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## Pelly Lake Remediation

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**Period of operation:** from 2025-07-01 to 2025-09-30

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			Air Services, who was contracted by the Federal Government to take aerial photographs of the region.	burial site have been provided to the Proponent. The location of the suspected burial is sensitive and cannot be shared in a public document but will be provided to the Contractor.	
Pelly Lake Site	Camp	Crown	The Pelly Lake Site (the Site) is a former airstrip and fuel cache site. It was reportedly used as a base and airstrip from 1954 to 1956 by Spartan Air Services, who was contracted by the Federal Government to take aerial photographs of the region.	o archaeological features were identified during the archaeological investigation; however, details of a suspected burial site have been provided to the Proponent. The location of the suspected burial is sensitive and cannot be shared in a public document but will be provided to the Contractor.	250 km from Baker Lake, no protected area around
Pelly Lake Site	Access Road	Crown	The Pelly Lake Site (the Site) is a former airstrip and fuel cache site. It was reportedly used as a base and airstrip from 1954 to 1956 by Spartan Air Services, who was contracted by the Federal Government to take aerial photographs of the region.	No archaeological features were identified during the archaeological investigation; however, details of a suspected burial site have been provided to the Proponent. The location of the suspected burial is sensitive and cannot be shared in a public document but will be provided to the Contractor.	250 km from Baker Lake, no protected area around

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ᓄᓇᓂᓄᓐ	27 members of the community during a public community meeting to discuss the site assessment results and the options for remediation plan	Hamlet of Baker Lake	2023-05-18





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50	pump with mesh screen	Drinking Water Lake



# **Additional Information**

**SECTION A1: Project Info**

**SECTION A2: Allweather Road**

**SECTION A3: Winter Road**

**SECTION B1: Project Info**

**SECTION B2: Exploration Activity**

**SECTION B3: Geosciences**

**SECTION B4: Drilling**

**SECTION B5: Stripping**

**SECTION B6: Underground Activity**

**SECTION B7: Waste Rock**

**SECTION B8: Stockpiles**

**SECTION B9: Mine Development**

**SECTION B10: Geology**

**SECTION B11: Mine**

**SECTION B12: Mill**

**SECTION C1: Pits**

**SECTION D1: Facility**

**SECTION D2: Facility Construction**

**SECTION D3: Facility Operation**

**SECTION D4: Vessel Use**

**SECTION E1: Offshore Survey**

**SECTION E2: Nearshore Survey**

**SECTION E3: Vessel Use**

**SECTION F1: Site Cleanup**

2.1 SUMMARY OF ITEMS REQUIRING REMEDIAL ACTION Based on the findings of the Phase III ESA and the HHERA and feedback during the community engagement session, the areas requiring remedial action are categorized into Impacted Sediment (Table 4), Hazardous Waste (Table 5) and Non-Hazardous Waste (Table 6). The volumes of waste are outlined below, details are available in Appendix A and their locations are documented in Figures 3 and 4a-e.

Table 4: Impacted Sediment  
 Impacted Sediment Estimate Volume of Sediment Total Estimated Volume of Contaminated Sediment 6.1 m<sup>3</sup>

Table 5: Hazardous Waste  
 Type of Waste Estimate Volume of Waste Total Debris 0.10 m<sup>3</sup> Total Paint 0.52 m<sup>3</sup> Total Liquid and Drum/Tank Residues 6.64 m<sup>3</sup>  
 Note: Includes the full barrel of liquid at Site#2 Fuel Cache

Table 6: Non-Hazardous Waste  
 Type of Waste Estimate Volume of Waste Wood Debris 45.9 m<sup>3</sup> Metal Debris 70.8 m<sup>3</sup> Construction Debris 15.3 m<sup>3</sup> Household Debris 0.3 m<sup>3</sup> Tanks 27.5 m<sup>3</sup> Barrels 13.2 m<sup>3</sup> Total Liquid 0.35 m<sup>3</sup>

### 2.3 REMEDIATION STRATEGY

The remediation strategy was informed by previous studies including the Phase III ESA (BLM2023a), the HHERA (BLM 2023b), the ROA (BluMetric 2023c) and the community engagement (BluMetric 2023d) and was documented in the Remedial Action Plan (RAP) (BluMetric 2023e). The proposed work is anticipated to be completed in two stages encompassing two summers and one winter. Phase 1 will occur over 8-12 weeks in Summer 2025 with the mobilization of the project team and equipment, execution of the remedial works and demobilization of equipment. Phase 2 will occur over 4-8 weeks in Winter 2026 with the demobilization of waste materials and extend into Summer 2026 with a final inspection and removal of any remaining items. Details are provided below, and proposed work areas are shown on Figure 5. Personnel and staff will be housed during Summer 2025/Winter 2026 on Site in a temporary camp and water, wastewater and waste management will be required. It is anticipated that the site cleanup will require approximately 12 to 15 workers to be on Site completing the cleanup activities. Workdays are expected to be 10 hours on site with 2 hours of additional time for travel and safety/administrative meetings that may occur on site or in the community. Wildlife monitors, equipment operators and labourers will be sourced from local communities where possible. Due to challenging access to the Site, equipment requirements will be kept to a minimum and are assumed to include: a drum crusher, drum and tank cleaning equipment, ATVs, trailers, and hand tools.

Stage 1 (Summer 2025):

- Maintenance of the airstrip and on site trails;
- Mobilization of personnel, equipment, materials and support facilities, including fuel by fixed wing aircraft;
- Construction of a temporary construction camp including camp, fuel storage area, staging areas and establishment of water intake;
- Excavation of impacted sediment;
- Inspection of large debris/equipment to be left on site and removal of all hazardous materials (e.g. paint, oils, fuel);
- Collection, cleaning and crushing of barrels/dismantling of tanks;
- Collection and sorting of debris;
- Burning of unpainted/untreated wood debris;
- Excavation of borrow material (aggregate) and regrading as required;
- Segregation, consolidation, packaging and containerization of all impacted sediment, debris (hazardous and non-hazardous) and equipment for shipment;
- Deconstruction of the temporary camp and packaging for removal. The temporary camp will be re-established for the winter demobilization program. Weekly or biweekly shipments are expected throughout the duration of Summer 1. Demobilization by air of hazardous wastes and other items equipment may occur in Stage 1 depending on the size and type of aircraft available and ability to land on site.

Stage 2 (Winter /Summer 2026):

- Construction of a temporary construction camp including camp, fuel storage area, staging areas and establishment of water intake;
- Construction of a winter access trail and ice strip;
- Demobilization (winter) by fixed wing aircraft of all consolidated materials on site including, but not limited to, fuel, equipment, materials, hazardous waste, non-hazardous waste, and contaminated sediment;
- Deconstruction of the temporary camp (including all waste and fuel) and packaging for removal.
- Final inspection and collection of any remaining small debris will occur following spring thaw.

A Site-Specific Environmental Health and Safety Plan and Management Plans will be developed for the project that will include (but are not limited to):

- On-site Contingency and Emergency Response Plan;
- Spill Contingency Plan;
- Fire Safety Plan;
- Wildlife Encounter and Management Plan;
- Fuel Management Plan;
- Historical, Archaeological and Cultural Resources Plan;
- Wildlife Protection Plan;
- Erosion Sediment and Drainage Control Plan;
- In Stream or Near Water Works Work Methodology Plan;
- Mobilization and Demobilization Plan; and
- Airstrip and Site Access Road Upgrading and Maintenance Plan.

#### 2.3.1 Impacted Sediment

The impacted sediment will be removed and disposed of off site. This was the preferred outcome in the ROA and the community engagement session. Due to the relatively small volume of impacted sediment (6.1 m<sup>3</sup>), impacted material will be removed by hand and packaged in suitable containers or drums for shipment off site. If possible, the impacted sediment will be removed at the end of Phase 1. Alternatively, it will be shipped off site with the other materials in Phase 2 (winter).

#### 2.3.2 Hazardous Materials

The hazardous materials requiring removal include:

- Hazardous Debris – 0.10 m<sup>3</sup>;
- Total Lead Paint – 0.52 m<sup>3</sup>;
- Liquid (Fuel, Fuel Residues and Vehicle Fluids) – 6.63 m<sup>3</sup>.

The hazardous liquid waste to be removed from site is assumed to be one drum of known PHCs, the estimated volume of fluids that remain in the machinery and vehicles on site and the sludge resulting from the cleaning of the fuel drums and tanks. The hazardous materials will be collected and placed into suitable containers or drums for shipment off site. If possible, the hazardous materials will be removed at the end of Phase 1. Alternatively, it will be shipped off site with the other materials in Phase 2 (winter). A summary of hazardous debris to be removed is found in Table 8. On-site treatment and discharge of water produced during tank and drum cleaning was assumed and would need to be permitted through a water license.

Table 8: Summary of hazardous debris to be removed from Site.

Item#	Area Description	APEC
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corresponding to the period from January to December 2021 (Government of Canada 2022). The average yearly precipitation has not been recorded. The total amount of precipitation received in 2021 was 207.7 millimetres (mm). Daily average temperatures were above 0°C during four months of the year in 2021 (June - September). Precipitation in the form of snow can occur at any time throughout the year, although it is less likely in July and August.

**5.3 GEOLOGY** The Site is located on a glacial outwash plain (Canadian Geoscience Map 274, 2015). West of the camp area, this consists of ice-contact sediments, which are described as mainly sand with gravel, moderately to well sorted, massive to stratified, 2 to 15 m thick. East of the camp area are outwash sediments, described as sand with gravel, moderately to well sorted and stratified, and greater than 2 m thick. The primary surficial geology observed during the Phase III ESA was sand, with gravel and cobbles observed in areas to the east of the eastern airstrip. The previous Phase II ESA for the Site (WESA, 2006) describes the bedrock beneath the Site consisting of Archean gneiss granite, as indicated on the map titled "Geology – Northeastern District of Mackenzie, NWT" (GSC, 1963). Additionally, the Geological Survey of Canada also confirmed the bedrock beneath the Site consists of Archean gneiss rock, describing it as Archean undivided gneiss (de Kemp, et al. 2006). The area of the Site is generally flat and plateaus above the surrounding area of hummocky terrain and rolling hills. The Site is located within a zone of continuous permafrost (90% - 100% of this zone is underlain by permafrost) (Heginbottom, J.A., 1995). Soil and geological conditions were confirmed during the 2022 site visit. Field staff recorded ground conditions as predominantly sand with gravel with cobbles. Trace organic material was also noted in the top 0-15 centimetres (cm) of several locations at APEC 1, 2 and 3. No permafrost was encountered during the environmental test pitting, completed to a maximum of 1 meter below ground surface (mbgs). The geotechnical test pitting reported permafrost between 0.9 and 1.2 mbgs but was not present at all test pit locations. Locations where permafrost was indicated were to the southeast, west and northwest of APEC 2 (Site #1), outside of the main runway area but on the sandy plateau.

**5.4 HYDROGEOLOGY** Groundwater was not observed in any of the test pits excavated during the BluMetric field investigation but was present in the two piezometers installed at APEC 3 (Site #2). Regional groundwater flow is expected to be influenced by permafrost which generally follows regional topography. Regional groundwater is inferred to flow generally northward, with local groundwater flow direction influenced by local topography, as many hills, valleys and lakes are present in the area. Permafrost in the area is classified as continuous with low (<10%) ground ice content in the upper 10-20 m of the ground (Geological Survey of Canada (GSC), 1995). Neither permafrost nor bedrock was encountered in any of the environmental test pits dug at the Site, however permafrost was encountered at approximately 0.9 to 1.2 m depth in several of the geotechnical test pits. The permeability of the sandy soils present at the Site is expected to be relatively high. Evidence of a confining layer above the permafrost was not observed, therefore surface water is anticipated to infiltrate through the upper layers to reach the permafrost that defines the active layer (the layer that thaws in warmer months and freezes in colder months). Infiltrated surface water and groundwater is expected to readily flow through the active layer of these soils.

**5.5 SURFACE WATER** Pelly Lake is a large lake that is located approximately 6 km southwest of the Site. There are also many lakes located in the area, some of which are interconnected. The Campsite Area is located approximately 10 m from an inland pond (Campsite Area Pond) that drains northward to the smaller of the lakes in the Landing Lakes Area approximately 570 m to the north of the Site. Runoff from the Campsite Area is anticipated to flow into the pond, as indicated by drainage channels observed on the eastern slope of the pond. Drinking Water Lake is located approximately 650 m west of the Campsite Area Pond. An inlet stream flows into the lake from the north end and an outlet stream flows southeastward from the southeast end of the lake. The area identified as Site #2 (APEC 3) is located approximately 450 m to the northwest of Drinking Water Lake. Runoff from Site #2 is anticipated to flow into Drinking Water Lake, as indicated by drainage channels observed in the area.

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**5.6 VEGETATION** The Pelly Lake Site is within the Southern Arctic Ecozone and the Garry Lake Lowland Ecoregion, which can be characterized as a gently sloping plain with a low Arctic ecoclimate and shrub tundra vegetation. The Project Site and surrounding area are characterized as a mosaic of sand and gravel glacial deposits with thinly dispersed vegetation that is primarily composed of sedges, dwarf shrubs, herbaceous plant species, lichens, and mosses (inferred from Site photographs and drone imagery). There are multiple lakes and ponds present at the Site and surrounding area that are bordered by sedges and dwarf shrubs but do not appear to support aquatic or emergent vegetation (inferred from Site photographs and drone imagery). There are no vascular plant or moss SAR expected to occur within the Pelly Lake area (Appendix B). Rare plants have not been recorded in the region; however, detailed inventories have not been conducted. A Site visit and environmental investigation was conducted during August 2022, where vegetation was sampled to determine the uptake of contaminants of concern to inform future risk assessment work. A partial list of vegetation present at the Site (based on identifications from Site photographs), is provided below:

- Black Crowberry (*Empetrum nigrum*);
- Dwarf Birch (*Betula pumila glandulifera*);
- Labrador Tea (*Rhododendron (Ledum) palustre*);
- Cloudberry (*Rubus chamaemorus*);
- Arctic Cranberry (*Vaccinium vitis-idaea*);
- Willows (*Salix* species);
- Sedges (*Carex* species);
- Lichens;
- Mosses.

**5.7 MAMMAL, AVIAN, AND FISH SPECIES** Many characteristic Arctic tundra mammal and bird species including

barren-ground caribou (*Rangifer tarandus groenlandicus*), muskox (*Ovibos moschatus*), grizzly bear (*Ursus arctos*), Arctic fox (*Vulpes lagopus*), Arctic wolf (*Canis lupus arctos*), wolverine (*Gulo gulo*), ermine (*Mustela erminea*), Arctic hare (*Lepus arcticus*), Arctic ground squirrel (*Spermophilus parryi*), brown lemming (*Lemmus sibiricus*), gyrfalcon (*Falco rusticolus*), snow geese (*Chen caerulescens*), Canada goose (*Branta canadensis*), willow ptarmigan (*Lagopus lagopus*) and rock ptarmigan (*Lagopus mutus*), are likely to inhabit the Site and surrounding area. Wildlife species observed during the August 2022 Site visit included barren-ground caribou, Arctic hare, Arctic ground squirrel, brown lemming, Canada goose (*Branta canadensis*), and ptarmigan species. Other evidence of wildlife (bones or tracks) observed during the August 2022 Site visit included Arctic wolf, barren-ground caribou, muskox and a bear species (most likely grizzly bear). Given the size of the Project Site and the existing habitat conditions available, larger mammals including barren ground caribou, muskox, and grizzly bear likely only occupy the area seasonally in search of forage (e.g., lichen, sedges, herbaceous plants, berries), and/or small mammal prey (e.g., Arctic hare, brown lemming), water or resting places. Similarly, wolverines are a wide-roaming species and likely only occasionally occupy the site in search of prey or carrion, however, the substrates and habitat characteristics present at the site and surrounding area (e.g., eskers, sand and gravel banks and debris) may provide suitable winter denning habitat. Polar bears (*Ursus maritimus*) may very rarely pass through the Site if animals are forced inland due to loss of sea ice during summer. The Project area is located at the southern border of the species' range, and therefore the occurrence of polar bears is expected to be very low. Smaller mammals including Arctic hare, Arctic ground squirrel and brown lemmings can be expected to inhabit the Project Site and surrounding area during all seasons. Arctic ground squirrels may burrow within the eskers, gravel or sandy banks and lakeshores present at the site and surrounding area. A diversity of migratory bird species can be expected to utilize habitats within the Project Site and surrounding area for breeding and/or staging during spring to fall. The Pelly Lake area is known to support large flocks of moulting Canada geese (*Branta canadensis*) and snow geese (Latour et al., 2008). Pre-moulting flocks can be expected to arrive around mid-June and to begin to depart in mid-August when animals have regained their ability to fly (Latour et al., 2008). Geese feed on sedge meadows and use water to avoid predation. Moulting geese are sensitive to disturbance. The study area is in migratory birds Zone N9, which has a nesting period of May 15 to August 17 (ECCC, 2018). Numerous fish species including burbot (*Lota lota*), northern pike (*Esox lucius*), slimy sculpin (*Cottus cognatus*), longnose sucker (*Catostomus catostomus*), Arctic char (*Salvelinus alpinus*), Arctic grayling (*Thymallus arcticus*), lake cisco (*Coregonus artedii*) and lake whitefish (*Coregonus clupeaformis*) are likely present in ponds and lakes within the Project Site and surrounding area. All wildlife in Nunavut and their habitat are protected from direct harm and/or harassment unless for regulated or traditional harvest and/or protection of life and property under the Nunavut Wildlife Act (2003). Migratory birds are protected under the Migratory Birds Convention Act (1994). Fish and fish habitat are protected under the federal Fisheries Act. SAR and their habitat are protected under the federal Species at Risk Act (2002). Mammal and bird SAR with potential to utilize the Project Site and surrounding area are discussed in Section 5.9 and outlined in Appendix 1 (Government of Canada, 2023a). There are no fish SAR expected to occur within the Pelly Lake area (Government of Canada, 2023b).

#### 5.8 SOIL AND AQUATIC INVERTEBRATES

The Project Site provides minimal habitat for soil invertebrate communities, due to the presence of permafrost that limits soil structure and depth. Soil invertebrates include organisms such as worms, springtails, spiders, and insects. As a result, soil invertebrates are uncommon in terrestrial Arctic ecosystems (Danks et al., 1997). Aquatic invertebrates in northern areas include a wide range of species, primarily larvae of insect species such as Dragonflies/Damselflies (Order Odonata), Mayflies (Order Ephemeroptera), Stoneflies (Order Plecoptera), and Midges (Order Diptera). There is no information available to base estimates of their abundance or species diversity. Aquatic invertebrates in northern areas generally prefer warm, shallow water habitats. Flying adults lay eggs in water, at various times during the summer (depending on the species). The eggs hatch into larvae that may spend multiple years maturing into adults that emerge from the water at various times during the summer. It can be expected that species of aquatic invertebrates are present in the water bodies present at the Project Site. There are no soil or aquatic invertebrate SAR expected within the Pelly Lake area (Government of Canada, 2023a).

#### 5.9 SPECIES AT RISK

Species at Risk (SAR) are identified by both the federal government and the Nunavut government. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent body of experts that uses criteria to critically evaluate and recommend status rank for each species in Canada. Following this, a federal government Minister then decides whether to place the species on Schedule 1 of the Species at Risk Act (SARA) after a consultation process. Once a species has been placed on Schedule 1 of SARA, it is legally a SAR. A species can be at risk within Nunavut, while not being at risk within Canada as a whole; however, no such species have been identified by the Government of Nunavut. There are 28 non-marine animal and plant SAR known to occur in Nunavut, which are provided in Appendix B (Government of Canada, 2023b). Marine species were omitted from this assessment because marine habitats do not occur within the Project Site or surrounding area. First, each species was evaluated to determine whether it may be present in the vicinity of the Pelly Lake area. Following this, it was determined whether a species may occur at the site or surrounding area, based on existing habitat conditions. Some SAR species are unlikely to occur in the vicinity of the Site and are noted as "nil" occurrence in Appendix 1. There are nine SAR potentially present at the Site, including one insect species, four bird species, and four mammal species (Table 15).

Table 15: Species at Risk Potentially



the majority of debris on Site. Clean (unpainted and untreated) wood waste will be burned, and the ash removed. Any large equipment that cannot be removed from Site will be cleaned and consolidated into a single location if possible. The overall goal is to enhance the quality of habitats and wildlife and to remove human health and ecological health risks at the Site.

**11.3 EFFECTS ON RENEWABLE RESOURCES** While natural resources will be used (e.g., borrow, water) and impacted (e.g., borrow sources, wildlife, vegetation) during the course of work, the impacts will be limited to the 10-16 weeks over 1.5 years. Further, the intent of the project is to improve the natural environment and thus is anticipated to have a positive long-term effect on fish and wildlife species and their habitat. With proper mitigation measures in place, no negative cumulative impacts are anticipated on natural resources.

**11.4 EFFECTS ON HERITAGE VALUES** No archaeological sites requiring protection have been identified on Site, however, a suspected burial site has been identified. With the implementation of a buffer and "no go zone", no negative impacts are expected.

**11.5 MITIGATION MEASURES** No negative cumulative impacts have been identified and no unique mitigation measures have been developed to address cumulative impacts.





