

Assembly of First  
Nations National  
Water Symposium  
& Tradeshow

***Design-build of package water  
treatment for FN communities***

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# Challenges

Additional challenges that add to the problems:

- Many of the treatment plants are located in remote areas so it is difficult to bring in supplies.
- Often the community wasn't consulted as to their primary water needs.
- Some plants are difficult to operate and cause water outages or downtime.
- Operator training is often difficult to fund.
- Many plants don't have remote monitoring.
- Very high cost of Design-Bid-Build plants.

# Potable Water Solutions

New solutions are being developed:

- Community Circle approach to gathering information and defining the needs of the residents.
- Cost and time savings by delivering standardized treatment systems.
- Modern communications and remote monitoring allows operator to watch the plant on a cell phone.
- Design-Build approach to supplying the treatment systems vs the old Design-Tender-Build method.

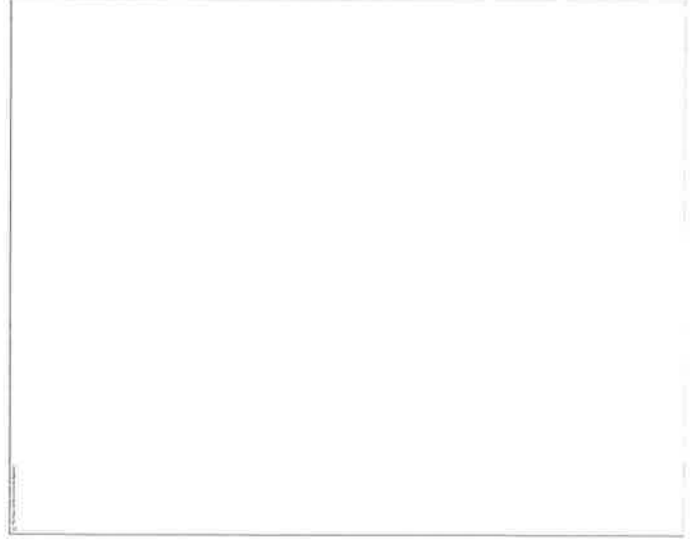
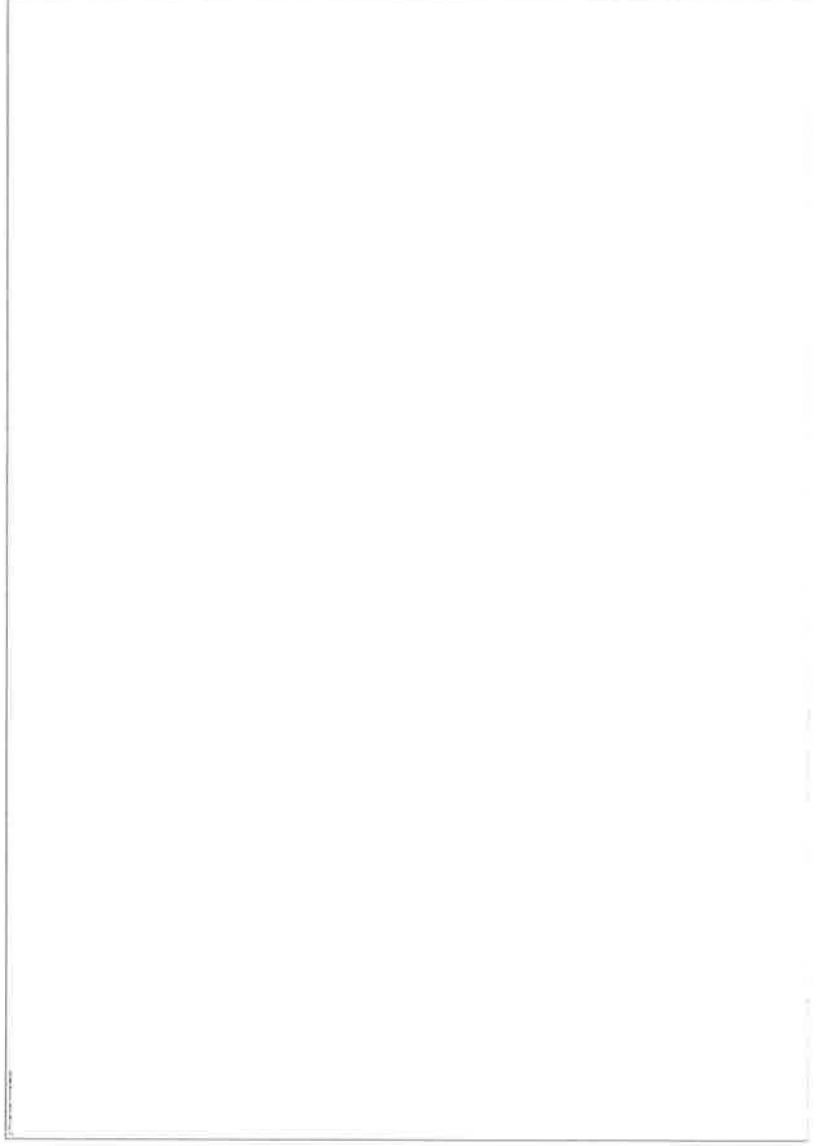
## Examples of First Nations & Remote Water Treatment Plants

### Design-Build Examples

1. Laketown, BC
2. Gilford Island, BC
3. Lytton, BC
4. Ymir, BC (Small community)
5. Little Saskatchewan, MB
6. Cambridge Bay, NU
7. Kugaaruk, NU
8. Kugluktuk, NU
9. Iqaluit, NU

## Gilford Island, BC Kwicksutaineuk First Nation Water Treatment Plant

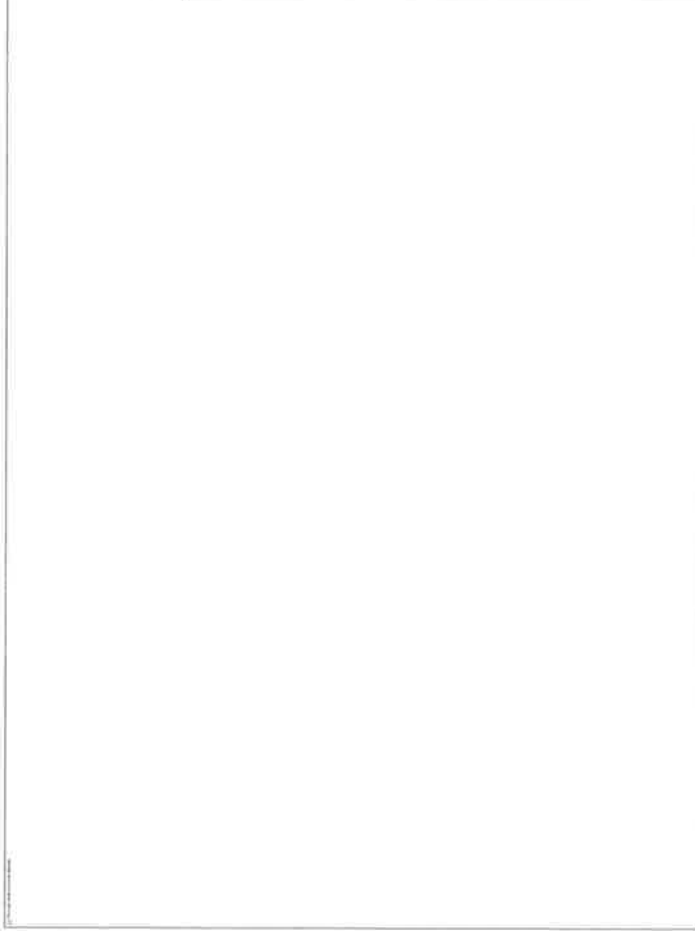
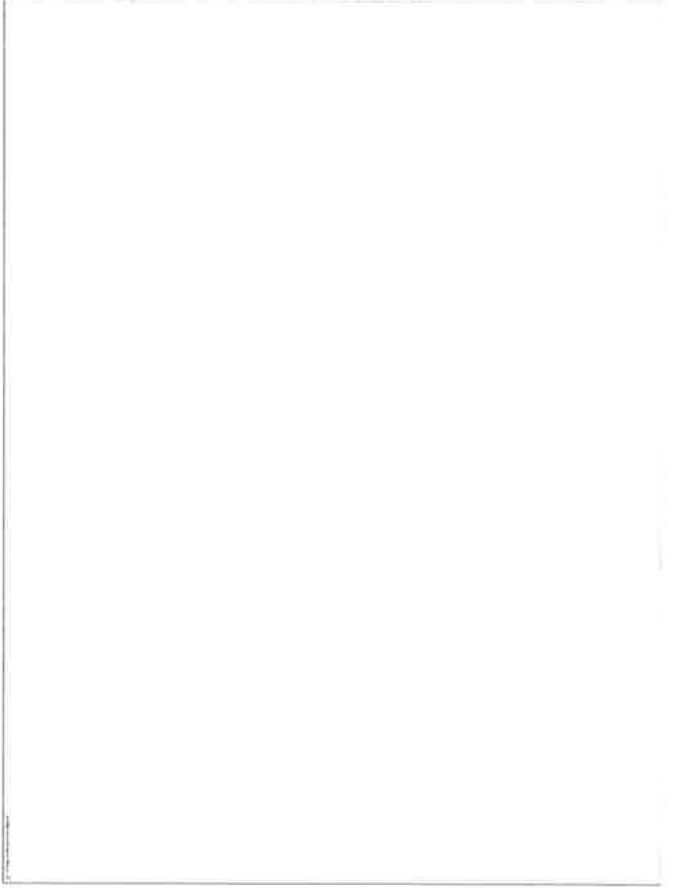
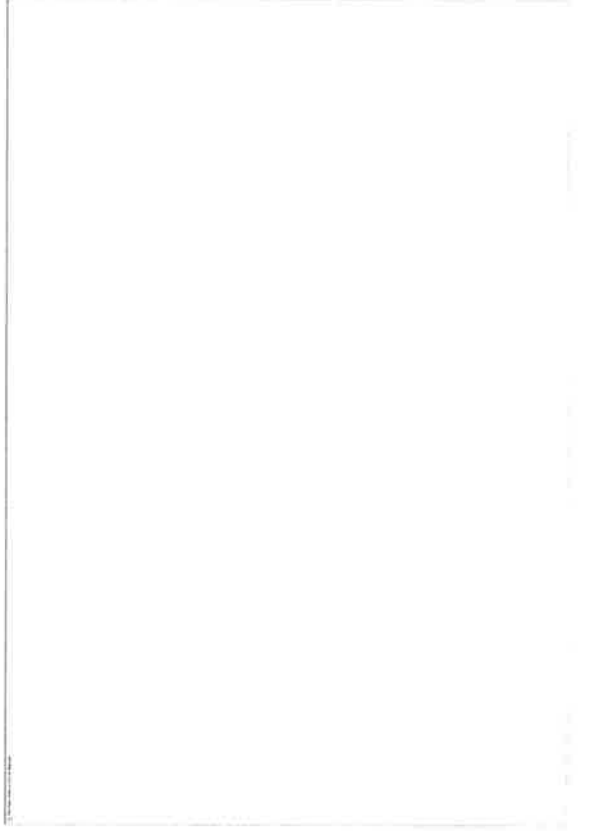
- Difficult combination of lack of water, excessive hardness, total dissolved solids, iron/ manganese and microbiological contaminants in wells
- Final package plant barged then skidded to location
- Tested 4 different RO units



## Nickeyeah #25, Lytton, BC

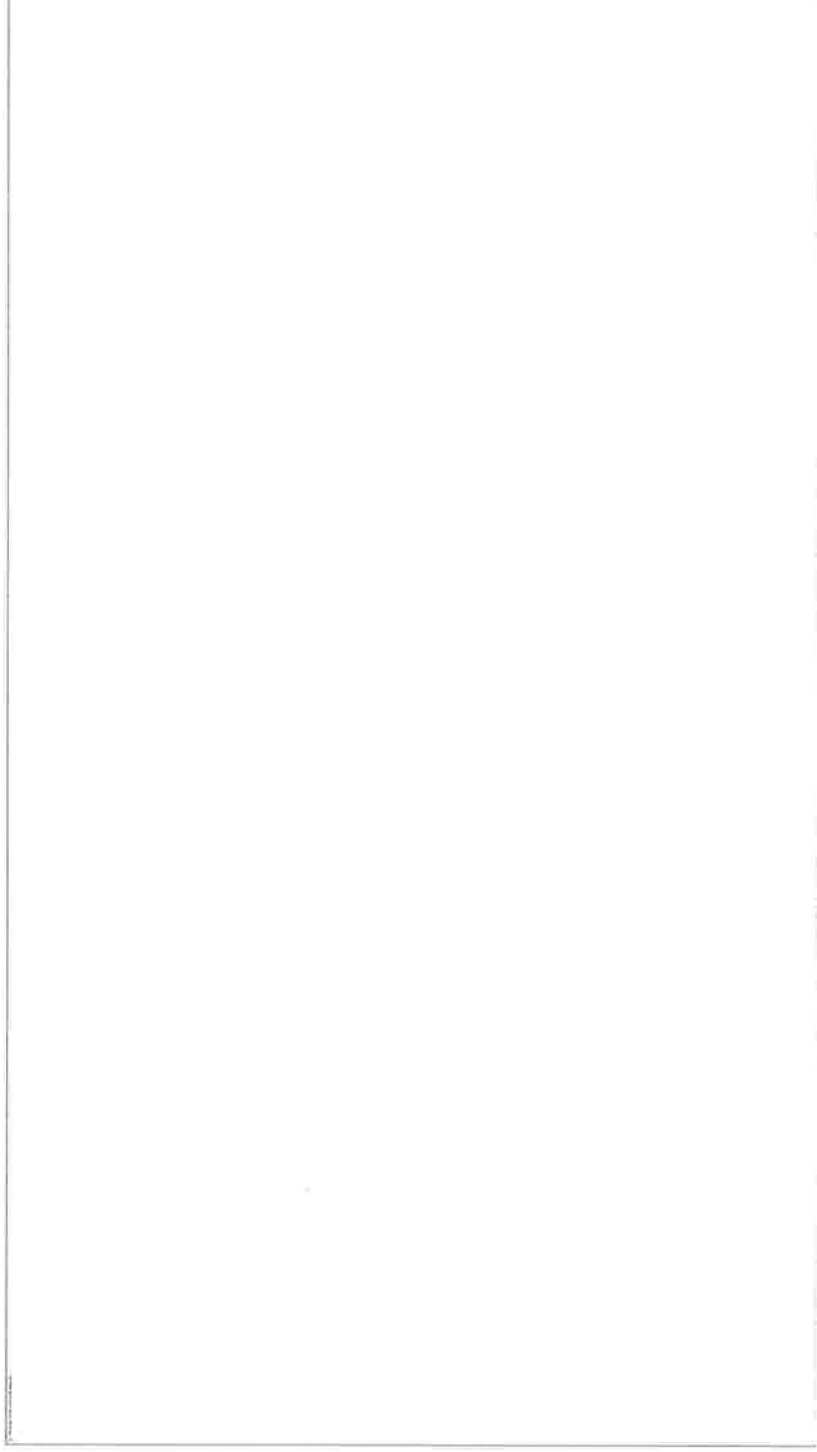
Long standing boil water advisory/ river turbidity addressed with filtration, UV and minimum of chlorination

\*Community Circles approach



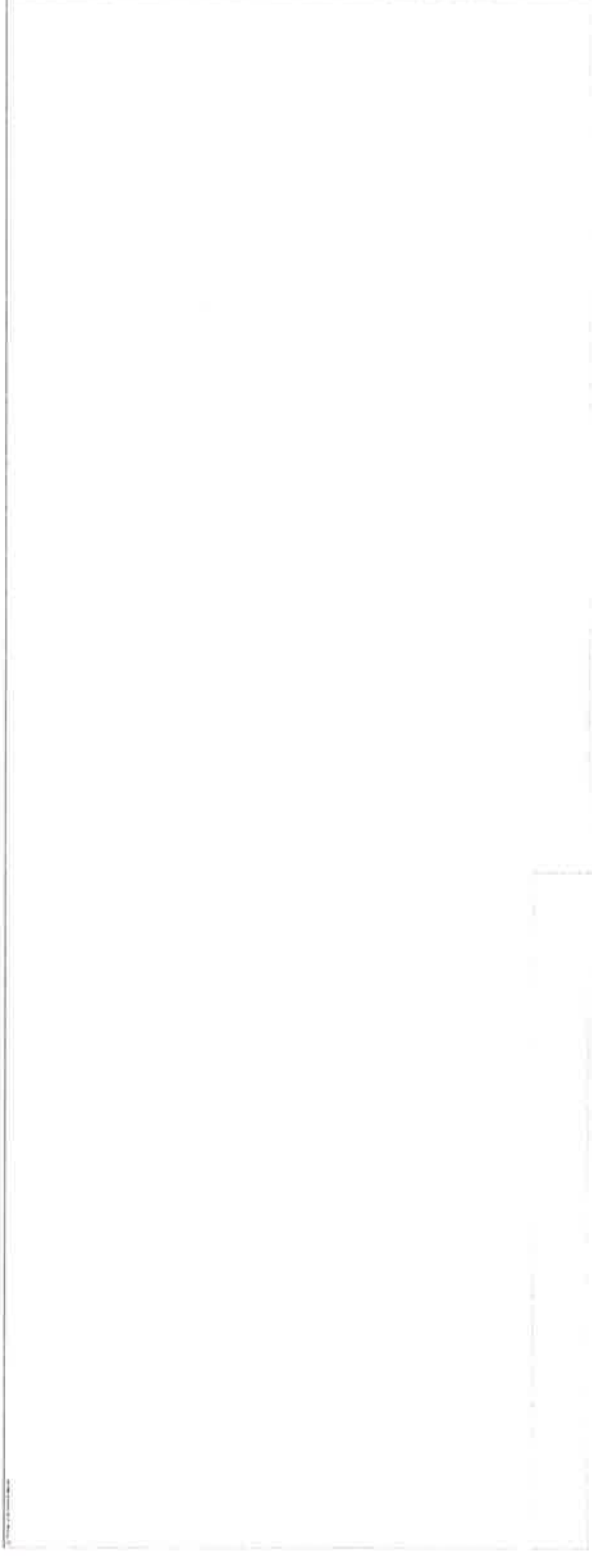
## Little Saskatchewan First Nation, Manitoba

- Very difficult water requiring Reverse Osmosis water treatment unit on a skid to go into existing building
- Cost \$76,000 in 2014



## Kugaaruk, Nunavut

### Truckfill water treatment plant



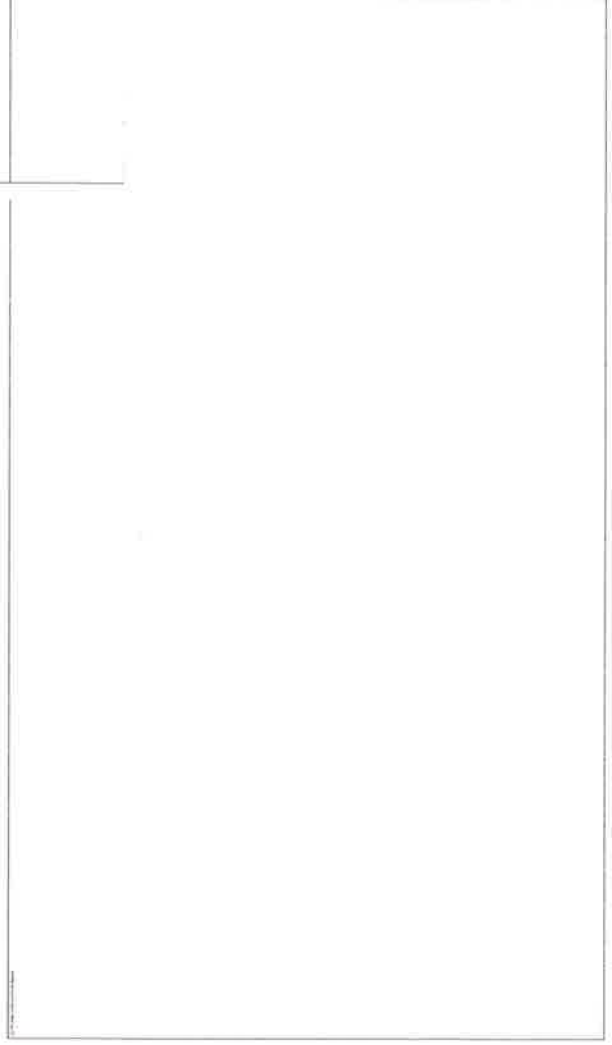
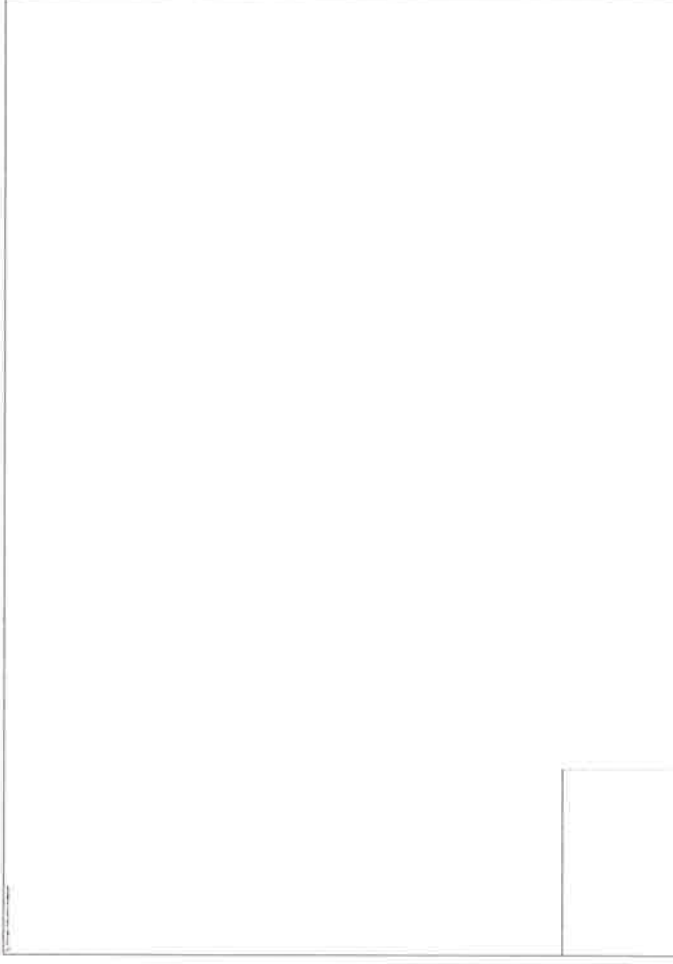
- Very cold winters.
- Two identical treatment trains, delivering 1,134 L/min lake water to the two truckfill stations.
- Cartridge filters, UV radiation and chlorination treatment.



## Iqaluit, Nunavut

### Package Fire Pumphouse

- Diesel pump with backup battery  
Delivers up to 1500 gpm@63 psi  
Fully tested then delivered.  
Inside method of testing flow all  
year



# Potable Water Requirements

Water suppliers are required to provide long term plans to reach the goals of:

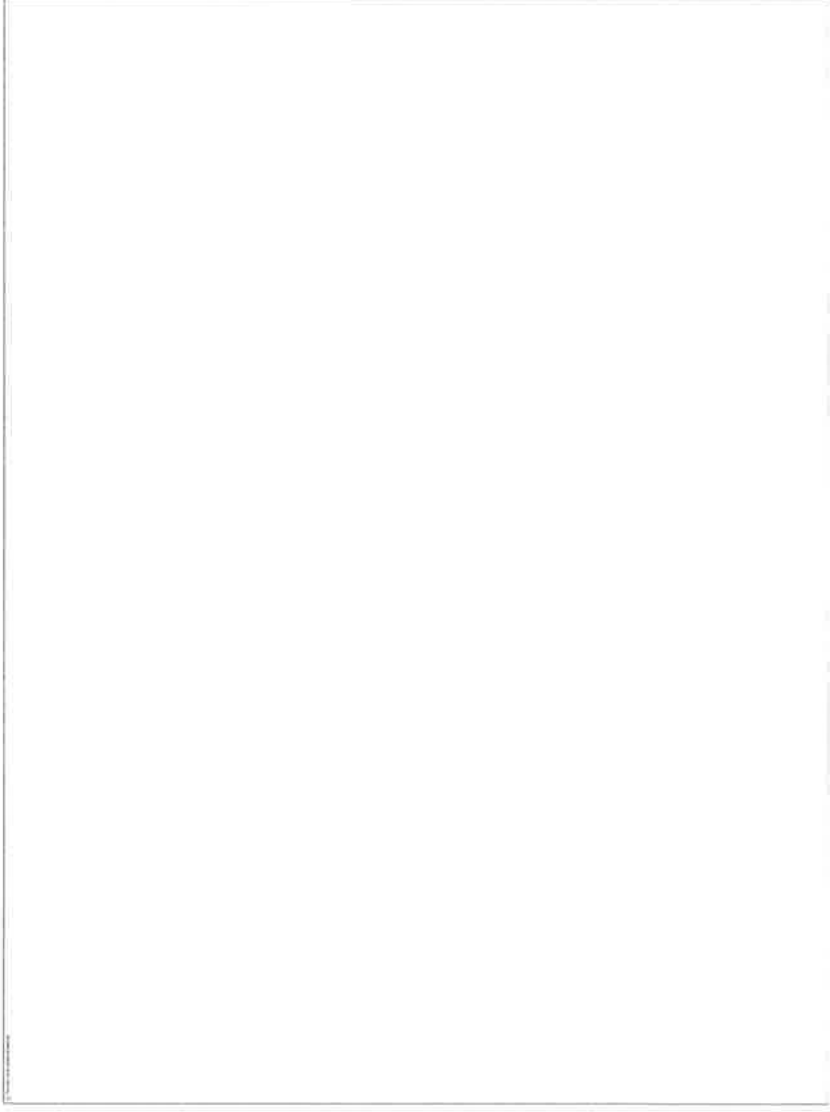
- 99.99% inactivation of viruses - “Bugs”
- 99.9% removal or inactivation of Giardia Lamblia and Cryptosporidium - “Cysts”
- Two treatment processes for all surface drinking water systems
- 0.1 NTU Turbidity - “Water clarity”
- Zero tolerance for total and fecal coliforms and E.Coli – “Worst bugs”

**Designing your plant:**  
Understand the operator's  
needs

Middle River Operator  
Gammale

## Designing your plant:

- New advancements in technology allow remote monitoring & plant control by cell phone or tablet
- Operator can see plant operations



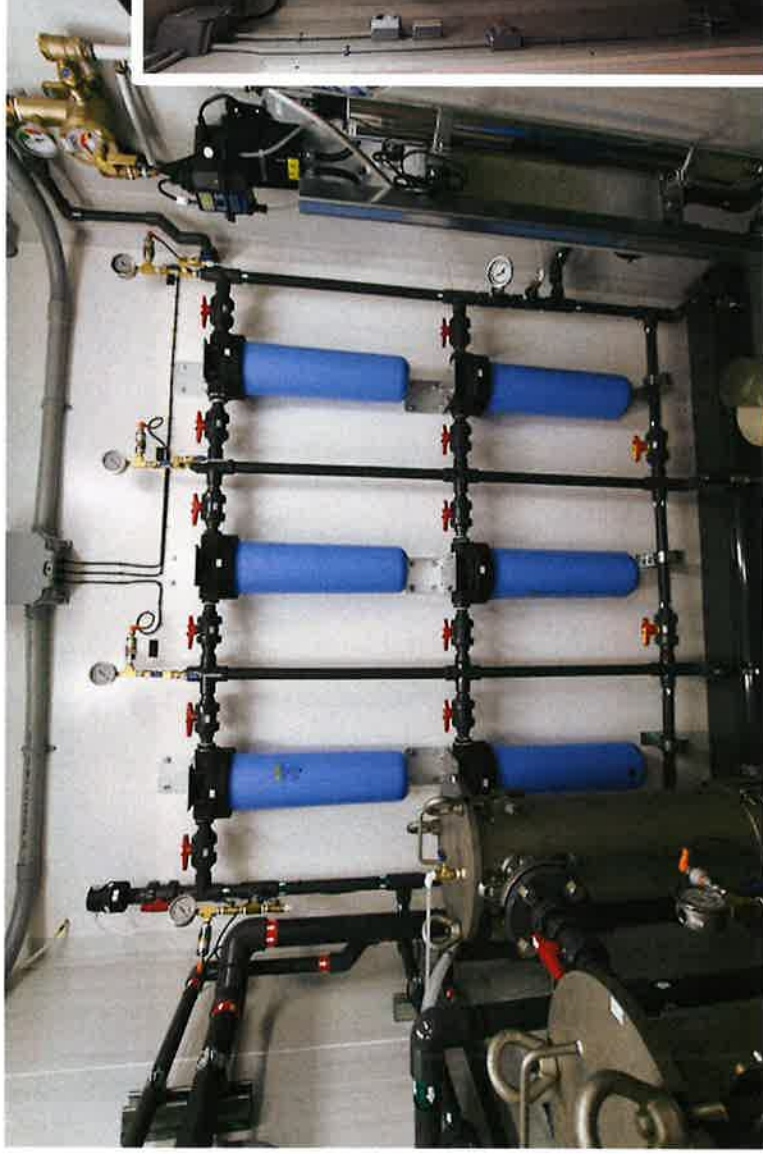
## Designing your plant:

### Easy to use, low maintenance equipment

Blue Filters and UV unit on the right

\*Separate chlorine room from control room, with safety shower/eyewash

*Warren Brown says at first he thought the equipment looked complex but found the plant to be very easy to run.*



# Designing your plant: Shipping, Commissioning, Operator Training, Servicing





## Treatment Plant Servicing and Replacement Parts



- Design-builders in general should have ability to service plants over long term and provide correct replacement parts
- Design-builders can remotely support the operator with proper electronics.



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**Thank you! Questions?**

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***Clean Water ~ Cleaner Future!***