2010 Annual Geotechnical Inspection, Doris North Project
Hope Bay, Nunavut

Prepared for:

Hope Bay Mining Ltd.

Prepared by:

SRK Consulting
Engineers and Scientists

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2010 Annual Geotechnical Inspection, Doris North Project, Hope Bay, Nunavut

Hope Bay Mining Ltd.

300, 889 Harbourside Drive
North Vancouver, BC
V7P 3S1

SRK Consulting (Canada) Inc.
Suite 2200, 1066 West Hastings Street
Vancouver, B.C. V6E 3X2

Tel: 604.681.4196 Fax: 604.687.5532
E-mail: vancouver@srk.com Web site: www.srk.com

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Author
Maritz Rykaart, Ph.D., P.Eng.

Reviewed by
Cam Scott, P.Eng.

Executive Summary

The Doris North Project (Project) is a mining and milling undertaking of Hope Bay Mining Limited (HBML), a wholly owned subsidiary of Newmont Mining Company (NMC). The site is located in the Kitikmeot Region of Nunavut, about 170 km southwest of Cambridge Bay. The Project is licensed to conduct mining, milling and associated activities. Construction of the Project started in 2007, and is expected to continue through to 2013. Mine development started in the summer of 2010; however, ore processing is not scheduled until 2013 at the earliest. In addition to supporting ongoing construction activities, the site is currently used to carry out regional exploration.

Site operations are currently conducted under a Type “A” Nunavut Water Board (NWB) License 2AM-DOH0713 (the License), dated September 19, 2007, which entitles HBML (the Licensee) to use water and dispose of waste associated with their operations. HBML contracted SRK Consulting (Canada) Inc. (SRK) to conduct the annual geotechnical site inspection of the Doris North Project in accordance with stipulated License conditions. This investigation was carried out during the week of July 12 – 16, 2010.

Table A below provides a summary of the inspection components and the primary recommendations stemming from the inspection. There were no issues that require urgent and immediate action, and for many of the issues highlighted, HBML site staff had already stated implementation of mitigation measures at the time of the inspection. It should also be noted that since the site is currently under construction many areas will be remediated as part of the current planned construction activities.

Table A: Summary of Inspection Items and Associated Inspection Recommendations

Inspection Item	2009 Recommendations	2010 Recommendations
Thermistors	• Inspect, repair and re-commission inactive thermistors where practical • Collect quarterly thermistor data as a minimum (August, November, February and May) • Consider installing data loggers for select remote thermistors to ease the burden of frequent manual data downloads	• Re-evaluate thermistor requirements taking into considering the surface infrastructure elements currently on site • Continue to collect quarterly thermistor data as a minimum (August, November, February and May) • Consider installing data loggers for select remote thermistors to ease the burden of frequent manual data downloads
Old Lay Down Area	• Relocate the explosives magazines from the tundra vegetation onto the beach • Conduct general cleanup of the site by collecting garbage and other debris and dispose of it in accordance with site waste management protocols	• Relocate the last two explosives magazines from the tundra vegetation onto the beach
Jetty	• Conduct annual survey of the jetty to allow for actual measurement of ongoing settlement • Remind operational staff annually about the operational limitations of the jetty	• Continue to collect quarterly thermistor data as a minimum (August, November, February and May) • Conduct annual survey of the jetty to allow for actual measurement of ongoing settlement • Remind operational staff annually about the operational limitations of the jetty

Inspection Item	2009 Recommendations	2010 Recommendations
Shoreline Lay Down Area	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Ensure that no equipment, supplies or garbage are stored outside the pad footprint	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Roberts Bay Tank Farm	• Monitor overburden ponding immediately above the high wall and construct a new drainage channel in 2010 • Construct a nominal rock containment berm at the downstream toe of the overburden stockpile to mitigate uncontrolled silt release • Install permanent sumps within the secondary containment area to facilitate complete surface water drainage • Install a sump in the jet fuel and hydraulic oil storage area, or re-grade the area to allow free draining off the pad • Install settlement beacons along the fuel transfer station and sections of the secondary containment facility not constructed on bedrock. Monitor the beacons quarterly • Confirm that the secondary containment facility has sufficient storage capacity to allow storage of jet fuel drums inside the containment area	• Monitor overburden ponding immediately above the high wall and construct a new drainage channel in 2011 • Construct a nominal rock containment berm at the downstream toe of the overburden stockpile to mitigate uncontrolled silt release • Install permanent sumps within the secondary containment area to facilitate complete surface water drainage • Install a sump in the jet fuel and hydraulic oil storage area, or re-grade the area to allow free draining off the pad • Install settlement beacons along the fuel transfer station and sections of the secondary containment facility not constructed on bedrock. Monitor the beacons quarterly • Confirm that the secondary containment facility has sufficient storage capacity to allow storage of jet fuel drums inside the containment area
Roberts Bay Lay Down Area	• Construct containment berms around the ANFO storage facility • Ensure that all equipment and supplies are stored completely on the lay down pad footprint • Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor flow from drainage channels beneath pad. If flow stops, the blockage must be traced to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion	• Ensure that all equipment and supplies are stored completely on the lay down pad footprint • Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor flow from drainage channels beneath pad. If flow stops, the blockage must be traced to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion
Airstrip	• Monitor areas where rock was relocated from the tundra for signs of thermal erosion • Maintain the practice of inspecting the runway toe line during freshet and after significant and prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	• Monitor areas where rock was relocated from the tundra for signs of thermal erosion • Maintain practice of inspecting the runway toe line during freshet and after significant or prolonged rainfall events. Pump ponded water to prevent onset of thermal erosion • Conduct daily inspections of the airstrip shoulder to monitor the tension cracks • Relocate the jet fuel and diesel storage and associated secondary containment facilities at least 3 m from the apron shoulder

Inspection Item	2009 Recommendations	2010 Recommendations
All Weather Roads (Doris Site)	• Inspect road toe lines during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion	• Inspect road toe lines during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion
Wash Bay/Explosives Mixing Plant	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Road Lay Down Area/Lower Reagent Pad	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Ponded water should be pumped to prevent onset of thermal erosion • Gravel stockpiles placed on the tundra on the west side of the pad should be relocated	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Ponded water should be pumped to prevent onset of thermal erosion
Quarry #2	• The overburden high wall on the upper bench of the quarry is over steepened and unsafe. Care needs to be taken when mucking out the blast rock in this area, and appropriate signage and barricades needs to be put in place along the quarry access road • A management protocol needs to be put in place to prevent prolonged ponding of water in the overburden pile sedimentation pond	• Continue to follow the Quarry Management Plan
Crusher Pad	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Develop and implement a protocol to ensure that water in the fuel tank secondary containment area is pumped out and managed in an appropriate manner	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Sewage Treatment Plant Outfall	• Develop and implement a long-term solution for discharge of grey water to prevent vegetation dieback and subsequent thermal and physical erosion	• Develop and implement a long-term solution for discharge of grey water to prevent vegetation dieback and subsequent thermal and physical erosion
Quarry # 2 Overburden Dump	• This did not exist in 2009	• No action required
Doris North Camp	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Construct a catch berm at the toe of the high wall and install appropriate signage and barricades to warn people and equipment from coming too close to the high wall • Eliminate ponding above the high wall through pumping or re-grading	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Construct a catch berm at the toe of the high wall and install appropriate signage and barricades to warn people and equipment of the danger • Develop and implement and interim water management plan to collect and discharge surface runoff to bridge the period until the sedimentation pond is constructed

Inspection Item	2009 Recommendations	2010 Recommendations
Doris North Camp Fuel Storage	• These components were not inspected in 2009	• Revisit the secondary containment requirements for fuel tanks on site
Camp Overburden Pile	• Develop and implement a protocol to monitor and manage ponded water at the toe of the overburden pile	• This pile was levelled and covered and therefore no longer exist
Quarry #4	• Re-slope and clad the overburden high wall • Pull back, re-slope and clad the overburden above the rock high wall • Scale the rock high wall and construct a catch berm at its base • Relocate the equipment above the high wall to get it off the tundra	• The Doris North Camp is being constructed within the confines of this quarry. It no longer exist as a separate inspection item
Matrix Camp	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	• This pad has been covered by the Doris North Camp
Doris Fresh Water Intake	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Doris-Windy All Weather Road	• This did not exist in 2009	• Inspect road toe lines during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion
Doris-Windy All Weather Road Stream Crossings	• This did not exist in 2009	• The crossings were not constructed at the time of the inspection. No action required
Quarry A	• This did not exist in 2009	• Continue to follow the Quarry Management Plan
Quarry B	• This did not exist in 2009	• Continue to follow the Quarry Management Plan
Quarry D	• This did not exist in 2009	• Continue to follow the Quarry Management Plan

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1 Introduction

1.1 Inspection Requirement

The Doris North Project (Project) is a mining and milling undertaking of Hope Bay Mining Limited (HBML), a wholly owned subsidiary of Newmont Mining Company (NMC). The site is located in the Kitikmeot Region of Nunavut, about 170 km southwest of Cambridge Bay (with general coordinates of latitude 68°09’N and longitude 106°40’W, as shown in Figure 1).

The Project is licensed to conduct mining, milling and associated activities. HBML temporally delayed mine development pending re-evaluation of project economics and therefore much of the licensed infrastructure components have not been constructed, as illustrated in Figures 2 and 3. Construction of the Project started in 2007, and is expected to continue through to 2013. Mine development started in the summer of 2010; however, ore processing is not scheduled until 2013 at the earliest. In addition to supporting ongoing construction activities (Figure 4), the site is currently used to carry out regional exploration.

Site operations are currently conducted under a Type “A” Nunavut Water Board (NWB) License 2AM-DOH0713 (the License), dated September 19, 2007, which entitles HBML (the Licensee) to use water and dispose of waste associated with their operations. Part J, Items 18 and 19 of the License states the following:

“18. The Licensee shall ensure that a geotechnical inspection is carried out annually between July and September by a Geotechnical Engineer. The inspection shall be conducted in accordance with the Canadian Dam Safety Guidelines where applicable and take into account all major earthworks, including the following:

- *a. North and South Dams;*
- *b. Geotechnical instrumentation and associated monitoring data;*
- *c. Tailings Impoundment Area shoreline and erosion strip monitoring results;*
- *d. Emergency Dump Catch Basins;*
- *e. All weather access roads;*
- *f. Roberts Bay Jetty;*
- *g. Landfill;*
- *h. Landfarm;*
- *i. Fuel Storage and Containment Facilities at the Plant site and Roberts Bay site;*
- *j. Sedimentation Pond;*
- *k. Pollution control Pond;*
- *l. Sumps;*
- *m. Underground mine openings;*
- *n. Groundwater conditions underground; and*

o. *Rock temperature measurements and groundwater inflow in the underground mine workings.*

19. *The Licensee shall submit to the Board within sixty (60) days of completion of the geotechnical inspection, the Geotechnical Engineer's inspection report. The report shall include a cover letter from the Licensee outlining an implementation plan addressing each of the Geotechnical Engineer's recommendations."*

In fulfillment of these regulatory requirements, Mr. Chris Hanks, Director for Environment and Social Responsibility (ESR) from HBML, requested that SRK Consulting (Canada) Inc. (SRK) conduct the 2010 geotechnical site inspection. This report provides a summary of the conditions observed and the resulting mitigation recommendations. This is the second formal annual geotechnical inspection carried out for this site in fulfillment of the stipulated Water Licence Condition. The first inspection conducted in 2009 was also completed by SRK (SRK 2009e).

A 10 km all-weather road linking the Doris Camp and the Windy Camp is under construction. This road does not fall under the Doris North Water Licence; however, the water management plans for the three rock quarries along the road is administered through the NWB. HBML therefore requested that the geotechnical inspection include the all-weather road.

It should be noted that most of the site is still under construction, and as a result, many of the elements listed for inspection under the Water Licence has not yet been constructed and are therefore not reported on. This is illustrated in Figure 2.

1.2 Report Structure

Section 2 of this report provides a brief summary of the site history and physical conditions to provide context for the report content. Inspection conditions are described in Section 3 and an overall summary of recommendations is provided in Section 4. All elements of the site discussed in this report are presented on the enclosed figures, which includes a detailed photo log. Details pertaining to the site thermistors are presented in the Appendices.

1.3 Disclaimer

This report and the opinions and conclusions contained herein ("Report") contains the expression of the professional opinion of SRK Consulting (Canada) Inc. ("SRK") as to the matters set out herein, subject to the terms and conditions of the agreement dated September 2008, HBML Professional Services Agreement (HBML.BOC.CM.PSA.003) (the "Agreement") between SRK and Hope Bay Mining Ltd. ("Hope Bay Mining"), the methodology, procedures and sampling techniques used, SRK's assumptions, and the circumstances and constraints under which Services under the Agreement were performed by SRK. This Report is written solely for the purpose stated in the Agreement, and for the sole and exclusive benefit of Hope Bay Mining, whose remedies are limited to those set out in the Agreement. This Report is meant to be read as a whole, and sections or parts thereof should thus not be read or relied upon out of context. In addition, this Report is based in part on information not within the control of SRK. Accordingly, use of such Report shall be at the user's sole risk. Such use by users other than Hope Bay Mining and its corporate affiliates shall constitute a release and agreement to defend and indemnify SRK from and against any liability (including but not limited to liability for special, indirect or consequential damages) in connection with such use. Such release from and indemnification against liability shall apply in contract, tort (including negligence of SRK whether active, passive, joint or concurrent), strict liability, or other theory of legal liability; provided, however, such release, limitation and indemnity provisions shall be effective to, and only to, the maximum extent, scope or amount allowable by law.

2 Site Conditions

2.1 Site History

A brief summary of the site history is listed in Table 1.

Table 1: Summary of Pertinent Site Ownership History

Period	Comment
1964	Sporadic exploration in the Hope Bay area begins, resulting in several gold and silver showings including Ida Point, Ida Bay and Roberts Lake.
1970	Roberts Bay Mining explores the area for about a decade up to 1980.
1977	Noranda begins exploring for volcanogenic massive sulphide deposits. They leave the belt in 1990. Prior to 1980, Roberts Bay Mining also explored the area.
1987	Abermin Corporation stake claims in the vicinity of Spyder- and Doris Lakes. After completing some exploration, they allow their claims to expire.
1988	BHP Minerals Canada Inc. (BHP) explores the southern portion of Hope Bay Volcanic Belt.
1991	BHP acquires a contiguous block of claims covering about 1,106 square kilometres.
1992	BHP commences exploration drilling at the Boston property.
1996 and 1997	BHP complete 2,300 m of underground development, underground exploration (drilling and sampling) and bulk sampling of the Boston deposit.
1999	BHP sells all its interests in the Hope Bay Belt to Hope Bay Joint Venture (HBJV), a 50:50 joint venture between Hope Bay Gold Corporation Inc. (formerly Cambiex Exploration Inc.), and Miramar Hope Bay Limited (MHBL), a wholly owned subsidiary of Miramar Mining Corporation (MMC).
2002	Hope Bay Gold Corporation Inc. formerly merges with MMC, and the Hope Bay site is operated under MHBL.
2003	MHBL completes a feasibility study to develop the Doris North Project as a small high grade underground mine.
2005	MHBL completes an Environmental Assessment (EA) for the Doris North Project.
2006	MHBL receives an approved and signed Project Certificate for the Doris North Project.
2007	The Doris North Project Water Licence is issued, and construction of the Doris North Project commences.
2008	Hope Bay Mining Limited (HBML), a wholly owned subsidiary of Newmont Mining Corporation (NMC) buys out all interests in the Hope Bay Belt from MMC. HBML announces a delay in the construction of the Doris North Project. Construction of select surface infrastructure continues, but mine development is not started.
2009 to 2010	Construction of select surface infrastructure elements of the Doris North Project continues. Mine development is started in the summer of 2010.

2.2 Site Infrastructure

The Doris North Project site is located on a narrow north-south trending stretch of land spanning approximately 8 km long and 3 km wide from Roberts Bay in the north to the southern end of Tail Lake in the south, as illustrated on Figures 2, 3 and 4. Outside of this area, immediately to the north-west along the Roberts Bay shoreline, there is a beach which has historically been used as a barge landing site and lay down area. This beach is not permanently connected to the Project, since its only link to the greater site is a seasonal ice-road constructed over the Roberts Bay sea ice.

At the north end of the Project there is a jetty and shoreline lay down area. An all-weather road connects these facilities to the Roberts Bay lay down area and primary fuel tank farm which has been constructed in the disused Quarry #1. The all-weather road continues south from this lay down area towards the camp, about 4 km further along. Part of this road has been widened for use as an all-weather airstrip. Between the camp and the airstrip, there is a spur road heading east towards a pad housing the wash bay and explosives mixing plant. Further along the road heading towards the camp, there is a large lay down area and the Lower Reagent pad which is currently used as the operational base for the exploration drilling contractor, as well as general equipment and supply storage.

Beyond the road lay down area, there is a spur road servicing an active construction rock quarry (Quarry #2). This spur road also serves as an access to the construction crusher complex and stockpile area, as well as the primary overburden pile.

The camp area, also known as Quarry #4, consists of multiple tiered foundation pads, cut partially into bedrock. The westernmost pad contains the two camps, sewage treatment plant, fire water tank and other miscellaneous camp services. The lower tier houses the site power plant, fuel storage, as well as warehousing and exploration support facilities. Moving east a pad is under construction for a large fuel tank farm, and along the easternmost end of the site two pads that will support underground mining activities are under construction. The all-weather road running along the south of the site acts as the construction stage sediment control berm for the site. This road links the camp area to Doris Lake, where the fresh water intake is located for the camp potable water supply.

A helicopter support base is located due south of the camp, at the junction from where the 10 km long Doris-Windy all-weather road starts. This road meanders due south along high ground, passing by three construction quarries as illustrated in Figure 3.

2.3 Climate

The project area has a low arctic eco-climate with a mean annual temperature of -12^{o}C with winter (October to May) and summer (June to September) mean daily temperature ranges of -50^{o}C to +11^{o}C and -14^{o}C to +30^{o}C, respectively. The mean annual precipitation is about 207 mm, with just over one third of that falling as snow. Significant and persistent site winds, results in substantial snow redistribution throughout the season, which often leads to protected slopes having almost year round snow cover. The annual lake evaporation (typically occurring between June and September) is estimated at about 220 mm.

2.4 Regional Geology

During the Quaternary period, the region was subjected to multiple glaciations. The north-western sector of the vast Laurentide Ice Sheet covered the area during each glaciation, and the present day landscape provides clear evidence of the most recent (Late Wisconsin) glaciation. Striations, orientation of eskers, grooves and drumlins indicate that the predominant glacial ice movement was north-northwest (EBA 1996).

The ice disappeared about 8,800 years ago leaving a blanket of basal till. The sea level was about 200 m higher than present immediately following de-glaciation. At that time, the project area was submerged and the edge of the ice sheet abutted the open sea. Melt water streams from the ice carried fine grained sediments towards the sea, resulting in the accumulation of marine sediments on top of the till, with the greatest accumulation in deeper water zones, which now form the valley bottoms (EBA 1996).

Isostatic rebound after de-glaciation resulted in emergent landforms, and during this process all parts of the land were washed by waves. The easily erodible marine sediments, till and glacio-fluvial sands and gravels were subsequently reworked by waves, currents and sea ice. This has resulted in the present day outcrops where thin soil veneers were washed off the uplands and deposited in the valley bottoms. Since emergence, the natural effects of slope processes, frost action and permafrost have transformed the landscape to its present day shape (EBA 1996).

2.5 Permafrost and Geotechnical Conditions

There have been numerous subsurface geotechnical investigations in the area, and SRK (2009a) provides a comprehensive summary of this information. The area is characterized by extensive areas of bedrock outcrop zones transitioning to deep overburden soils at the contact zones. Geotechnical laboratory testing (moisture contents, Atterberg Limits, grain size distribution, pore water salinity, strength, permeability, mineralogy, thermal conductivity, bulk density, Proctor density and consolidation) on disturbed and intact samples collected during the various field campaigns confirms that overburden soils are comprised mainly of ice-rich, saline marine silt and clay ranging in thickness from 5 to 35 m. Isolated historic beach deposits containing small amounts of sand are present. Bedrock generally consists of competent basalt, and the interface zone between overburden and bedrock are typically associated with a relatively small rubble zone.

The area is completely within the cold continuous permafrost region of Canada, and site specific thermistor data, dating back to 2003 confirm the average surface ground temperature is about -9^{o}C. The active layer is somewhat variable, but is typically about 1 m thick, and the depth of zero annual amplitude is about 10 m. Based on data from a deep thermistor installed in 2003, total permafrost depth is estimated to be about 570 m.

3 Inspection Conditions

3.1 General

Mr. Maritz Rykaart, P.Eng., Ph.D., a Principal Geotechnical Engineer with SRK, conducted the geotechnical inspection during the week of July 12-16, 2010. The detailed site inspection was carried out on foot, after conducting a reconnaissance fly-over of the site via helicopter. SRK Staff Consultant Mr. John Kurylo participated in the inspection. Ms. Jill Turk, the HBML Environmental site representative, did not accompany SRK on the inspection but was available for questioning.

Weather conditions during the inspection were cool but sunny with light winds, but no precipitation. A photo log of the inspection has been incorporated into the figures accompanying this report.

3.2 Thermistors

Figure 5 presents a location map of all 36 Project area thermistors installed between 2002 and 2010. 24 of these strings are still active (Appendix B), while 12 are inactive (Appendix A). There are also a number of historic thermistor installations dating back to the 1990's (SRK 2009a); however, data from these cables are not reported in this document.

In the Project area, the bulk of the thermistors are less than 20 m deep, with the exception of five thermistors at an approximate depth of 50 m (SRK-38, SRK-39, SRK-40, SRK-42 and SRK-43), and three deeper thermistors (SRK-50 @ 200m, 08TDD632 @ 350 m and TDD-242 @ 70 m).

Based on about five years of data from the thermistor in SRK-50, the geothermal gradient below a depth of 90 m is about 10.9°C/km, which in turn implies a depth of permafrost of about 570 m in the area of the drill-hole. Using one year of data from the thermistor in drill hole 08TDD632, the geothermal gradient below a depth of approximately 90 m is about 17.9°C/km, which in turn implies a depth of permafrost of about 435 m in the area of that drill-hole. Another deep string (about 70 m long) was installed in drill hole TDD-242 in 2000. Golder (2001) presents data from this string, but reports that this data is likely unreliable due to an unidentified malfunction, and has thus not been used in any assessments of the deep thermal gradient.

The numerous shallow thermistors (5 to 20 m deep), some with data spanning more than seven years, consistently show an active layer of about 1 m thick and a depth of zero annual amplitude of about 10 m. The surface permafrost temperature is consistently about -9^{o}C.

Two thermistors were installed through the jetty into submarine permafrost in 2009 (SRK 2009b). Data from these strings supports an observation that the submarine permafrost has similar trends to onshore conditions.

There are no data loggers connected to any of the project thermistors. HBML ESR and survey staff collects manual readings at roughly monthly intervals. This data is forwarded to SRK, who maintains a database with the relevant information.

Recommendations:

1. Re-evaluate thermistor requirements taking into consideration the surface infrastructure elements currently on site. Where appropriate inactive thermistors should be inspected, and where practical they should be repaired and re-commissioned.

2. The thermistor monitoring frequency should be formalized. Ideally monthly readings should be targeted; however, site operational demand may not allow for this. As a minimum, quarterly readings should be taken, with the readings scheduled around the maximum thermal activity expected in the area, i.e., late August (maximum thaw depth), late November, late February (maximum frost), and late May.

3. Consideration should be given to installing data loggers on some of the remote thermistors to ease the burden of frequent manual data downloads.

3.3 Old Lay Down Area

Prior to construction of the Doris North Project jetty, barges resupplying the site were beached at a location along the western shore of Roberts Bay (see Figures 2 and 4). This area has sufficiently deep water to allow barges to be pushed up onto the shore for safe offloading. Once offloaded, supplies and equipment were stored on the beach until such time that there was sufficient sea-ice and snow to construct an ice road to allow transport of the supplies and equipment to their final destination on the belt.

HBML used this facility during early construction stages of the Project, and may continue to use this facility for the life of the project for offloading of heavier loads which exceed the design capacity of the Roberts Bay jetty.

During the 2007 to 2010 construction seasons, this site was primarily used for storage of construction explosives, in five (two added in 2009) self-contained Type-4 magazines. At the time of the inspection, these three magazines were still located at this site (see Figure 4). During winter time, explosives are transported to their intended areas of use via an explosives truck on an ice road, and during the summer period, explosives are transported via helicopter.

The beach landing site is a large un-vegetated sandy area, and there have been no surface improvements to the site since it was first used in the 1990’s.

At the time of the inspection two explosives magazines were located on the perimeter of the beach area, partially on tundra vegetation, while the remaining three were on the unvegetated beach area.

Given the short growth season in the area, SRK recommends that these two magazines be relocated to avoid permanent vegetation damage, which may lead to permafrost degradation.

All remaining fuel drums and other garbage that was at this location in 2009 have been removed and other than the explosives magazines the site is clean. The beach is covered in wheel tracks; however, given the sandy nature of the beach, and the fact that there have been no signs of physical and/or thermal erosion, there are no concerns associated with these ruts.

Recommendations:

1. Relocate two explosives magazines to an area where it is on the sandy beach as opposed to partially on the tundra vegetation.

3.4 Roberts Bay Jetty

The jetty was constructed in the summer of 2007, and was put in use for the first time in August 2007. It is used as a berthing facility from which to offload barges during the annual resupply sealift. This jetty is designed to replace the use of the old lay down area for normal resupply operations of the Project.

Foundation conditions beneath the jetty are very weak, and as a result the jetty is subject to extensive consolidation settlement (SRK 2004, 2005a, b, 2006). This settlement was expected, and to facilitate more controlled settlement, the rock fill structure was underlain by a double layer of geogrid placed directly onto the seabed. The jetty was originally designed to extend a total length of 103 m from the shoreline, such that the barges could berth in 5 m deep water; however, during construction, and due to very weak foundation conditions in the deep water, the front section of the jetty slumped. The design was subsequently modified to allow berthing in shallower water (about 2 m deep), which resulted in a slightly shorter overall jetty length (SRK 2009c, d).

Extensive settlement monitoring of the berthing face of the jetty was undertaken in 2007, and by the summer of 2008, the jetty was observed to have settled about 0.5 m, in accordance with original design expectations (SRK 2005a). Subsequently the jetty was raised in the summer of 2008 to ready the facility for the 2008 sealift. No further settlement monitoring was undertaken after this, and no further raising of the jetty was required prior to the 2009 sealift. Further levelling and raising of the jetty was done prior to the 2010 sealift; however, no surveys were available to confirm how much settlement had occurred. Observational information suggests that since the last repairs have been made the settlement had likely reached steady state.

A significant portion of the jetty has been constructed on submarine permafrost, and in accordance with a Water Licence stipulation, HBML installed two thermistors to confirm the presence of this condition. These thermistors were installed by HBML in March 2009 under supervision of SRK (SRK 2009b), and the data was reported in Section 3.2.

The 2010 geotechnical inspection of this structure revealed no cause for concern (Figure 6). There were no obvious signs of distress anywhere on the structure, and based on these observations, supported by verbal descriptions from site staff, settlement appears to have reached steady state. The SRK inspector has inspected the jetty annually since construction, and no visual differences could be observed since the 2009 inspection, other than the fact that the facility was raised and levelled. SRK imposed strict design and operational limitations on the use of the jetty due to the weak foundation conditions (SRK 2005a, 2009c, d), and based on observations, supported by staff interviews, HBML are following these recommendations carefully.

An annual bathymetric survey is required around the jetty perimeter in support of fish habitat compensation measures. It would be useful to include an annual resurvey of the jetty at that time to evaluate how much ongoing settlement is happening.

SRK understands that HBML is planning extensive upgrades to the jetty in 2011, which would improve the off-loading weight restrictions of the existing structure, as well as prolong its design life while reducing the maintenance requirements.

Recommendations:

1. An annual survey of the jetty should be carried out at the same time the bathymetric survey around the jetty is carried out. This would allow for actual measurement of ongoing settlement. Should the proposed modifications to the jetty go ahead, the commencement of the annual survey could be deferred until 2012.

2. Operational staff responsible for the operation and maintenance of the jetty should be reminded annually of the operational limitations of the jetty imposed by its design. Excessive loading may result in catastrophic failure. Should the proposed jetty modifications be carried out, these limitations would no longer apply.

3. Continue monitoring the jetty thermistors in accordance with the protocols stipulated in Section 3.2.

3.5 Shoreline Lay Down Area

A small lay down area has been constructed adjacent to the jetty. This area was initially used for the construction office facilities, but is currently used to stage equipment, supplies and garbage which will be backhauled via the annual sealift return barges (see Figure 6). The area consists of one large triangle shaped pad, connected via a short all-weather road to the construction phase helipad (now used as lay down area), and a short spur road further west (intended to join up with a mooring bollard, but that was not constructed). All these elements are thermal rock fill pads between 1 and 2 m thick placed directly on the tundra. The main lay down pad was constructed in the winter of 2006/2007 to final design grade; however, the road spurs were only constructed as tote roads at that time. The roads were completed to design grade, and the helipad constructed during the summer of

2007. The access road between the jetty and the Roberts Bay lay down area was widened during the 2010 construction season to facilitate barge off-loading activities.

Although this seasonal construction technique is not desirable, visual inspection show no sign of permafrost degradation, or undue settlement of any of the shoreline lay down area pads. Some natural surface overland flow is blocked by the shoreline lay down area pad, and no culverts or rock drains have been installed. There are however no signs of ponding upstream of the pads, suggesting that the run-of-quarry fill used in pad construction is sufficiently coarse to not impede drainage.

Recommendations:

1. Conduct visual inspections upstream of the pad during freshet and immediately following significant or prolonged rainfall events. If ponding is observed, the water must be pumped out to prevent the onset of thermal erosion.

3.6 Roberts Bay Tank Farm

Primary project fuel storage is in a purpose built single 5.7 million litre steel tank located in the disused Quarry #1 at Roberts Bay (Figure 7). The steel tank is placed in an engineered secondary containment facility designed and constructed by SNC Lavalin Engineers and Contractors (SLEC) in 2008. Secondary containment is provided with a double-lined system consisting of an HDPE liner overlying a geosynthetic clay liner. This liner system is protected with a gravel topping. Appropriate quality control and quality assurance were carried out during construction of the secondary containment facility (SRK 2009c, d).

The tank sits on a competent bedrock foundation, but the eastern section of the secondary containment and the fuel transfer station sit on engineered fill (compacted quarry rock) overlying a permafrost overburden foundation. Rock high walls are present along about 30% of the perimeter of the secondary containment. These high walls have been scaled and there are no concerns about their general condition.

Immediately north of the secondary containment area, a large deep pocket of frozen overburden soil was encountered overlying the quarry rock. During quarry development much of this overburden was relocated to a stockpile northeast of the tank farm (see Figure 7); however, this has resulted in areas of ponding above the north high wall of the secondary containment area. To alleviate any risk of overtopping and spilling of water into the secondary containment area, a drainage channel was constructed to convey this water away from the high wall towards the tundra east of the quarry. Thaw settlement of this drainage channel has occurred, and as a result the amount of ponding has increased. While there does not appear to be any immediate risk of overtopping, the increased ponding will further promote thermal erosion of the overburden pockets and possibly water may find its way though cracks in the rock and flow underneath the liner. This could compromise the performance of the liner. SRK recommends that these ponds be closely monitored, and during the 2011 summer season a new drainage channel should be constructed.

The overburden pile was inspected and there were no signs of surface erosion; however, this may occur in due time as the pile has steep side slopes. There is no containment berm to prevent silt migration onto the surrounding tundra. It is recommended that a nominal rock berm be constructed at the toe of the pile to contain any surface erosion and associated silt migration.

At the time of the inspection it was noted that there were at least two separate areas, at opposite ends of the facility, where water was ponding within the secondary containment facility. Since these are the obvious low spots, consideration should be given to installing sumps which would allow for pumping out any standing water. Whilst the presence of this water should not impact the integrity of the facility, it is good practice to ensure that it is well drained at all times. Ponded water was also observed in the area reserved for storage of the jet fuel and hydraulic oil, immediately adjacent the fuel transfer pad but outside of the secondary containment area. Since this area does not have a liner, and is founded on ice rich overburden, ponding should be avoided. A sump should be installed, or alternatively the area should be re-graded to allow free-draining off the pad.

Since the fuel transfer station and part of the secondary containment are only partially constructed on bedrock, the area should be carefully monitored for any signs of settlement. It is recommended that permanent settlement beacons be installed in key areas to facilitate such monitoring.

During the geotechnical inspection it was noted that significant quantities of jet fuel in drums were stored within the secondary containment facility, both on pallets and in sea cans. It should be confirmed that the presence of this fuel does not compromise the design capacity of the secondary containment facility.

Recommendations:

1. Ponding in the overburden immediately above the north high wall of the secondary containment facility should be monitored and a new drainage channel should be constructed in 2011.

2. A nominal rock berm should be constructed around the toe of the overburden stockpile to help contain the stockpile and manage the risk of uncontrolled silt release onto the tundra.

3. Permanent sumps should be installed within the secondary containment area to facilitate complete draining of captured surface water.

4. A sump should be installed in the jet fuel and hydraulic oil storage area or alternatively the area should be re-graded to allow free-draining off the pad.

5. Consider installation of settlement beacons along the fuel transfer station and on sections of the secondary containment facility not constructed on bedrock.

6. Confirm that the secondary containment facility has sufficient storage capacity to allow storage of jet fuel drums inside the containment area.

3.7 Roberts Bay Lay Down Area

The lay down area at Roberts Bay (Figure 8) is a thermal rock fill pad approximately 1 to 2 m thick, placed directly on the tundra. The pad essentially follows the natural topography in the area; however, there are some levelling tiers included. This lay down pad is intended to serve as the staging area for receipt of supplies and equipment from the annual sealift. Currently this site is also used to house the workshop and warehousing facilities (including power generation) of the site services contractor, the site and contractor construction fleet and spares, the primary camp incinerator, and other general warehousing in the form of converted sea cans.

The incinerator has been installed within a fully lined facility (HDPE liner), and all other fuel storage on the pad is in double-lined tanks, placed within secondary lined fuel containment berms. For the most part all equipment and supplies were well organized on the pad; however, there were a few items that were not completely placed on the pad and therefore rested partially on the tundra.

The lay down pad shows no obvious signs of distress in the form of thaw settlement, and there was no evidence of ponding water on the pad. The south-eastern section of the pad was constructed over a couple of drainage channels which used to direct overland surface runoff towards Roberts Bay. There was no special care taken to place rock drains over there areas; however, a reconnaissance investigation along the perimeter toe of the pad showed no signs of standing or ponding water, suggesting that the pad is coarse enough to allow subsurface drainage. This observation is also supported by the fact that where the drainage channels emerge from the pad, water was visibly flowing unimpeded from the pad. Within this general area, a large quantity of quarry rock was temporarily stored on the tundra, but this has subsequently been relocated. The contractor took great care to not damage the tundra whilst removing the rock; however, the net effect is that there is a thin veneer of gravel covering the tundra vegetation. This will affect the thermal response and most likely result in a localized increase in the active layer thickness. Significant long-term thermal erosion is not expected; however, these areas should be monitored.

Recommendations:

1. Care must be taken to ensure that all equipment and supplies are stored completely on the lay down pad, as opposed to partially on the tundra.

2. The perimeter of the pad should be carefully inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed, it should be pumped out to prevent onset of thermal erosion.

3. At the time of the inspection the drainage channels which had been covered by placement of the lay down pad were flowing unimpeded. The flow in these channels should be monitored and if there are signs of reduced flow, remedial action to prevent the onset of thermal erosion should be taken.

4. The area to the east of the lay down area, where rock fill was removed from the tundra should be monitored for signs of thermal erosion.

3.8 Airstrip

The all-weather airstrip (runway) is 900 m long and 23 m wide and is a 2 m thick thermal rock fill pad constructed directly on the tundra (Figure 9). At each end of the runway there is an apron which measures about 80 m x 50 m. The base course of the airstrip consists of run-of quarry material, followed by a layer of 2-inch crush. The surfacing material is a ¾-inch gravel topping layer. The north end of the airstrip, up to the first drainage crossing was constructed in 2007, and the remainder was completed in 2008.

This airstrip doubles as the main access road between Roberts Bay and the Doris North Camp, and traffic control is managed via access control booms at each end of the runway. A permanent aircraft control tower is located on the north apron, complete with a portable wash station and power supply. Fuel for the generator is stored in a double walled fuel tank housed in a portable secondary containment berm. Drummed jet fuel is also housed in a portable secondary containment berm. Both of these facilities are located right on the shoulder of the apron. In this area the shoulder is over-steepened and shows signs of sloughing. These fuel storage areas should be relocated to be at least 3 m from the edge of the shoulder.

The airstrip is equipped with permanent runway lights (power supplied by the generator at the control tower), Global Positioning System (GPS) approach instrumentation, and a standard wind sock. During installation of the runway lighting and windsock, temporary rock fill roads were pushed out onto the tundra. During the removal of these roads, care was taken not to damage the tundra; however, that meant that a thin veneer of gravel was left behind. This will likely affect the thermal response of the active layer and these areas should be monitored for signs of thermal erosion.

There are two ephemeral drainage channels passing under the airstrip, and at each of these locations rock drains were installed to allow unimpeded flow of water. At the location of the two rock drains, flow appears to be unimpeded, suggesting that they are functioning as intended.

The airstrip required a significant amount of maintenance during since its completion in 2008, which according to the staff was mostly as a result of frequent construction traffic passing over the runway. Some of the maintenance can also be ascribed to ongoing settlement. The settlement is to be expected, since the airstrip was not completely constructed to design grade during the winter, and as such, there was not complete frost in the foundation which would result in consolidation settlement of the active layer. There were tension cracks along the edge of the runway present at the time of the inspection, which supports the observation that minor settlement is occurring; however, the manifestation of these cracks are also partially as a result of the over-steepened shoulders.

There was clear evidence of significant ponding of water against the airstrip, which would result in thermal erosion which in turn would lead to increased runway settlement. It is however understood that there is a management protocol in place whereby ponding is pumped out, and therefore this is likely not a significant contributing factor to runway settlement.

Recommendations:

1. Relocate the fuel storage areas to at least 3 m from the edge of the shoulder.
2. Conduct daily inspections of the airstrip shoulder to monitor the tension cracks.
3. Areas where temporary roads were removed leaving behind a veneer of gravel should be monitored for signs of thermal erosion.
4. Maintain the practice of inspecting the runway during freshet and after significant and prolonged rainfall events for ponding water and pumping it out.

3.9 All-Weather Roads (Doris Site)

The following all-weather roads have been constructed on site, as illustrated in Figures 2 and 10:

- 250 m long, 6 m wide single lane link between the jetty and Roberts Bay lay down area;
- 600 m long, 6 m wide single lane link between Roberts Bay lay down area and the north airstrip apron;
- 2.6 km long, 8.3 m wide single lane link between the south airstrip apron and Doris Camp;
- 75 m long, 8.3 m wide single lane spur from the main camp road to the wash bay;
- 300 m long, 8.3 m wide single lane spur from main camp road to Quarry #2; and
- 870 m long, 8.3 m wide single lane link between Doris Camp and Doris Lake.

The roads are above grade thermal rock fill pads constructed directly on the tundra. Road fill thickness is variable between 1 m and just over 2 m. The roads have been constructed with run-of -quarry material with a surfacing layer of 2-inch crush. All roads are single lane roads with turnouts. There are no culverts or rock drains under the road to allow drainage of overland surface runoff flow. Visual inspection revealed that there are only a few isolated areas where ponding exist along the toe of the road, suggesting that the fill material is generally sufficiently coarse to not impede flow. Where ponding does occur, it appears to be associated with areas of the tundra where construction damage occurred. There were however no signs of thermal erosion, but these ponded areas should be monitored and pumped out during freshet and after significant or prolonged rainfall events.

As per the Mines Act, road turnouts were constructed every four truck-lengths to facilitate road construction. Many of these have been picked up, and since care was taken not to damage the tundra, a thin veneer of gravel remains present at these locations. This gravel will change the thermal response of the underlying soils and these areas should be monitored for signs of thermal erosion.

Recommendations:

1. The road toe line should be inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed, it should be pumped out to prevent onset of thermal erosion.

2. Areas where road turnouts were removed leaving behind a veneer of gravel should be monitored for signs of thermal erosion.

3.10 Wash Bay/Explosives Mixing Plant

The wash bay pad houses two modular buildings, some sea cans as well as a double walled steel fuel tank within a secondary lined containment area (Figure 4). One of the buildings contains mixing tanks for brine mixing to support exploration drilling activities. The pad is a thermal rock fill pad about 1 m thick. Visual inspection showed no signs of ponding at the toe of the pad.

Recommendations:

1. The pad toe line should be inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed, it should be pumped out to prevent onset of thermal erosion.

3.11 Road Lay Down Area/Lower Reagent Pad

Between the airstrip and Doris Camp there is a widening of the road, which is being used as a general lay down area, as well as the workshop and warehousing facilities for the exploration drilling contractor (Figure 10). This lay down area measures about 400 m long x 25 m wide, and was constructed to mitigate an area of permafrost degradation which was inadvertently caused as part of the 2008 construction activities. This pad is generally about 1 m thick; however, there are areas where the pad is thinner. Immediately behind the drilling contractor workshop there are small stockpiles of gravel on the tundra and evidence of significant ponding. This gravel should be picked up and the area monitored for signs of ongoing thermal erosion. Ponded water should be pumped out.

Immediately south of this lay down area is the lower reagent pad, constructed in the winter of 2010. This is a rock fill pad that ranges in thickness from 1 m to over 3 m. It will be used as a general lay down and storage area. There are no concerns associated with this pad.

Recommendations:

1. The pads toe line should be inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed it should be pumped out to prevent onset of thermal erosion.

2. The gravel stockpiles on the tundra on the west side of the pad must be relocated.

3.12 Quarry #2

At the time of the inspection Quarry #2 was active, and will continue to be used long into 2011. The quarry has been developed using two benches, each about 6 m high as illustrated in Figure 11. There were no signs of standing water on either of the quarry benches, and no evidence of overland surface runoff flowing uncontrolled onto the tundra. There are no natural water bodies near the quarry site and therefore no risk of an uncontrolled sediment release into a water body.

Prior to development of the quarry, a significant amount of overburden (frozen silt and clay) was stripped and stockpiled on the tundra in an area immediately west of the quarry. This overburden was relocated to an area north of the quarry as shown in Figure 11. At the time of the inspection this overburden material was spread out and levelled and is the future land farm site.

Recommendations:

1. HBML to continue to follow the designated Quarry Management Plan.

3.13 Crusher Pad

At the junction between the main road to the camp and the quarry spur road (Figure 2) a 1 m thick run-of quarry pad measuring about 125 m x 125 m has been constructed (Figure 11). This thermal pad houses the construction crusher plant, crusher power and fuel supply as well as stockpiles of crushed rock. The fuel supply is a double walled steel tank placed in a lined and bermed secondary containment facility.

Visual inspection of the pad perimeter showed no signs of standing water, and given the fact that this pad has been constructed on the natural watershed divide, surface overland flow is limited.

Recommendations:

1. The pad toe line should be carefully inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed, it should be pumped out to prevent onset of thermal erosion.

2. A protocol needs to be in place so that water in the fuel tank secondary containment area is pumped out and managed in an appropriate manner.

3.14 Sewage Treatment Plant Outfall

The grey water (sewage treatment effluent) pipeline is discharged directly onto the tundra immediately south of the crusher pad (Figure 11). Visual inspection confirmed that there was significant ponding of water; and tundra vegetation dieback has started with associated erosion damage. This practice should not continue for an indefinite time and an alternate strategy should be implemented.

Recommendations:

1. A long-term solution needs to be developed for discharge of grey water. If the practice of tundra discharge remains to be used, the discharge should be frequently moved to prevent vegetation dieback and subsequent thermal and physical erosion.

3.15 Quarry #2 Overburden Dump

A permanent overburden dump has been constructed north of Quarry #2. Overburden stripped from Quarry # 2 and #4, and oversize quarry rock that is not suitable for construction is hauled to this location. Material is end dumped and then spread with a dozer. The overall dump construction consists of a series of cells, primarily to facilitate constructability. The material is therefore a random mix of organics, marine silts and clays and quarry rock. A sedimentation berm has been constructed downstream of the overburden dump to ensure that no sediment is released from the dump area. At the time of inspection there were isolated pockets of ponding within the dump area; however, there was no water in the vicinity of the sedimentation berm.

Recommendations:

1. No action required, other than to continue monitoring the condition of the sedimentation berm.

3.16 Doris North Camp Pads

The Doris North Camp area is also the designated Quarry #4 area as illustrated in Figure 12. The permanent camp has been constructed on a bedrock foundation which was achieved through a benched cut with a high wall at the north side of the camp. This pad is increased in size via a fill zone extended to the south placed directly on tundra. This pad is variable in thickness but generally at least 1 m thick. A lower fill pad (about 2 m lower than the upper pad) provides additional space for camp facilities.

The upper pad houses the camp, permanent power generation station (not commissioned), equipment storage shed, the sewage treatment plant, fire water tank and pump house and a muster station. The lower pad, which extends all the way to the location of the sedimentation and pollution control ponds houses the temporary (construction) power station and fuel supply, joint geology/warehousing building, additional warehousing in the form of modified sea cans, as well as general miscellaneous equipment and supplies and core storage.

Immediately south of the lower pad is the helicopter base pad, which houses four helipads, a helicopter base station as well as other related support facilities. Towards the east, immediately below the portal are two pads that were under construction at the time of the inspection that will serve as primary support for the mining activities. Immediately northeast of the camp, a rock excavation was underway to prepare the foundation base for the primary camp fuel tank farm. An access road was constructed in this area extending north of the rock outcrop that will ultimately be excavated to become the mill pad.

Visual inspection of the pad perimeters showed no signs of ponding water, and there was no ponding water visible anywhere on the pad surfaces. The high wall behind the camp has been scaled clean and a partial catch berm was constructed behind wooden cabins constructed immediately beneath the wall. It is however recommended that a catch berm be placed along at the base of the entire length of the high wall in case rocks loosen and fall from the highly fractured face. Furthermore, appropriate barricades and signage should be erected to keep people and equipment at a safe distance from the wall.

Recommendations:

1. The pad toe line should be carefully inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed, it should be pumped out to prevent the onset of thermal erosion.

2. A catch berm should be constructed at the toe of the high wall and appropriate signage and barricades should be put in place to prevent people and equipment from coming to close to the high wall.

3. An interim water management plan must be put in place to collect and discharge surface runoff until such time as the sedimentation pond has been constructed.

3.17 Doris North Camp Fuel Storage

The primary fuel tank farm for the Doris North Camp was under construction at the time of the inspection. Current fuel supply for the camp is in the form of three steel double-lined tanks, housed in a pre-manufactured steel and lined secondary containment berm. This secondary containment facility is however not appropriately designed and constructed and based on the invert level of the containment liner SRK is convinced that this facility does not provide adequate secondary containment.

A number of other double lined fuel tanks are scattered throughout the site. All of these tanks are placed in lined secondary containment; however, SRK is convinced that in most cases these secondary contain facilities are not adequately sized.

Recommendations:

1. The pre-manufactured steel secondary containment facility housing the three double lined tanks has not been adequately designed and constructed and does not provide appropriate secondary containment. While there is no immediate risk of as fuel spill, due to the fact that all tanks are double lined, SRK understands that it is HBML policy to provide secondary containment over and above this. SRK further understands that the facility in question is temporary and will be decommissioned as soon as the new tank farm is completed; however, until such time the facility is compromised.

2. Although secondary containment is provided under all other single tanks throughout the site, the capacity of this secondary containment is not adequate in accordance with standard Federal Regulations. HBML should re-evaluate their policy regarding this secondary containment and clearly stipulate what their containment requirements are.

3.18 Camp Overburden Pile

A significant amount of overburden was stripped during the development of Quarry #4. This material was stockpiled south of the lower camp pad. This pile was levelled and lowered in areas during the winter of 2011 and covered with at least 2 m of rock fill, and is now part of the camp pads.

Recommendations:

1. No action required, as element no longer exist.

3.19 Quarry #4

The entire camp area is also designated as Quarry #4 (Figure 12). At the time of the inspection active excavation was underway immediately northwest of the camp for preparation of the foundation base of the primary camp tank farm. An access road was also constructed north of the rock outcrop which will be excavated to house the mill complex.

Recommendations:

1. No action required as the area is under active construction.

3.20 Matrix Camp

A temporary construction camp was erected on a two-tiered rock fill pad south-east of the main camp. This camp was dismantled in the spring of 2009, and the pad was converted to a support base for the site helicopters. During the winter of 2010 the helicopter base was relocated (see Figure 12) and the pad was re-contoured to form part of the Doris Camp pads.

Recommendations:

1. No action required as the area is under active construction.

3.21 Doris Fresh Water Intake

A small thermal pad has been constructed on the shoreline of Doris Lake to support the fresh water intake facilities which consist of a pump house, generator and fuel supply. The fuel tank is a double-walled steel tank within a portable secondary containment facility. A removable boat dock extends from the pad during the open water season.

Visual inspection of the pad toe showed no signs of ponding or thermal erosion.

Recommendations:

1. The pad toe line should be carefully inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed it should be pumped out to prevent the potential onset of thermal erosion.

3.22 Doris-Windy All-Weather Road

The Doris-Windy road is a 10 km all-weather road that stretches from the Doris Camp, due south to the Windy Camp (Figure 13). The road is an 8.3 m wide single lane road with turnouts designed based on lines of sight. Construction of this road started during the winter of 2009/2010 and was terminated about 1 km short of Windy Camp when work was suspended in the spring of 2010.

The roads are above grade thermal rock fill pads constructed directly on the tundra. Road fill thickness is variable between 1 m to over 2 m. The roads have been constructed with run-of -quarry material with a surfacing layer of 2-inch crush. There are no culverts or rock drains under the road to allow drainage of overland surface runoff flow. Visual inspection revealed that there are only a few isolated areas where ponding exist along the toe of the road, suggesting that the fill material is generally sufficiently coarse to not impede flow. Where ponding does occur, it appears to be associated with areas of the tundra where construction damage occurred. There were however no signs of thermal erosion, but these ponded areas should be monitored and pumped out during freshet and after significant or prolonged rainfall events.

As per the Mines Act, road turnouts were constructed every four truck-lengths to facilitate road construction. Many of these have been picked up, and since care was taken not to damage the tundra, a thin veneer of gravel remains present at these locations. This gravel will change the thermal response of the underlying soils and these areas should be monitored for signs of thermal erosion.

Recommendations:

1. The road toe line should be inspected during freshet, and immediately following significant and prolonged rainfall events. If ponding is observed, it should be pumped out to prevent onset of thermal erosion.

2. Areas where road turnouts were removed leaving behind a veneer of gravel should be monitored for signs of thermal erosion.

3.23 Doris-Windy All-Weather Road Stream Crossings

There are four designated stream crossings along the Doris-Windy all-weather road (Figure 14). These crossings will be free span crossings to allow unimpeded flow of water. The crossings were not yet installed at the time of the inspection as ice bridges was used during the construction phase.

Recommendations:

1. No action required as the stream flow has not been impacted in any way.

3.24 Doris-Windy All-Weather Road Quarries (#A, #B & #D)

Three rock quarries have been designated and are used to construct the Doris-Windy road as illustrated in Figure 15. At the time of the inspection none of these quarries was in use; however, all three quarries will continue to be used when road construction commences.

There were no signs of standing water on either of the quarry benches, and no evidence of overland surface runoff flowing uncontrolled onto the tundra. There are no natural water bodies near any of the quarry sites and therefore no risk of an uncontrolled sediment release into a water body.

Recommendations:

1. HBML to continue to follow the designated Quarry Management Plan at each of these sites.

4 Summary of Recommendations

This report provides a performance assessment of the numerous foundation pads and infrastructure at the Doris North Project site. The findings are based on a site visit and walkover survey between July 12-16, 2010 and subsequent consultation with site staff and contractors. This is the second formal annual geotechnical inspection undertaken at the site. The site is still under active construction and therefore many of the remedial recommendations identified during this geotechnical investigation are likely to be addressed as part of ongoing construction.

Table 2 below provides a summary of the inspection components and the primary recommendations stemming from the inspection. There were no issues that require urgent and immediate action, and for many of the issues highlighted, HBML site staff had already started implementation of mitigation measures at the time of the inspection.

Table 2: Summary of Inspection Items and Associated Recommendations

Inspection Item	2009 Recommendations	2010 Recommendations
Thermistors	• Inspect, repair and re-commission inactive thermistors where practical • Collect quarterly thermistor data as a minimum (August, November, February and May) • Consider installing data loggers for select remote thermistors to ease the burden of frequent manual data downloads	• Re-evaluate thermistor requirements taking into considering the surface infrastructure elements currently on site • Continue to collect quarterly thermistor data as a minimum (August, November, February and May) • Consider installing data loggers for select remote thermistors to ease the burden of frequent manual data downloads
Old Lay Down Area	• Relocate the explosives magazines from the tundra vegetation onto the beach • Conduct general cleanup of the site by collecting garbage and other debris and dispose of it in accordance with site waste management protocols	• Relocate the last two explosives magazines from the tundra vegetation onto the beach
Jetty	• Conduct annual survey of the jetty to allow for actual measurement of ongoing settlement • Remind operational staff annually about the operational limitations of the jetty	• Continue to collect quarterly thermistor data as a minimum (August, November, February and May) • Conduct annual survey of the jetty to allow for actual measurement of ongoing settlement • Remind operational staff annually about the operational limitations of the jetty

Inspection Item	2009 Recommendations	2010 Recommendations
Shoreline Lay Down Area	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Ensure that no equipment, supplies or garbage are stored outside the pad footprint	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Roberts Bay Tank Farm	• Monitor overburden ponding immediately above the high wall and construct a new drainage channel in 2010 • Construct a nominal rock containment berm at the downstream toe of the overburden stockpile to mitigate uncontrolled silt release • Install permanent sumps within the secondary containment area to facilitate complete surface water drainage • Install a sump in the jet fuel and hydraulic oil storage area, or re-grade the area to allow free draining off the pad • Install settlement beacons along the fuel transfer station and sections of the secondary containment facility not constructed on bedrock. Monitor the beacons quarterly • Confirm that the secondary containment facility has sufficient storage capacity to allow storage of jet fuel drums inside the containment area	• Monitor overburden ponding immediately above the high wall and construct a new drainage channel in 2011 • Construct a nominal rock containment berm at the downstream toe of the overburden stockpile to mitigate uncontrolled silt release • Install permanent sumps within the secondary containment area to facilitate complete surface water drainage • Install a sump in the jet fuel and hydraulic oil storage area, or re-grade the area to allow free draining off the pad • Install settlement beacons along the fuel transfer station and sections of the secondary containment facility not constructed on bedrock. Monitor the beacons quarterly • Confirm that the secondary containment facility has sufficient storage capacity to allow storage of jet fuel drums inside the containment area
Roberts Bay Lay Down Area	• Construct containment berms around the ANFO storage facility • Ensure that all equipment and supplies are stored completely on the lay down pad footprint • Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor flow from drainage channels beneath pad. If flow stops, the blockage must be traced to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion	• Ensure that all equipment and supplies are stored completely on the lay down pad footprint • Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor flow from drainage channels beneath pad. If flow stops, the blockage must be traced to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion
Airstrip	• Monitor areas where rock was	• Monitor areas where rock was

Inspection Item	2009 Recommendations	2010 Recommendations
	relocated from the tundra for signs of thermal erosion • Maintain the practice of inspecting the runway toe line during freshet and after significant and prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	relocated from the tundra for signs of thermal erosion • Maintain practice of inspecting the runway toe line during freshet and after significant or prolonged rainfall events. Pump ponded water to prevent onset of thermal erosion • Conduct daily inspections of the airstrip shoulder to monitor the tension cracks • Relocate the jet fuel and diesel storage and associated secondary containment facilities at least 3 m from the apron shoulder
All Weather Roads (Doris Site)	• Inspect road toe lines during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion	• Inspect road toe lines during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion
Wash Bay/Explosives Mixing Plant	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Road Lay Down Area/Lower Reagent Pad	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Ponded water should be pumped to prevent onset of thermal erosion • Gravel stockpiles placed on the tundra on the west side of the pad should be relocated	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Ponded water should be pumped to prevent onset of thermal erosion
Quarry #2	• The overburden high wall on the upper bench of the quarry is over steepened and unsafe. Care needs to be taken when mucking out the blast rock in this area, and appropriate signage and barricades needs to be put in place along the quarry access road • A management protocol needs to be put in place to prevent prolonged ponding of water in the overburden pile sedimentation pond	• Continue to follow the Quarry Management Plan
Crusher Pad	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Develop and implement a protocol to ensure that water in the fuel tank secondary containment area is pumped out and managed	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Sewage Treatment Plant	• Develop and implement a long-term solution for discharge of grey water to	• Develop and implement a long-term solution for discharge of grey water to

Inspection Item	2009 Recommendations	2010 Recommendations
Outfall	prevent vegetation dieback and subsequent thermal and physical erosion	prevent vegetation dieback and subsequent thermal and physical erosion
Quarry # 2 Overburden Dump	• This did not exist in 2009	• No action required
Doris North Camp	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Construct a catch berm at the toe of the high wall and install appropriate signage and barricades to warn people and equipment from coming too close to the high wall • Eliminate ponding above the high wall through pumping or re-grading	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Construct a catch berm at the toe of the high wall and install appropriate signage and barricades to warn people and equipment of the danger • Develop and implement and interim water management plan to collect and discharge surface runoff to bridge the period until the sedimentation pond is constructed
Doris North Camp Fuel Storage	• These components were not inspected in 2009	• Revisit the secondary containment requirements for fuel tanks on site
Camp Overburden Pile	• Develop and implement a protocol to monitor and manage ponded water at the toe of the overburden pile	• This pile was levelled and covered and therefore no longer exist
Quarry #4	• Re-slope and clad the overburden high wall • Pull back, re-slope and clad the overburden above the rock high wall • Scale the rock high wall and construct a catch berm at its base • Relocate the equipment above the high wall to get it off the tundra	• The Doris North Camp is being constructed within the confines of this quarry. It no longer exist as a separate inspection item
Matrix Camp	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	• This pad has been covered by the Doris North Camp
Doris Fresh Water Intake	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion	• Inspect pad perimeter during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion
Doris-Windy All Weather Road	• This did not exist in 2009	• Inspect road toe lines during freshet and immediately following significant or prolonged rainfall events. Pump out ponded water to prevent onset of thermal erosion • Monitor areas where rock was relocated from the tundra for signs of thermal erosion
Doris-Windy All Weather Road Stream Crossings	• This did not exist in 2009	• The crossings were not constructed at the time of the inspection. No action required

Inspection Item	2009 Recommendations	2010 Recommendations
Quarry A	• This did not exist in 2009	• Continue to follow the Quarry Management Plan
Quarry B	• This did not exist in 2009	• Continue to follow the Quarry Management Plan
Quarry D	• This did not exist in 2009	• Continue to follow the Quarry Management Plan

This report, **"2010 Annual Geotechnical Inspection, Doris North Project, Hope Bay, Nunavut"** has been prepared by SRK Consulting (Canada) Inc.

Maritz Rykaart, P.Eng., Ph.D.
Principal Geotechnical Engineer

Cam Scott, P.Eng.
Principal Geotechnical Engineer

5 References

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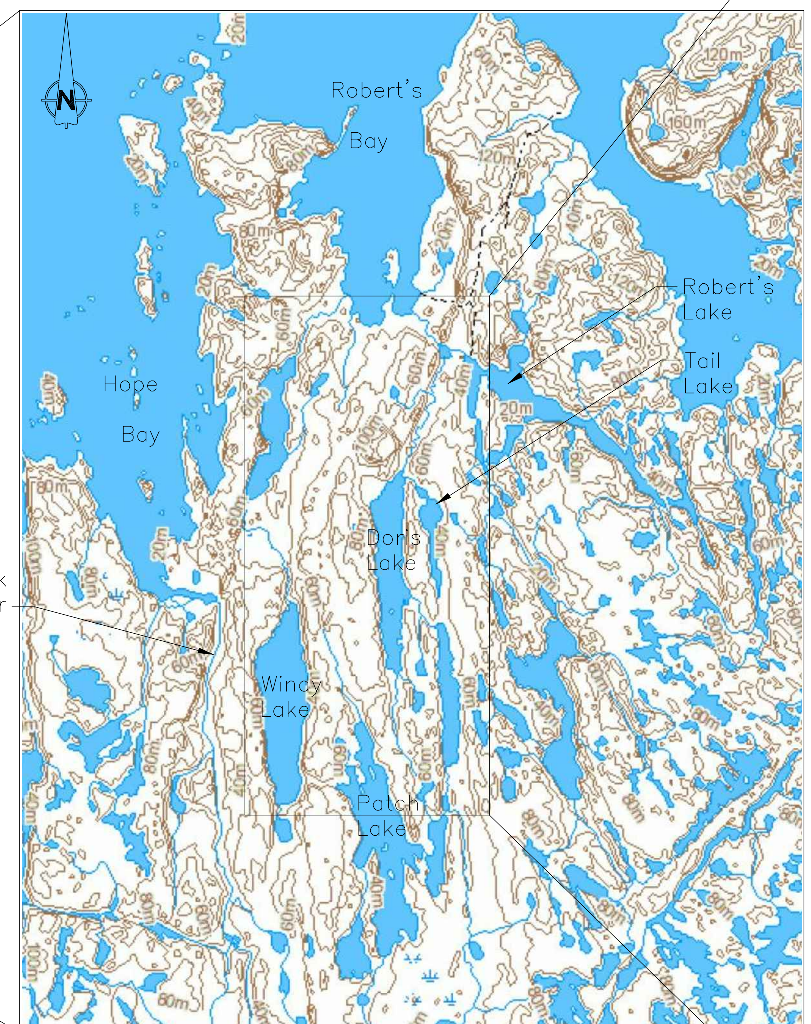
Figures

TERRITORIAL LOCATION

Approx. Scale 0 500 1000 Km



REGIONAL LOCATION

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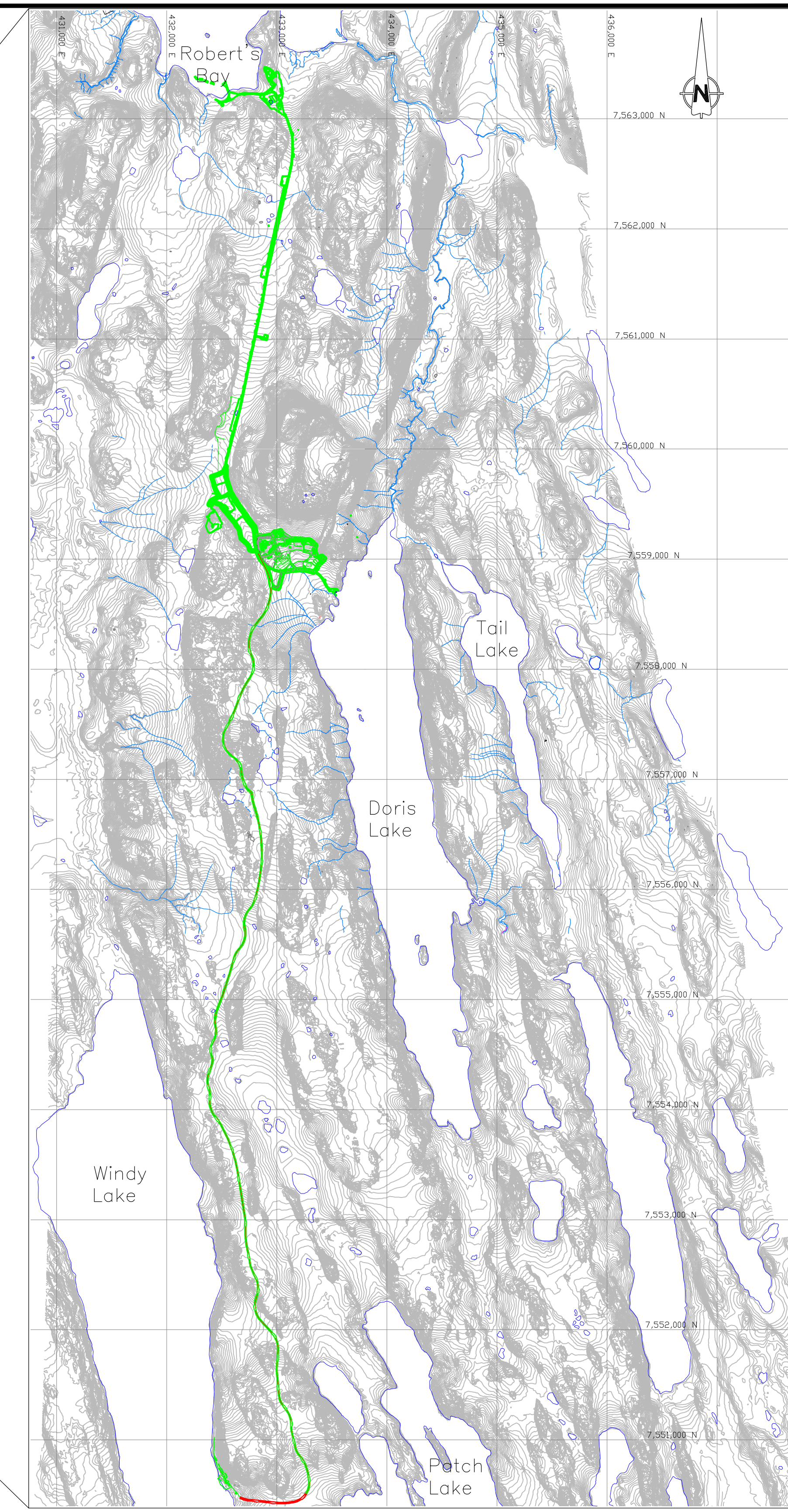

SITE LOCATION

1:30000 0 600 1200 1800 2400 3000 Metres

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SRK JOB NO.: 1CH008.032
FILE NAME: 1CH008_032-GT10-1.dwg

NEWMONT NORTH AMERICA

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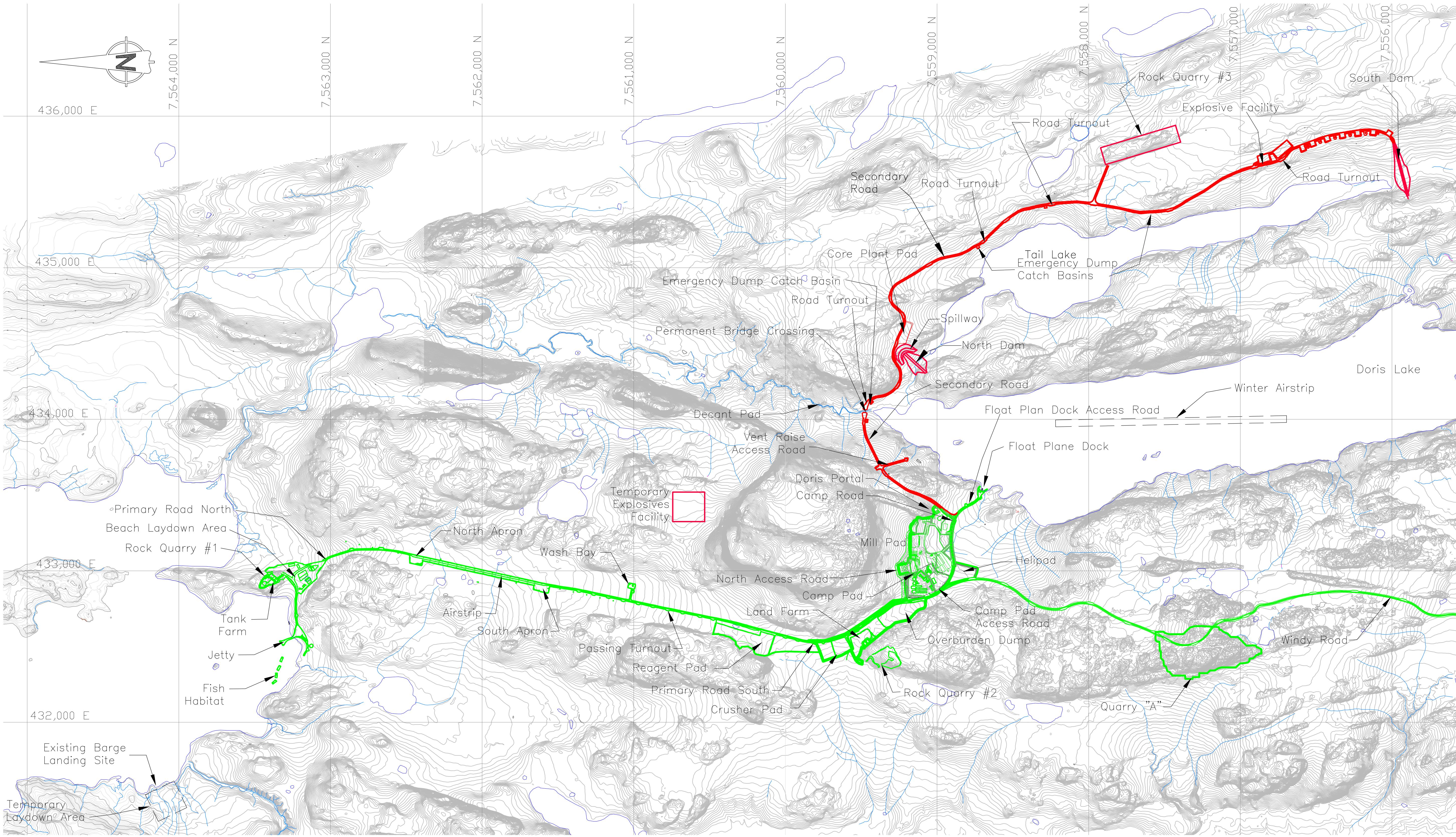
2010 Geotechnical Inspection

Location Map

DATE:	APPROVED:	FIGURE:
February 2011	EMR	1

J:\01_SITES\Hope.Bay\!ACAD\2010 Drawings\1CH008_032-GT10-1.dwg



LEGEND

- Asbuilt
- Licenced but not yet constructed

0 200 400 600 800 1000 Metres

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Vancouver B.C.

SRK JOB NO.: 1CH008.32
FILE NAME: 1CH008_032-GT10-1.dwg

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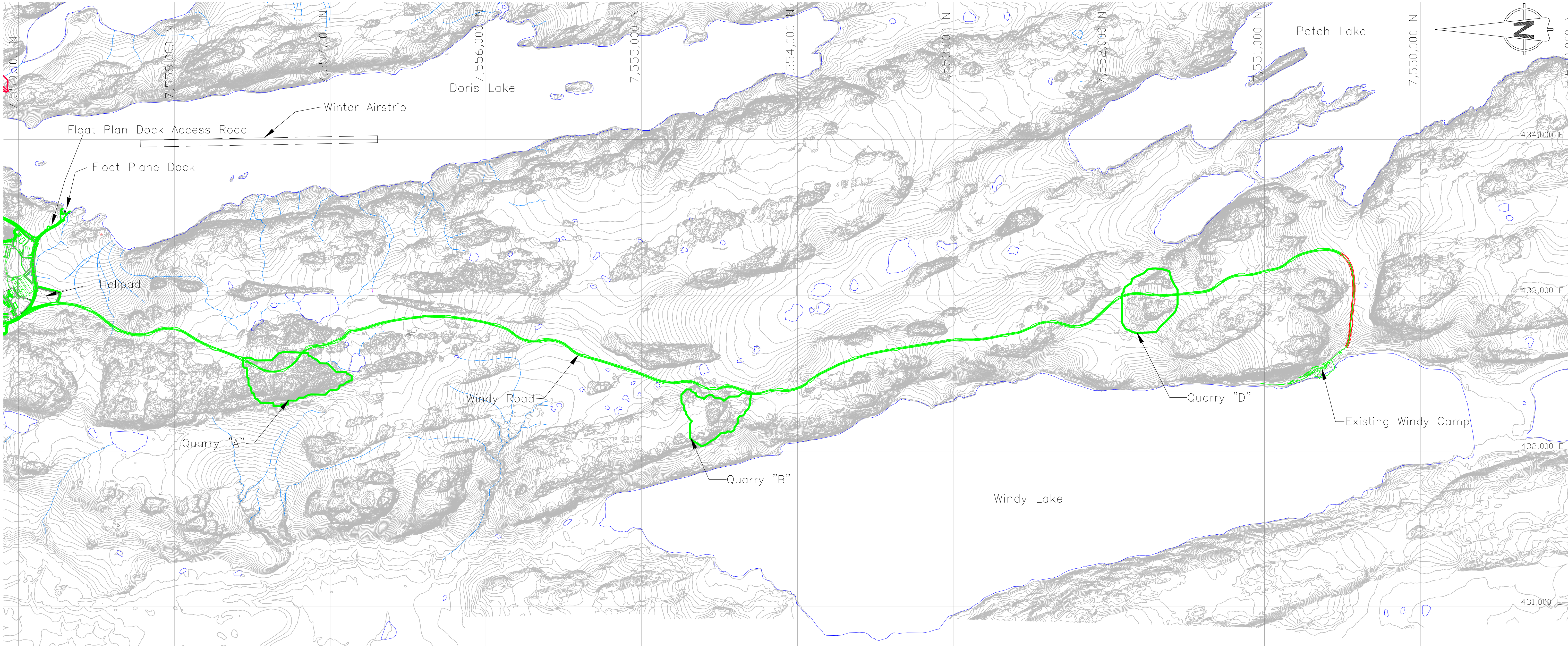
HOPE BAY MINING LTD.

2010 Geotechnical Inspection

Overall Site Layout
(Sheet 1)

DATE:	APPROVED:	FIGURE:
February 2011	EMR	2



LEGEND

- Asbuilt
- Licenced but not yet constructed

0 200 400 600 800 1000 Metres

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SRK JOB NO.: 1CH008.32
FILE NAME: 1CH008_032-GT10-1.dwg

NEWMONT
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HOPE BAY MINING LTD.

2010 Geotechnical Inspection

Overall Site Layout
(Sheet 2)

DATE:	APPROVED:	FIGURE:
February 2011	EMR	3

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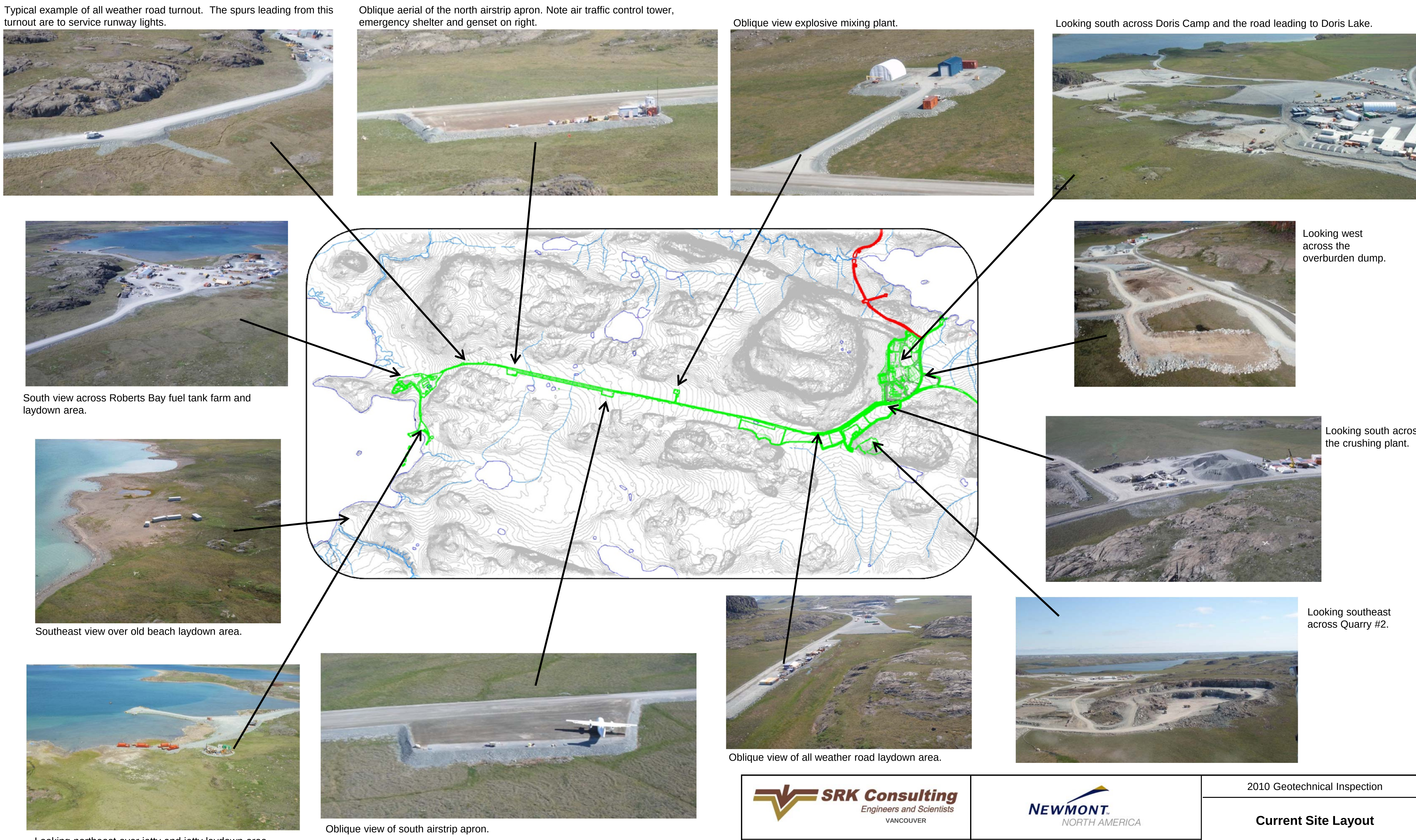

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Current Site Layout

Job No: 1CH008.032

Filename: Fig 4_6-9_2010GeotechInsp_20110217_v3.ppt

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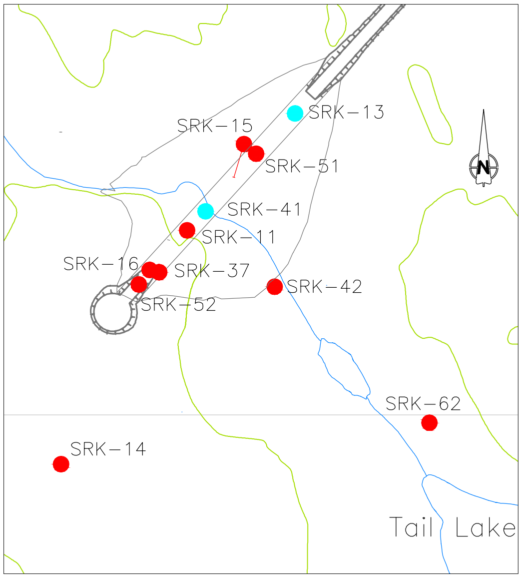
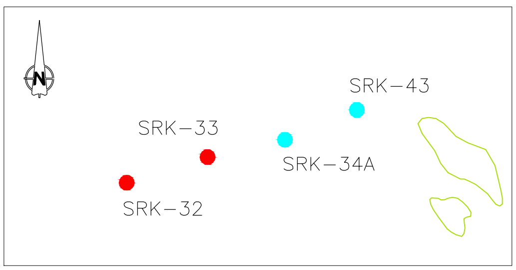
Date: February 2011

Approved: EMR

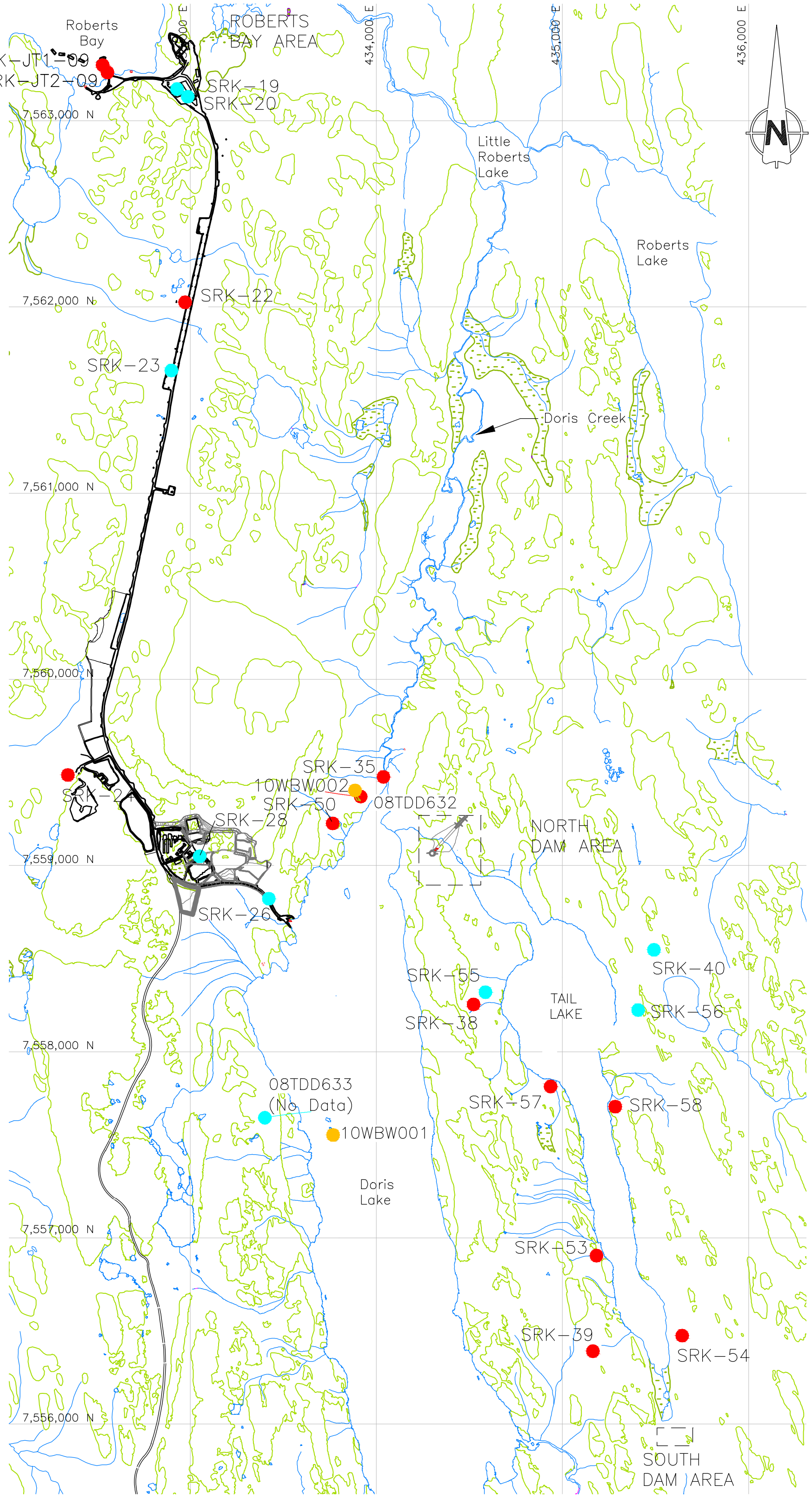
Figure: 4



NORTH DAM AREA



SOUTH DAM AREA



LEGEND

- Active Thermistor Installation
- Inactive Thermistor Installation
- Westbay Wells

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2010 Geotechnical Inspection

Thermistor Locations

SRK JOB NO.: 1CH008.032	HOPE BAY MINING LTD.	DATE: Feb. 2011	APPROVED: EMR	FIGURE: 5
FILE NAME: 1CH008_032−GT09−2.dwg				

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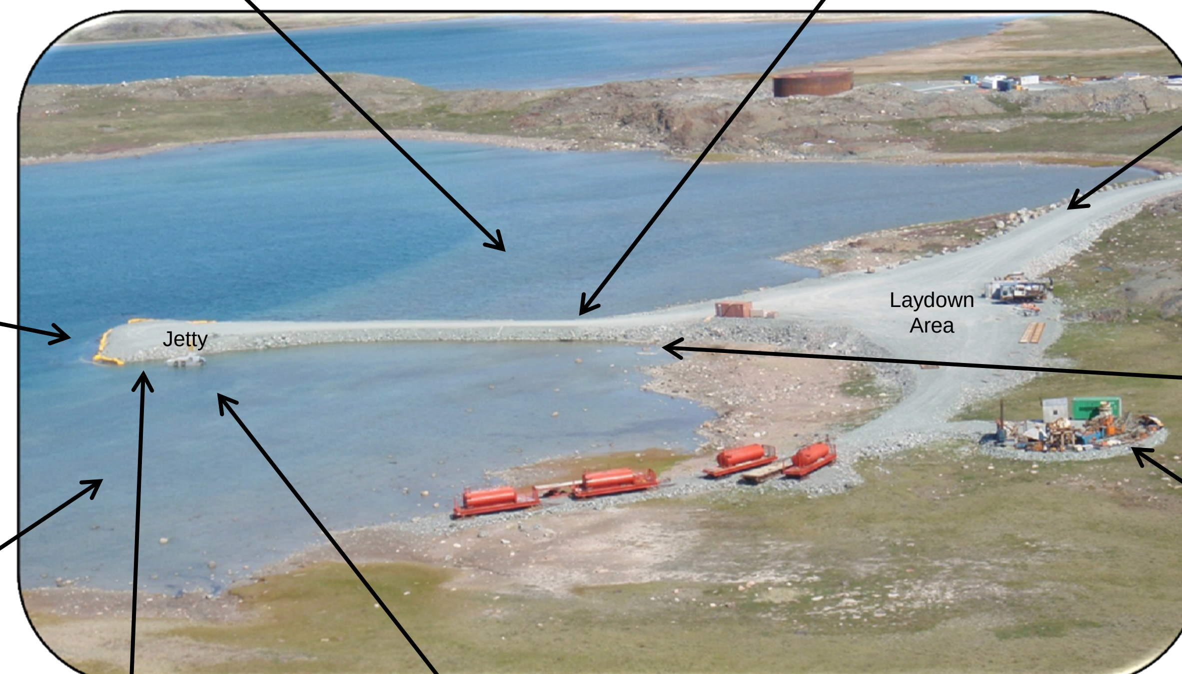
Looking south across shoreline laydown area. All the containers, supplies and equipment are scheduled for backhaul to Hay River and/or Edmonton.

Eastern face of jetty looking south.

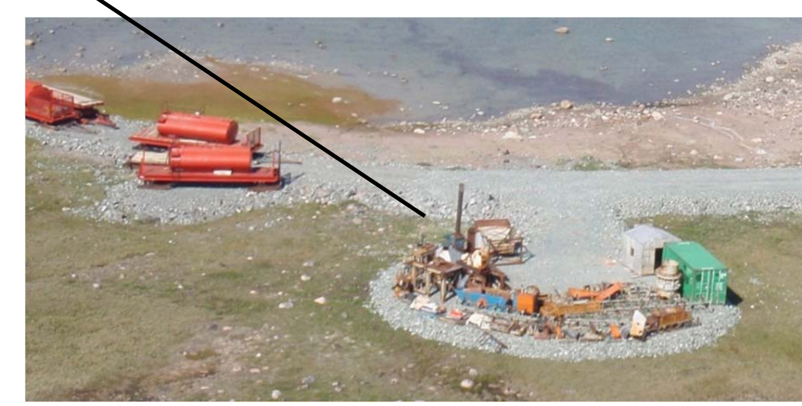
All weather road link with Roberts Bay laydown area.

Oblique aerial view of jetty head looking north.



Western face of jetty at connection point to shoreline, looking north.

Fish habitat shoals visible under the water.



Looking north across western section of shoreline laydown area. Scrap stored on construction helipad is scheduled for backhaul. Red fuel transporters will be returned to Cambridge Bay.

Oblique aerial view of jetty head looking northeast.

Oblique aerial view of jetty head looking south.

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Jetty and Shoreline Laydown Area

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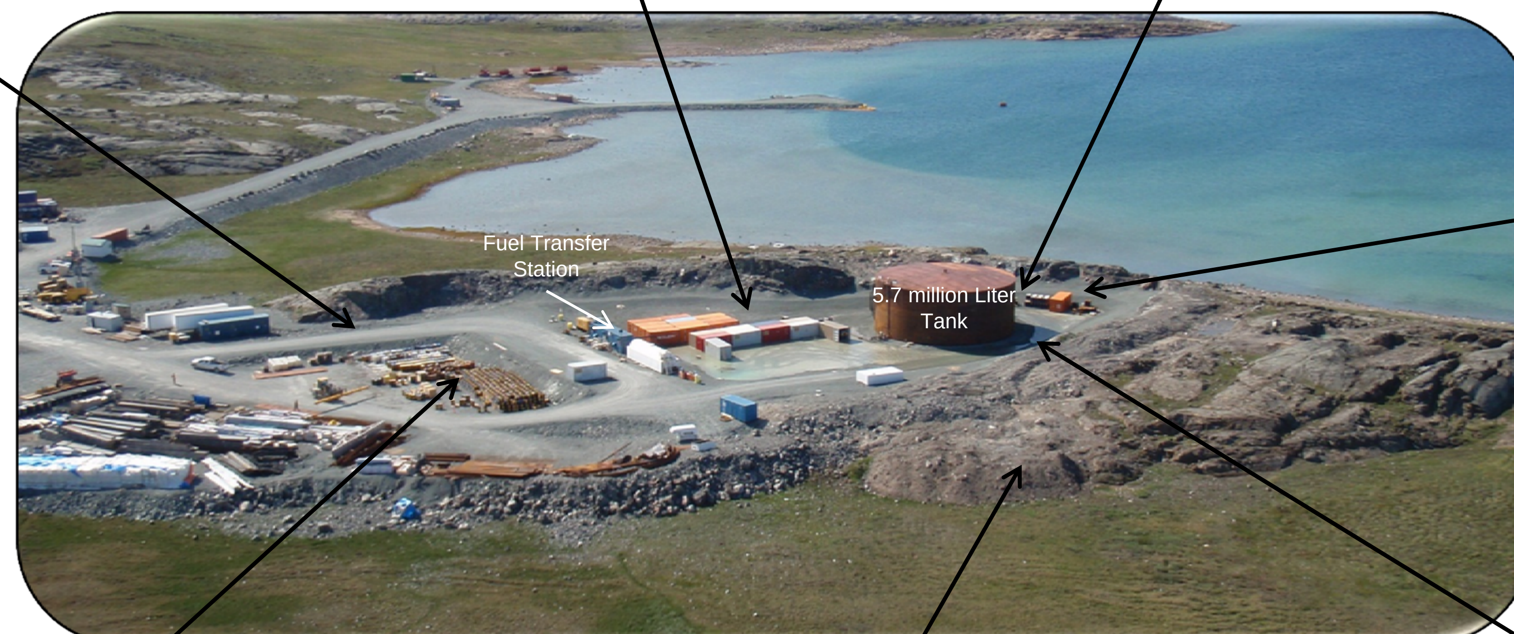
Filename: Fig 4_6-9_2010GeotechInsp_20110217_v3.ppt				

Fuel transfer station ramp.

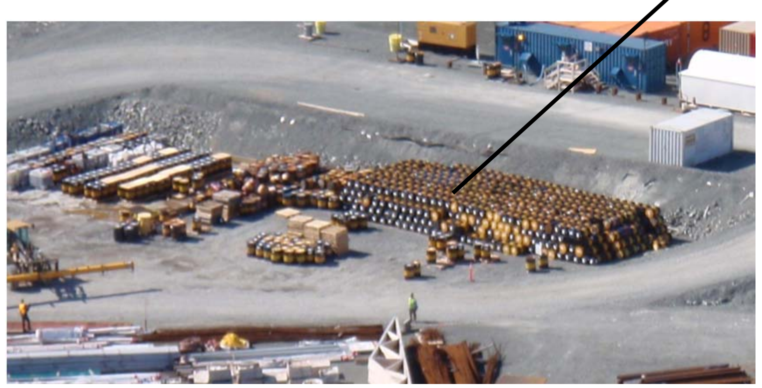
Jet fuel storage in seacans.

Jet fuel storage on crest of containment berm below highwall.



Jet fuel storage on pellets and in seacan.

Ponded area with no sump.



Empty fuel drum storage area.

Overburden pile at base of quarry on north side of tank farm.

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Job No: 1CH008.032
Filename: Fig 4_6-9_2010GeotechInsp_20110217_v3.ppt

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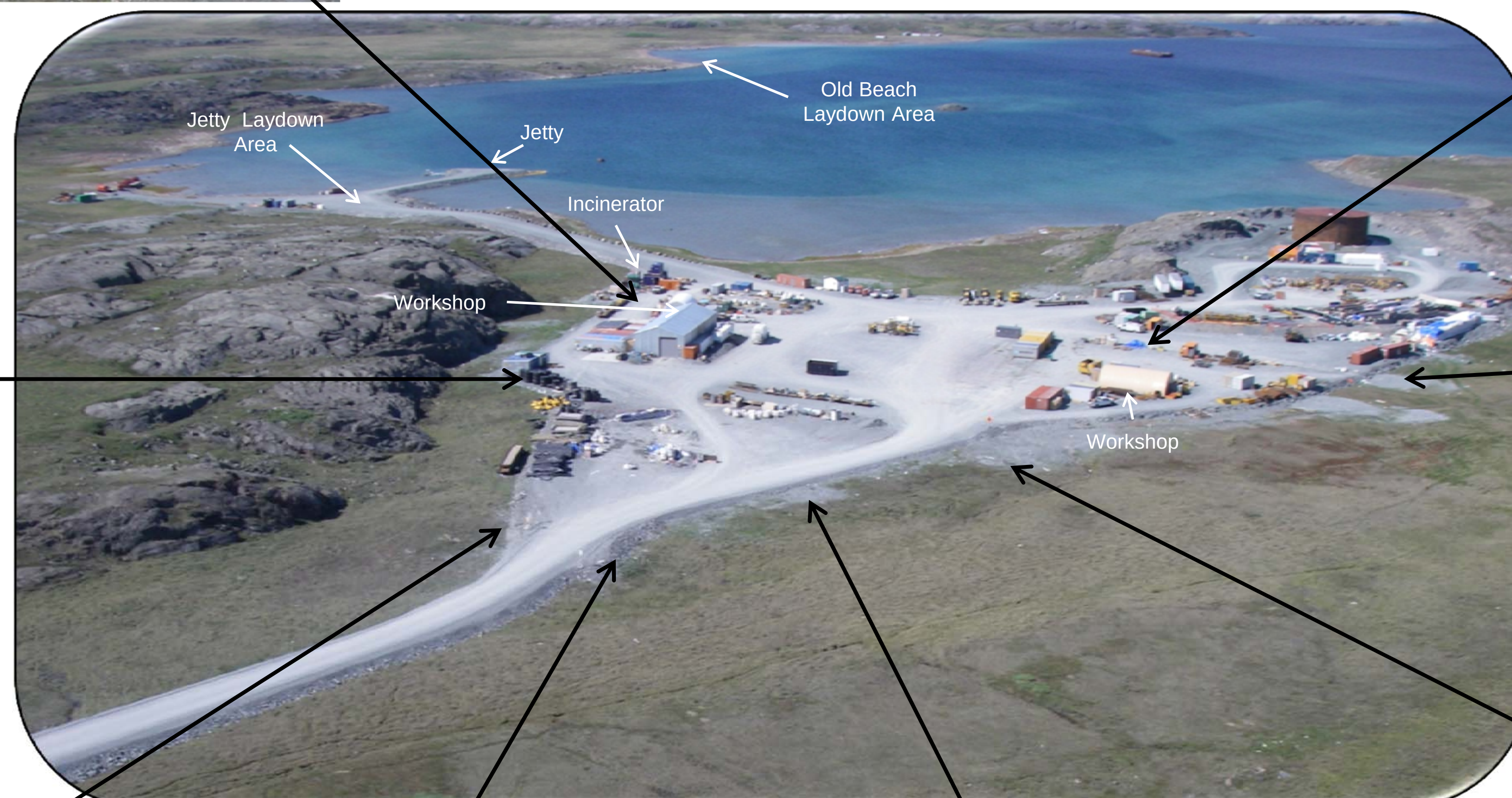
2010 Geotechnical Inspection

Roberts Bay Tank Farm

Date:	Approved:	Figure:
February 2011	EMR	7

North view across north edge of laydown area.

Northwest view across laydown area. Grey colour of tundra is where rock was removed. All drainage flows unhindered.



West view across central area of laydown area. The large building is used as a workshop by the care and maintenance contractor.

Light grey area in foreground is where stockpile crushed rock was stored. It has been removed without damaging tundra and drainage flows unimpeded.

Northwest view across central area of laydown area.

Example of unimpeded flow through pad.

Example of unimpeded flow through pad.

Example of unimpeded flow through pad.

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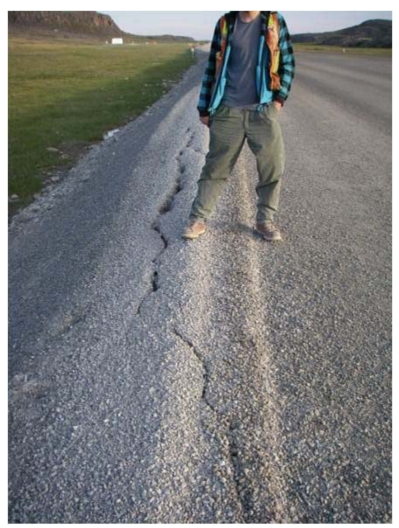
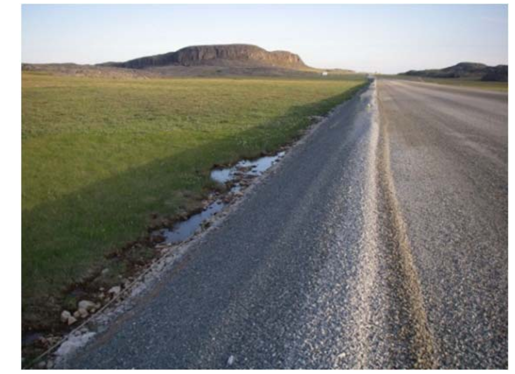
Job No: 1CH008.032 Filename: Fig 4_6-9_2010GeotechInsp_20110217_v3.ppt	**HOPE BAY MINING LTD.**	Date: February 2011 / Approved: EMR / Figure: 8

Examples of Tension Cracks



Examples of Ponding





Other Issues

Secondary containment for fuel tank supplying the airstrip control tower generator. Note compromised berm.

Secondary containment for jet fuel. Note compromised berm.

Fuel stored too close to edge of pad.

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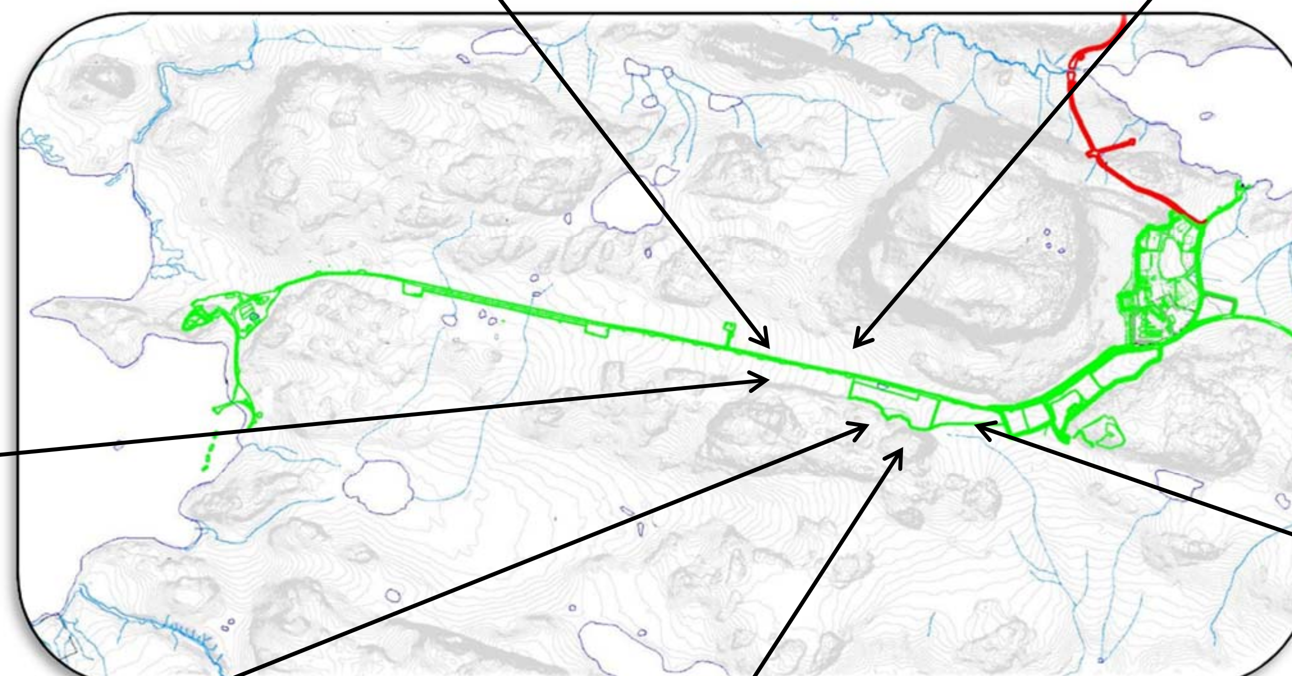
Job No: 1CH008.032 Filename: Fig 4_6-9_2010GeotechInsp_20110217_v3.ppt	HOPE BAY MINING LTD.	Date: February 2011 / Approved: EMR / Figure: 9

Ponding on west side of road north of road laydown area. Site of a road turnout that was removed.

Looking west at road turnout.

Oblique view looking south across road laydown area. Note rock pulled back of tundra adjacent to turnout.



Area between road laydown area and lower reagent pad. This are will be infilled by the upper reagent pad.

Wood debris on the pad.

Ponded water at the toe of the pad.

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2010 Geotechnical Inspection

All Weather Road and Road Laydown Area

Job No:	1CH008.032	HOPE BAY MINING LTD.	Date: February 2011	Approved: EMR	Figure: 10
Filename:	Fig 10-15_GeotechInsp_20100217.ppt				

Looking west across the crusher pad.

Looking east across Quarry #2.

Looking south across Quarry #2 and future land farm area site.

Looking west across overburden pile.

Looking north across the crusher pad with the STP discharge area in the foreground.

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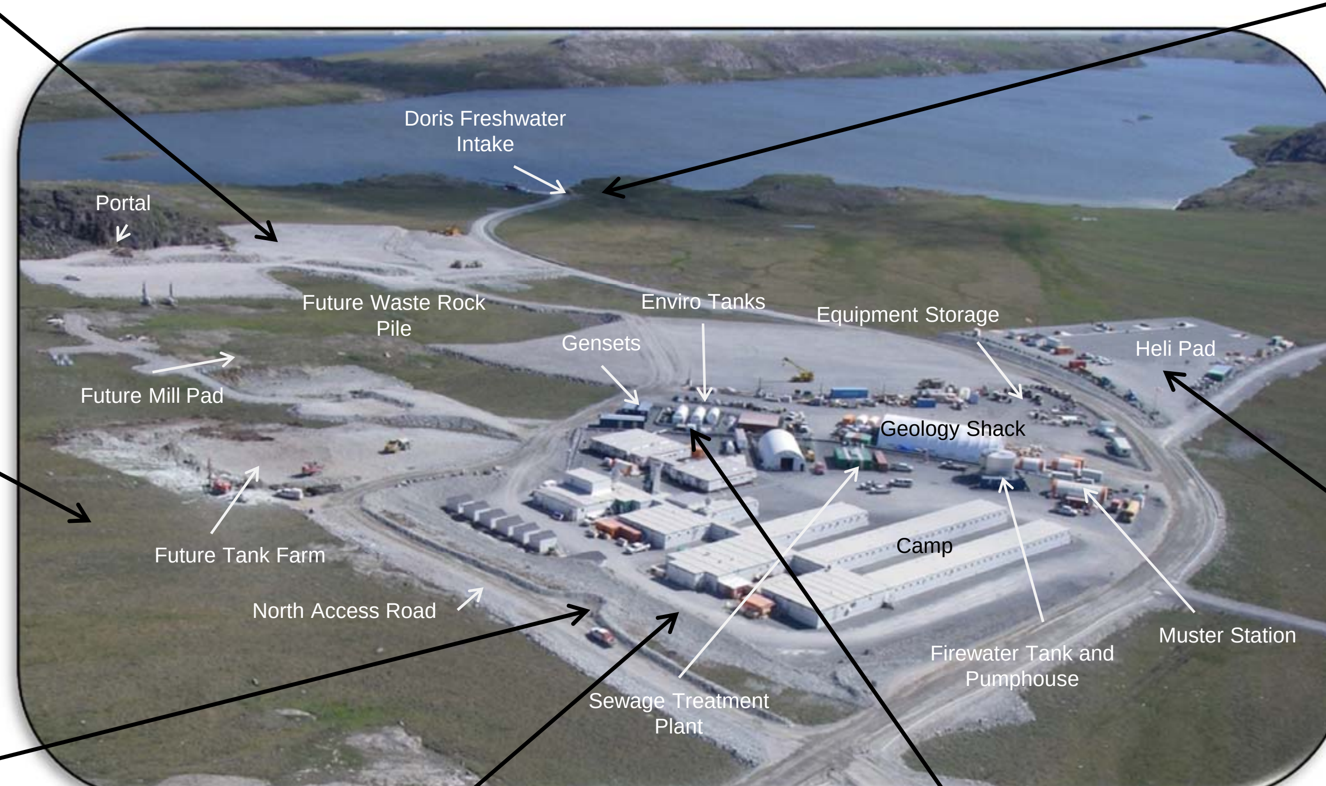
		Quarry #2 and Crusher Pad
Job No: 1CH008.032 Filename: Fig 10-15_GeotechInsp_20100217.ppt	**HOPE BAY MINING LTD.**	Date: February 2011 / Approved: EMR / Figure: **11**


Oblique view of portal access and mine infrastructure support pads looking north.


Looking north across camp area.


Doris Lake water intake pipeline and pump station.


Oblique view of camp wall looking southwest.




Doris Lake water inlet fuel tank.


Oblique view of camp highwall.


Oblique view of helipad.


Power station tank farm.


Oblique view of camp looking east.


Camp fuel tank.

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2010 Geotechnical Inspection

Doris North Camp

Job No: 1CH008.032
Filename: Fig 10-15_GeotechInsp_20100217.ppt

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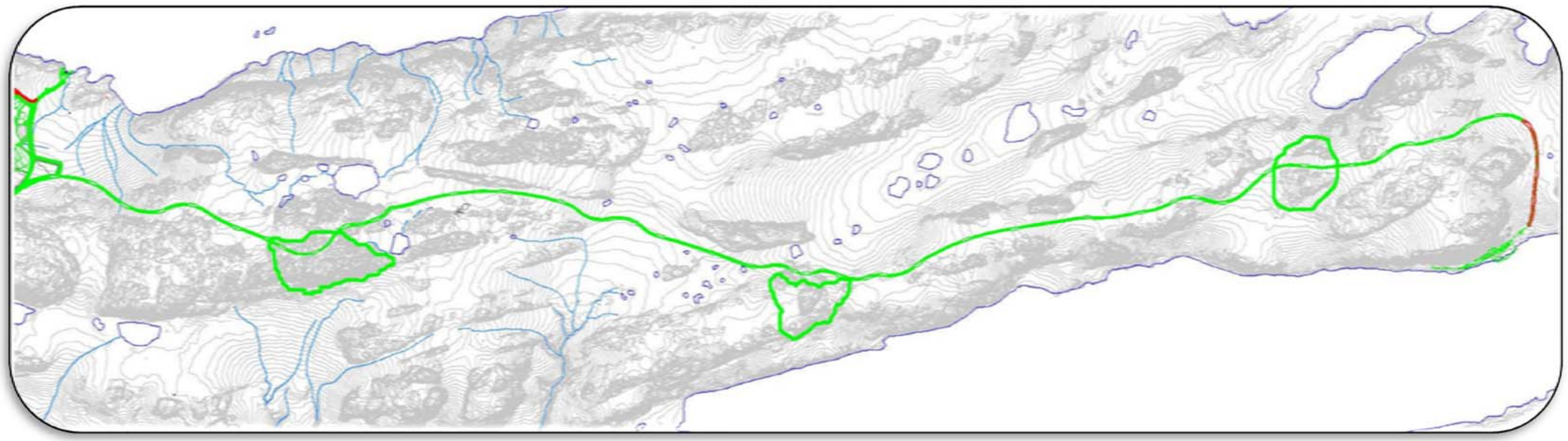
Date:	Approved: EMR	Figure: 12

View along all-weather road looking north.

Typical road turnout.

Looking north across all-weather road where construction was terminated in 2010.



View along all-weather road looking north.

View along all-weather road looking north.

Typical road turnout.

Typical north view across all-weather road.

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		Doris – Windy All Weather Road
Job No: 1CH008.032 Filename: Fig 10-15_GeotechInsp_20100217.ppt	HOPE BAY MINING LTD.	Date: February 2011 / Approved: EMR / Figure: 13

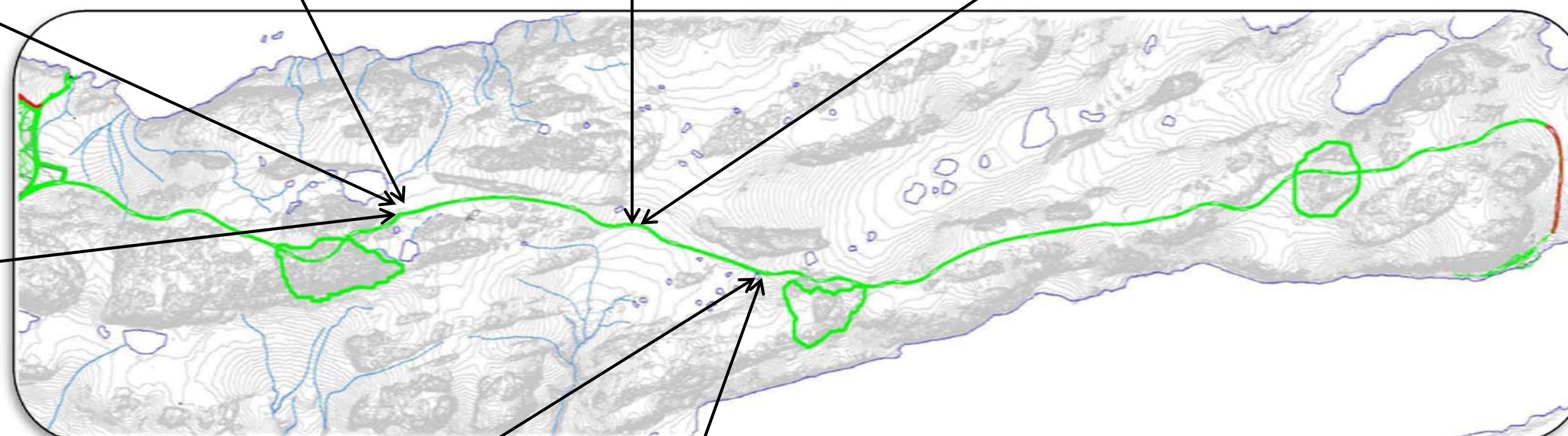

Crossing #1 looking south.


Crossing #1 looking east.


Crossing #2 and #3 looking east.


Crossing #2 and #3 looking east.


Crossing #1 looking southeast.




Crossing #4 looking east.


Crossing #4 looking northeast.

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Job No: 1CH008.032 Filename: Fig 10-15_GeotechInsp_20100217.ppt	HOPE BAY MINING LTD.	Date: February 2011 · Approved: EMR · Figure: 14

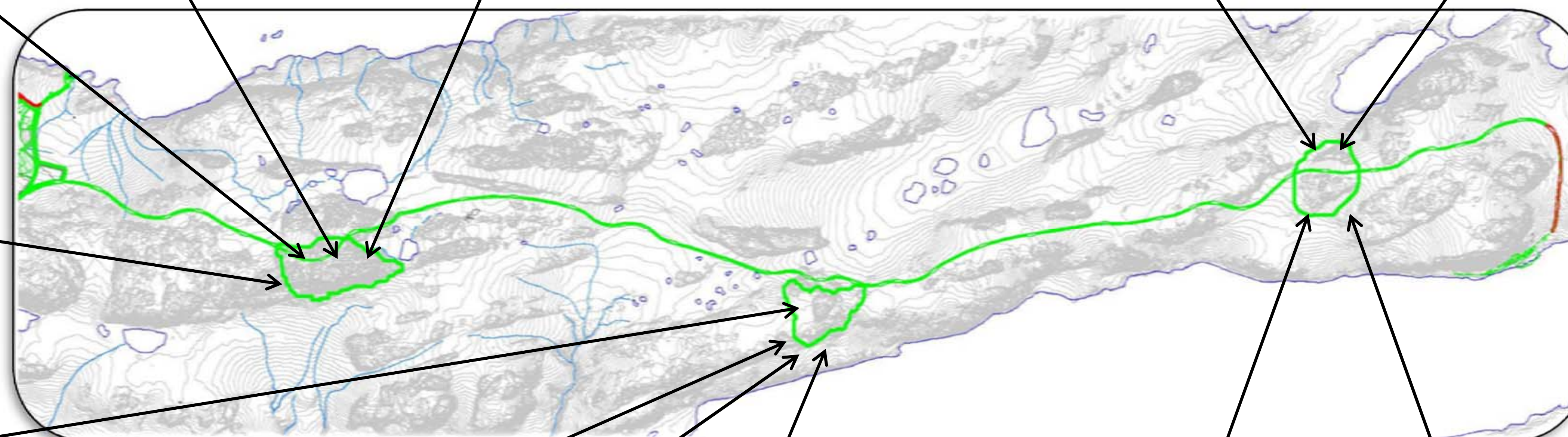
Quarry A looking northwest.

Quarry A looking south.

Quarry A looking east.

Quarry D looking northeast.

Quarry D looking east.



Quarry A looking north.

Quarry B looking northwest.

Quarry B looking south.

Quarry B looking east.

Quarry B looking west.

Quarry D looking south.

Quarry D looking southwest.

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Job No: 1CH008.032

Filename: Fig 10-15_GeotechInsp_20100217.ppt

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2010 Geotechnical Inspection

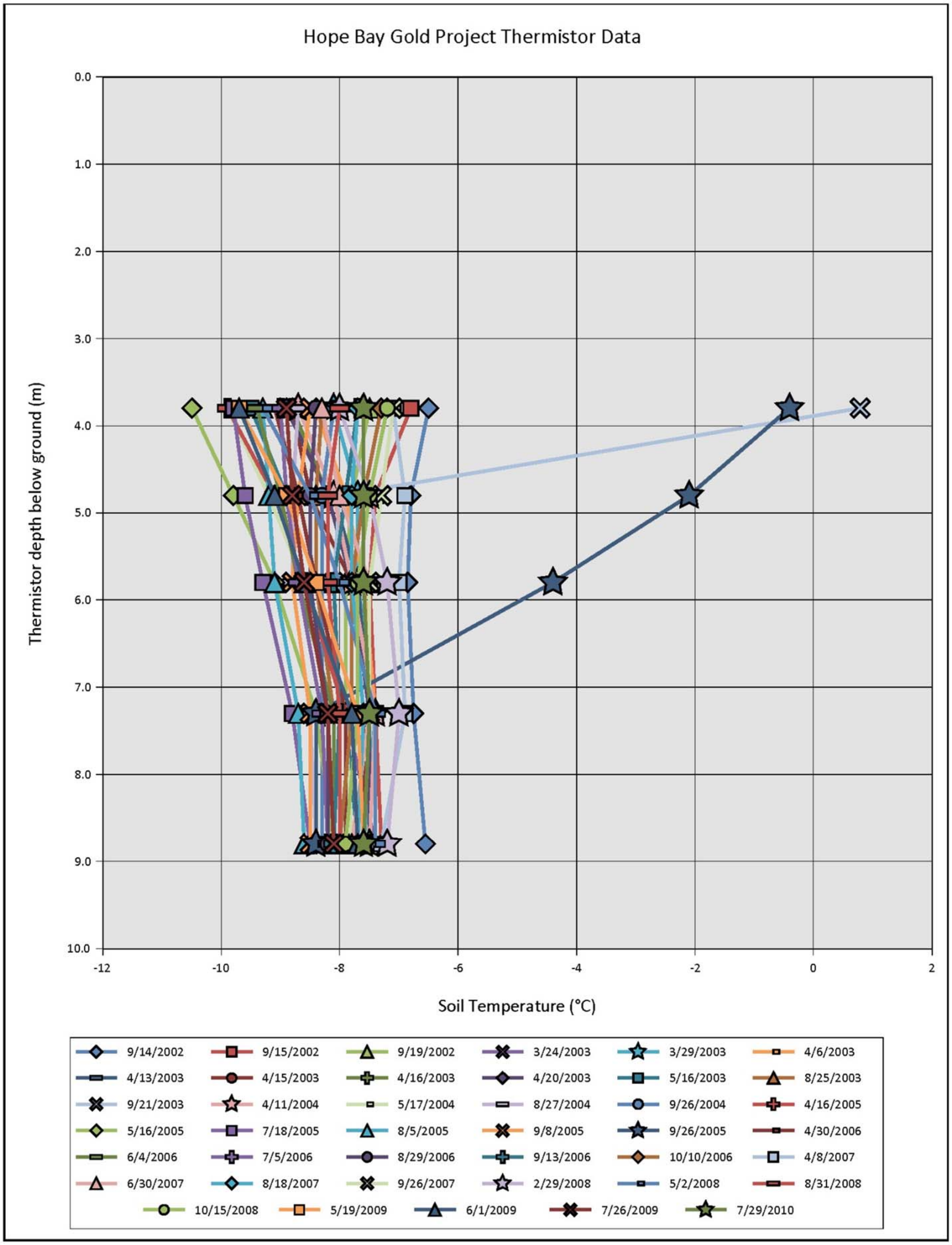
Doris – Windy All Weather Road Quarries

Date:	Approved:	Figure:
February 2011	EMR	15

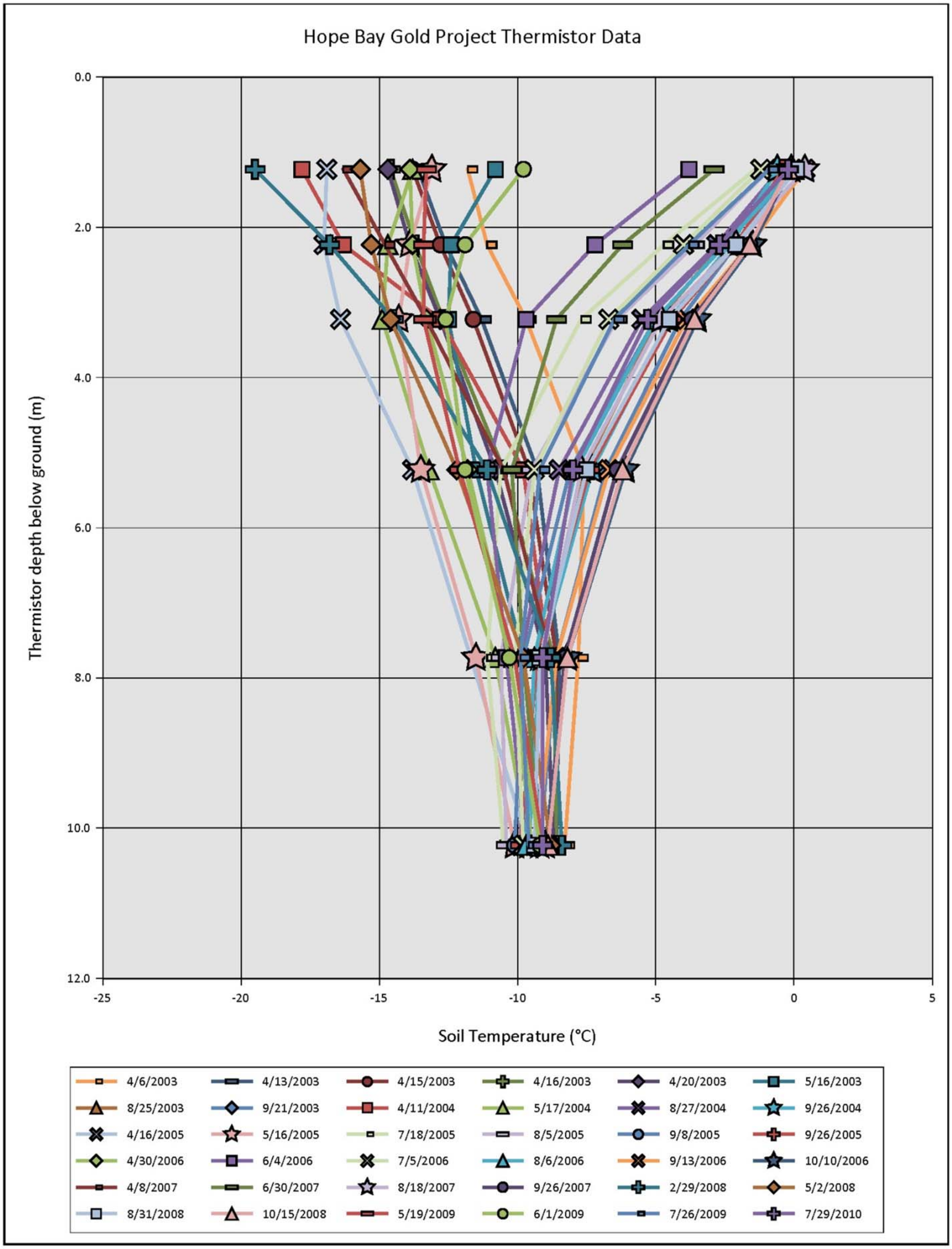
Appendix A

Doris North Project Active Thermistor Profiles

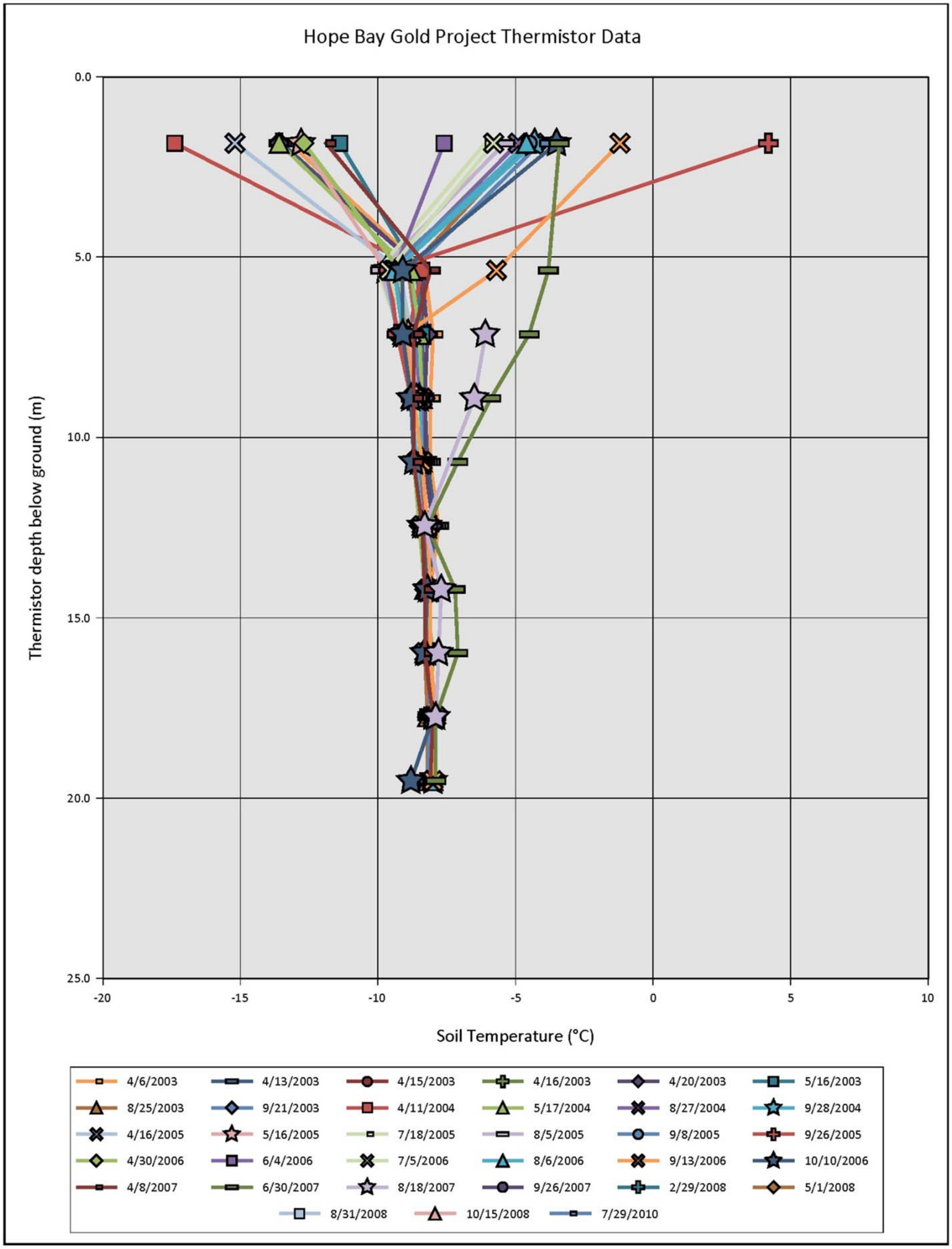
Drillhole SRK 11



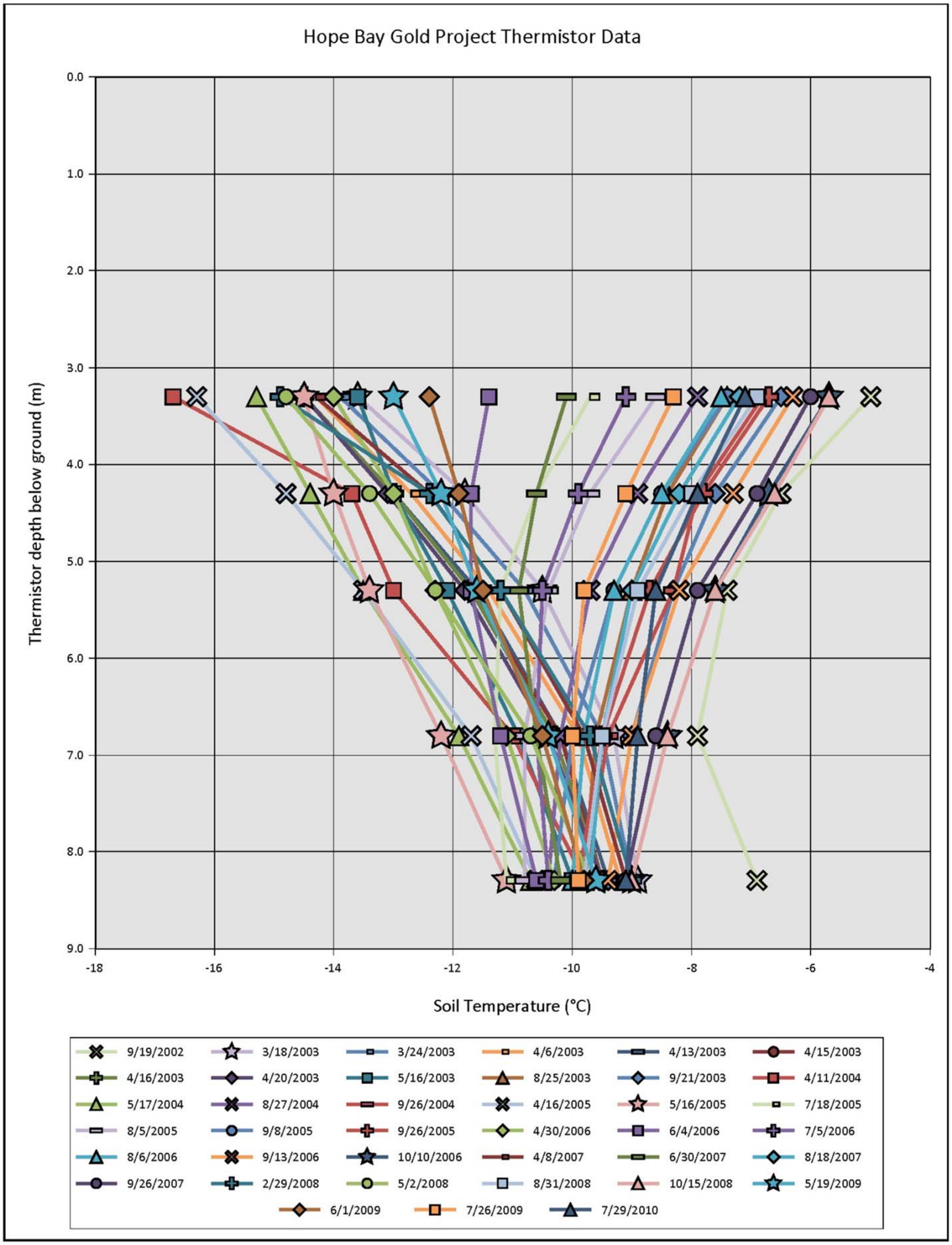
Drillhole SRK 14



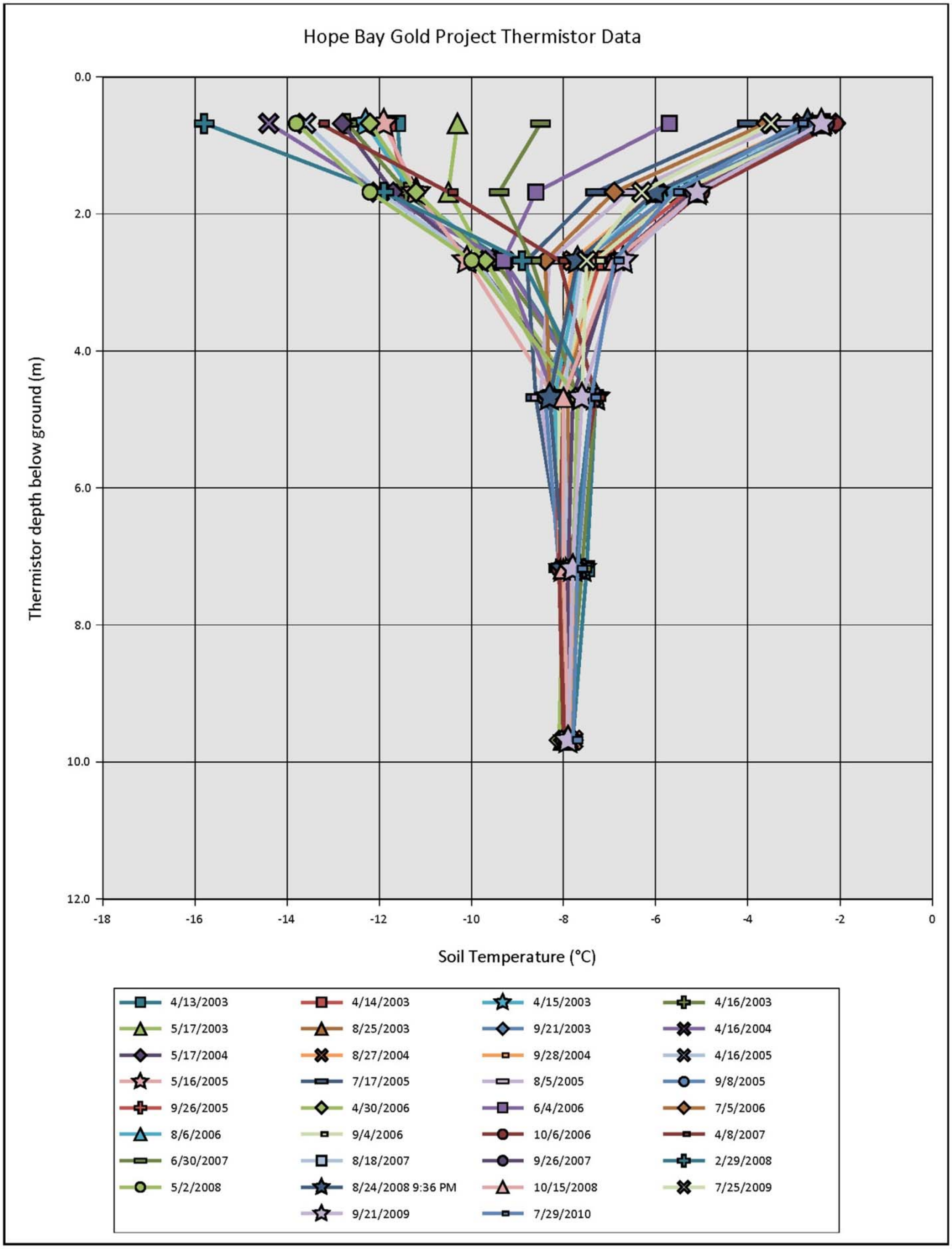
Drillhole SRK 15



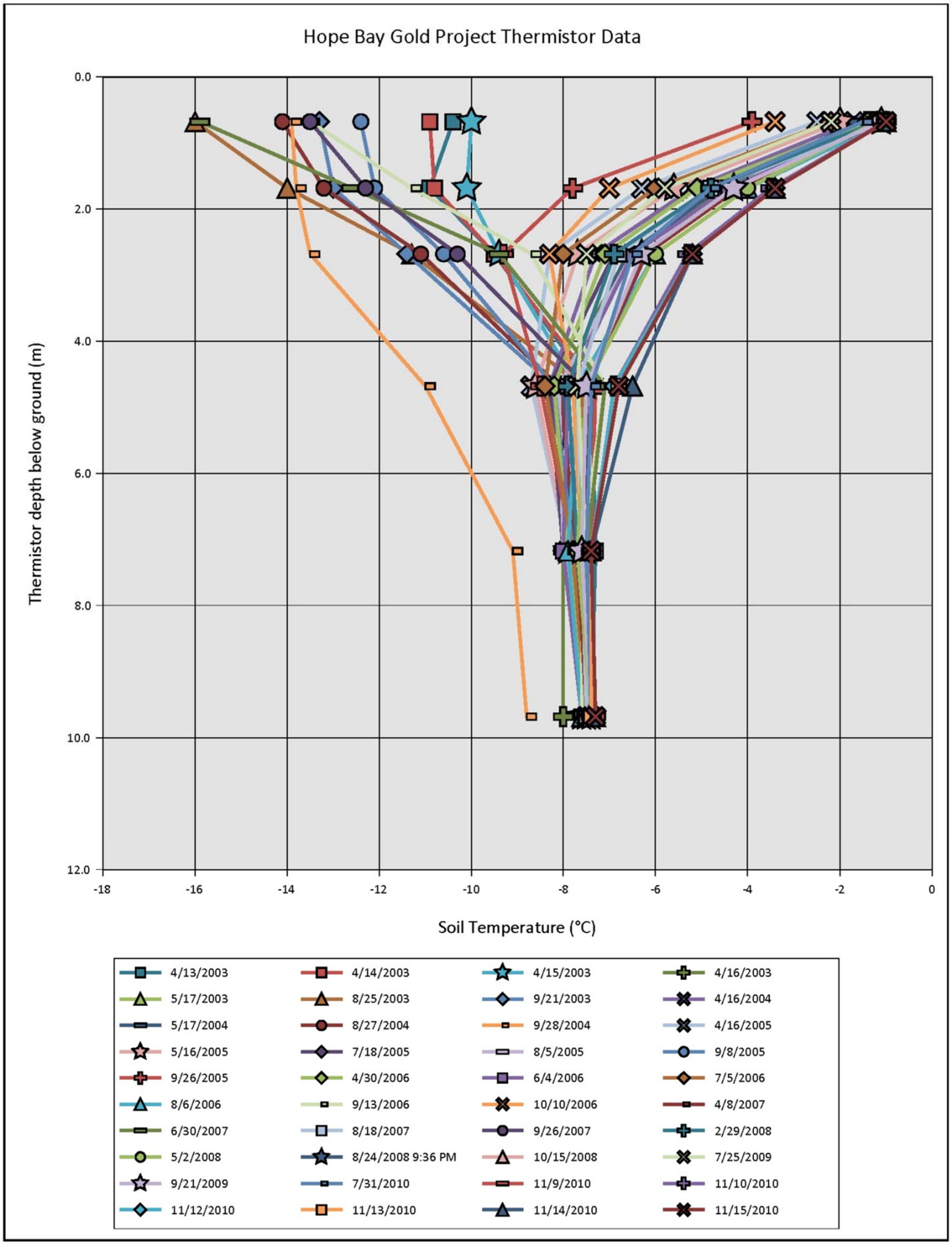
Drillhole SRK 16



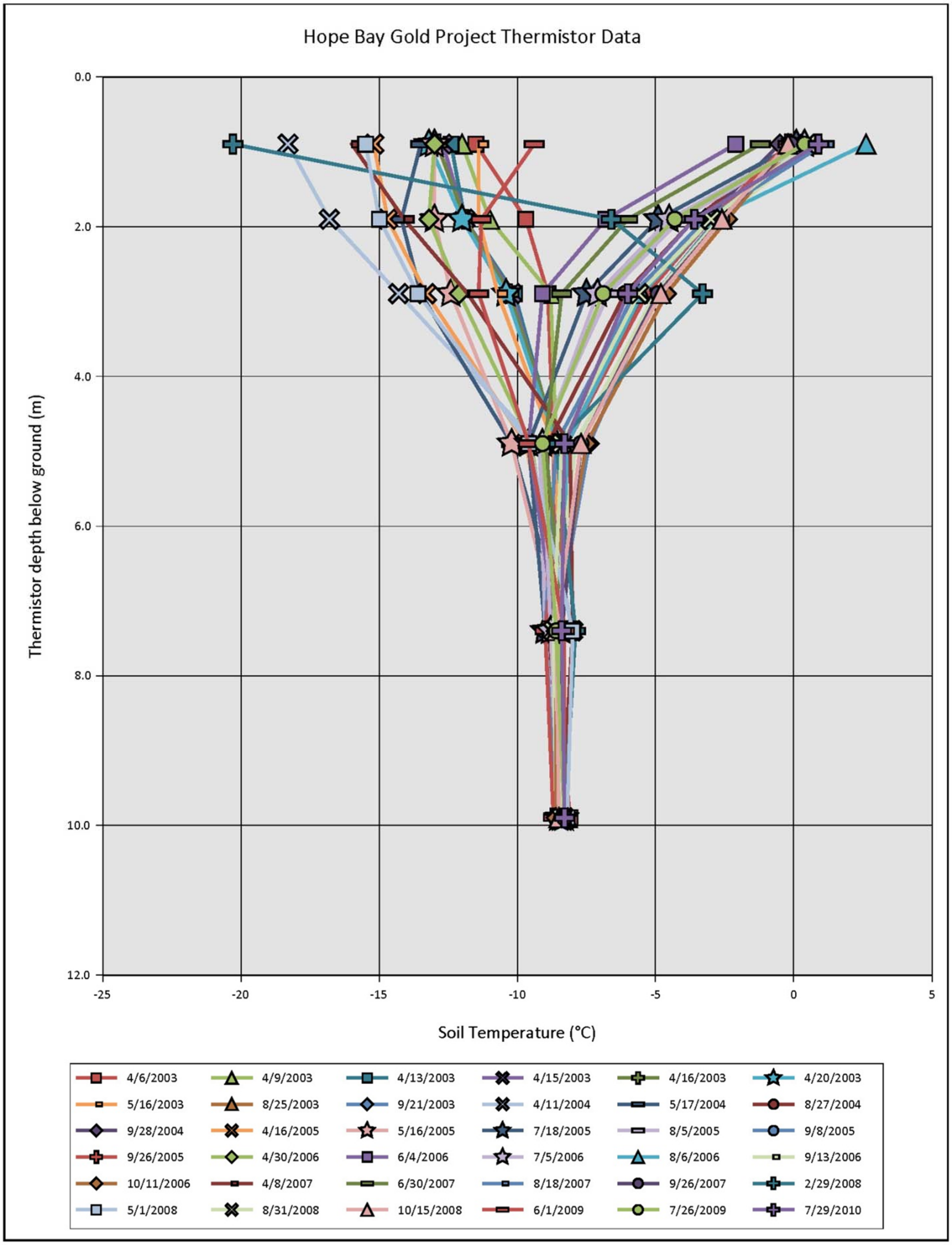
Drillhole SRK 22



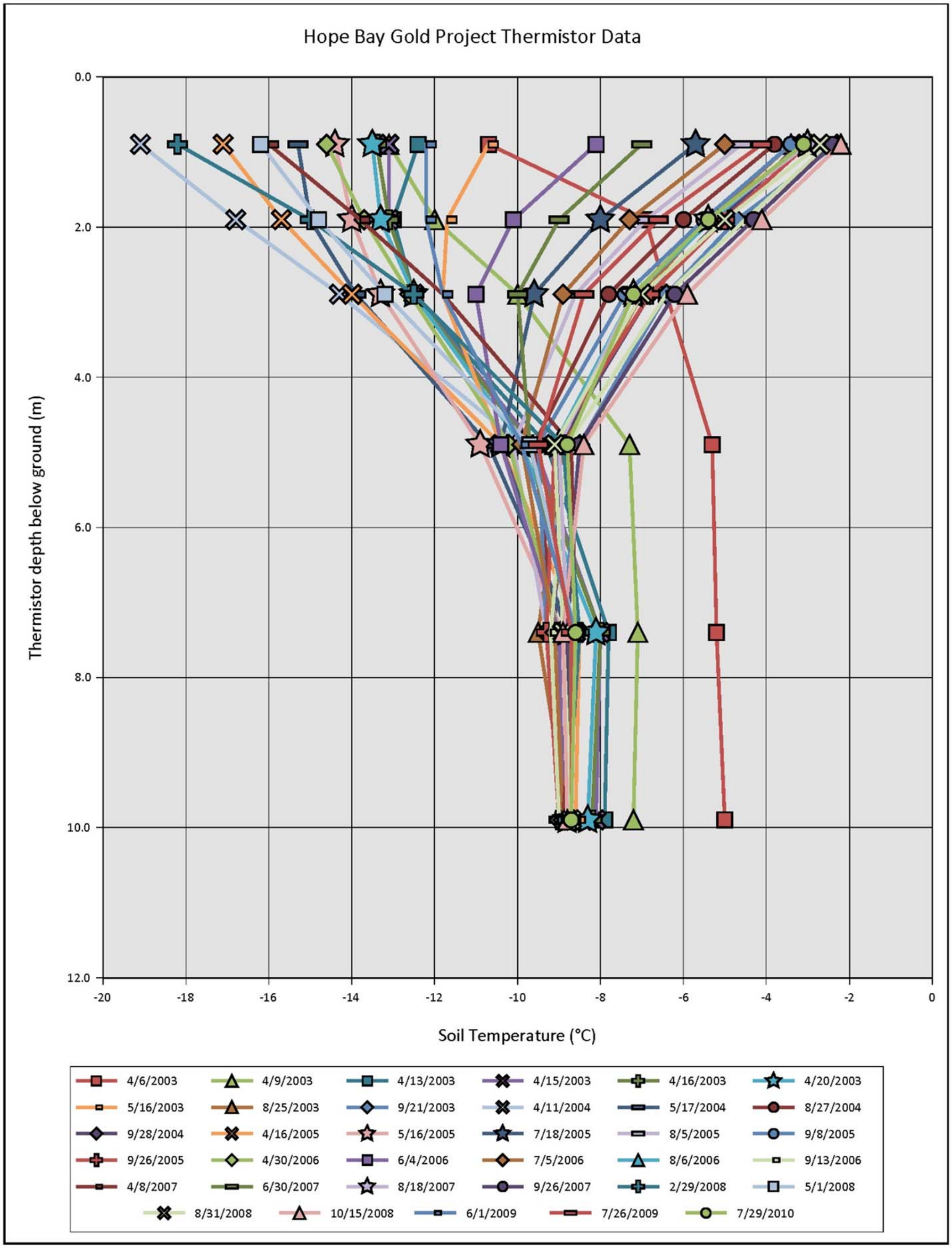
Drillhole SRK 24



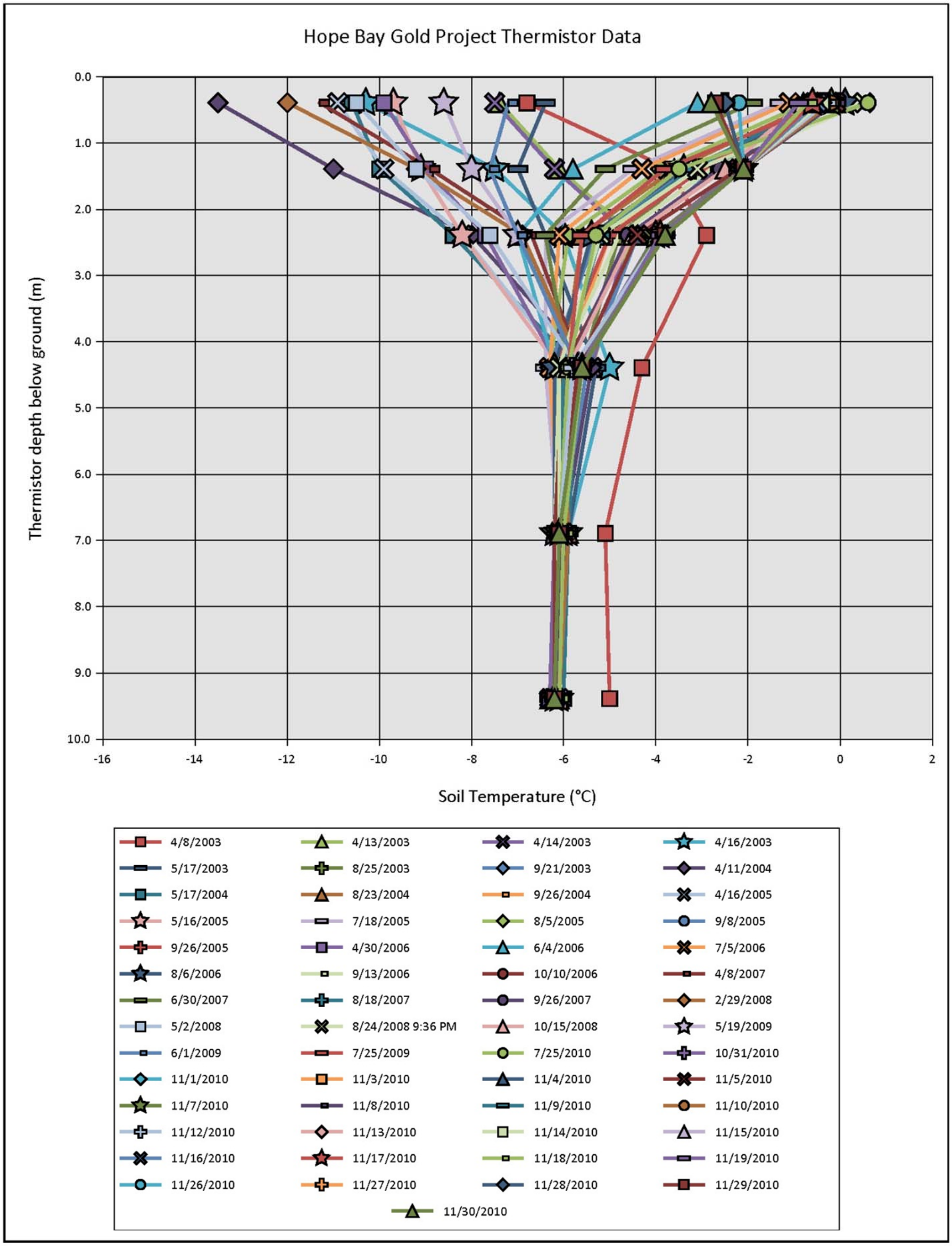
Drillhole SRK 32



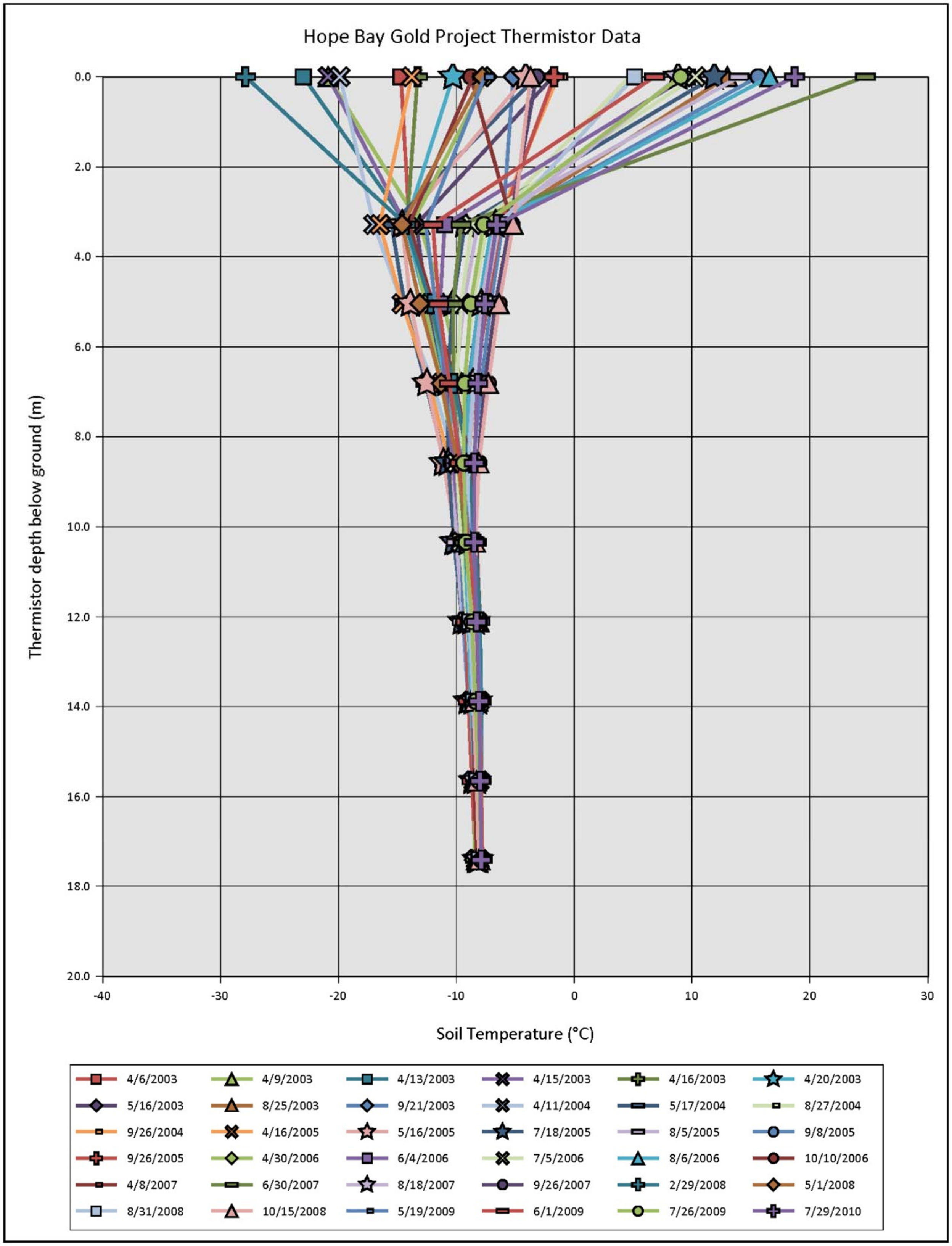
Drillhole SRK 33



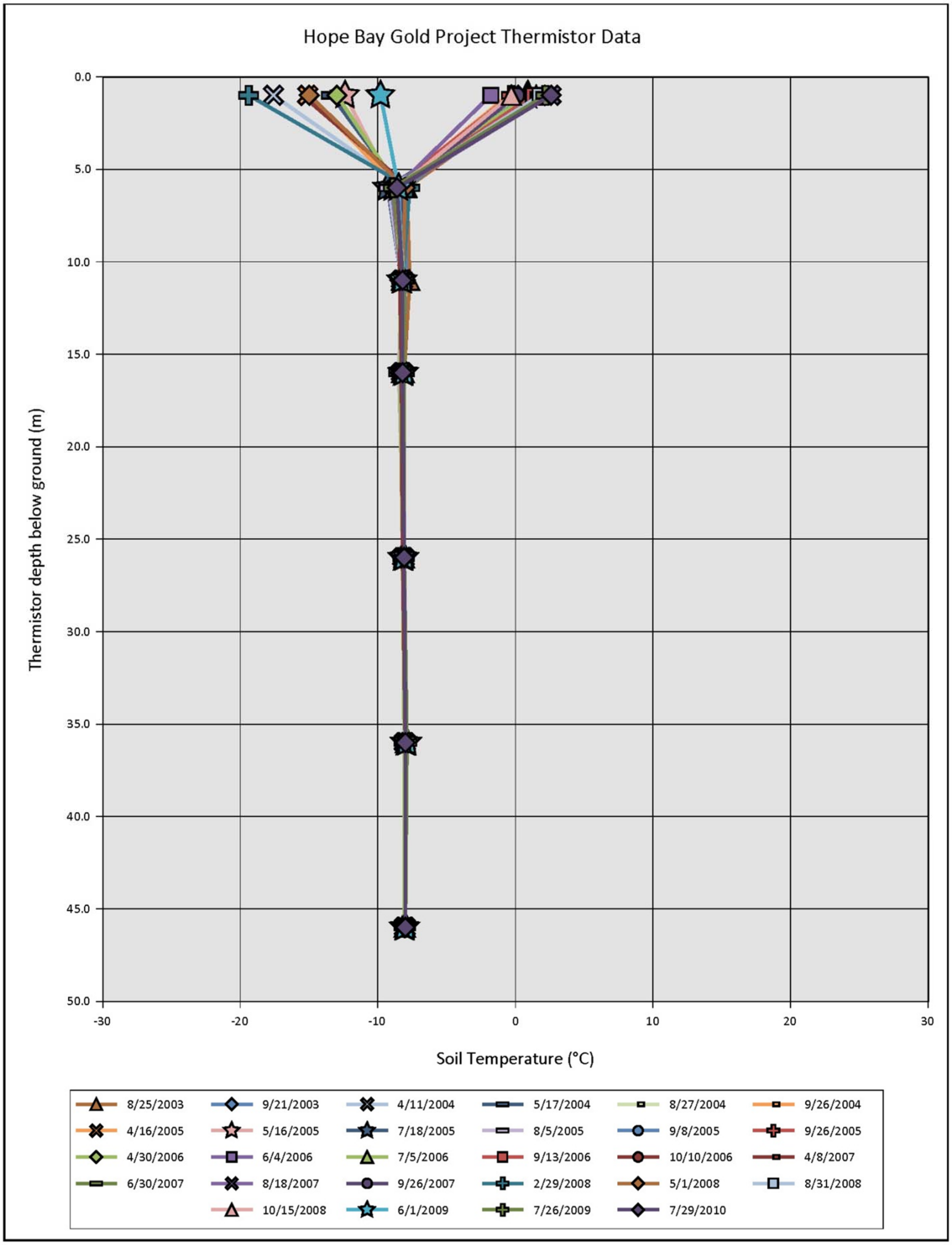
Drilhole SRK 35



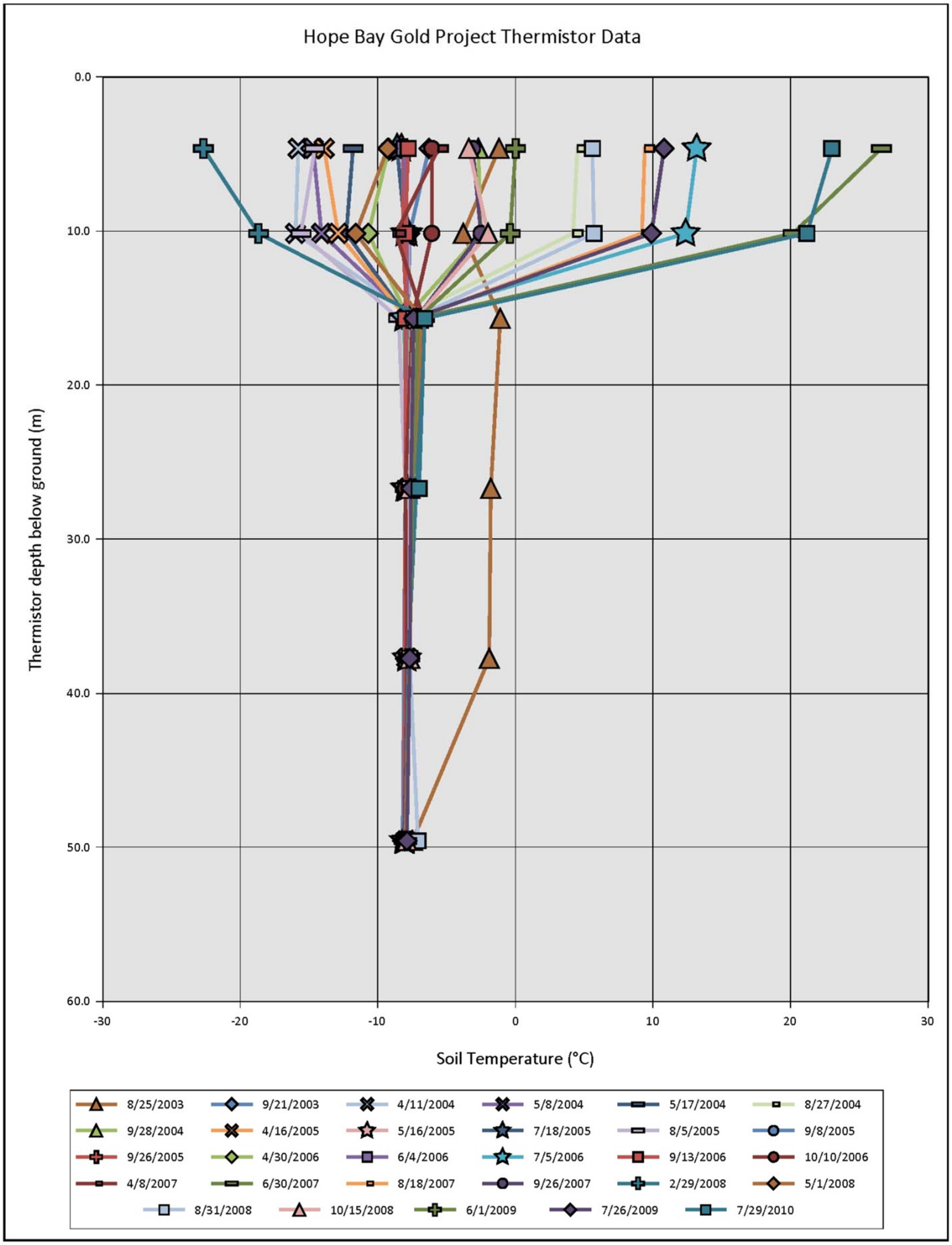
Drillhole SRK 37



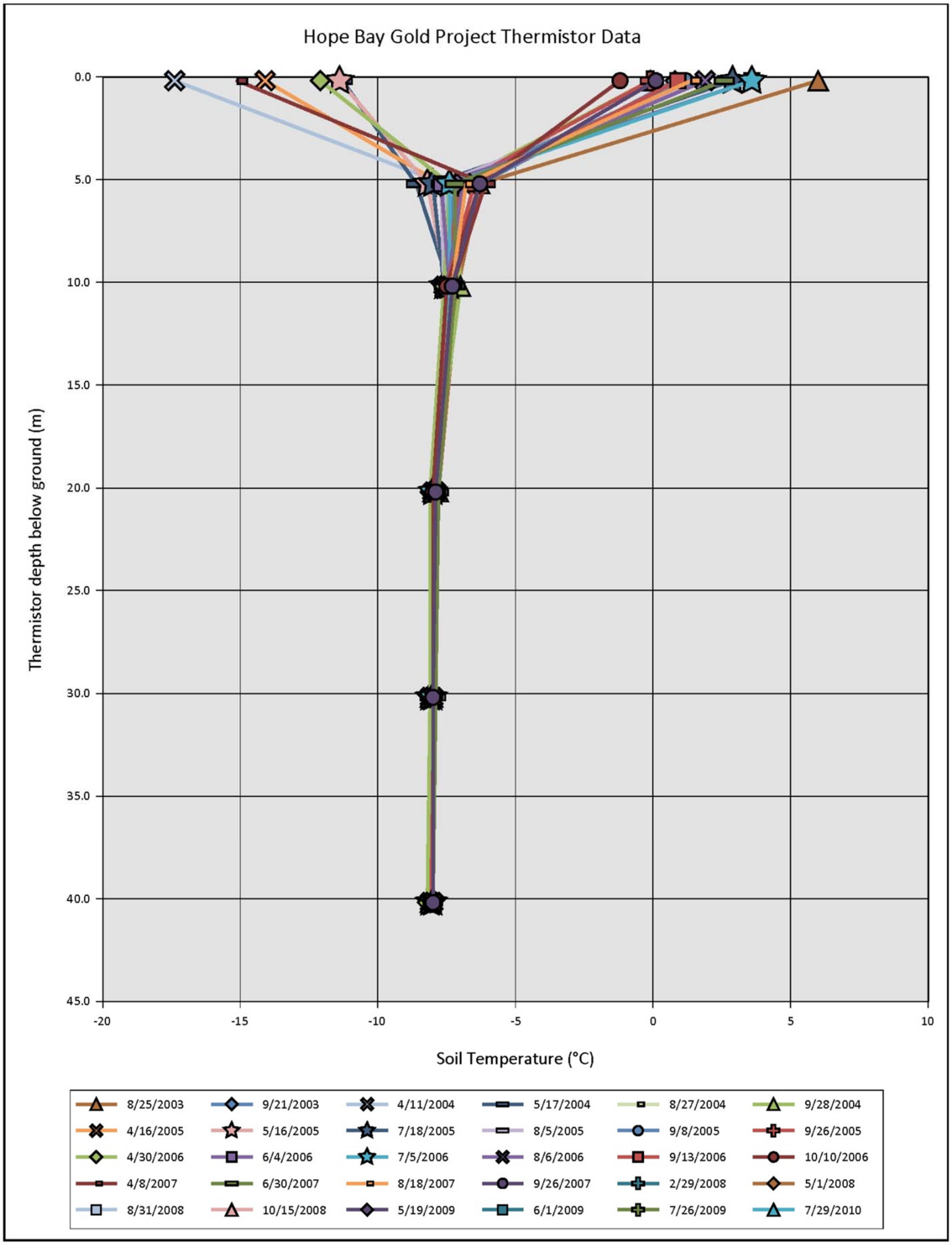
Drillhole SRK 38



Drillhole SRK 39



Drillhole SRK 42



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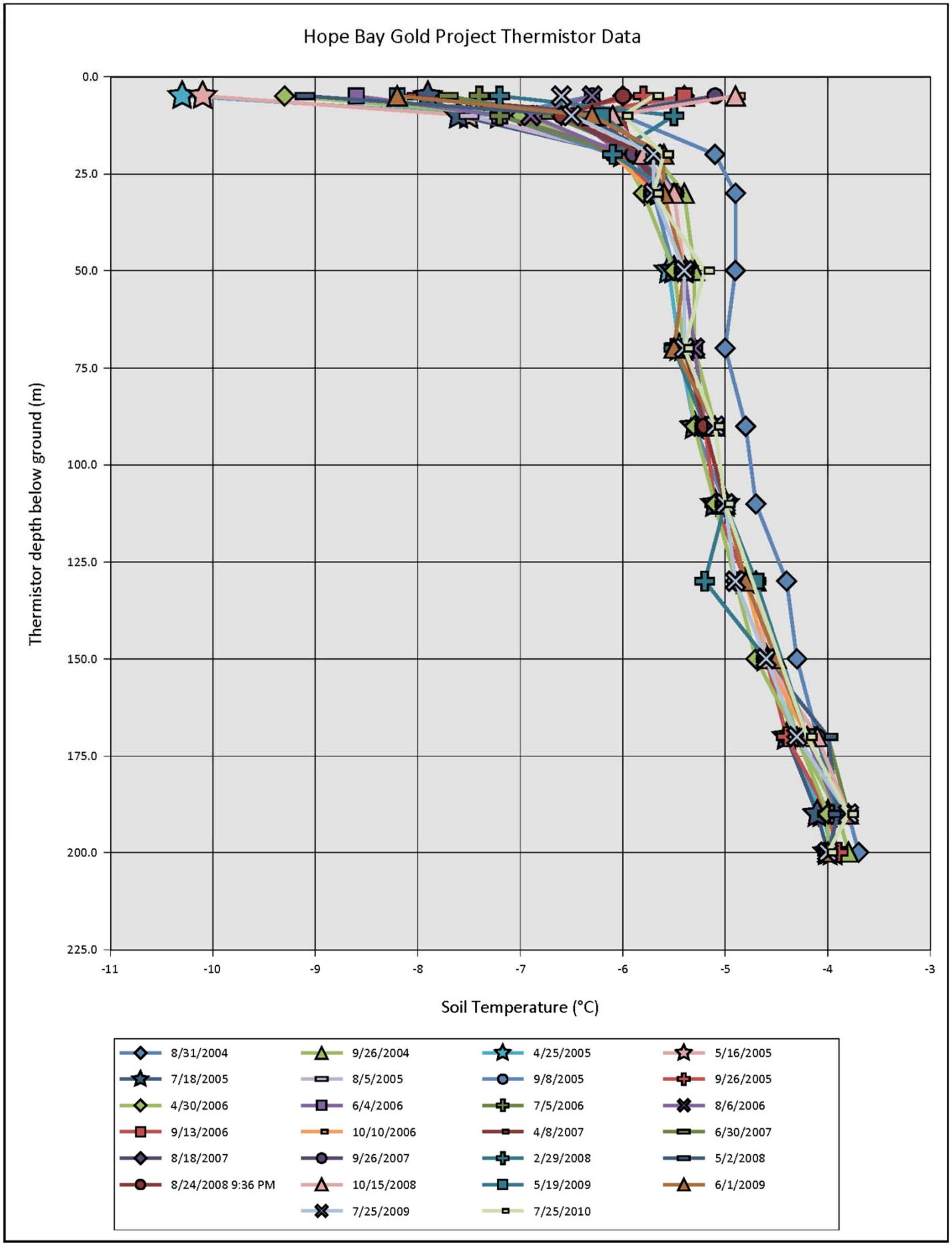

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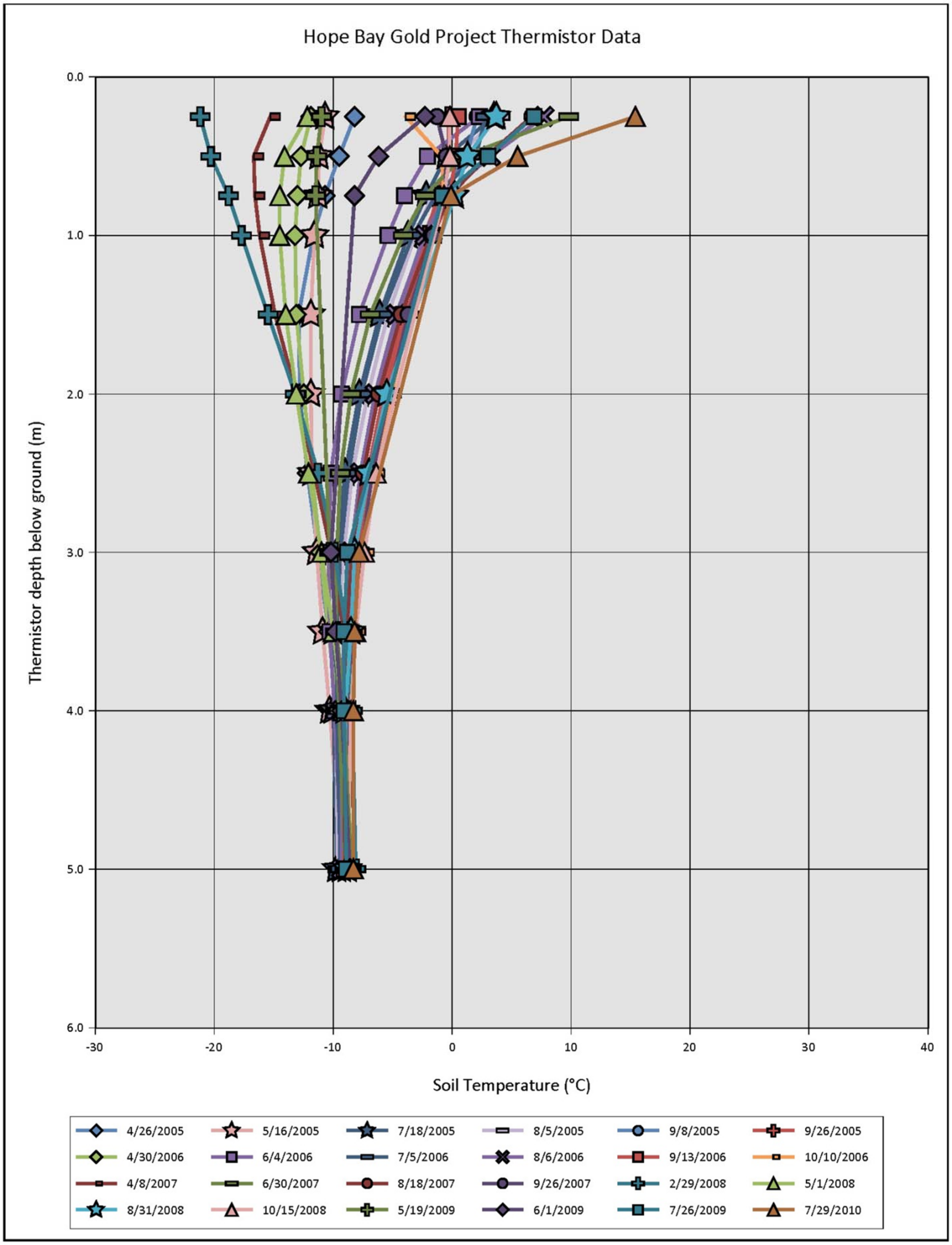

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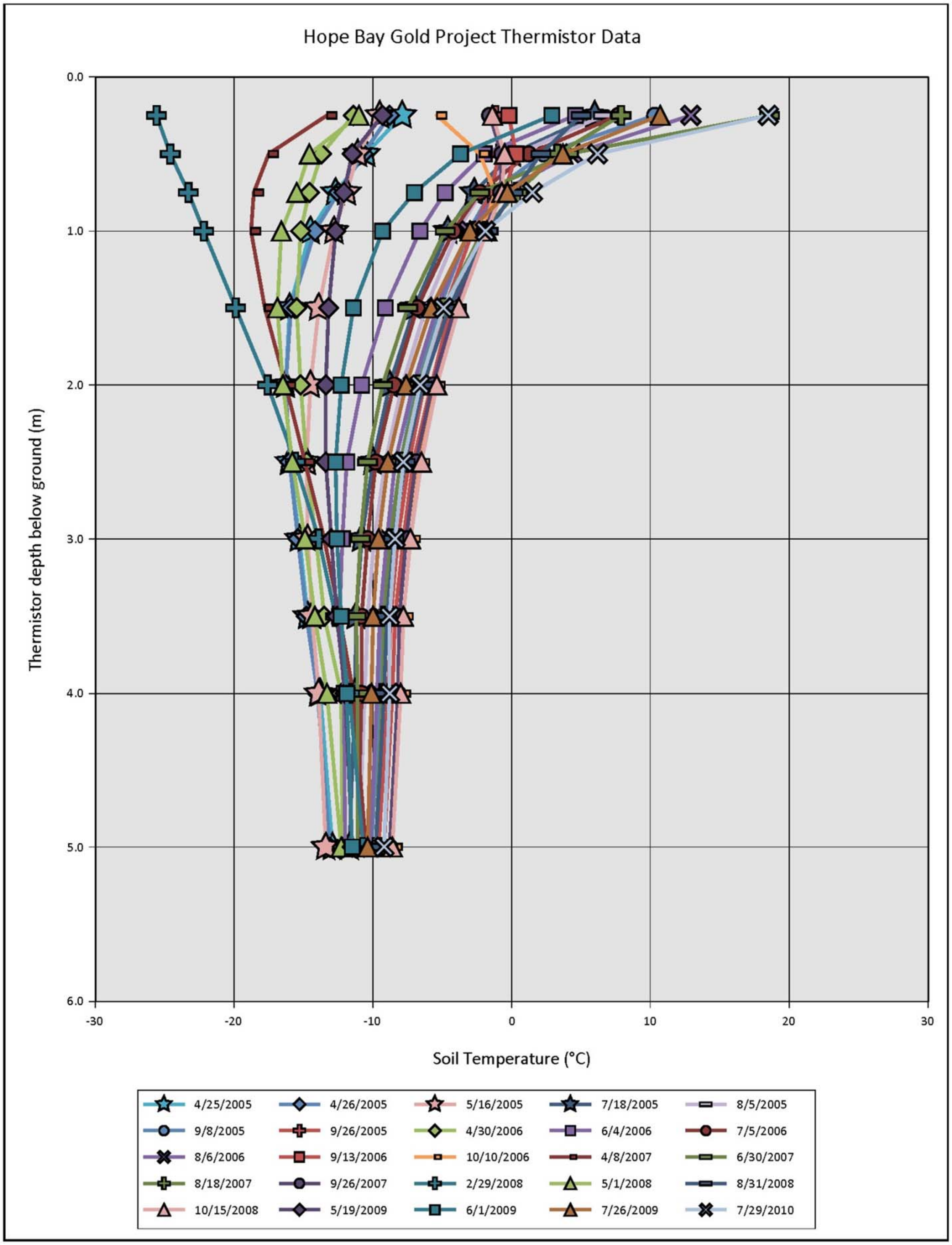

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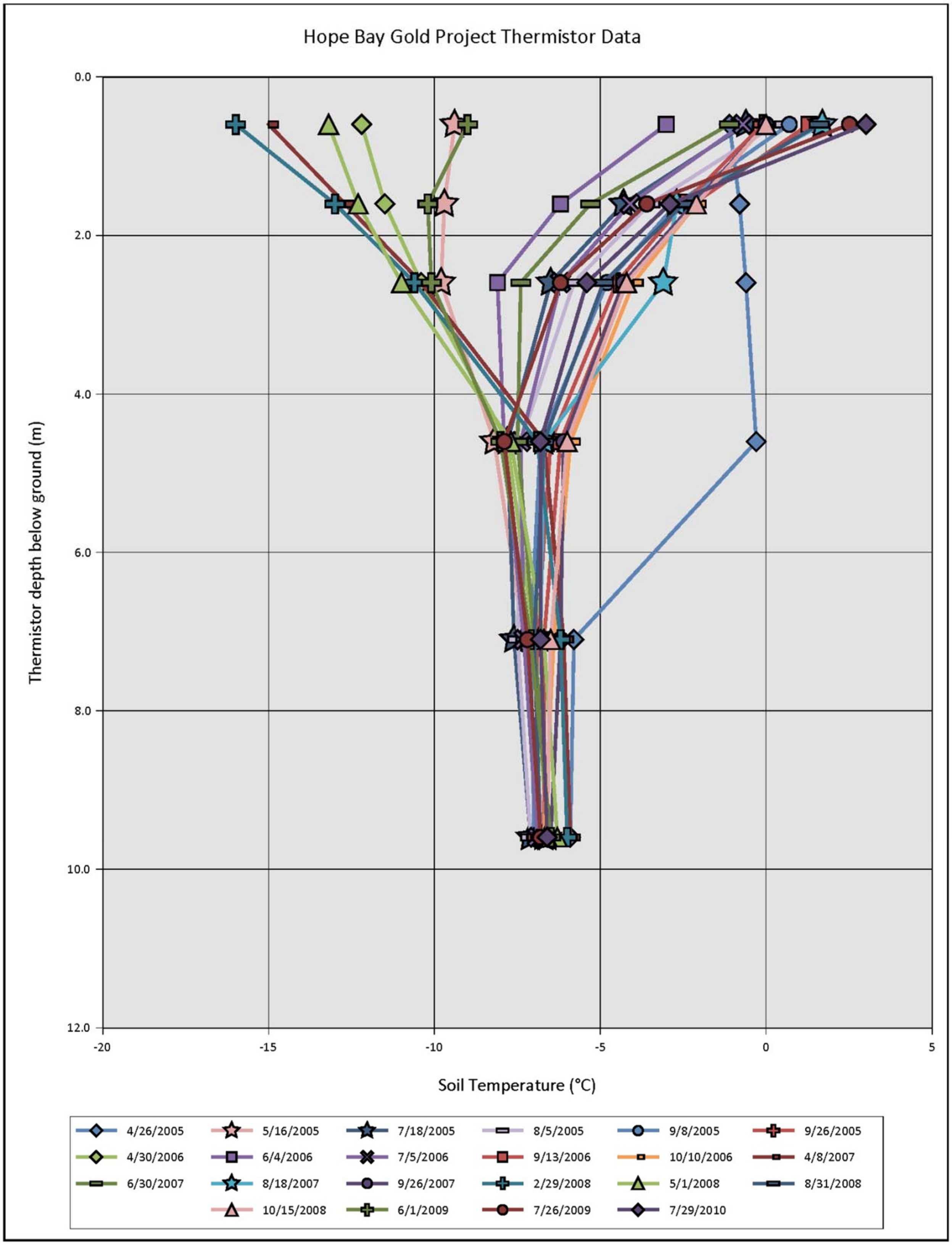

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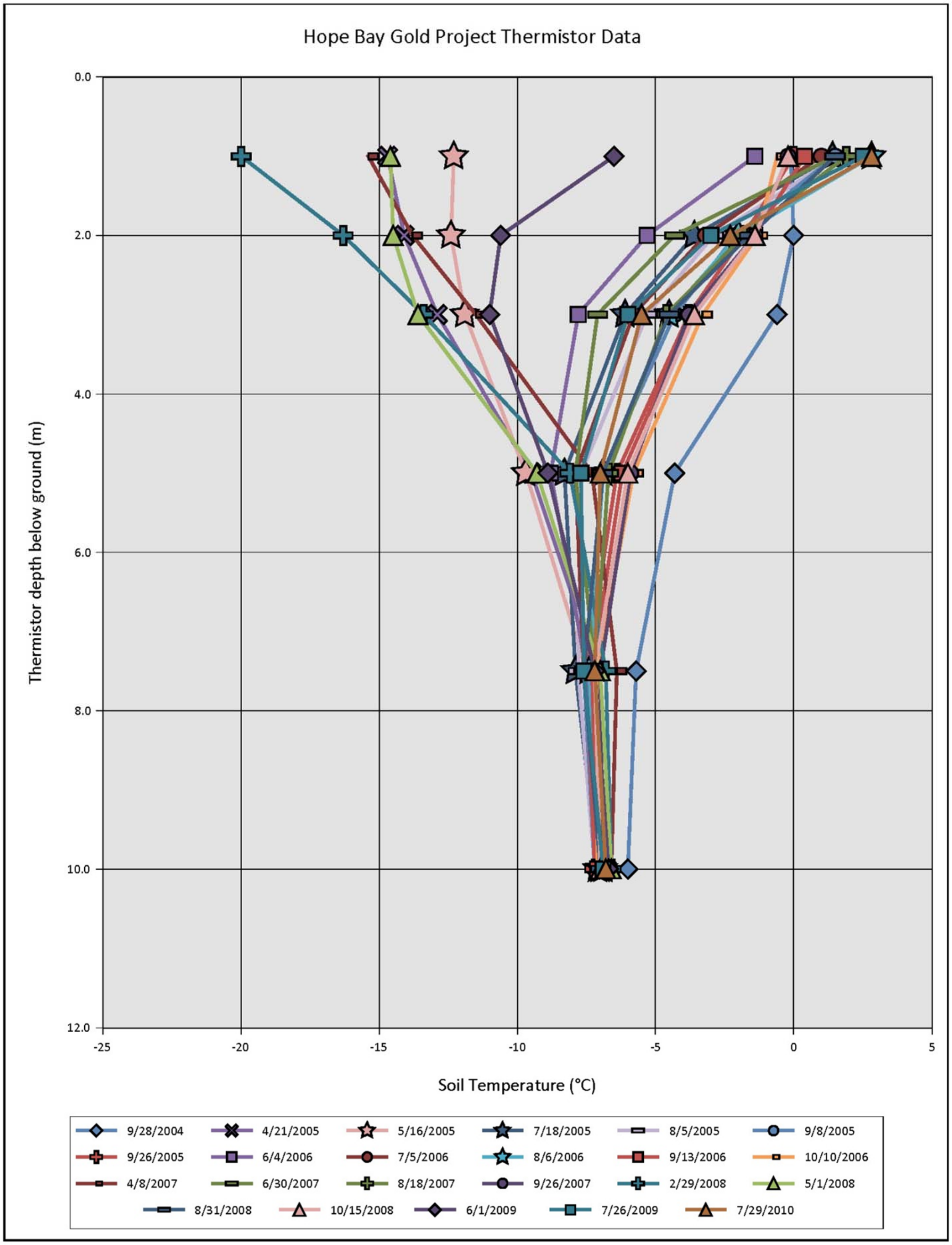

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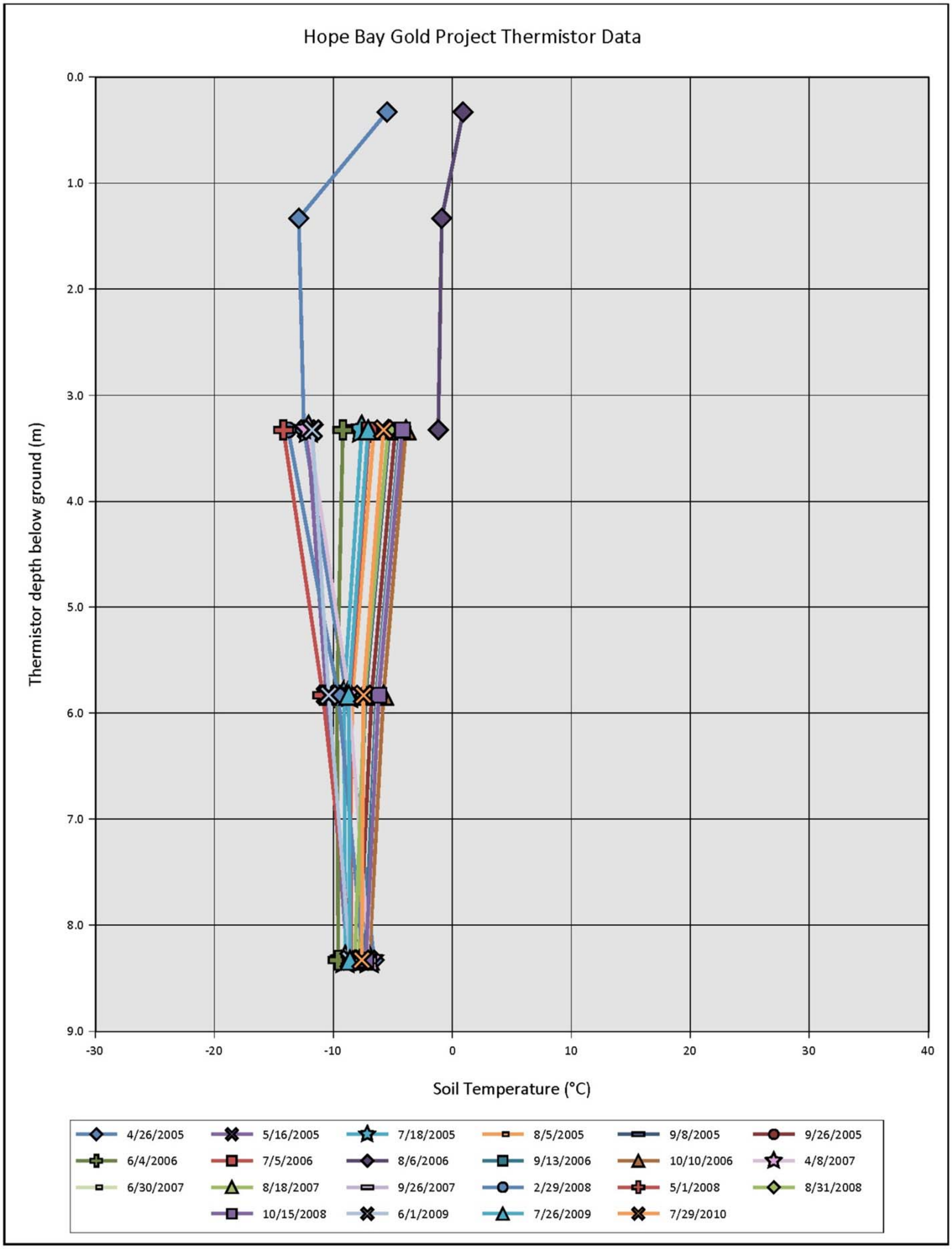
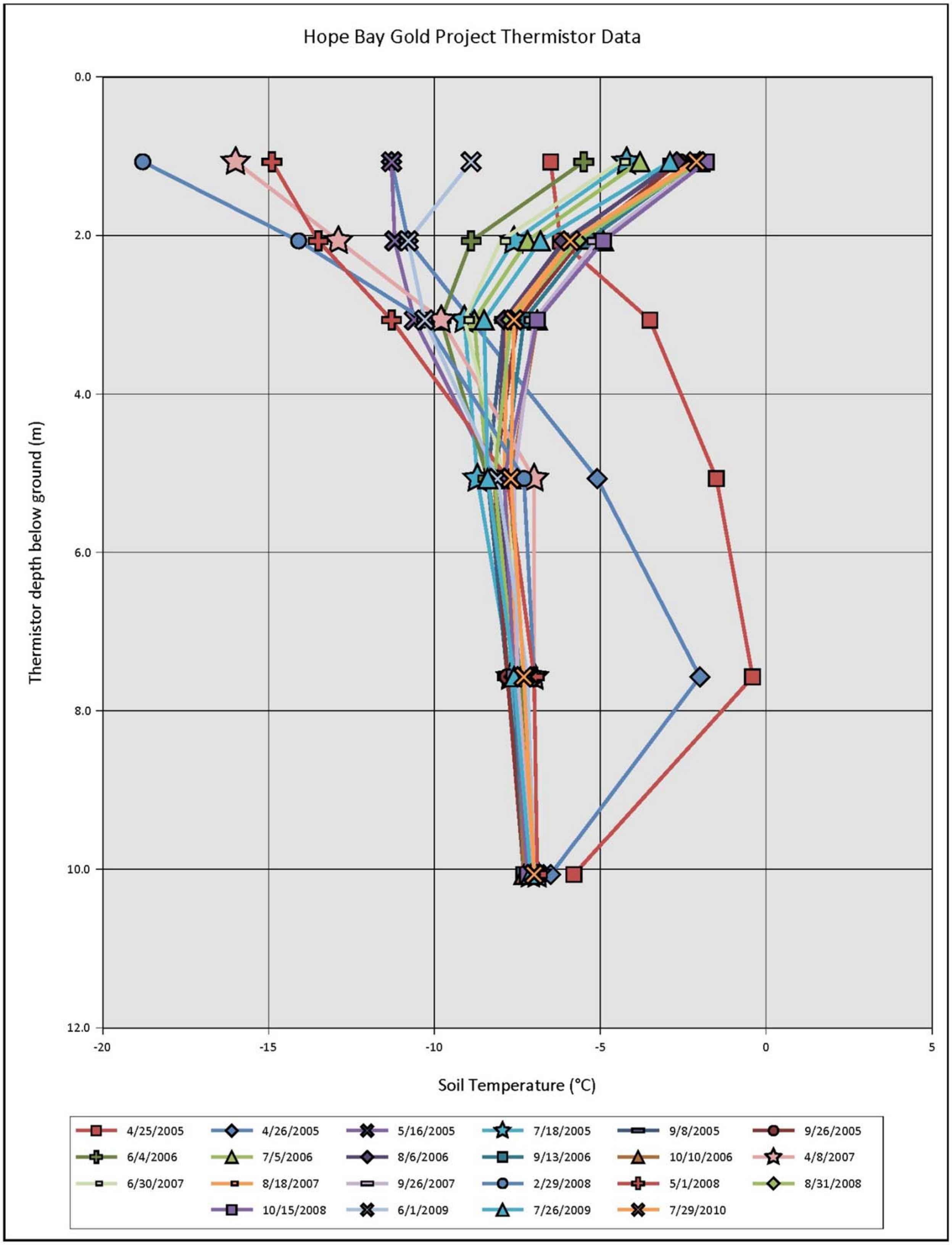
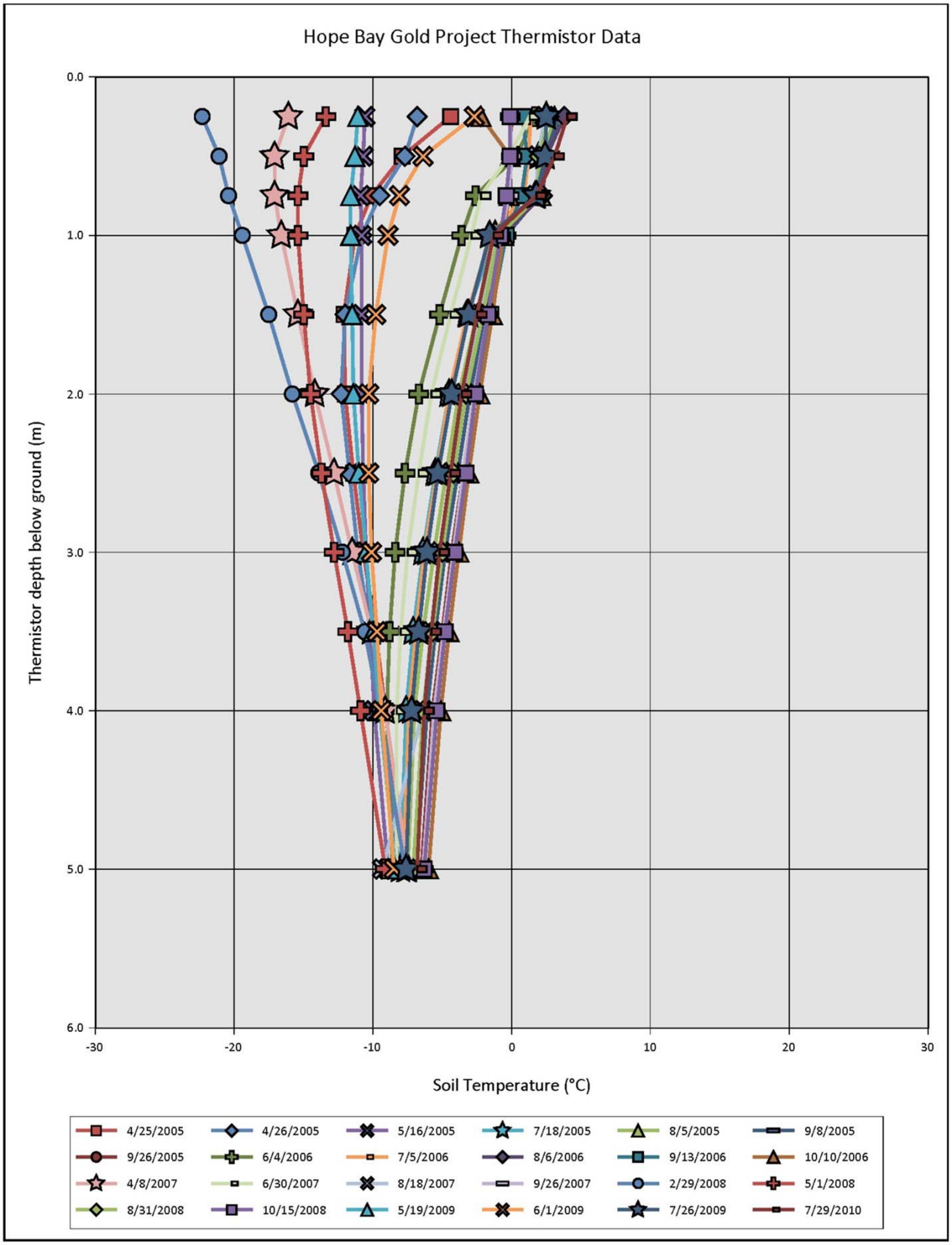


Drillhole SRK 58



Drillhole SRK 62



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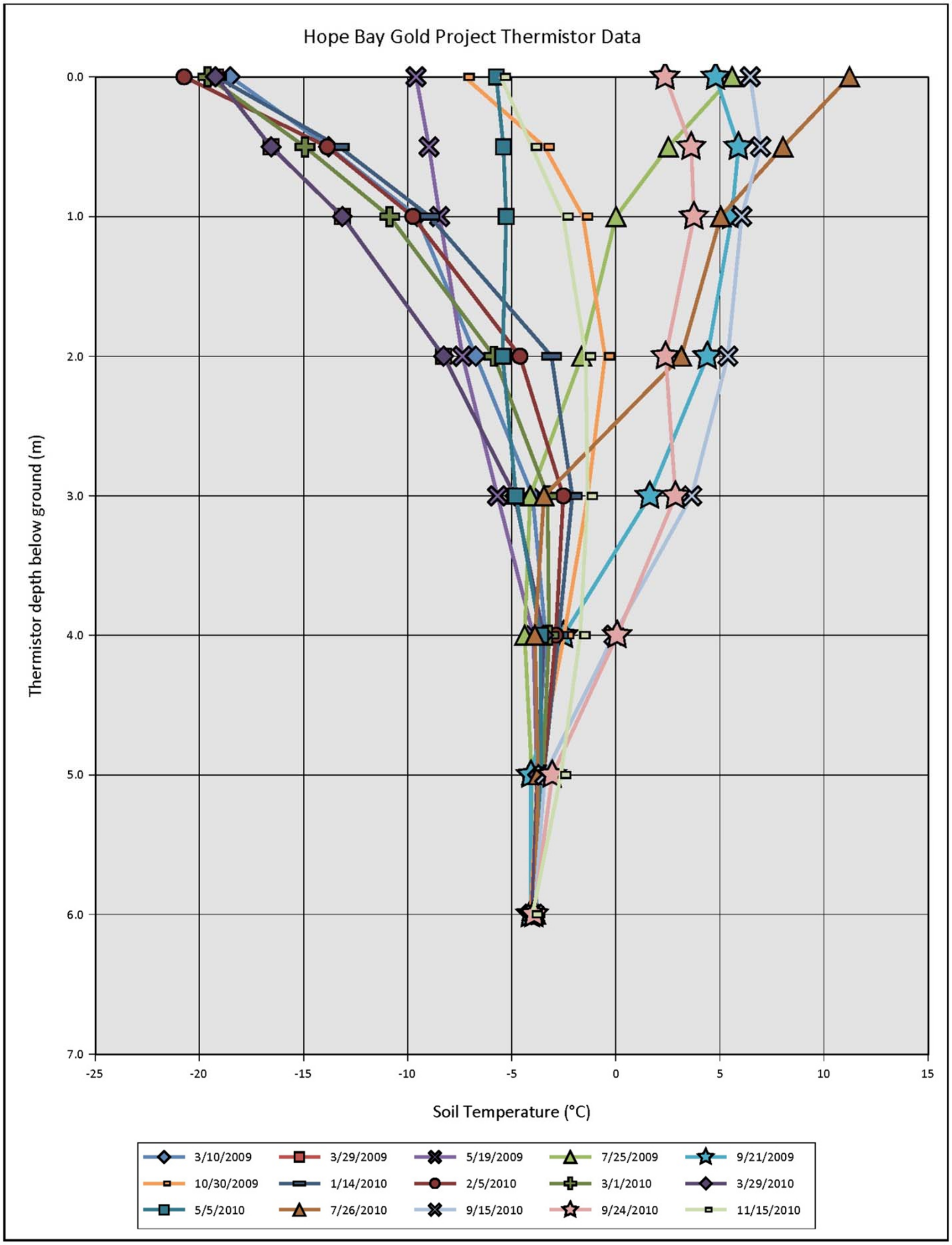

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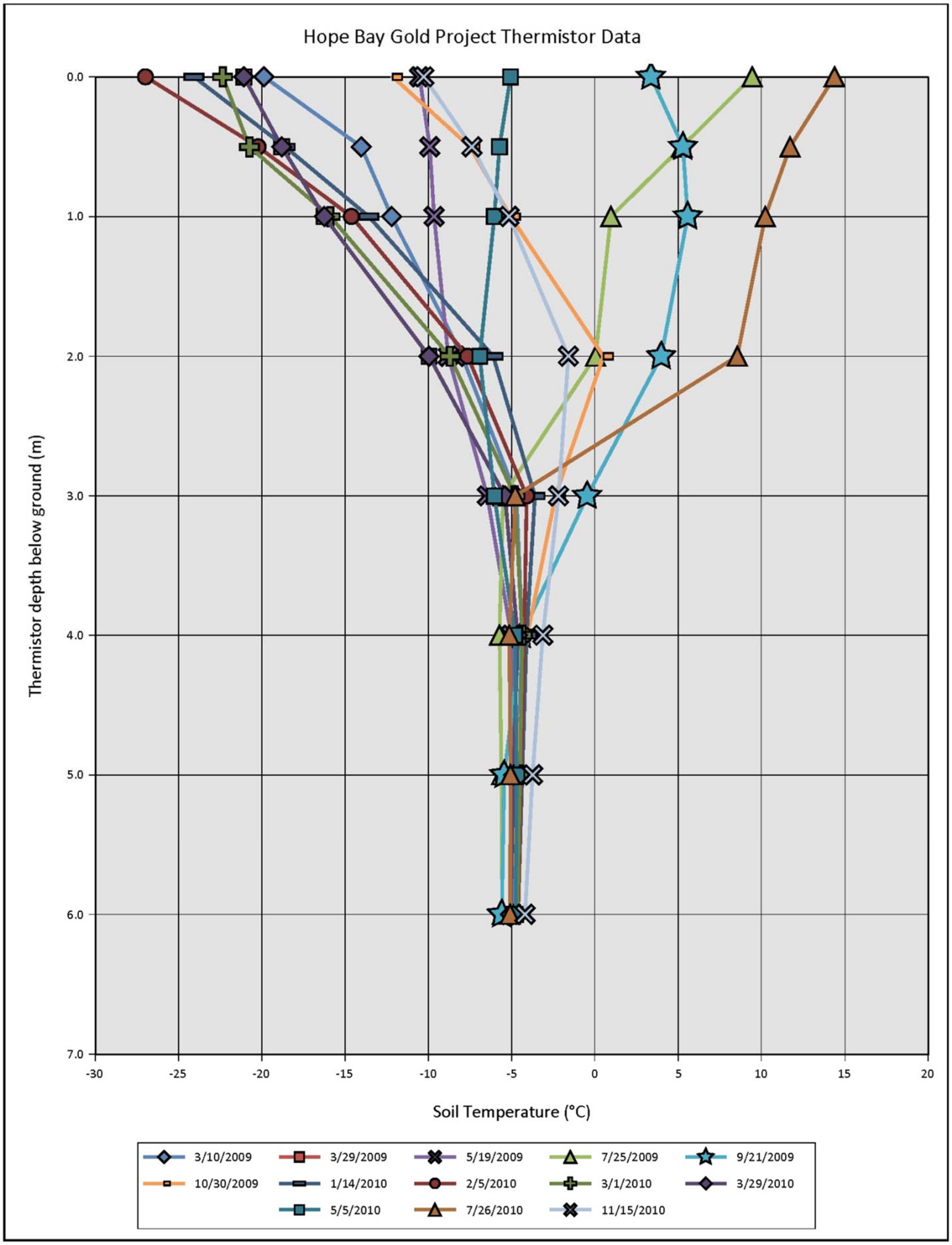
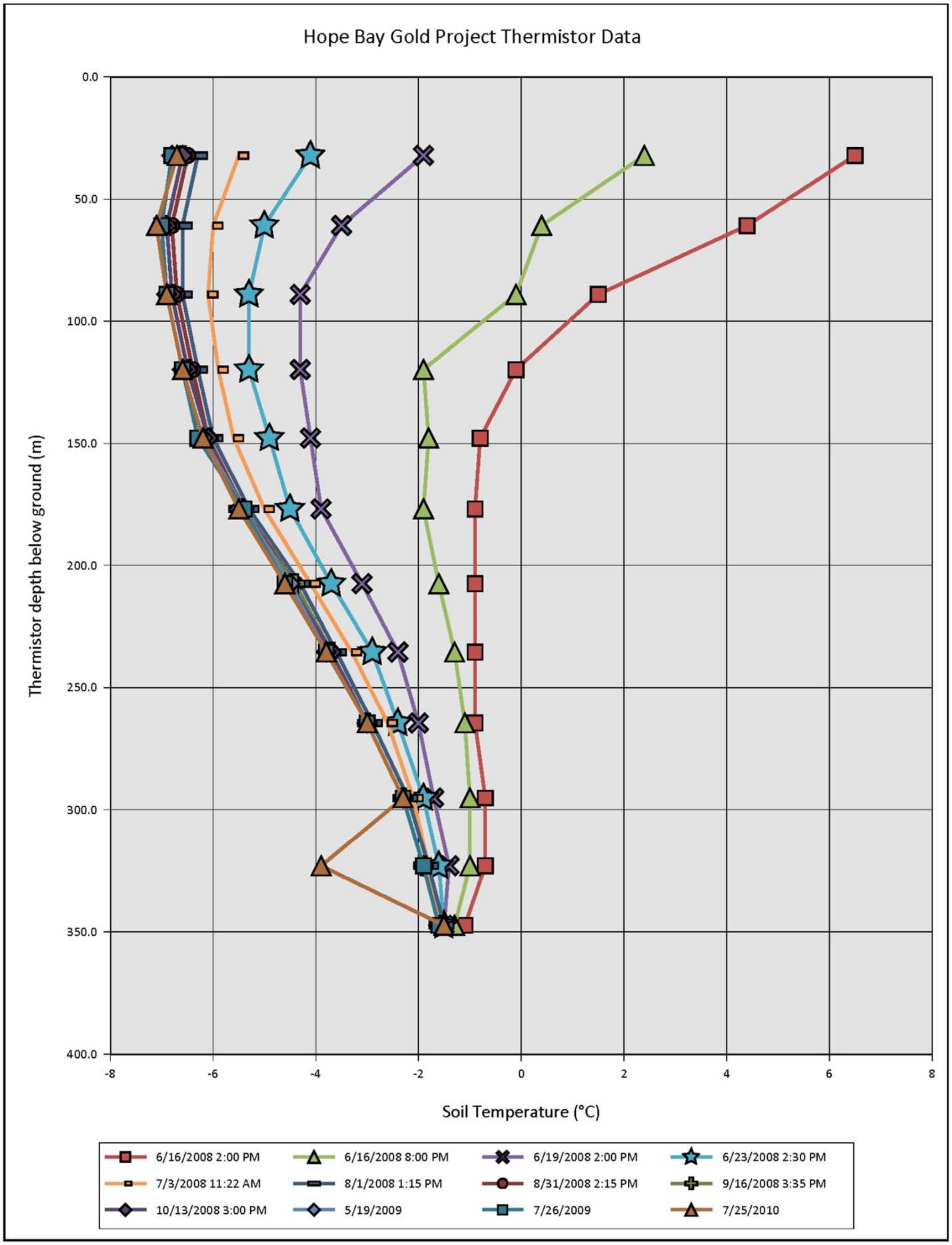


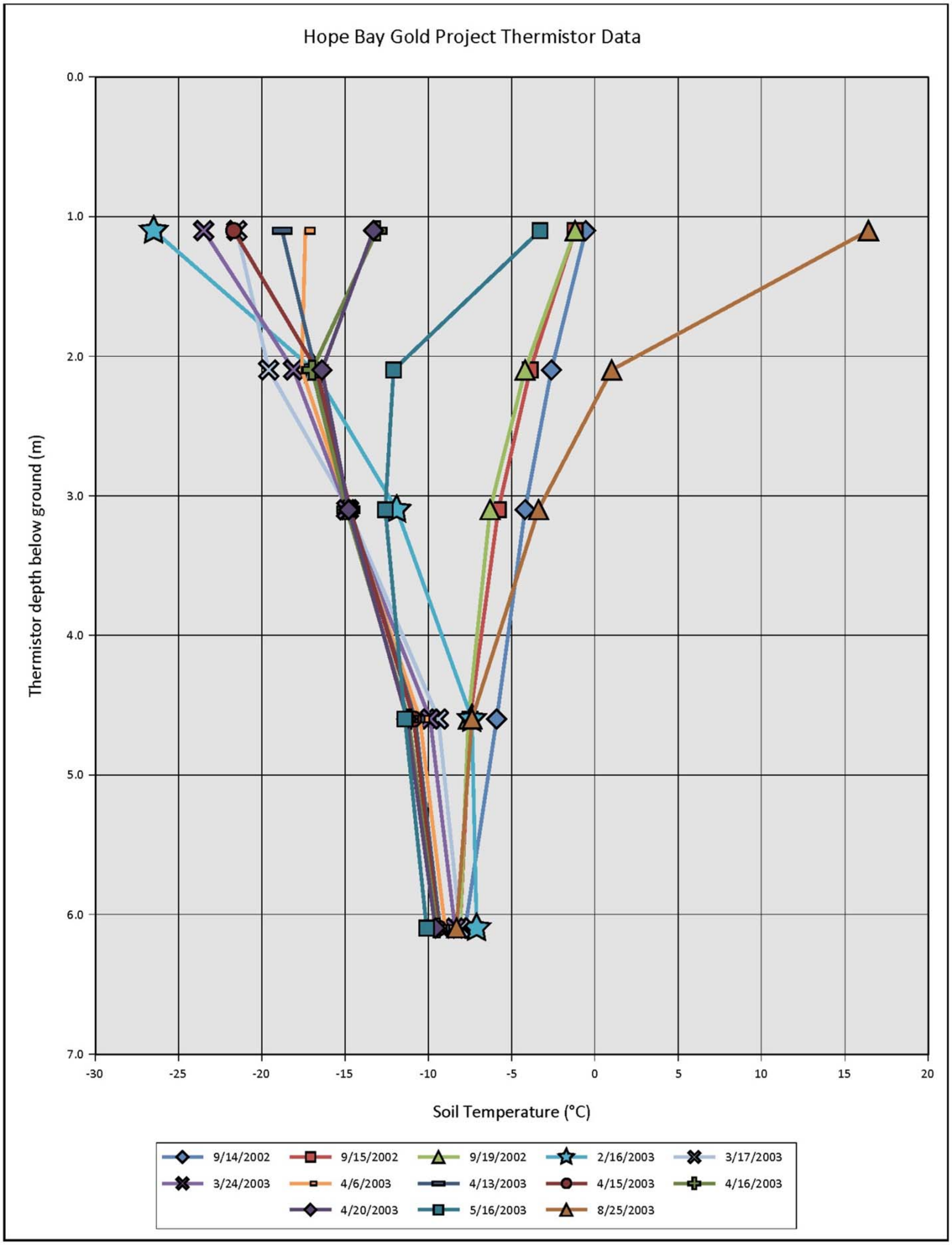
Drillhole 08TDD632



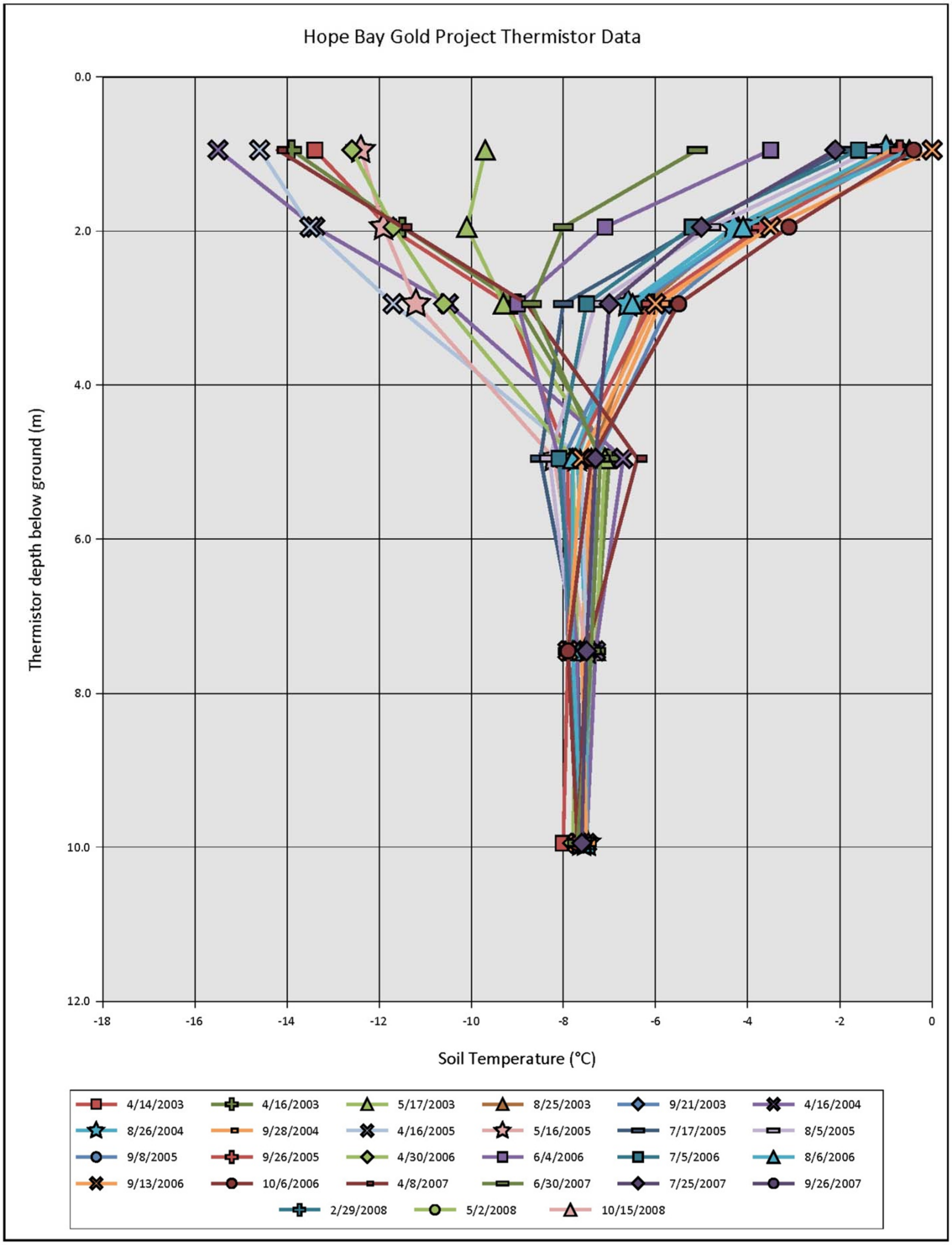
Appendix B

Doris North Project In-Active Thermistor Profiles

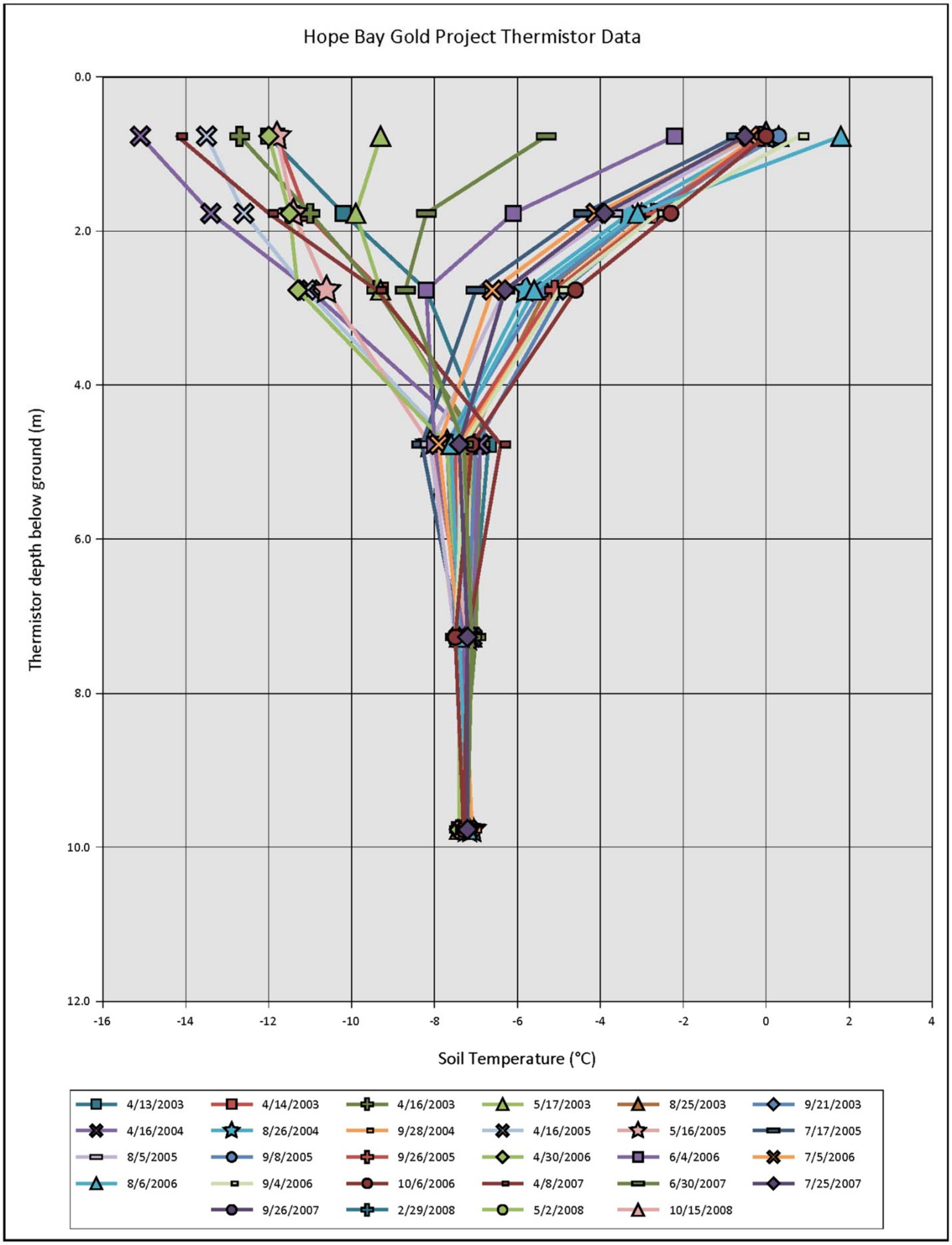
Drillhole SRK 13



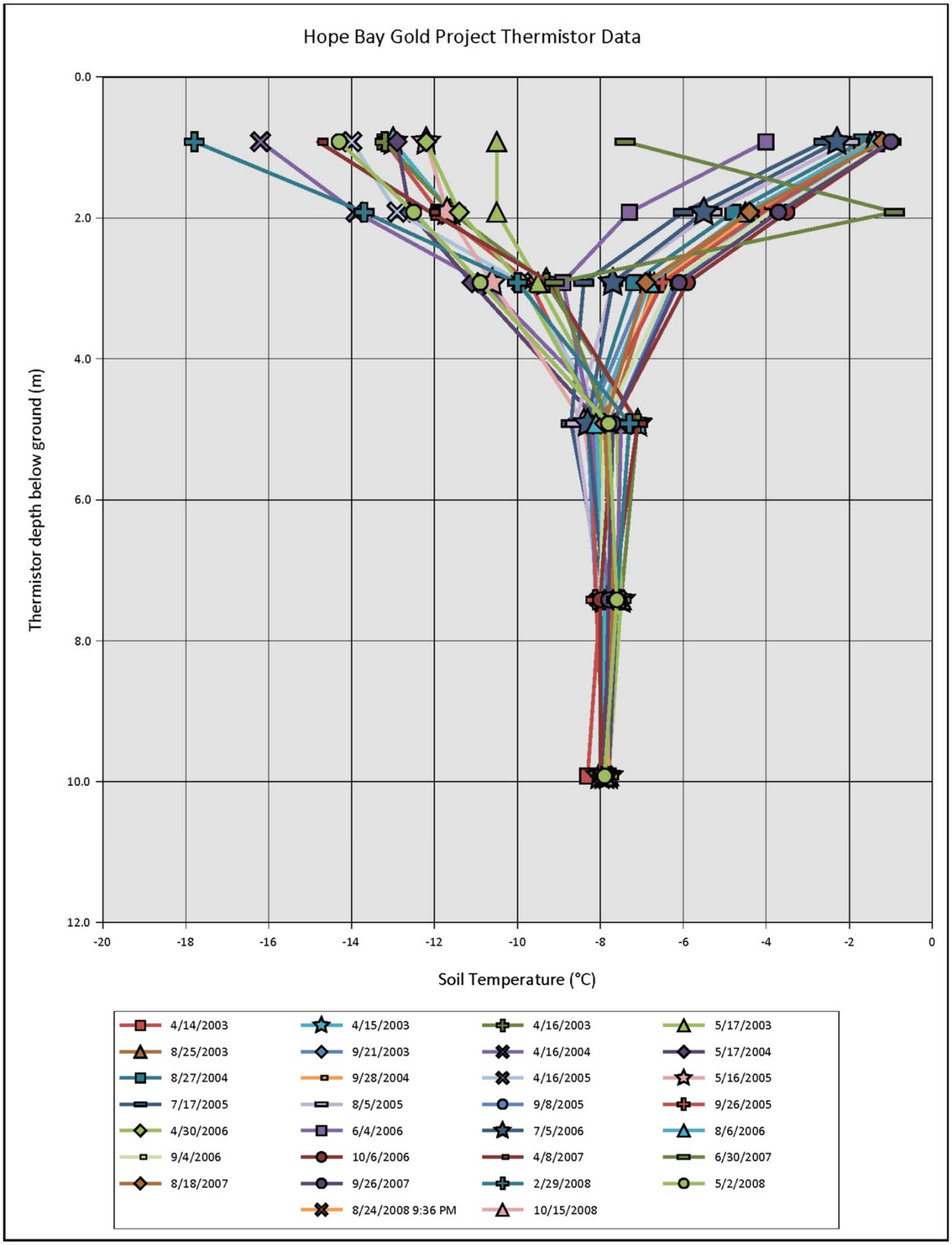
Drillhole SRK 19



Drillhole SRK 20



Drillhole SRK 23



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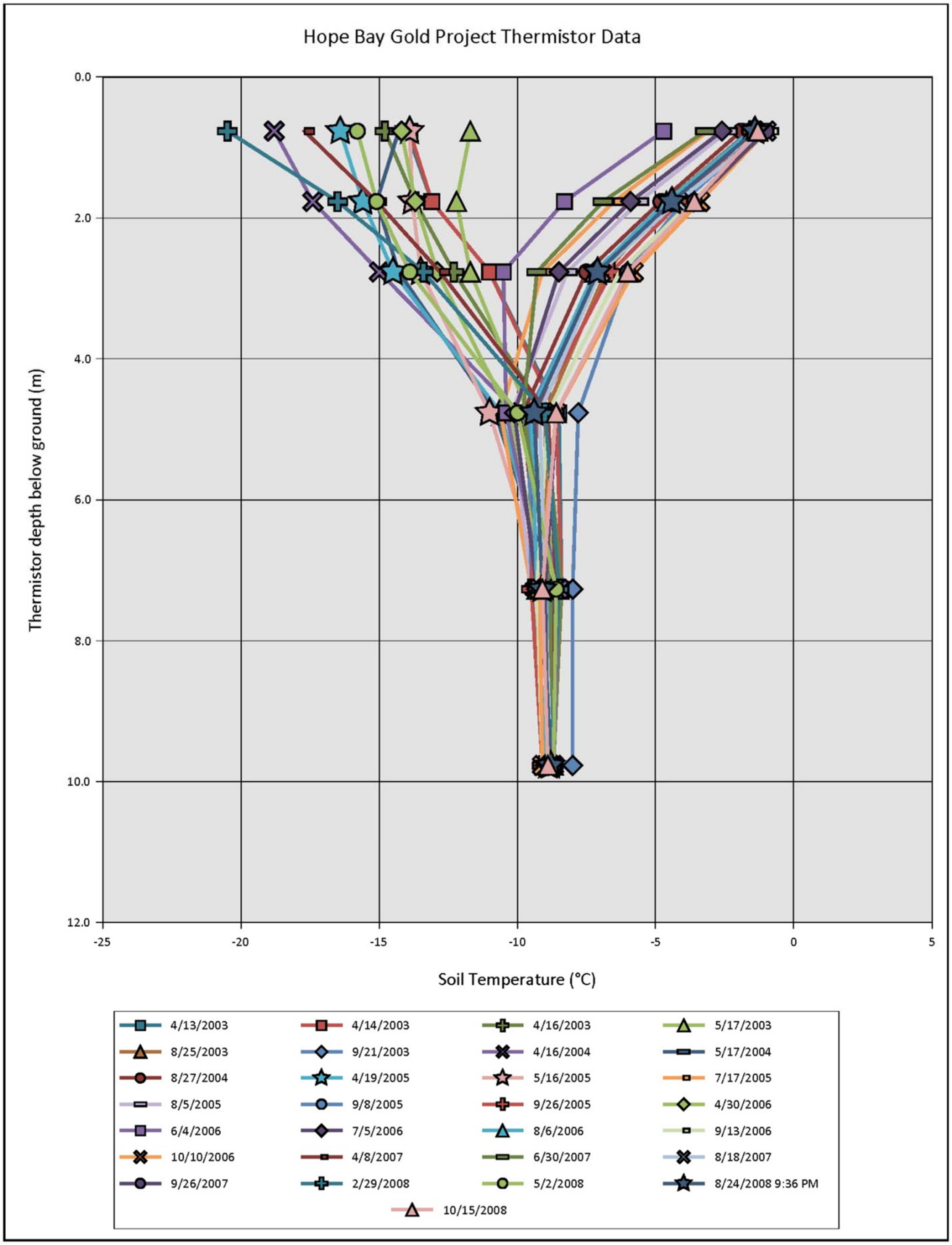

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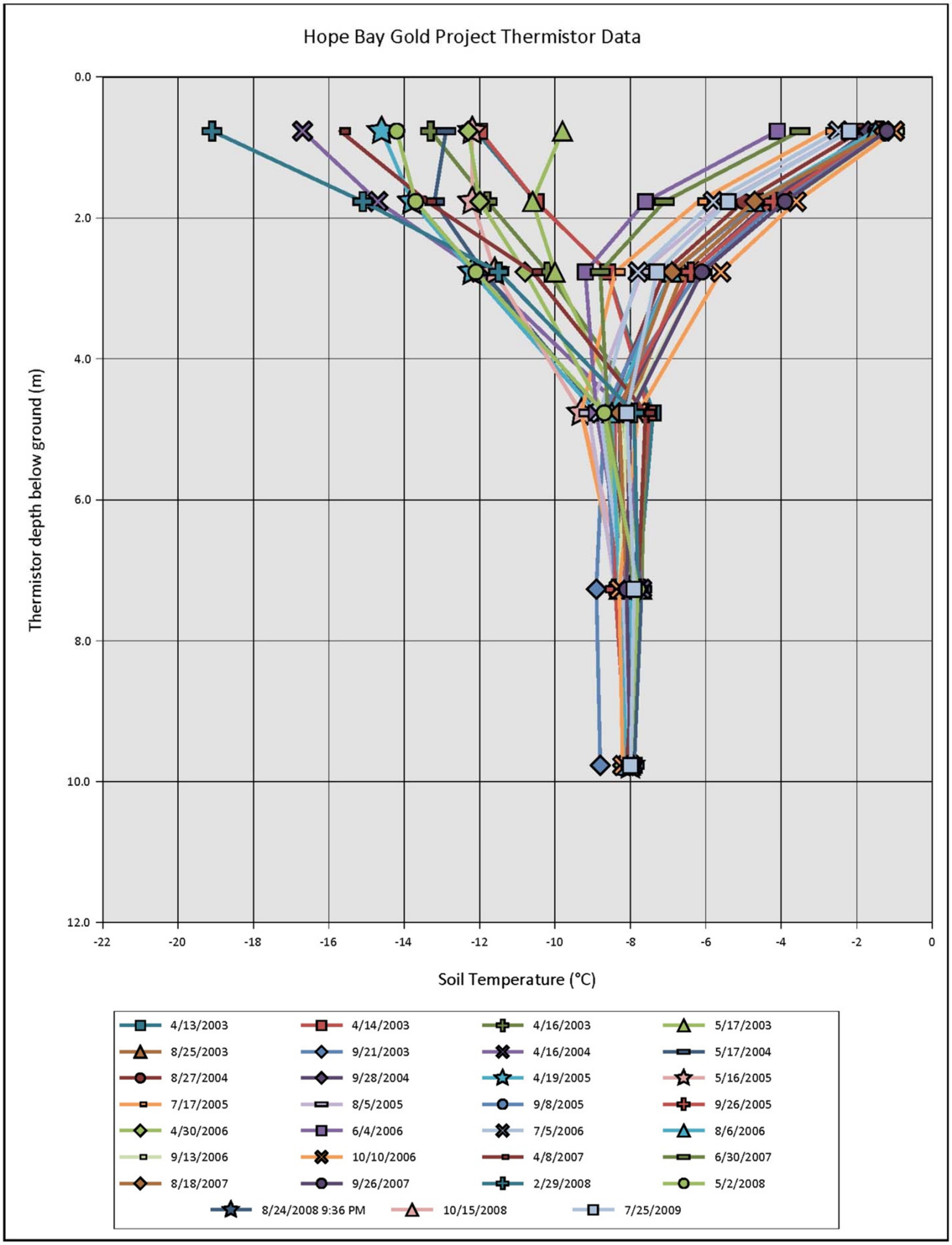
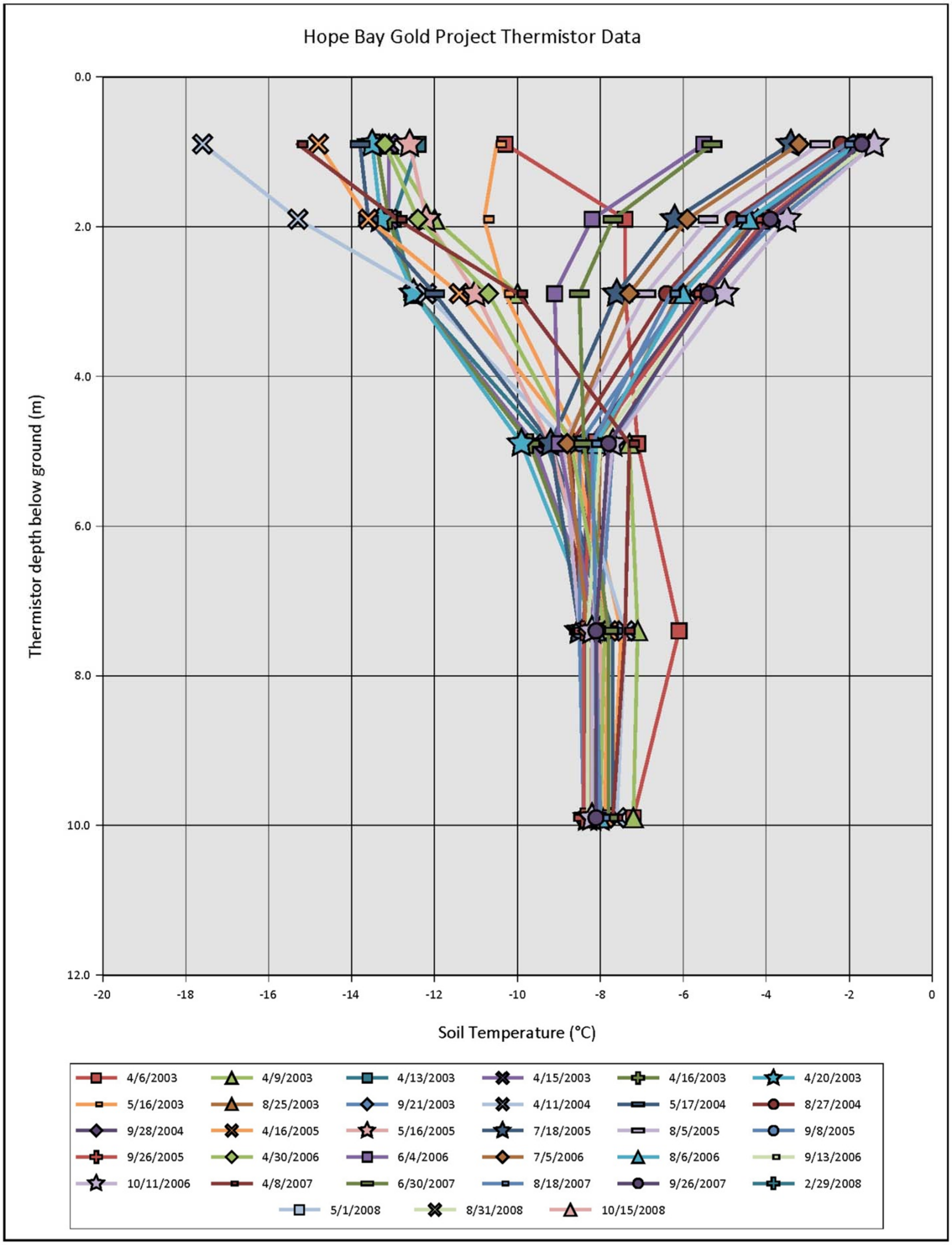
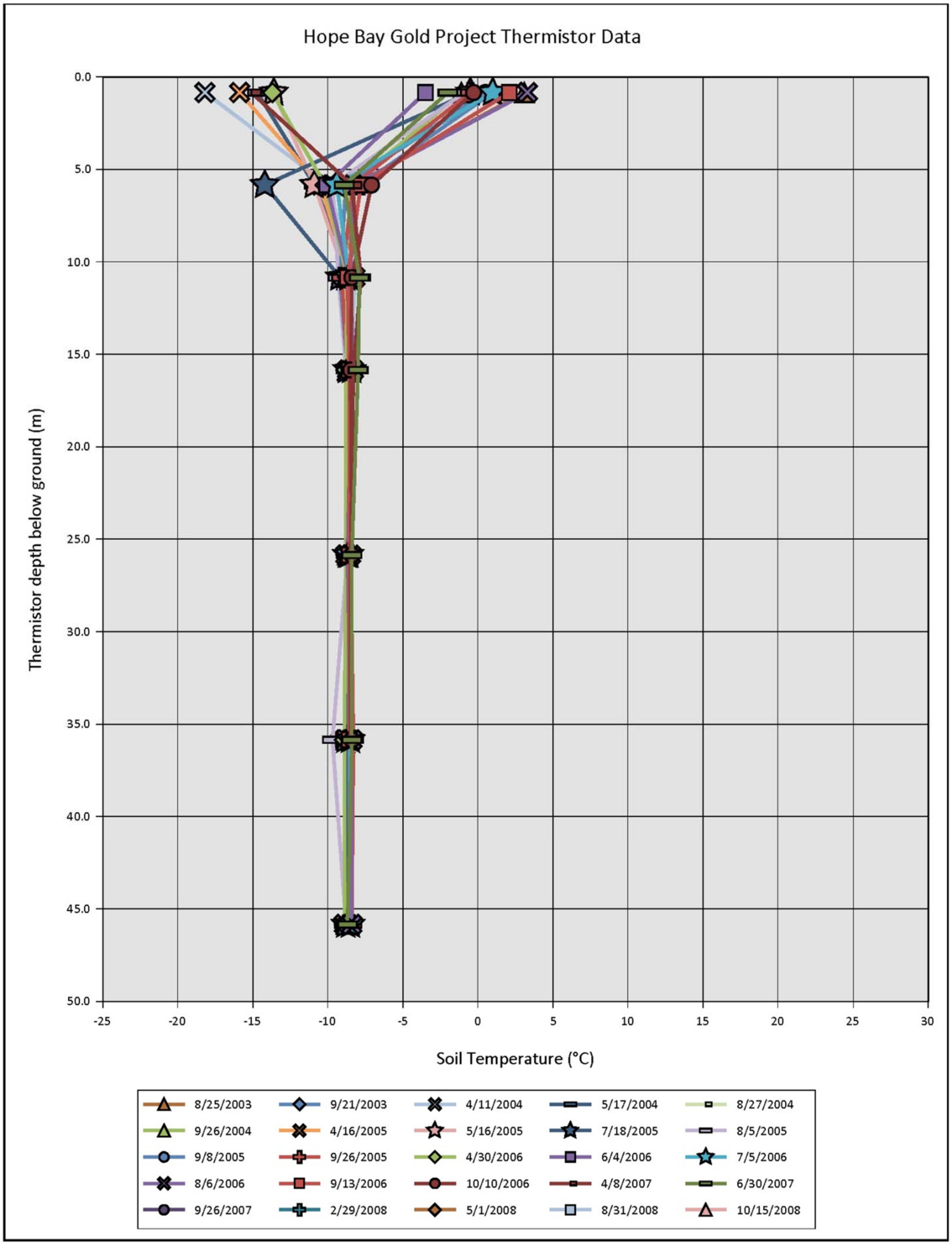


Drillhole SRK 34A



Drillhole SRK 40



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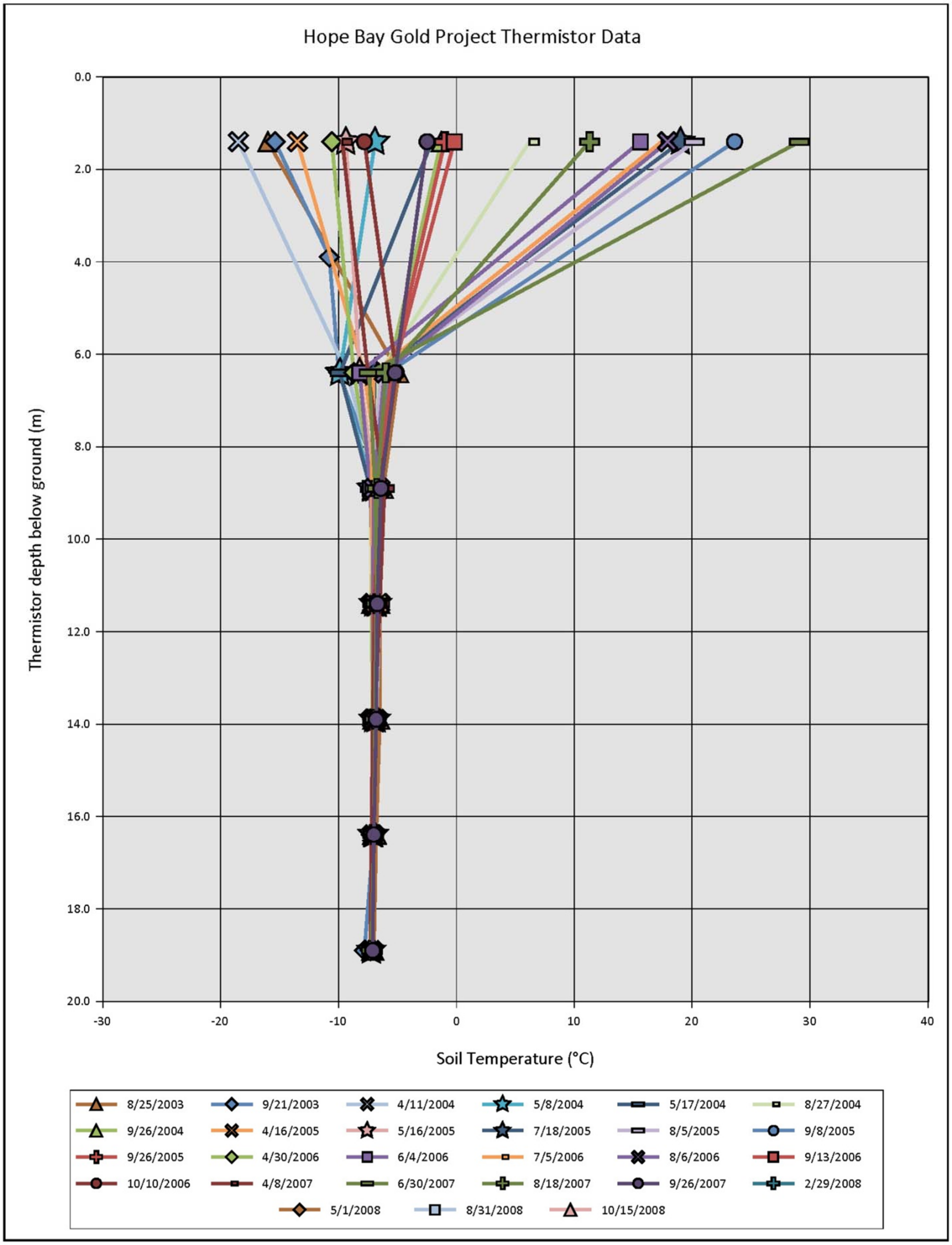
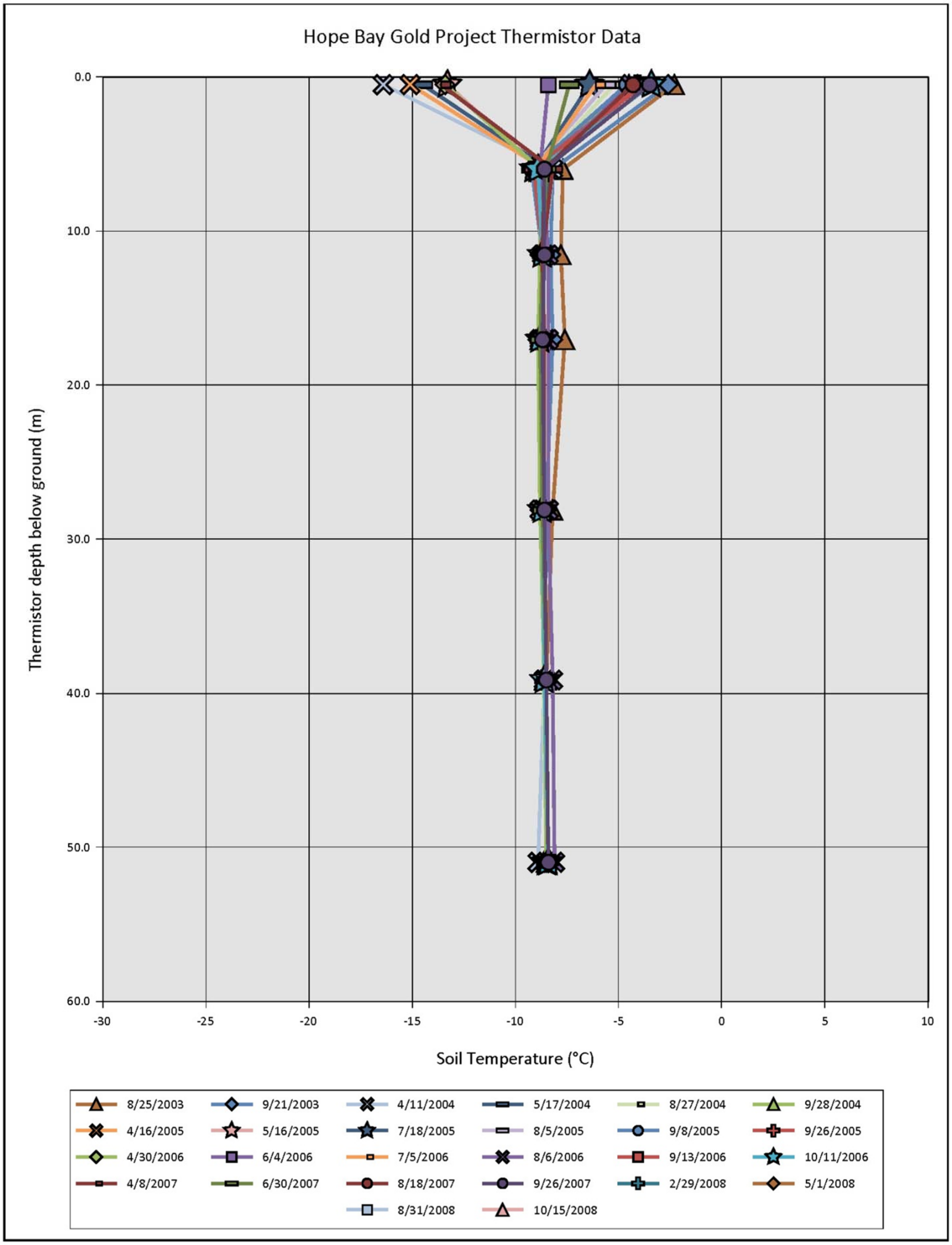
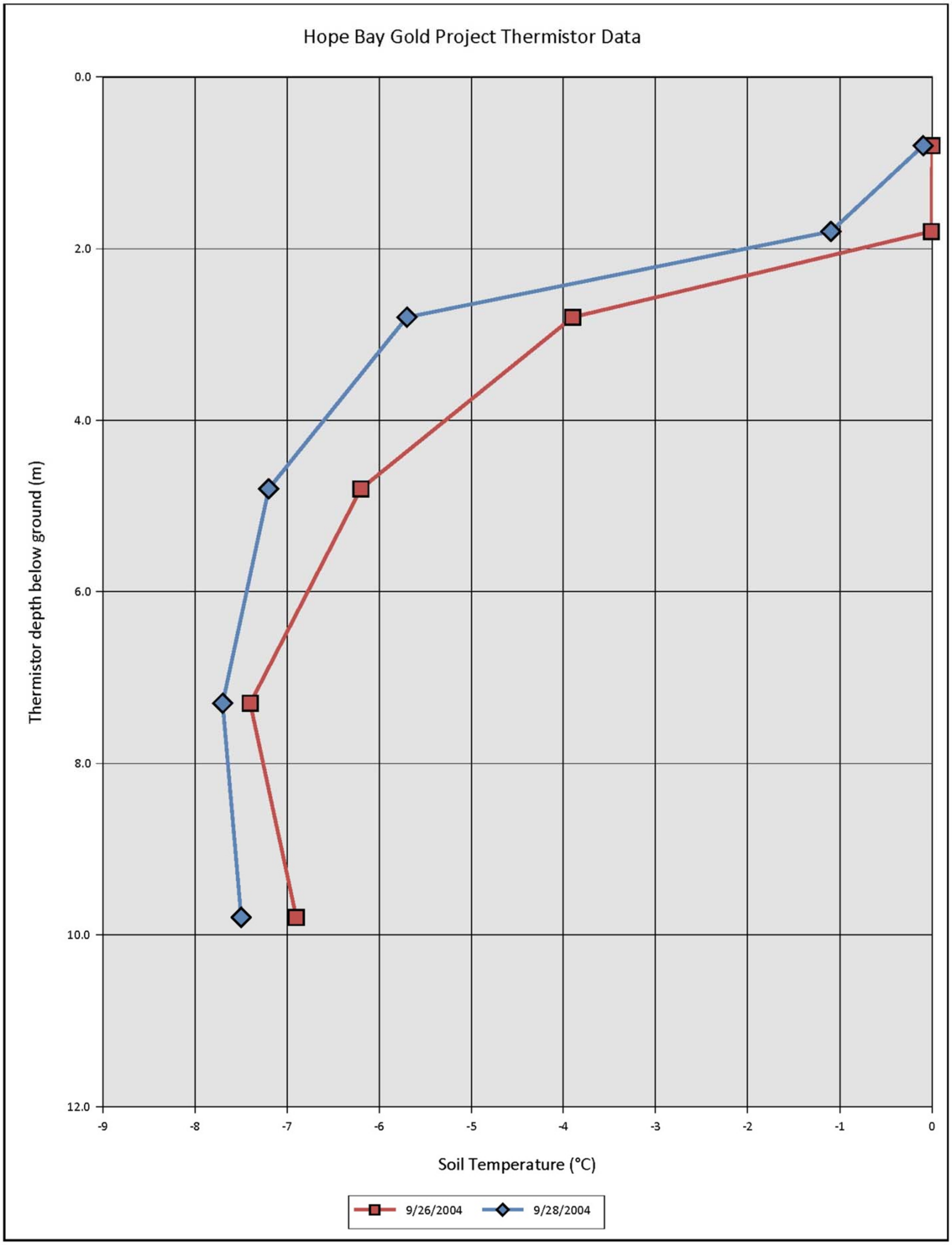


Drillhole SRK 43



Drillhole SRK 55



Drillhole SRK 56