

## **Appendix 4. Suggested Research Priorities**

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Further research improves our understanding of land use and contributes to mitigating land use impacts in the North Yukon Planning Region. Research helps to achieve regional management objectives, and supports many of the identified implementation tasks of this Plan.

Incorporating research results into the Plan is an important part of the adaptive management process. The following are suggested research priorities identified during production of this Plan—they do not represent commitments or obligations on the part of the Yukon Government or Vuntut Gwitchin Government. While the Parties will make best efforts to follow these suggestions, research items will be initiated at their discretion, subject to available resources and changing circumstances.

### **Cumulative Effects Indicators:**

- Further investigation of cause and effect relationships for recommended cumulative effects indicators should be undertaken, with focus on the following:
  - relationship between barren-ground caribou and land use activities, with focus on range utilization in response to surface disturbance and linear density;
  - cumulative impacts of exploration and development activities on Porcupine Caribou herd population viability; and,
  - cumulative surface disturbance impacts and potential effects on habitat quantity and quality.
- Establish cause and effect relationships between land use activities and aquatic impacts, with focus on the following:
  - Relationship between stream crossing methods, human-caused stream impacts and aquatic integrity in permafrost areas (note: stream crossing index is one method to measure potential human-caused stream impacts. Stream crossing index should incorporate fish stock habitat values and level of risk based on type of infrastructure); and,
  - Relationship between CCME water quality indicators, other contaminant indicators, and aquatic health.
- Establish benchmark conditions for suggested regional sustainable development indicators (see Table 7.2).

### **Land and Resource Use:**

- Identify potential aggregate (gravel) sources where required; Eagle Plains and Dempster Highway corridor should receive initial focus.
- Conduct research on renewable energy options and solutions that can be effectively adopted and used in Old Crow.
- Dempster Highway view shed analysis – mapping the view shed of the Dempster Highway would allow for planning of development activities in a manner that minimizes their visibility from the Highway.

**Biophysical and Hydrology:**

- Wetlands require further definition, mapping and increased understanding of function:
  - Develop standardized definition of wetlands, including peatlands (bogs and fens), in accordance with Canadian Wetlands Classification System; and,
  - Wetland function (hydrology and connectivity—*see* Section 5.2.5), potential factors impacting wetland function (land use, permafrost degradation, climate change) and carbon storage should be examined.
- Conduct hydrology studies in Eagle Plains region to establish winter water quality and flow rates in order to determine potential water availability for industrial uses.
- Identify fish over-wintering habitats in tributary watersheds to Major River Corridors in Eagle Plains and determine their significance and sensitivity to in-stream water withdrawals (task is related to hydrology studies) (*see* Section 5.2.4)
- Refine and update North Yukon Landscape Types (Biophysical) Map as required.
- Continue research on climate change related risks—refine and update habitat impact hypotheses and models