

# Island Lake Water Treatment Plant

## Manitoba, Canada

Treatment of lake water - pretreatment for nanofiltration  
MEL type filters as polishing sand filters (PSF's).



Island Lake Water Treatment Plant

### Design constraints and objectives:

- Remote community. Airplane and ice road access only.
- Source is large lake – normally low turbidity but subject to minor variations in turbidity and TOC. TOC is elevated throughout year.
- Cryptosporidium to be removed by MEL filters, nanofiltration and UV disinfection.
- TOC to be removed by MEL filters and nanofiltration.
- MEL polishing filters intended to reduce suspended solid load to nanofilters (minimize membrane maintenance and extend membrane life by several years).
- Two filters each with minimum operating capacity of 6,000 L/h or 144,000 L/day. (Maximum operating capacity of each filter is 8,000 L/h or 192,000 L/day).
- No chemical requirements (apart from chlorination).
- Manual operation.
- Minimum complexity – Local operator with minimum training or experience.
- Minimum backwash - Wastewater to be disposed of through existing sanitary sewer and sewage lagoon.
- No media replacement.
- Performance capable of being verified using pilot testing on site.

# Treatment Process

**Lake to MEL polishing filters to Filtered water storage to Nanofiltration to UV disinfection to Chlorination to Treated water storage.**



**Filters producing to storage tank**



**Filtered water pumped into nano-filtration system**

- Two (prefabricated stainless steel 2m x 4m x 2m) MEL-PF filters.
- Each filter can treat a maximum of 8,000 L/h. (Surface loading of 1000 L/m<sup>2</sup>/h).



**Loading filter and media on to flatbed**



**Filters loaded onto truck for transported to site (2,050km/48hr road & ice road journey)**