445	6978314
	M13.3	13+000	546287	6979542
	M22.6	21+325	541245	6985577
	M23.7	22+325	541188	6986363
	D1.2	41+475	547016	6981222
	D5.8	45+300	550651	6981886
	D5.8	45+550	550936	6981576
	D6.7	46+400	551717	6981979

1. Northing and Easting given in NAD 83 UTM Zone 15

APPENDIX C

Road Fill Quantity Estimates

All Weather Access Road

Table C-1. Fill Quantity Estimates

Station	Volume by Kilometer (m^3)	Cumulative Road Fill Volume (m^3)
2+000	15,002	15,002
3+000	12,630	27,631
4+000	15,730	43,361
5+000	21,090	64,451
6+000	14,979	79,429
7+000	17,740	97,170
8+000	14,629	111,799
9+000	14,913	126,712
10+000	13,278	139,990
11+000	13,701	153,691
12+000	26,368	180,059
13+000	19,776	199,835
14+000	17,395	217,230
15+000	14,803	232,033
16+000	12,116	244,149
17+000	14,994	259,144
18+000	18,303	277,447
19+000	23,430	300,876
20+000	13,261	314,137
21+000	13,358	327,495
22+000	17,508	345,004
23+000	24,084	369,088
24+000	15,420	384,507
24+727.27	9,995	394,502
41+000	15,036	409,538
42+000	13,181	422,719
43+000	12,799	435,518
44+000	16,008	451,526
45+000	14,103	465,629
46+000	12,934	478,563
47+000	17,951	496,514
48+000	11,737	508,251
49+000	12,368	520,619
49+489.20	6,716	527,334
61+000	13,982	541,317
61+300	3,401	544,718

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates Ltd.
500 - 4260 Still Creek Drive
Burnaby, British Columbia, V5C 6C6
Canada
T: +1 (604) 296 4200

Golder Associates