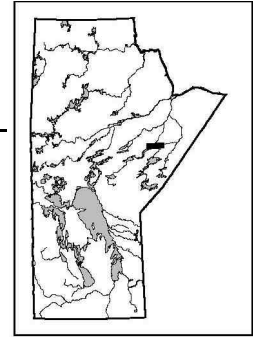


GS-15 MULTIMEDIA GEOCHEMICAL AND MINERALOGICAL SURVEYS, NORTHERN KNEE LAKE-FISH LAKE GREENSTONE BELT, NORTHERN SUPERIOR PROVINCE (NTS 53M/1, 53M/8, 53N/3, 53N/4 AND 53N/5) by M.A.F. Fedikow and E. Nielsen



Fedikow, M.A.F. and Nielsen, E. 2001: Multimedia geochemical and mineralogical surveys, northern Knee Lake-Fish Lake greenstone belt, northern Superior Province (NTS 53M/1, 53M/8, 53N/3, 53N/4 and 53N/5); in Report of Activities 2001, Manitoba Industry, Trade and Mines, Manitoba Geological Survey, p. 108-110.

SUMMARY

Rock, till, b-horizon soil, humus and vegetation samples were collected during the month of July for multi-element geochemical analysis from 157 sites in the area west, north and east of the northern half of the Knee Lake greenstone belt. The sampling included 150 bulk samples of till and beach sand (20–25 kg) collected for kimberlite indicator-mineral identification and analysis. Samples are currently undergoing preparation for geochemical analysis in the laboratories of the Manitoba Geological Survey.

2001 SURVEY

Helicopter- and fixed-wing-assisted, belt-scale (1 km sample spacing), multimedia geochemical and mineralogical surveys in northeastern Manitoba were concentrated in the northern portion of the Knee Lake greenstone belt, including the belt that trends eastward to Fish Lake (Fig.GS-15-1). The distribution of sampling sites for the 2001 survey is given in Figure GS-15-2. Sample collection in 2001 was accomplished entirely by helicopter by two separate sampling crews. This year's sampling was designed to:

- extend or truncate the kimberlite indicator-mineral (KIM) dispersion train defined in 1999 and 2000 in the Knee Lake greenstone belt (Fedikow et al., 2000, 2001a, 2001b);
- define the eastern limits of the 1999 and 2000 Knee Lake KIM dispersion train;

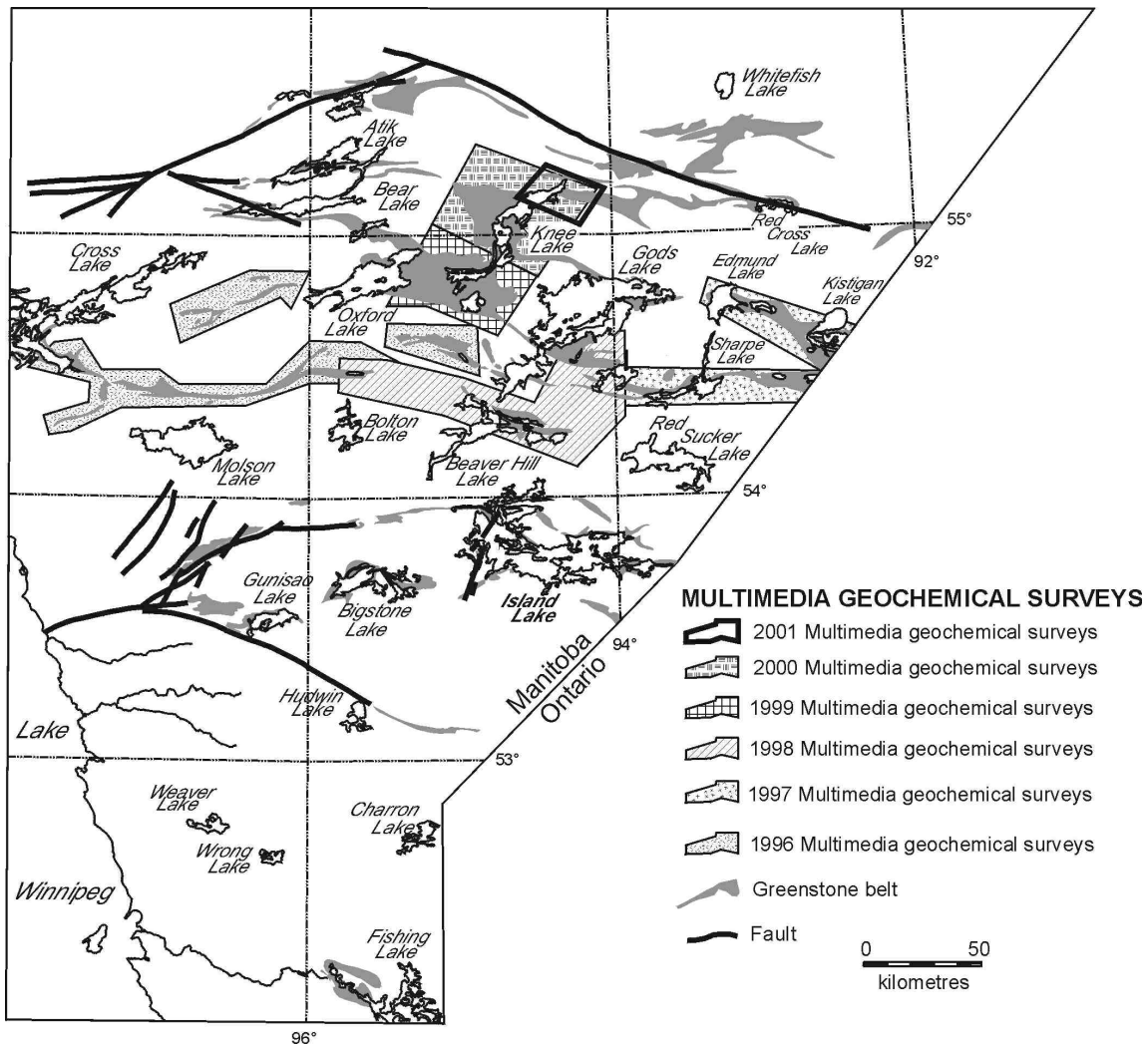


Figure GS-15-1: Target areas for multimedia geochemical surveys, 1996-2001

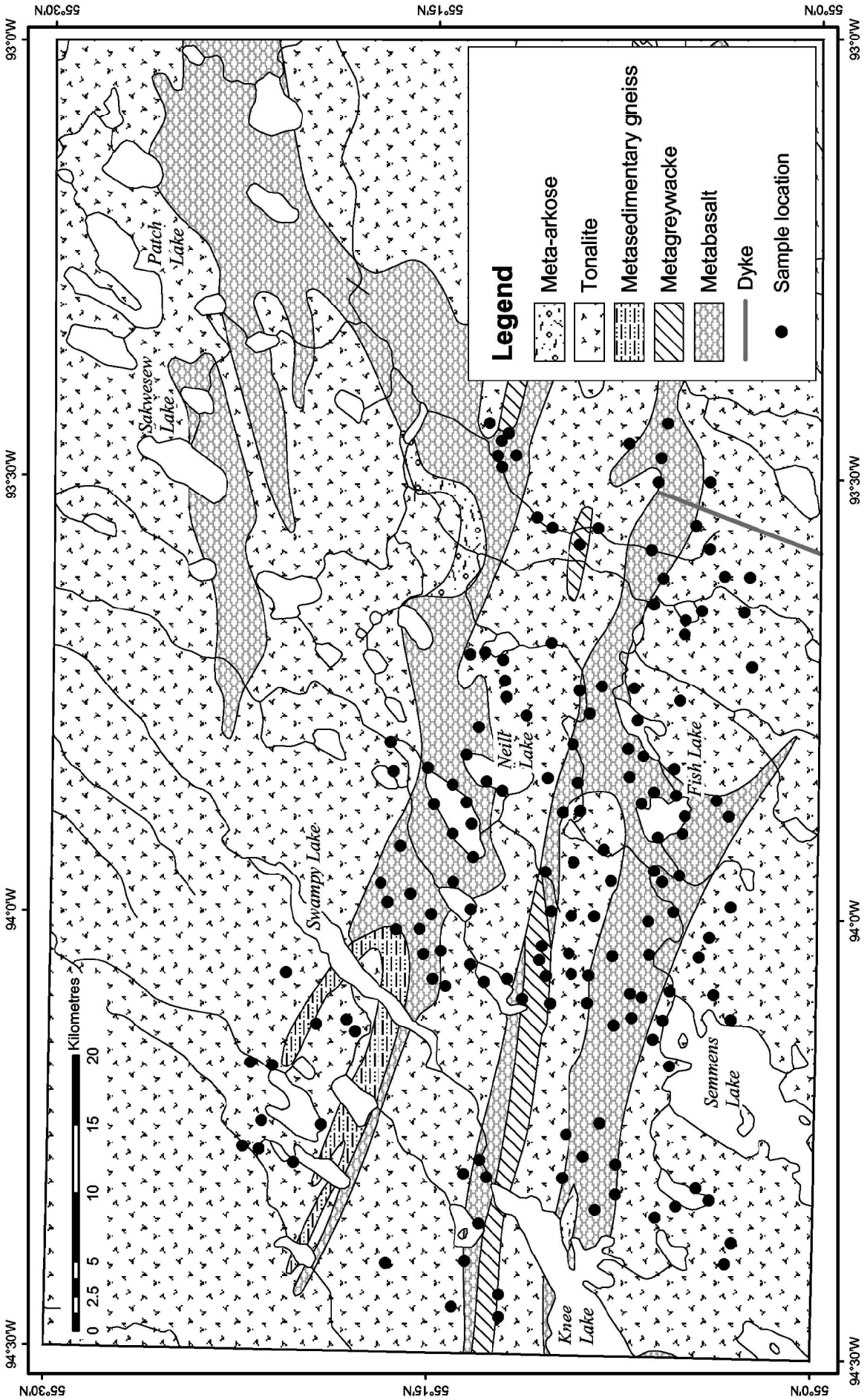


Figure GS-15-2: Distribution of sampling sites for the 2001 survey area.

- assess the possibility that multimedia geochemical analyses have effectively mapped out the Knee Lake KIM dispersion train, with the possibility that the analysis of any one of these media may represent an alternative to bulk till sampling for diamond exploration; and
- assess the greenstone belt that extends east from the northern end of Knee Lake to Fish Lake for base-metal, precious-metal and diamond potential.

The geochemical and mineralogical analysis of these samples will continue to build a multi-element–multimedia geochemical database initiated under the Operation Superior program between 1996 and 2000 (Fedikow et al., 1996, 1997a, 1997b, 1998, 1999, 2000, 2001a, 2001b; Fedikow et al., work in progress, 2001; Fedikow and Nielsen, 1997, 1998, 1999, 2000) to assist mineral-resource assessment in the northern Superior Province of Manitoba.

ACKNOWLEDGEMENTS

We acknowledge the considerable skills of Alain Desjardins, Provincial Helicopters Ltd. (Lac du Bonnet) in safely accessing landing sites for the 2001 season. Chris Bater, John Harrison and Ryan Oger provided able and enthusiastic assistance during the sampling program. Neill Brandson and Karen Punstel are thanked for all-around logistical support.

REFERENCES

- Fedikow, M.A.F. and Nielsen, E. 1997: Operation Superior: multimedia geochemical surveys in the Edmund Lake and Sharpe Lake greenstone belts, northern Superior Province, Manitoba (NTS 53K); *in* Report of Activities, 1997, Manitoba Energy and Mines, Geological Services, p. 4–5.
- Fedikow, M.A.F. and Nielsen, E. 1998: Operation Superior: multimedia geochemical surveys in the Knife Lake, Webber Lake, Goose Lake and Echimamish River greenstone belts, northern Superior Province, Manitoba (NTS 53L and 53K); *in* Report of Activities 1998, Manitoba Energy and Mines, Geological Services, p. 75–77.
- Fedikow, M.A.F. and Nielsen, E. 1999: Operation Superior: multimedia geochemical surveys in the Knee Lake greenstone belt, northern Superior Province, Manitoba (NTS 53L); *in* Report of Activities 1999, Manitoba Industry, Trade and Mines, Geological Services, p. 67–68.
- Fedikow, M.A.F. and Nielsen, E. 2000: Operation Superior: multimedia geochemical surveys in the Knee Lake greenstone belt (southern half), northern Superior Province, Manitoba (NTS 53L); *in* Report of Activities 2000, Manitoba Industry, Trade and Mines, Manitoba Geological Survey, p. 105–107.
- Fedikow, M.A.F., Nielsen, E. and Conley, G.G. 1997a: Operation Superior: 1996 multimedia geochemical data from the Max Lake area (NTS 63I/8, 9 and 53L/5 and 12); Manitoba Energy and Mines, Geological Services, Open File Report OF97-1, 34 p. plus 1 diskette.
- Fedikow, M.A.F., Nielsen, E., Conley, G.G. and Lenton, P. 1999: Operation Superior: multimedia geochemical surveys in the Knife Lake, Webber Lake, Goose Lake and Echimamish River greenstone belts, northern Superior Province, Manitoba (NTS 53L and 53K); Manitoba Energy and Mines, Geological Services, Open File Report OF99-8, 400 p. plus 1 CD-ROM.
- Fedikow, M.A.F., Nielsen, E., Conley, G.G. and Lenton, P. 2000: Operation Superior: multimedia geochemical surveys in the Knee Lake greenstone belt (southern half), northern Superior Province, Manitoba (NTS 53L); Manitoba Industry, Trade and Mines, Manitoba Geological Survey, Open File Report OF2000-2, 2 vol. plus 1 CD-ROM.
- Fedikow, M.A.F., Nielsen, E., Conley, G.G. and Lenton, P.G., 2001a: Operation Superior: kimberlite indicator mineral survey results (2000) for the northern half of the Knee Lake greenstone belt, northern Superior Province, Manitoba (NTS 53M/1, 2, 3, 7 and 53L/15); Manitoba Industry, Trade and Mines, Manitoba Geological Survey, Open File Report OF2001-5, 59 p.
- Fedikow, M.A.F., Nielsen, E., Conley, G.G. and Lenton, P.G., 2001b: Operation Superior: a compilation of kimberlite indicator mineral survey results (1996–2000), northern Superior Province, Manitoba (NTS 53M); Manitoba Industry, Trade and Mines, Manitoba Geological Survey, Open File Report OF2001-4, 60 p.
- Fedikow, M.A.F., Nielsen, E., Conley, G.G. and Matile, G.L.D. 1997b: Operation Superior: multimedia geochemical survey results from the Echimamish River, Carrot River and Munro Lake greenstone belts, northern Superior Province, Manitoba (NTS 53L and 63I); Manitoba Energy and Mines, Geological Services, Open File Report OF97-2, 1548 p. plus 2 diskettes.
- Fedikow, M.A.F., Nielsen, E., Matile, G.L.D. and Conley, G.G. 1998: Operation Superior: multimedia geochemical surveys in the Edmund Lake and Sharpe Lake greenstone belts, northern Superior Province, Manitoba (NTS 53K); Manitoba Energy and Mines, Geological Services, Open File Report OF98-5, 403 p. plus 1 CD-ROM.
- Fedikow, M.A.F., Nielsen, E. and Sailerova, E. 1996: Operation Superior: multimedia geochemical surveys in the Echimamish River, Carrot River and Munro Lake greenstone belts, northern Superior Province, Manitoba (NTS 53L and 63I); *in* Report of Activities 1996, Manitoba Energy and Mines, Geological Services, p. 5–8.