

**Blood Tribe Land
Management Microbial
Water Quality Monitoring
Project, 2007.**

Today's Presentation

- ◆ Blood Tribe Land Management (BT Lands) and Lethbridge College (LC) Water Quality Monitoring Project.
- ◆ Developing capacity on the Blood tribal lands with Blood Tribe students for monitoring and testing flowing waters.
- ◆ Film developed by Blood Tribe Land Management with support from Environment Canada.

Part I: BT Lands Water Quality Monitoring Project.



Water Quality Monitoring Project

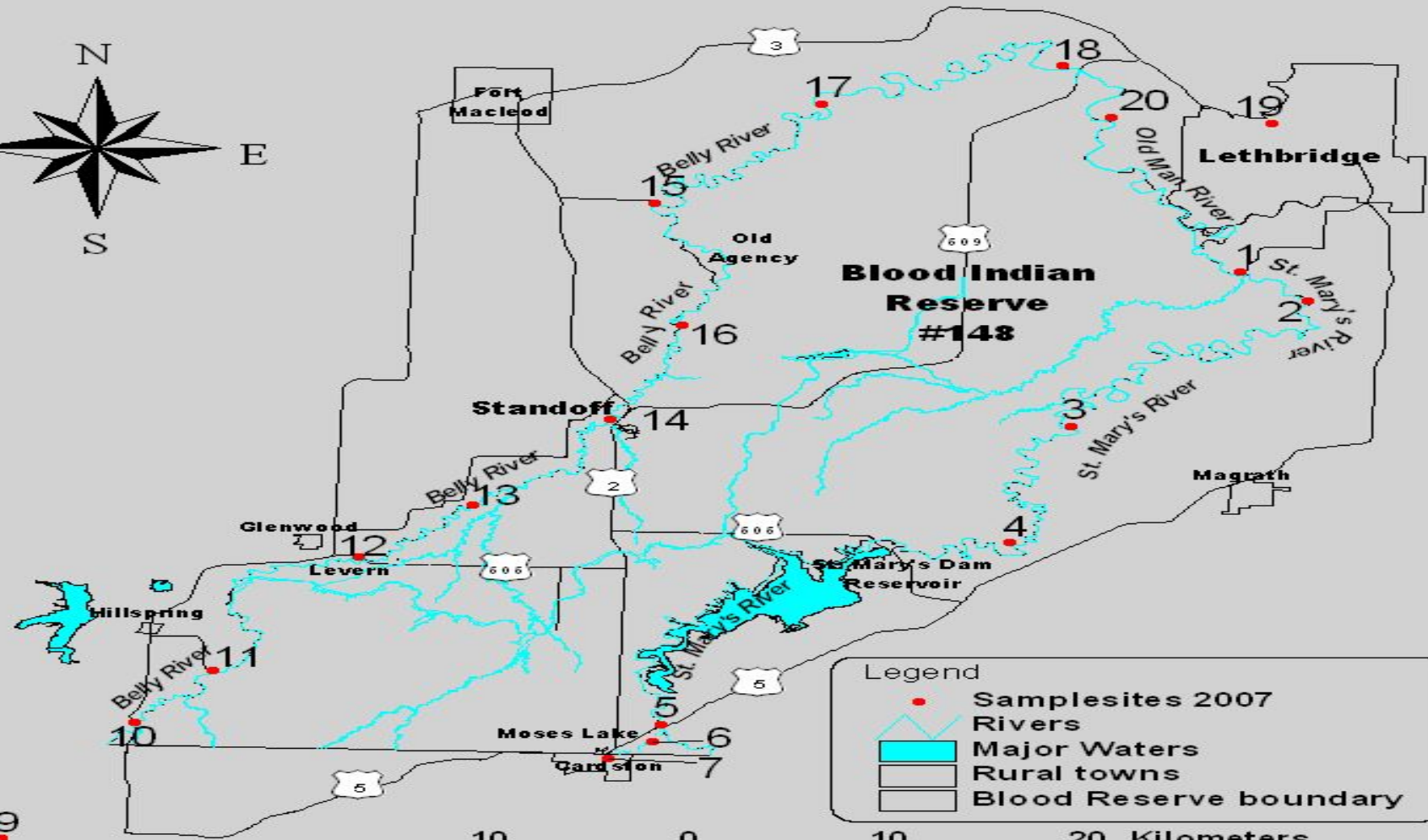
- ◆ In the spring of 2007 the Blood Tribe was selected as the main First Nations group for a water testing project.
- ◆ The project was titled “**Laboratory analysis of quantities and types of *Cryptosporidium*, *Giardia* and *E. coli* present in raw source water samples from selected First Nation communities in Canada**”.
- ◆ This project was funded through Environment Canada and was developed by Dr Norman Neumann of the Alberta Provincial Laboratory for Public Health and Rob Phillips of Environment Canada, Water Monitoring Division.

Project Details

- ◆ Fecal indicator bacteria testing.
- ◆ Blood Tribe Lands and Lethbridge College collected 200 water samples from 20 sites selected by BT Lands.
- ◆ These water samples were tested for fecal indicator bacteria, *E. coli* and fecal *Enterococcus*.
- ◆ Water samples for *E. coli* testing were sent to Alberta Provincial Laboratory for Public Health in Edmonton.
- ◆ Water samples for *Enterococcus* testing were brought to Lethbridge College for testing using Enterolert Quanti-Trays (IDEXX).



Blood Tribe Water Sampling 2007



Legend

- Samplesites 2007
- ~ Rivers
- Major Waters
- Rural towns
- ▭ Blood Reserve boundary

Scale 1 : 400 000; Projection : UTM Zone 12; Datum : NAD 83

Map produced by
Blood Tribe Land Management Dept
Geomatics Service Division
October 01, 2007
Box 470, TOLYO
Standoff, Alberta
(403) 737-8151

**Blood
Timber Limit #148A**

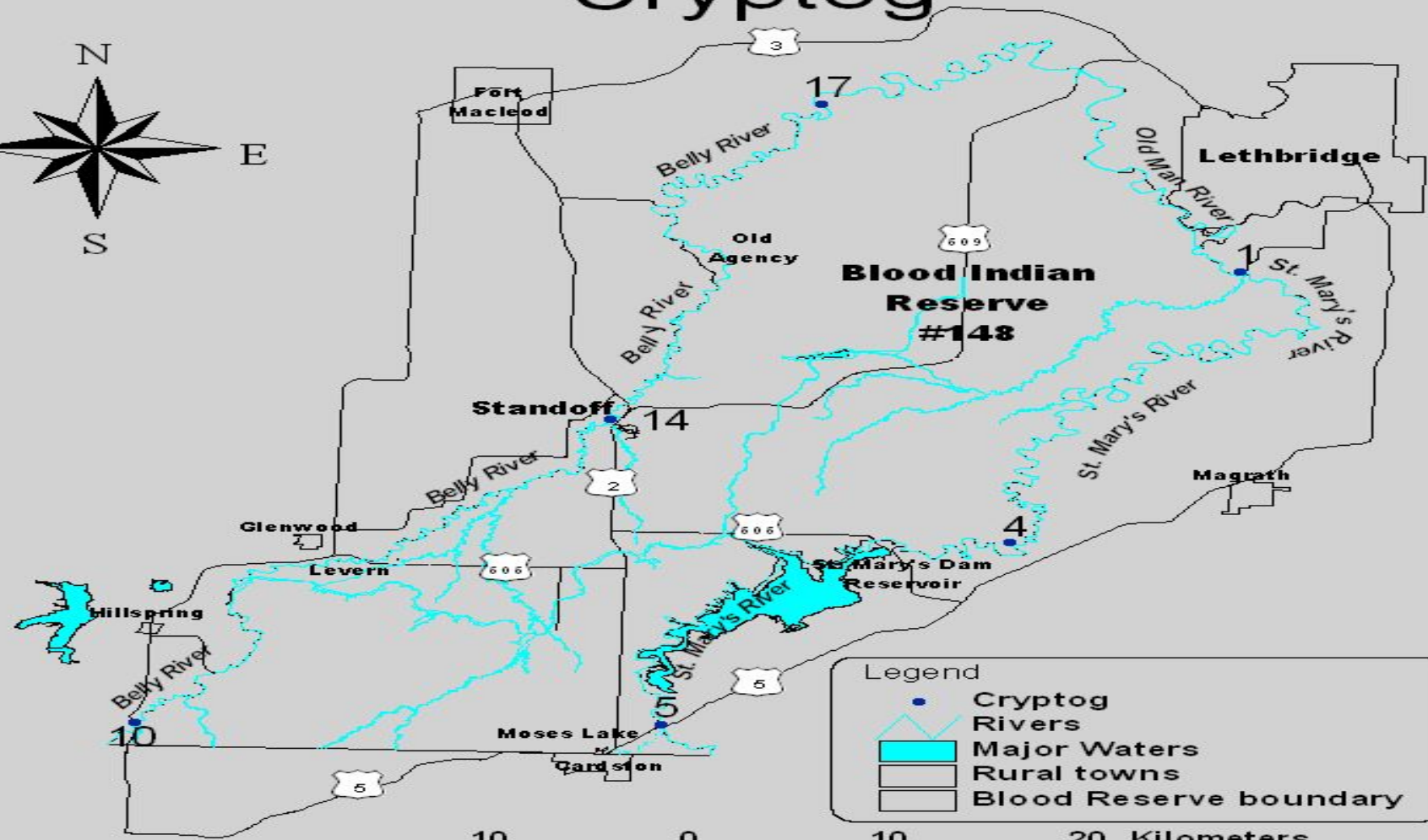


Cryptosporidium and Giardia Testing

- ◆ 50 samples from 6 sites were tested for the presence of the protozoan parasites *Cryptosporidium* and *Giardia*.
- ◆ Up to 50 liters of river water was filtered through a filter apparatus (IDEXX).
- ◆ These filters were sent to the Alberta Provincial Laboratory for Public Health in Calgary for testing.
- ◆ Testing was done to determine the number and the species of both *Cryptosporidium* and *Giardia* in each filter.



Blood Tribe Water Sampling 2007 Cryptog



Legend

- Cryptog
- Rivers
- Major Waters
- Rural towns
- Blood Reserve boundary

10 0 10 20 Kilometers

Scale 1 : 400 000; Projection : UTM Zone 12; Datum : NAD 83



**Blood
Timber Limit #148A**

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Highlights of The Project

Indicator Bacteria

- ◆ 200 water samples tested from 20 water sampling sites over the summer.
- ◆ *E. coli*
 - 8% (15/200) were over the Health Canada allowable limit (200 CFU/100 ml) for *E. coli* in recreational waters.
 - 12 of 20 water testing sites were over the allowable recreational limit for *E. coli* at least once.
 - 1 site was over the allowable limit twice
 - 1 site was over the allowable limit 3 times for *E. coli*.

Indicator Bacteria Testing

◆ *Fecal Enterococcus*

- 18% (36/200) were over the Health Canada allowable recreational limit (35 CFU/100 ml)
- 17 of 20 water testing sites were over the allowable recreational limit for *Fecal Enterococcus*.
- 2 sites were over the allowable limit twice, 1 site three times, 2 sites five times and 1 site all 8 times tested.

Highlights of The Project

Cryptosporidium

- ◆ 50 water samples tested from 6 sites over the summer.
- ◆ Cryptosporidium oocysts were isolated in 24% (12/50) of the water samples.
- ◆ Cryptosporidium oocysts were found in all testing sites at least once during the project.
- ◆ One of the water test sites was positive 3 of 7 times tested and one was positive 5 of 8 times tested.
- ◆ One of the sites tested positive 2 times for *C. hominis* which is a strong indicator for the presence of human fecal contamination.
- ◆ *C. hominis* was determined to be the causative agent for a large waterborne human outbreak in North Battleford, Saskatchewan.

Highlights of The Project

Giardia

- ◆ 50 water samples tested from 6 sites over the summer.
- ◆ Giardia cysts were isolated in 56% (28/50) of the water samples.
- ◆ Giardia cysts were found in all water testing sites at least twice during the summer.
- ◆ One of the water test sites was positive for Giardia 3 of 8 times tested, another was positive 5 of 7 times and one was positive 8 of 8 times tested.

Part II: Building Capacity on The Blood Tribal Lands



"I enjoy the teaching styles and in-depth coverage of material in the field and in the lab."

*Tara Shouting
Class of '08*

- ◆ This water testing project was developed as part of the federal government First Nation Water Monitoring Strategy (FNWMS).
- ◆ One of the mandates of the FNWMS is to build capacity through the training of First Nations people in water quality and safety.
- ◆ With this in mind BT Lands and LC developed this summer project insuring that we involved as many Blood Tribe secondary and post secondary students as possible.

Student Training

- ◆ In all 13 Blood Tribe students were involved in our water quality project.
- ◆ Three of the students, Candace Shade, Tara Shouting and Leon Day Chief are all currently enrolled in either the University of Lethbridge or Lethbridge College.
- ◆ These 3 students were directly involved in the collection and testing of the flowing waters for this project.
- ◆ They also became mentors and/or teachers in the Blood Tribe program Building Environmental Aboriginal Human Resources (BEAHR) that was given to 10 Blood Tribe students.
- ◆ The BEAHR program was put on by Red Crow Community College, Blood Tribe Employment and Skills Training Center and the Blood Tribe.
- ◆ In this program 10 students were trained in environmental land and water stewardship on Blood Tribal lands.



Water Quality Portion of The BEAHR Program

- ◆ BT lands, LC and a number of government and private professionals involved in water quality and safety helped train the students.
- ◆ In this training we were allowed to introduce a draft manual developed by Environment Canada called **“First Nations Manual for Source Water Quality Monitoring”**.
- ◆ This manual was developed also through the FNWMS on behalf of INAC.

First Nations Manual for Source Water Quality Monitoring

- ◆ Easy to use water quality monitoring manual.
- ◆ Divided into the following topic;
 - Planning and Developing a Source Water Monitoring Program.
 - Working With a Laboratory.
 - Surface Water Quality Monitoring
 - Ground Water Quality Monitoring
 - Sample Handling and Transportation
 - Record Keeping and Reporting
 - Being Prepared and Staying Safe




Part III: Water Quality Film

- ◆ Environment Canada provide funding to the Blood Tribe Land Management Group to develop a film on the water quality and training project to help promote flowing water monitoring on First Nations tribal lands.
- ◆ Paulette Fox of the Blood Tribe Management will now present that film to you.

Acknowledgements

- ◆ BT Lands and LC would like to thank both Rob Phillips and his group from Environment Canada and Dr Norman Neumann and his group from Alberta Provincial Laboratory for Public Health.
- ◆ Both Rob and Norm insured that this project was a great success.

Acknowledgements

- ◆ Chief Charles Weaslehead and Blood Tribe Council
 - ◆ Red Crow Community College.
 - ◆ Blood Tribe Land Management.
 - ◆ Blood Tribe Employment Skills Training (BTEST).
 - ◆ Lethbridge College.
 - ◆ Alberta Environment.
 - ◆ Alberta Provincial Laboratory for Public Health.
 - ◆ BEAHR Project
 - ◆ Environment Canada
 - ◆ University of Lethbridge
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Water Safety For All

