EXECUTIVE SUMMARY

The Polaris Mine was an underground lead-zinc mining property, operated and majority owned by former Teck Cominco Limited, now Teck Metals Ltd. (Teck), a Canadian resource company based in Vancouver, British Columbia. The mine was located on Little Cornwallis Island in the Canadian high arctic approximately 100 km northwest of the Hamlet of Resolute Bay.

The mine operated between 1981 and 2002 and was decommissioned in 2003 and 2004. Decommissioning and reclamation of the site involved demolition of all structures and excavation of soils contaminated with metals and/or hydrocarbons. All demolition waste was either placed underground or in engineered landfills. Access roads were decommissioned and natural drainage patterns re-established. Facilities related to the airstrip were removed but the landing surface remains intact for use during the post closure monitoring period. Teck maintained a small temporary camp following decommissioning for use during post closure monitoring that was relocated near the ocean in 2010 and removed from site in September 2011. The temporary camp was regraded after the camp and other remaining post closure equipment and supplies were relocated to the shore of Polaris Bay in preparation for removal from site.

The marine foreshore area and former concentrate storage shed were regraded during decommissioning with gentle slopes interrupted by access roads and ramps. Four portals for mine access and exploration activities were sealed, backfilled and graded to match the surrounding slopes.

The former Little Red Dog quarry was backfilled partially with demolition debris and metals contaminated soils and capped with rockfill. The remnant quarry walls above the level of the capping layer are benched and catch ravelling material as the slopes gradually weather. Safety berms exist around the quarry perimeter, and additional safety measures in the form of a ditch and a high berm exist at the end of the airstrip. The Operational landfill was regraded and capped with rockfill during decommissioning. Ground temperature data measured by thermistors at the Little Red Dog quarry landfill and the Operational landfill indicates that the landfilled waste is encapsulated in ice as designed.

A subsidence area is located over top of the former underground mine workings. During decommissioning the subsidence area was backfilled and regraded. Detailed topographic surveys of the area carried out during annual post closure inspections did not detect any further ground deformations.

The new quarry, which provided a source of shale, was reclaimed by backfilling stripped materials against the quarry perimeter walls, and an erosion resistant channel was formed for drainage. A rockfill jetty remains at Frustration Lake which was constructed for the freshwater supply intake during mine operation. Freshwater pumps and piping were removed during decommissioning.

At Garrow Lake, the former tailings disposal area, the impoundment dam and wave break structure were breached. Since decommissioning, water levels have returned to pre-development levels, the shoreline has stabilized, and natural wave and ice processes have resulted in the deposit of gravel in front of the breached wave break. Topographic surveys of the natural gravel berm have been carried

out from 2007 through 2011. Since decommissioning in 2004, discharge from the lake has been controlled by seasonal weather cycles.

Since mine closure, ten years of monitoring information has been collected from Garrow Lake and Garrow Creek, the effluent discharge point, in accordance with the *Metal Mining Effluent Regulations* (MMER) and the Water Licence which was designed to be consistent with the MMER. This monitoring included:

- Weekly monitoring of Garrow Creek for a narrow suite of parameters;
- Monthly monitoring of Garrow Creek, Garrow Bay and a reference area for a broad suite of parameters, including discharge, temperature and metals loading;
- Monthly acute toxicity testing of Garrow Creek during open water; and
- Limnological and chemical profiling of Garrow Lake three times annually.

Monitoring has shown that there are no significant environmental effects of the effluent from Garrow Creek to the receiving environment. Environment Canada (EC) accepted the Project's Final Environmental Effects Monitoring Interpretive Report, and on July 27, 2006 EC confirmed that the mine has no further obligations under the MMER.

Given the consistently positive monitoring results obtained to date and the outdated relevance of the MMER to the Project, Teck proposes the following post reclamation long term water quality monitoring program including appropriate quality assurance/ quality control and adaptive management measures:

- Water quality monitoring in Garrow Creek including: field temperature, conductivity, and pH; lab measured conventional parameters; Total Suspended Solids; Total Metals (full suite of 30 metals); and Dissolved Metals. Teck proposes monitoring Garrow Creek in 2014, 2019, and 2029, a frequency consistent with Aboriginal Affairs and Northern Development Canada's *Abandoned Military Site Remediation Protocol*, 2009; and
- Vertical limnological and chemistry monitoring in Garrow Lake during winter in 2029 including the same parameters as collected from Garrow Creek.

In addition to post closure water quality monitoring, Teck conducted annual post closure geotechnical inspections for a period of seven years, from 2005 until 2011 of the following former mine site areas: the Garrow Lake Area including shoreline, wave break structure, and breached dam; Frustration Lake jetty and access road; new quarry area; subsidence area; Operational landfill; Little Red Dog quarry landfill; mine portals; marine foreshore adjacent to the former dock; and temporary camp area.

Several of these areas were observed to be stable and therefore Teck proposes long term post reclamation geotechnical monitoring of the following areas: subsidence area; operational landfill; little red dog quarry landfill; mine portals; Garrow Lake wave break structure and breached dam; and marine foreshore adjacent to the former dock. Teck proposes to conduct this monitoring in 2014, 2019, and 2029, a frequency consistent with the above noted proposed long term post reclamation water quality monitoring program.

Each post reclamation water quality and geotechnical monitoring program event will be conducted in a matter of hours via air and on foot and will not involve any on-site water use or waste disposal.