**North Slope Lakes Project**  
Water and Environmental Research Center  
University of Alaska Fairbanks

**Mine Site B (6 Mile Lake) Water-Level Observations**

**North Slope Lakes Project Hydrologic Notes, May 23, 2006.**

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Water level elevations are being surveyed at Mine Site B (6 Mile Lake), in both the south and north cells during winter months. Additional chemistry and physical measurement data are also being collected. Water withdrawals took place during the winter in just the North Cell. Hydrologic interactions between the two cells and effects of water withdraw are some of the primary issues under investigation.

![Mine Site B, North and South Cells](image)

Figure 1. Water-surface elevation (temporary datum) in Mine Site B north and south cells. During winter ice-covered periods, this is the water surface in open drill holes. The water levels in both cells were the same through the winter period and there was water under ice at either side of the island separating the two cells.
Initially, water levels were surveyed just in the North cell. Ice holes were augered in the
two channels connecting the north and south cells and both channels had open-water
connections throughout the winter period. The average ice thickness during the May
sampling was around 4.5 feet. The data from this winter season shows the impact of snow
loading by the increase in water levels in February. Some of the decrease in water levels
from February to March can be accounted for by overflow water seeping onto the top of
the ice surface and refreezing. Water levels declined during March and April with regular
water use. Additional snow loading during these months will have a slight impact on the
relationships between water withdrawal volumes and winter water levels. During the May
sampling visit, local snowmelt had been entering the North cell for about a week. Due to
dusting from adjacent roads and pads, this melting should always occur earlier than the
regular melting of undisturbed tundra. Early snowmelt from Milne Creek was also
flowing into the South reservoir, probably for about a week. Flow rates are estimated to
be over 100 gallons per minute. The resulting water levels in the North and South cells
are now higher than in December 2005.

The water level data and other winter observations indicate the two cells were
hydrologically connected throughout the winter season in both of the channels connecting
the two cells. Water management applications include the separate permitting of the
North and South cells, the timing of water use permit start and end dates, and reservoir
maintenance activities that may yield more usable volumes from the two cells. Dissolved
oxygen levels remained high in the most of the water column for both cells. Further
interpretation will be covered in future project reports and papers.

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