

# Beating a Dead Horse Creek: Pharmaceutical and Agrochemical Contaminants in a Lake Winnipeg Watershed

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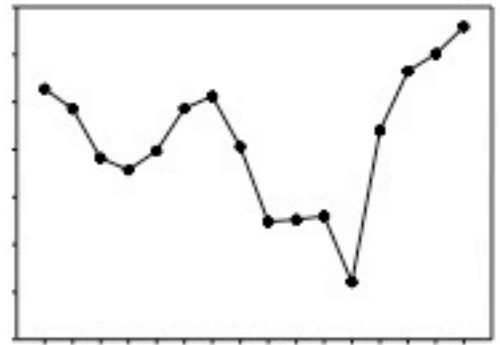


# Background

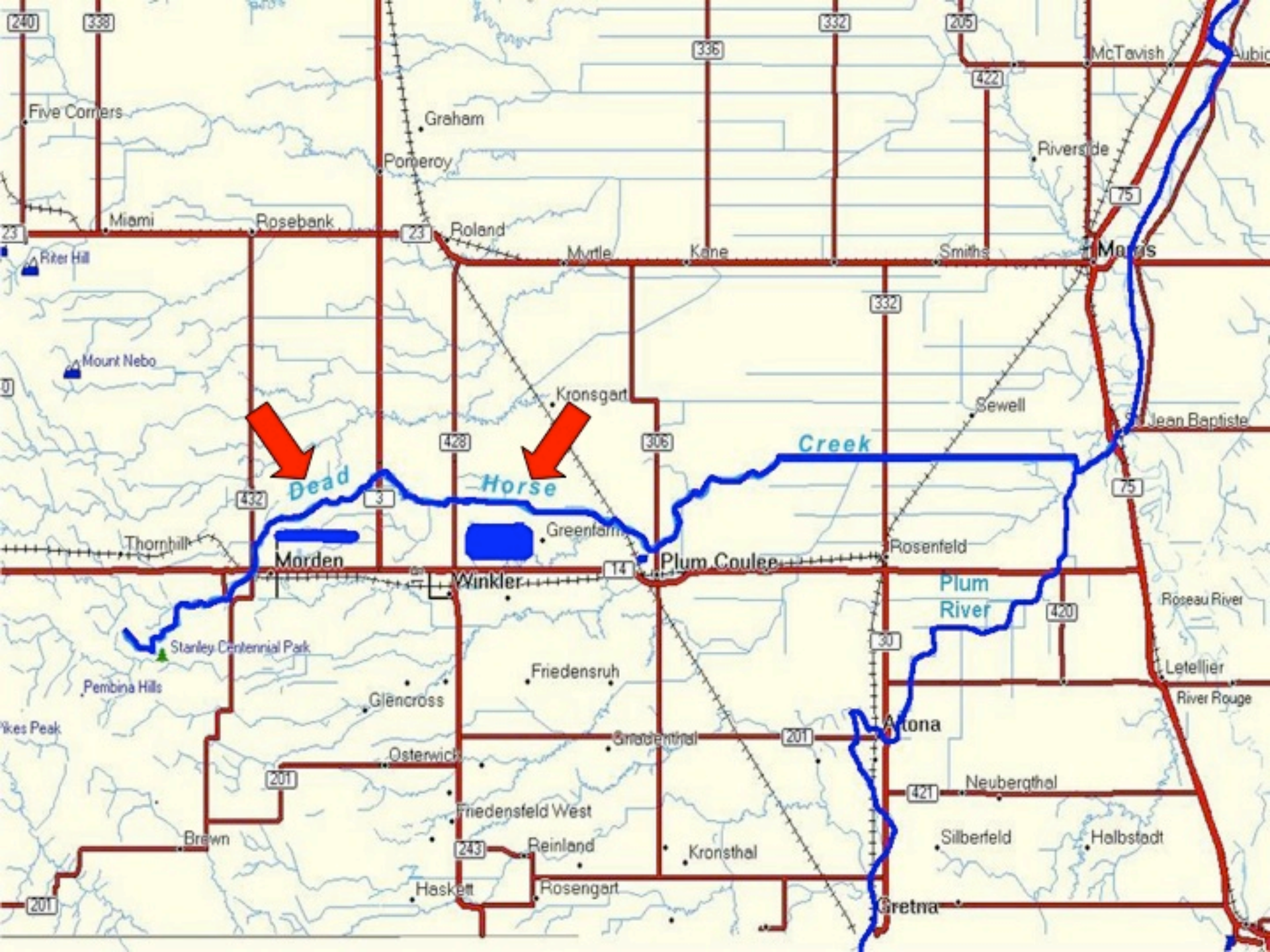


- Many Manitoba communities rely on waste water lagoons to passively treat sewage.
- Release when fecal coliform levels are safe and after fish spawn.
- Can occur once or twice a year.
- Significant nutrient & contaminant plug.
- *What, where and when are these stressors and how do they influence biota in these watersheds?*
- *And what do we do about it?*

# Background

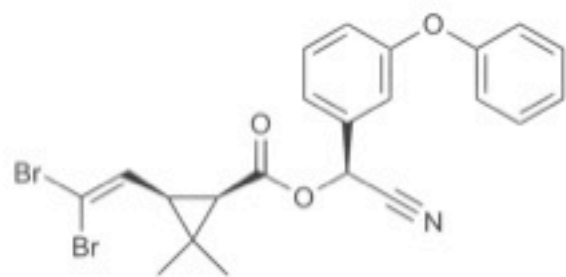


- The Dead Horse Creek is the model system.
- Morden, Winkler and other communities release their treated waste water into this system.
- 2009 observations show elevated nutrients and significant impacts on water quality that are sustained.
- Communities are looking to be proactive and make changes, i.e., treatment wetlands.

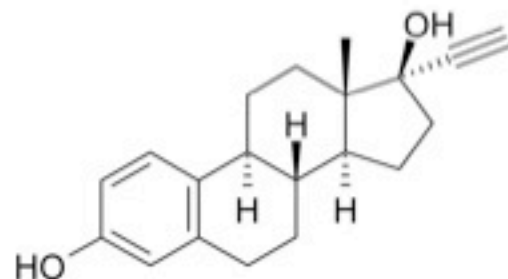








# Objectives



- Characterize pharmaceutical and agrochemical contaminants in this watershed.
- Characterize biological effects on fish, benthos and macrophyte communities upstream and downstream of municipal inputs.
- Test specific hypotheses around nutrient and contaminant reduction via treatment wetlands.
- *Create a Manitoba solution!*

# Approaches

➤ Polar Organic Chemical Integrative Sampler (POCIS)

➤ In-situ fish monitoring



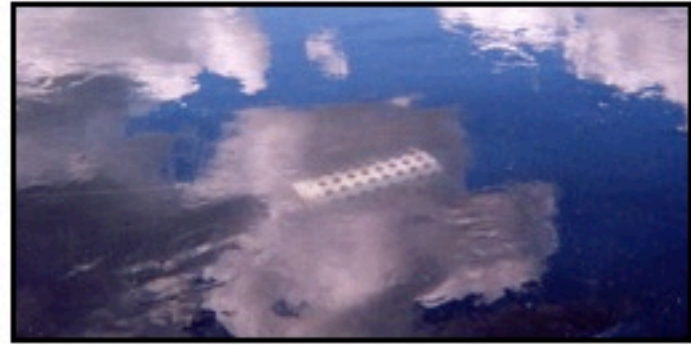
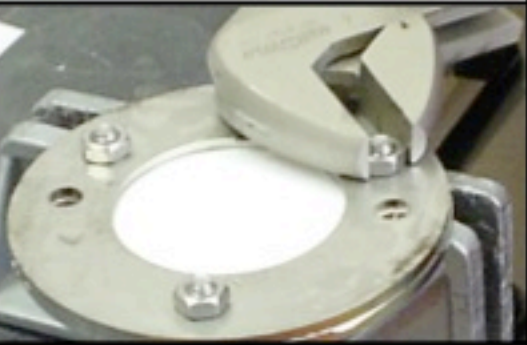
➤ Benthic sampling



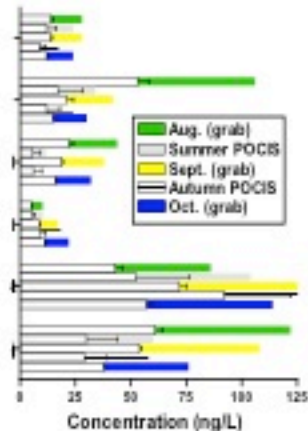
➤ Manipulations of macrophyte community structure in treatment wetlands



# Approaches



# Results?



- 🐎 By early fall we will have a strong sense of the Dead Horse Creek ecosystem and the role nutrient and chemical stressors play in its biological integrity.
- 🐎 Generate research questions for 2011 and beyond.

# As we move forward . .

- Plan to expand study to evaluate microbial communities, including development and persistence of antibiotic resistant traits.
- Expand analysis to veterinary pharmaceuticals.
- Develop an understanding of the overall loading and potential risk to Lake Winnipeg from these contaminants and their interactions.

# Acknowledgements

- 🐾 NSERC
- 🐾 Health Canada
- 🐾 Thomas Sill Foundation
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Foundation
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- 🐾 Communities of Morden and Winkler