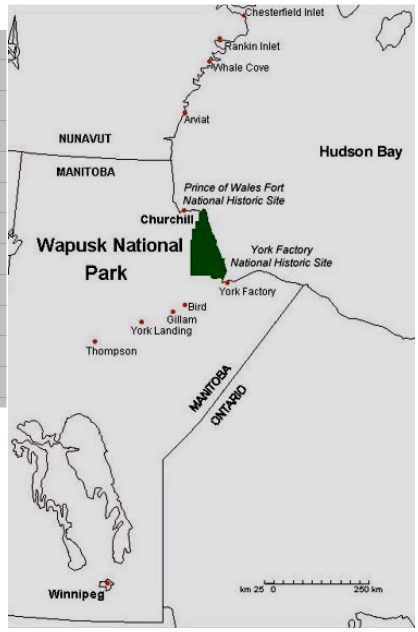
Case Study: Small scale Potable Water Treatment System



The Parks Canada operated **York Factory National Historic Site** is located at the mouth of the Hayes River; one hour helicopter flight north east of the Town of Gillam – south of the Hudson Bay shoreline.

The staff house provides seasonal accommodation for 3 to 12 person; the facility is staffed from May to September.

All equipment required for the assembly of the potable water treatment system was flown in by helicopter in early summer 2009 and immediately commissioned for operation.

Water Quality Testing Results
June 27, 2009
York Factory Staff Residence

LOCATION	TOTAL COLIFORM	E- COLI
Raw Water (in outside storage tank)	> 200 MPN/ 100 ml	24 MPN/ 100 ml
Treated Water (at Kitchen Tap)	0	0

LOCATION		
Raw Water	at outside tank	368 NTU
Treated Water	at Kitchen Tap	0.35 NTU
Treated Water	at sampling port	0.24 NTU

Power for the staff residence is supplied by a small scale renewable energy system (PV panels, battery bank and 2 KW capacity inverter) plus a back-up generator.
All components for the potable water treatment system have been chosen to minimize energy consumption:

- A low energy consumption, variable speed pump
- A membrane filtration system with extremely power consumption and
- A proprietary and patent pending flow activated UV disinfection system

The modular, factory-assembled potable water treatment system provides a fail safe multiple barrier technology to filter, treat and disinfect the potable water supply for the staff accommodation.

On demand, the raw water is sourced directly from the Hayes River – water very high in turbidity and coliform levels. Once treated with the ACPI proprietary treatment system, the water meets all Parks Canada quality requirements for potable water.

CONVENIENCE:

- To facilitate easy transport by road, rail, water or air to any location, the technology is designed as a modular system.
- Equipment can be upgraded at any time without significantly affecting the overall operation of the core technology.
- All components are selected for low power consumption. The proprietary flow activated UV disinfection system uses 95% less power than a conventional UV disinfection system.
- To assure best operation, critical components and equipment are sourced from well known global suppliers such as: General Electric, Grundfoss, Omron, Carlos Gavazzi, Trojan and Johnson Controls.

SAFETY:

- The membrane system is certified as per NSF 42 and 53.
- The UV disinfection system is certified as per NSF 55 Class A.

For installations in remote locations these 3 models are available:

Unit	Occupancy Examples	Capacity	Dimension	Throughput of treatment system	Treated water storage capacity	Power Supply
BLUE (custom)	Remote recreational cottage Remote Research / Ranger Station Rural Housing (single family dwelling)	2 to 10 person	Custom design	1,000 liters per hour	Custom design (ranges from 200 to 2,400 liter capacity)	15 Amp 110 VAC
BLUE 20	Temporary, semi permanent work camp Public Park (toilet only / no shower)	8 to 40 person 90 visitors/day	20' ISO container	2,000 liters per hour	6,000 liter	30 Amp 110 VAC
BLUE 40	Remote tourist resort / "EcoLodge" Airport passenger lounge (incl. offices) Public Campground (toilet & shower)	15 to 25 person 100 pass'ger per day 64 person	40' ISO container	3,000 liters per hour	12,000 liter	30 AMP or 60 AMP 110 VAC

Potable water consumption per person can vary from 80 liters per day to 250 liters per day --- therefore it is important to recognize that the above capacity calculations have a certain degree of unpredictability. Each application is best assessed on an individual basis to determine the anticipated usage pattern. Based on the modular design of the utility appliance, additional configurations can be supplied upon request.

TECHNOLOGY:

The proprietary utility appliance technology was developed between 1999 and 2003 – partially supported by Canada Mortgage and Housing Corporation (Research Division), Industry Canada and the National Research Council.

- In 2000, the utility appliance technology was chosen for the Canada Mortgage and Housing Corporation (CMHC) Millennium Housing Award (Technology Category).
- In 2007 the technology was selected as the national winner (Canada) in the international "Energy Globe" sustainable technology competition, sponsored by the European Parliament in Brussels, Belgium.

CONTACT:

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