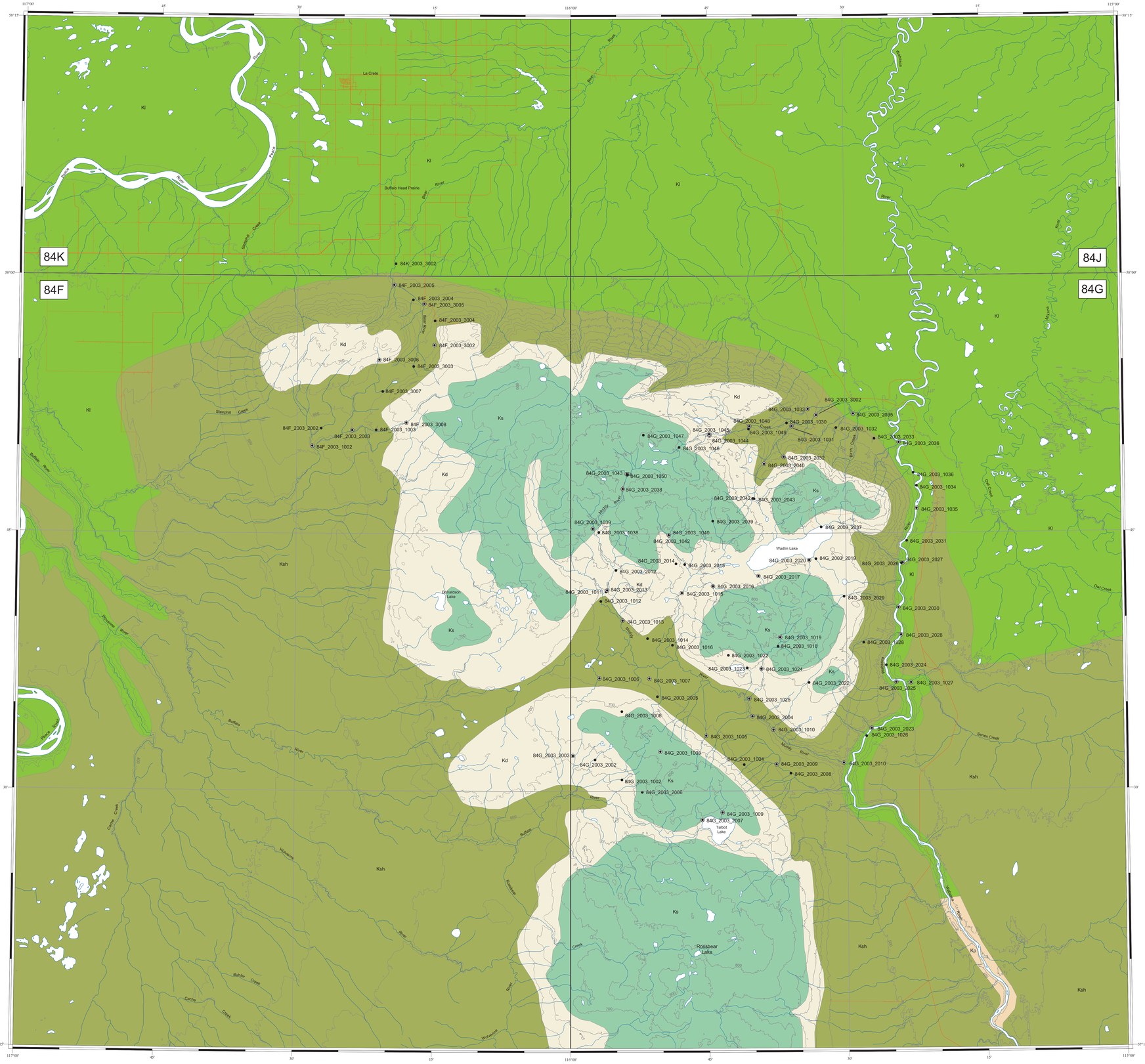


Sample Locations

Alberta Geological Survey and Geological Survey of Canada

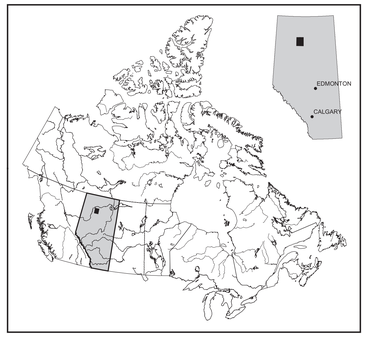
Buffalo Head Hills, Northern Alberta
(Parts of NTS 84F, 84G, 84K, 84J)

EUB/AGS SPE 71 - GSC Open File 4735

Staff of the Geological Survey of Canada (GSC) and the Alberta Energy and Utilities Board/Alberta Geological Survey (EUB/AGS) carried out a regional stream sediment and water survey in the northern Buffalo Head Hills area of northern Alberta in 2003. The 2003 data are part of an ongoing survey of the Buffalo Head Hills area initiated in 2001. This National Geochemical Reconnaissance project is aligned with Alberta's plan for a multi-year, multi-disciplinary study in the northern part of the province. The GSC, under the Northern Resource Development Program and the Targeted Geoscience Initiative II (2003-2005), and the EUB/AGS funded the 2003 survey.

Stream sediments and waters were collected from 95 sites in the northern Buffalo Head Hills during 2003. Analytical data for up to 48 elements in stream sediments and up to 58 variables in waters, determined by a number of analytical techniques, are available for locations indicated on this map. In addition, at 48 sites, indicated by a circled dot, bulk sediment samples were collected for heavy mineral concentration. Heavy minerals were characterized in the 0.25 to 0.5 mm fraction of the concentrate by a 100-grain identification after kimberlite indicator minerals were picked and identified separately. Kimberlite indicator minerals, picked from the 0.25 to 2.0 mm fraction, underwent analysis by electron microprobe to determine the chemistry of individual grains. Further geochemical analysis was carried out on the <0.25 mm fraction of the heavy mineral concentrate by ICP-MS. Detailed descriptions of collection, preparation and analytical methods are available in the text of the report accompanying this map.

Analytical results and field observations contribute to building a national geochemical database for resource assessment, mineral exploration, geological mapping, and environmental studies. Sample collection, preparation procedures and analytical methods are strictly specified and carefully monitored to ensure consistent and reliable results regardless of the area, the year of collection or the analytical laboratory undertaking the analyses.



Legend

●	Silt and Water Sample Sites	n = 47
◉	Silt, Water and Heavy Mineral Concentrate Sites	n = 48

UPPER CRETACEOUS

- **Ks** — SMOKEY GROUP: Dark grey shale and silty shale, nodules and thin beds of concretionary ironstone; includes unnamed dark grey shale unit on Caribou Mountains and Buffalo Head Hills; marine
- **Kd** — DUNVEGAN FORMATION: Grey, fine-grained, feldspathic sandstone with hard calcareous beds; laminated siltstone and grey silty shale; deltaic to marine

UPPER AND LOWER CRETACEOUS

- **Ksh** — SHAFTESBURY FORMATION: Dark grey fish-scale bearing shale, silty in upper part; numerous nodules and thin beds of concretionary ironstone; bentonite partings; lower part with thin silty and sandy intervals; marine

LOWER CRETACEOUS

- **Kp** — PEACE RIVER FORMATION: Dark grey silty shale; fine-grained quartzose sandstone shoreline complex Note: sandstone in lower part of map unit may be equivalent to uppermost member of underlying Spirit River Formation (Loon River Formation equivalent) in NW Alberta subsurface
- **Kl** — LOON RIVER FORMATION: Dark grey, fossiliferous, silty shale and laminate siltstone; nodules and thin beds of concretionary ironstone; marine

0 10 20
Kilometers

Projection: Universal Transverse Mercator, Zone 11
Datum: North American Datum, 1983
Contour Interval: 50 metres

OPEN FILE
DOSSIER PUBLIC
4735
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2004

Open files are products that have not gone through the GSC formal publication process.

Les dossiers publics sont des produits qui n'ont pas suivi le processus officiel de publication de la CGC.

Northern Resource Development Program
Studies Geo & Element Opportunities in Northern Alberta and British Columbia

Open files are products that have not gone through the GSC formal publication process
Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada.
© Her Majesty the Queen in Right of Canada 2004