Development of a Source Water Monitoring Protocol for First Nations in Canada

Context, Approach, Challenges & Opportunities

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NWQMC presentation
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WHY a Source Water Monitoring Protocol for First Nations

- 1998 – 2000 E.Coli 0157:H7 CRYPTOSPORIDUM outbreaks in Walkerton ONTARIO, North Battleford SASKATCHEWAN; WQ & WATER SAFETY spotlight
- 2000 - CANADIAN FED WATER MC followed: First Nations Water Management Strategy (FNWMS) born (2003)
- Sept 2005 OAG Canada rpt on Env/Sustainable Dvlp't; Chapter 5 on FNs: Monitoring as a key in improving FN water quality:
- 100s of on-reserve BWAs, Boil Water Advisories; other water problems also require Monitoring as key component of protection of FN waters & Source Water Protection (SWP)
- Public concern means CBWM Community Based Water Monitoring; FN protocol a version?

Magnitude of WQ problem, First Nations Reserves in Canada

- *738 water systems on the First Nation reserves*
- *203 (28%) at high-risk*
- *283 (38%) at medium risk*
- *High and Medium water systems = potential Pilot Sites for testing Source Water Monitoring protocol?*

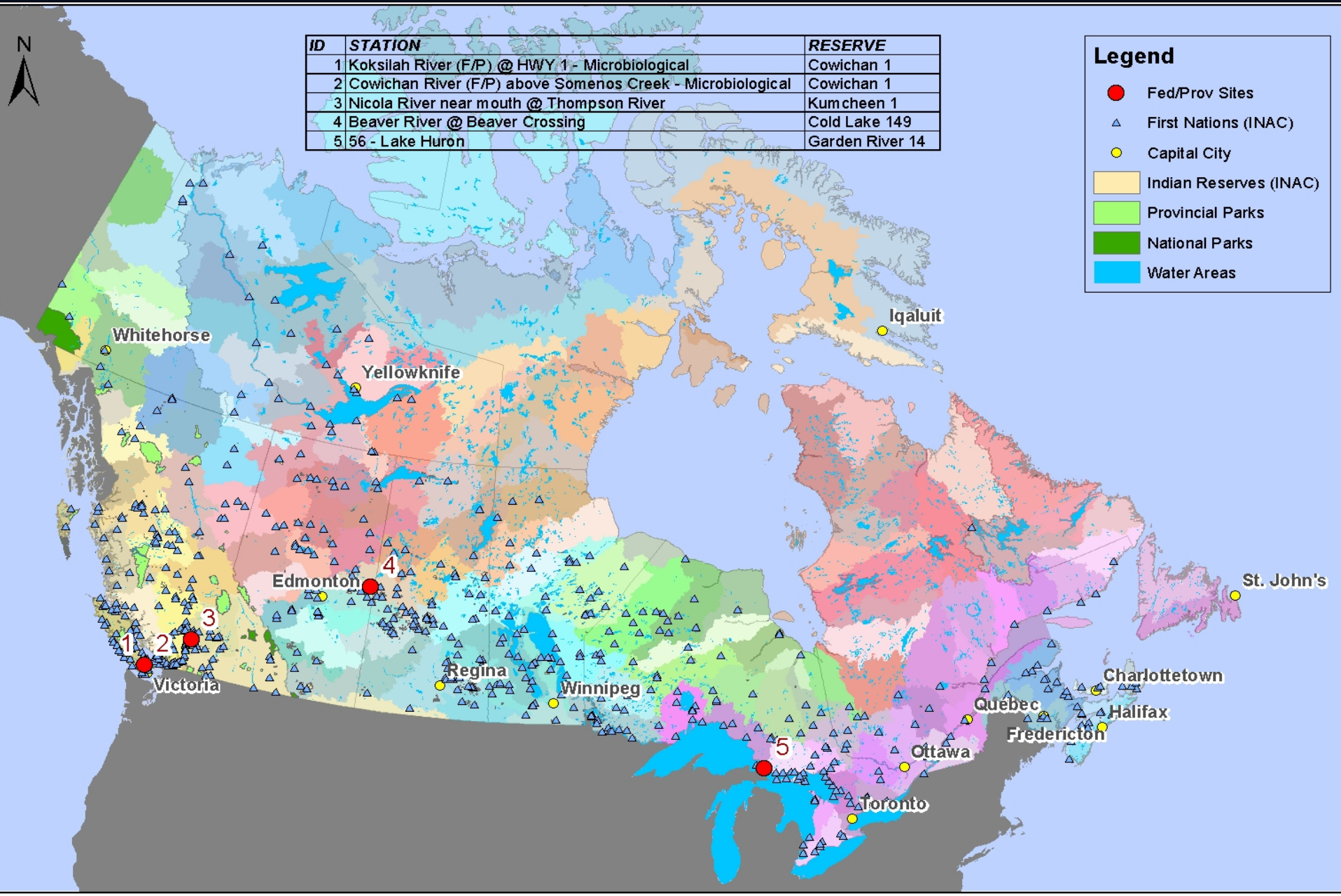
The magnitude of the water quality problem on FN reserves in Canada

2004-05 FINAL results for Water Systems at Risk					
REGION	total # of water systems	# of high-risk	% of high risk	# med-risk	% med-risk
Alberta	78	14	18%	32	41%
Atlantic	18	14	78%	4	22%
BC	285	89	31%	150	53%
Manitoba	67	0	0%	31	46%
Ontario	135	63	47%	32	24%
Quebec	38	9	24%	13	34%
Sask.	99	6	6%	12	12%
Yukon	18	8	44%	9	50%
National	738	203	28%	283	38%

•**Source: Indian and Northern Affairs Canada** http://www.cbc.ca/slowboil/

Fed/Prov Sites within Indian Reserves

ID	STATION	RESERVE
1	Koksilah River (F/P) @ HWY 1 - Microbiological	Cowichan 1
2	Cowichan River (F/P) above Somenos Creek - Microbiological	Cowichan 1
3	Nicola River near mouth @ Thompson River	Kumcheen 1
4	Beaver River @ Beaver Crossing	Cold Lake 149
5	56 - Lake Huron	Garden River 14



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0 215 430 860 1,290 1,720 Kilometers

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Magnitude of WQ problem, First Nations Reserves in Canada (cont)

- *The Boiling Water Advisory (BWA) is recommended by Environmental Health Officers employed by Health Canada*
- *BWA Reasons*
  - *unacceptable microbial quality*
  - *equipment malfunction during treatment and distribution*
  - *unacceptable turbidity or particle count*
- *February 2006, 76 BWAs*

SWM protocol as part of Environment Canada's role in FNWMS?

Source Water Protection: 2005 – 2008		
Task	**Lead**	**Priority**
2.1 Review Existing Conditions	**Regions**	Short term
2.2 Develop SWP Plan Protocol	**HQ/WPCD**	Short term
2.3 Help Build First Nations Awareness	**HQ/WPCD**	Short to Medium-term
2.4 Help Train First Nations on SWP	**Regions**	Short to long term
2.5 Advise on Source Water Assessments *(Source Water Monitoring Protocol)*	***NWRI*, HQ, Regions, RWTs**	Medium to Long term
2.6 Help Develop Model SWP Plans	**Regions**	Medium to long term

SW Monitoring Protocol development: Gameplan

1*) Gather Baseline data in conjunction with EC regions RWTs INAC, HC, PWGSC, OGDs

2*) Merx RFP for plain-language SW monitoring protocol for First Nations

3*) With aid of RWTs, list potential candidate sites for protocol validation

4) Test-drive protocol; 5-10 candidate sites; 1 or 2 reserves in each of PYR, PNR, OR, QR, AR

5) Fine-tune protocol based on First Nations feedback

6) ~2007-2008: collaboration with FN self-monitors. Ideal? FN Monitors=Trainers: train other FNs

Note: SWM is beyond & before the Tap; Think Source-to-Tap!

* underway

First Nations Programme Approach 2003-08

Waterborne Pathogens- #1 of 15 NWRI –defined Threats to Source Water Quality in Canada

Septic tanks

http://www.fencing-farm-ranch.com/septic-tanks.jpg

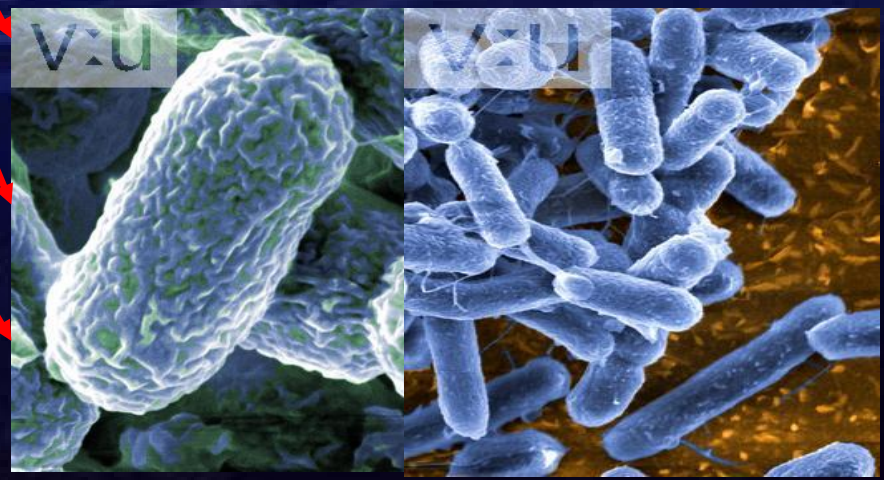
Manure application

http://sawg.cas.psu.edu/images/Manure%20spreading2.jpeg

Feedlots

http://www.davidsuzuki.org/files/WOL/feedlot.jpg

Waterborne pathogens: E. Coli O157:H7



http://www.goshen.edu/bio/Biol206/Biol206LabProject/HUS05/E-coli.htm

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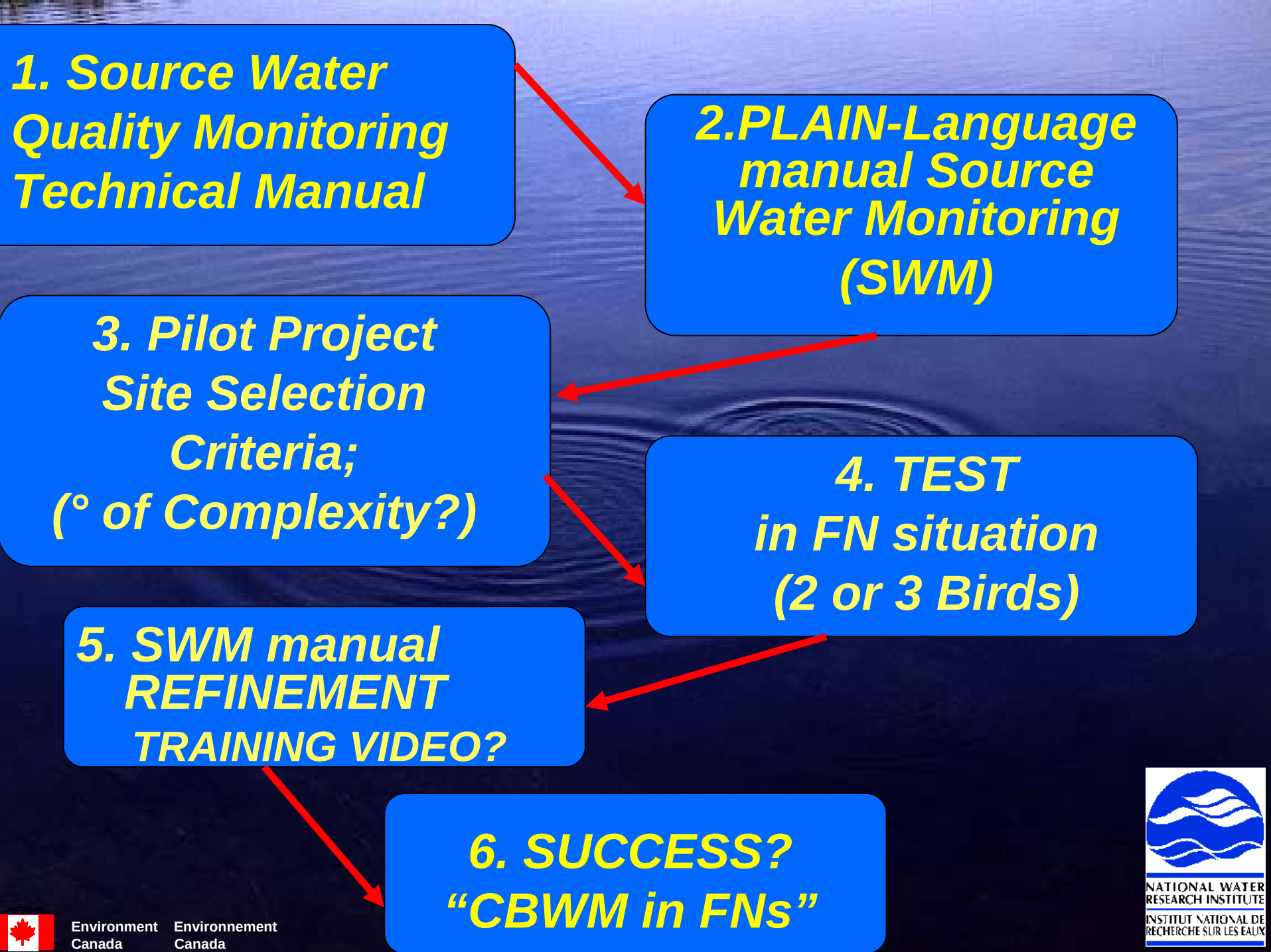

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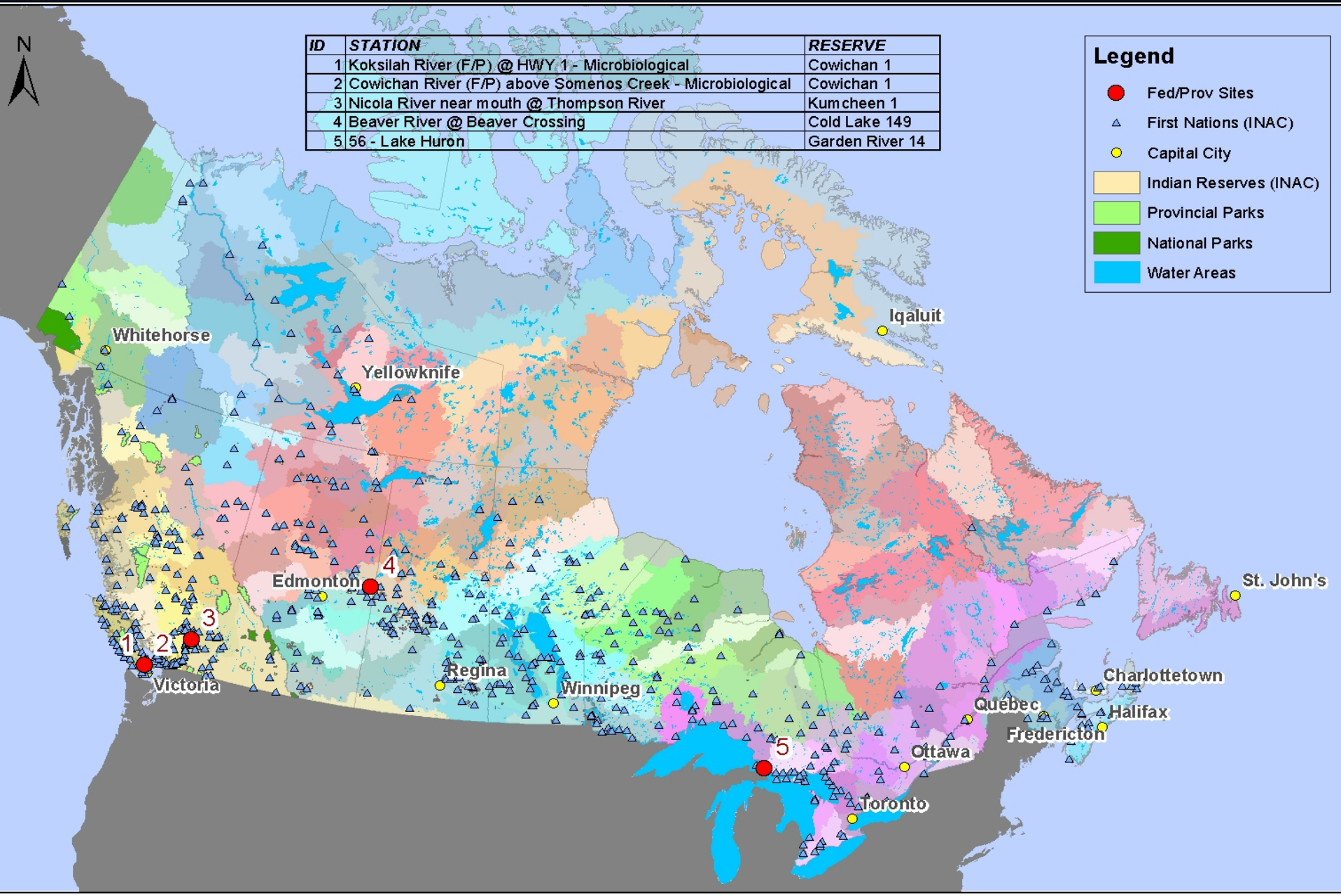

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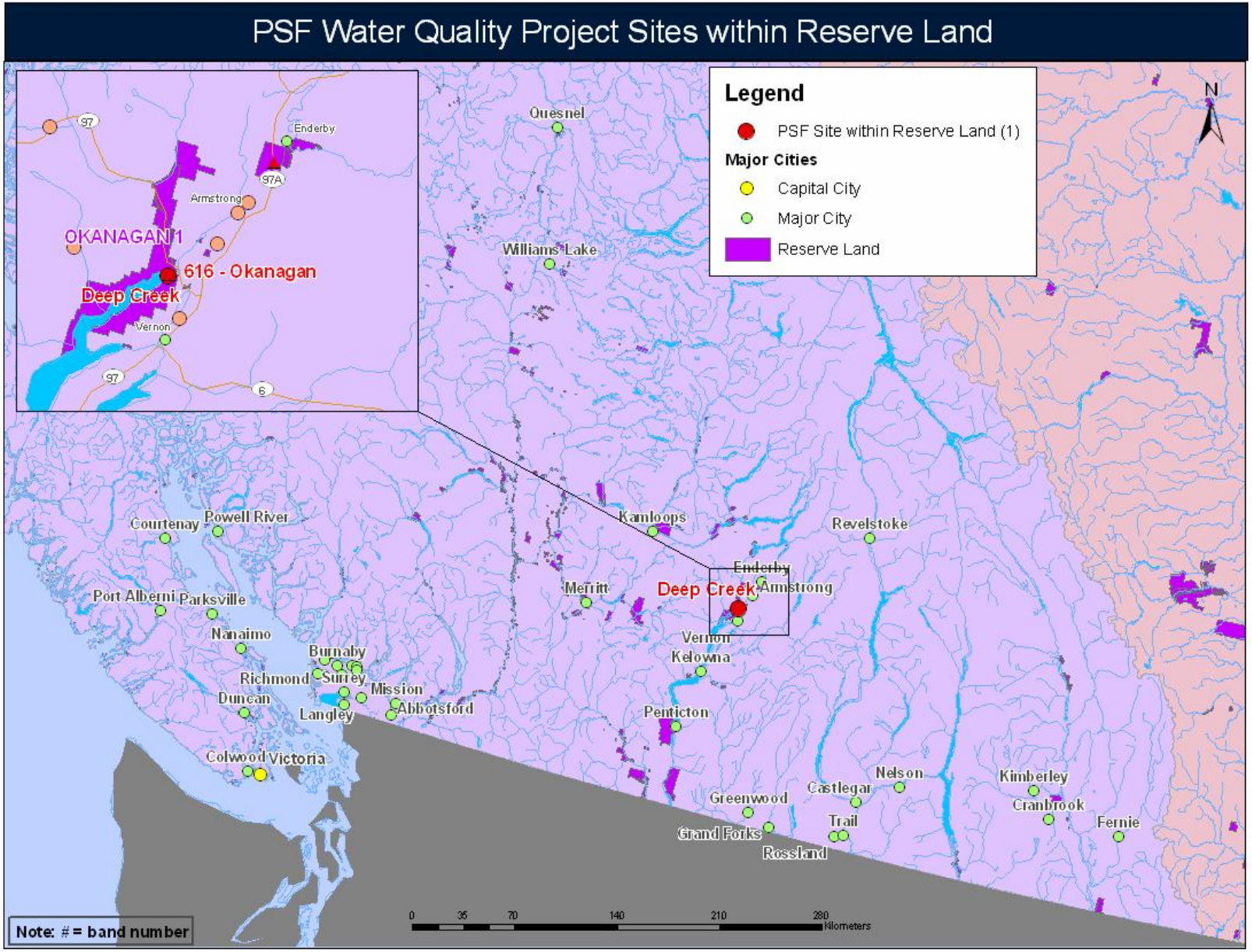
Simplified Site-Selection Criteria

1. *The reserve has a water problem*
2. *Other reserves have similar water problem*
3. *Strong willingness on the part of the FN to participate*
4. *$- The project is feasible within the allotted budget*

PSF Water Quality Project Sites within Reserve Land



Some Challenges

- *738 Reserves*
- *Political History*
- *Variable Capacity*
- *Limited Funds & Resources*
- *Remoteness of many reserves*
- *Urgency of WQ problems*
- *QA/QC and Reporting*
- *Perspective:ATK vs. S&T*

Water More Deeply….

- "….water is critical for the emotional and spiritual health of Aboriginal people….includes the symbiotic role played by water in Creation stories."

- "Water…cannot be separated out from other environmental components and still be discussed meaningfully. All components are interconnected and changes in one affect changes in all the others."

Excerpts from Chiefs of Ontario submission to Walkerton Inquiry Commission

Challenges

An approved flotation suit should be worn when working on ice over deep or swift water
Hint: frozen sampler can be lowered back into water to"thaw" if frozen

http://www.ongov.net/WEP/gif/we1599b.jpg

Thanks for your attention!

Questions?

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