Assessing the Effects of Riverbank Inducement on Groundwater Quality of a Shallow Aquifer in Southeastern Wisconsin

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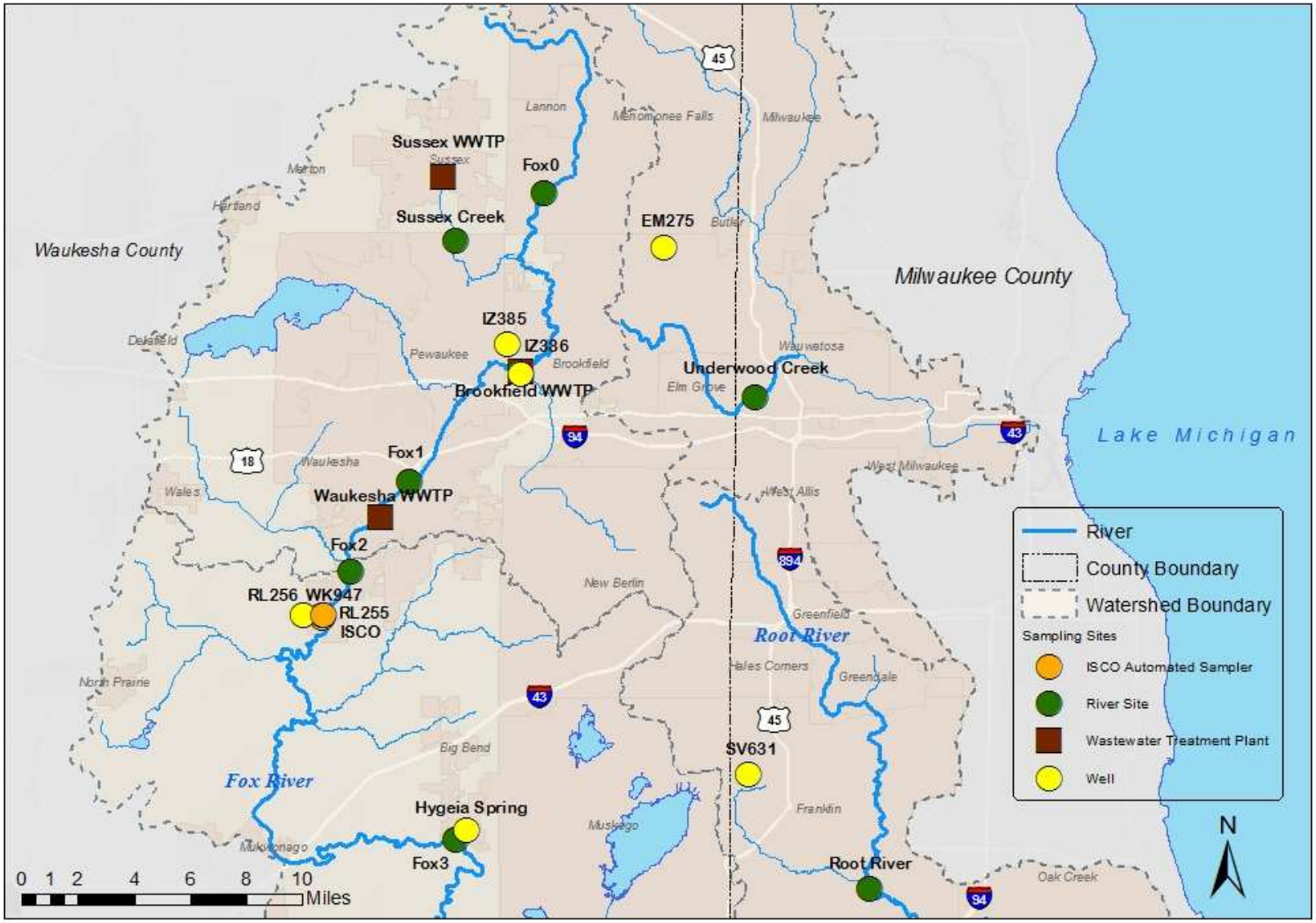
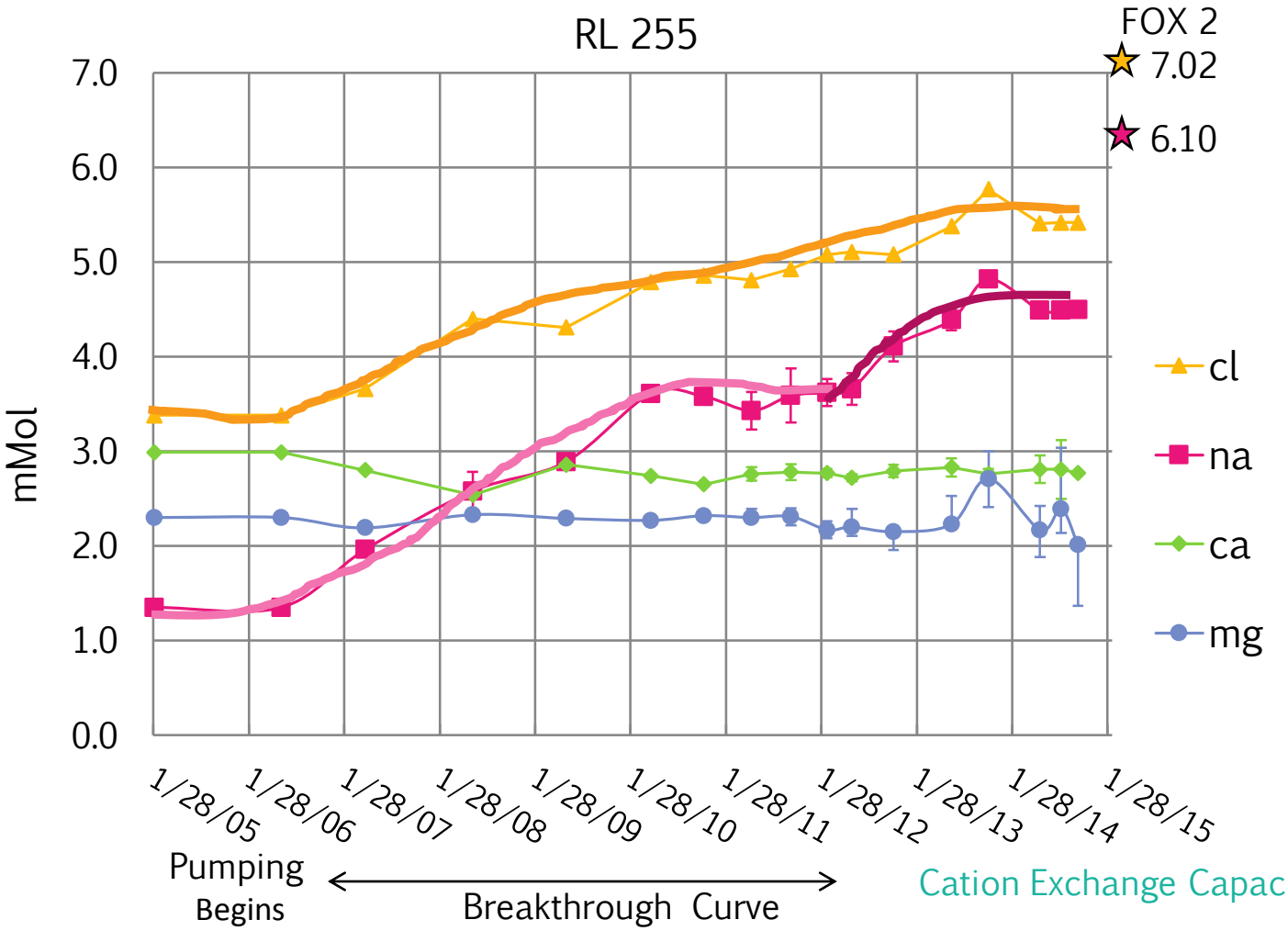
Sampling Locations

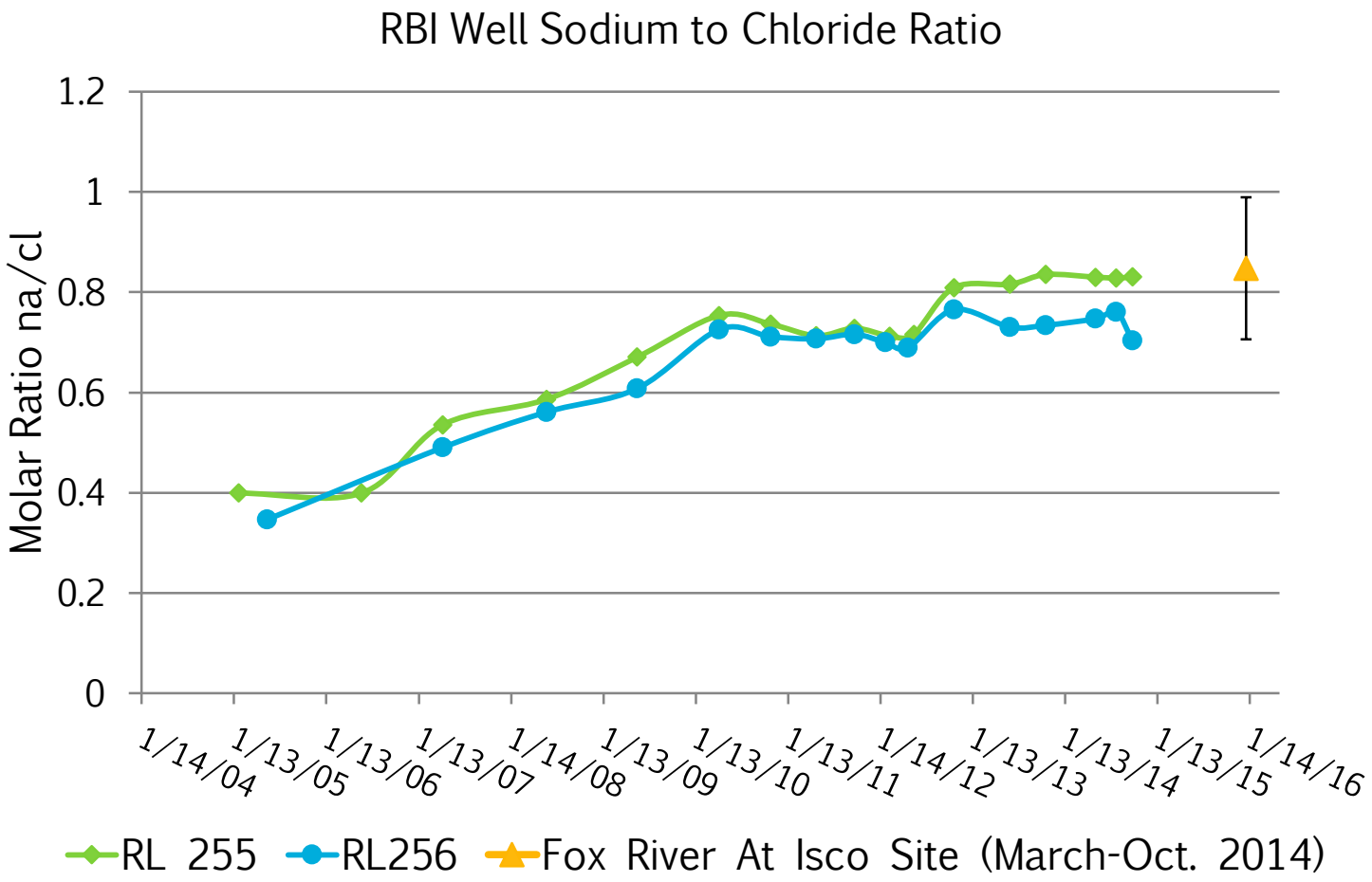


Thoughts on Major Ions

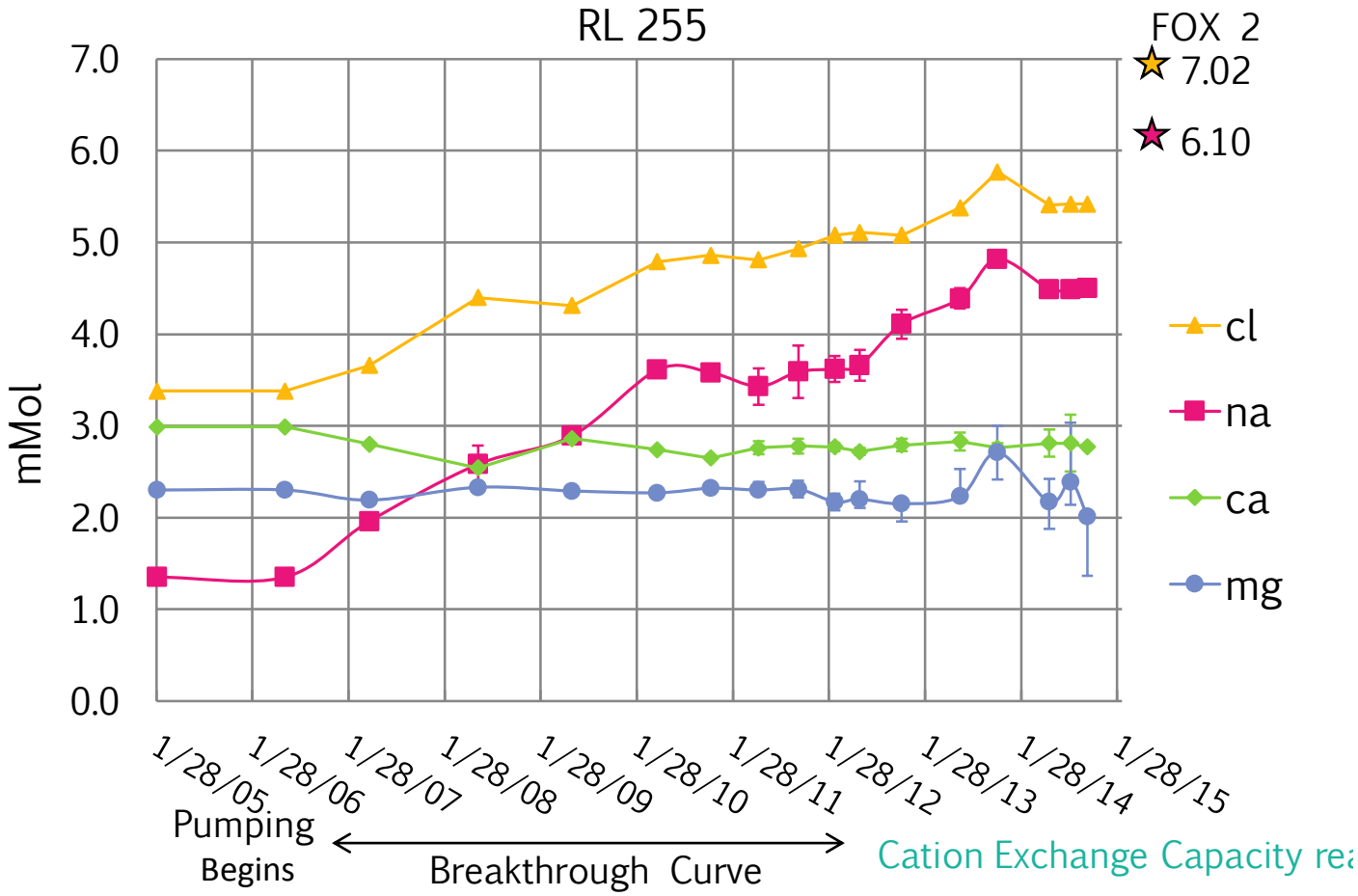


Cation Exchange Capacity depleted?

Depleted Cation Exchange

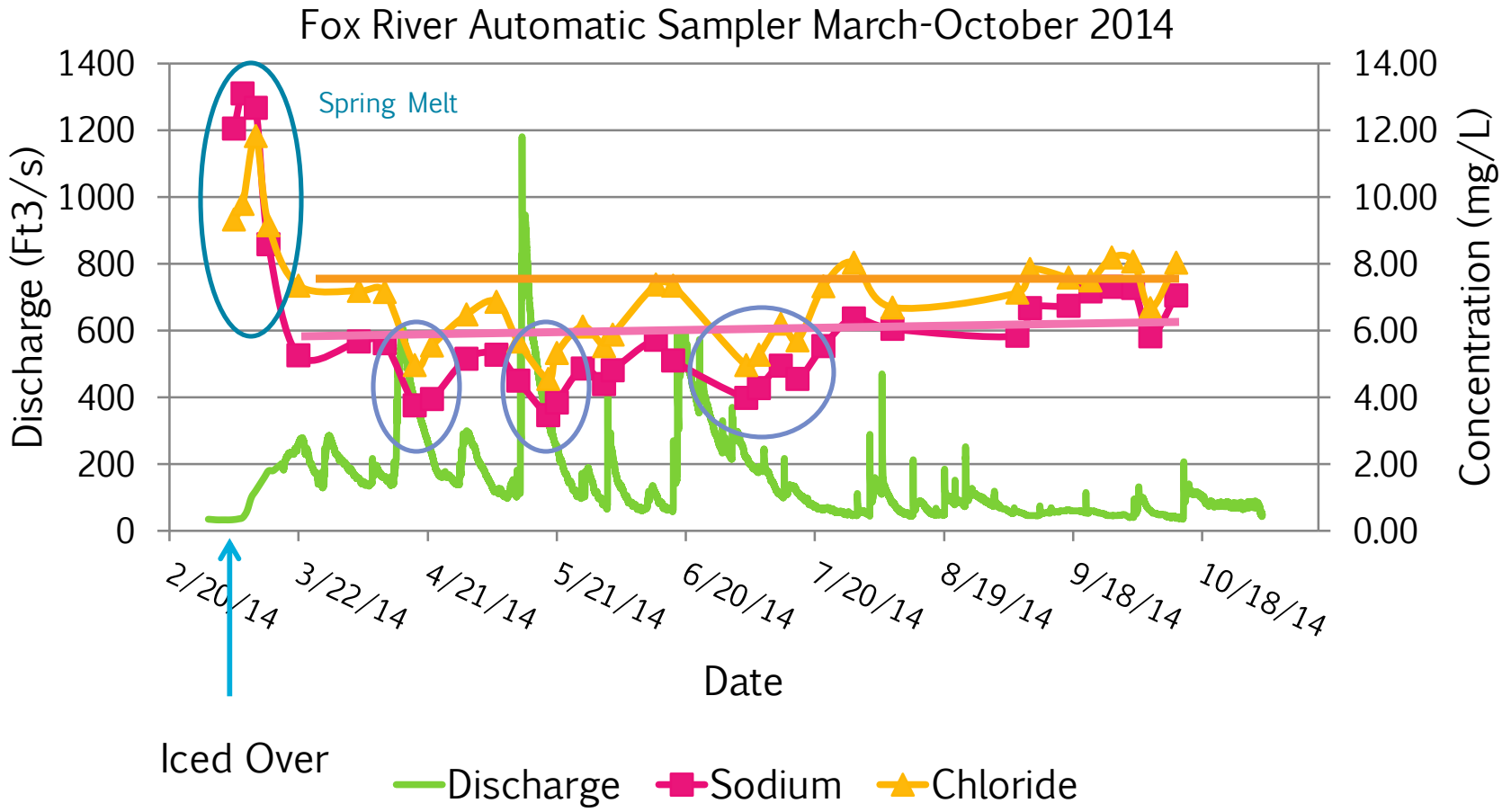


Idea for Future

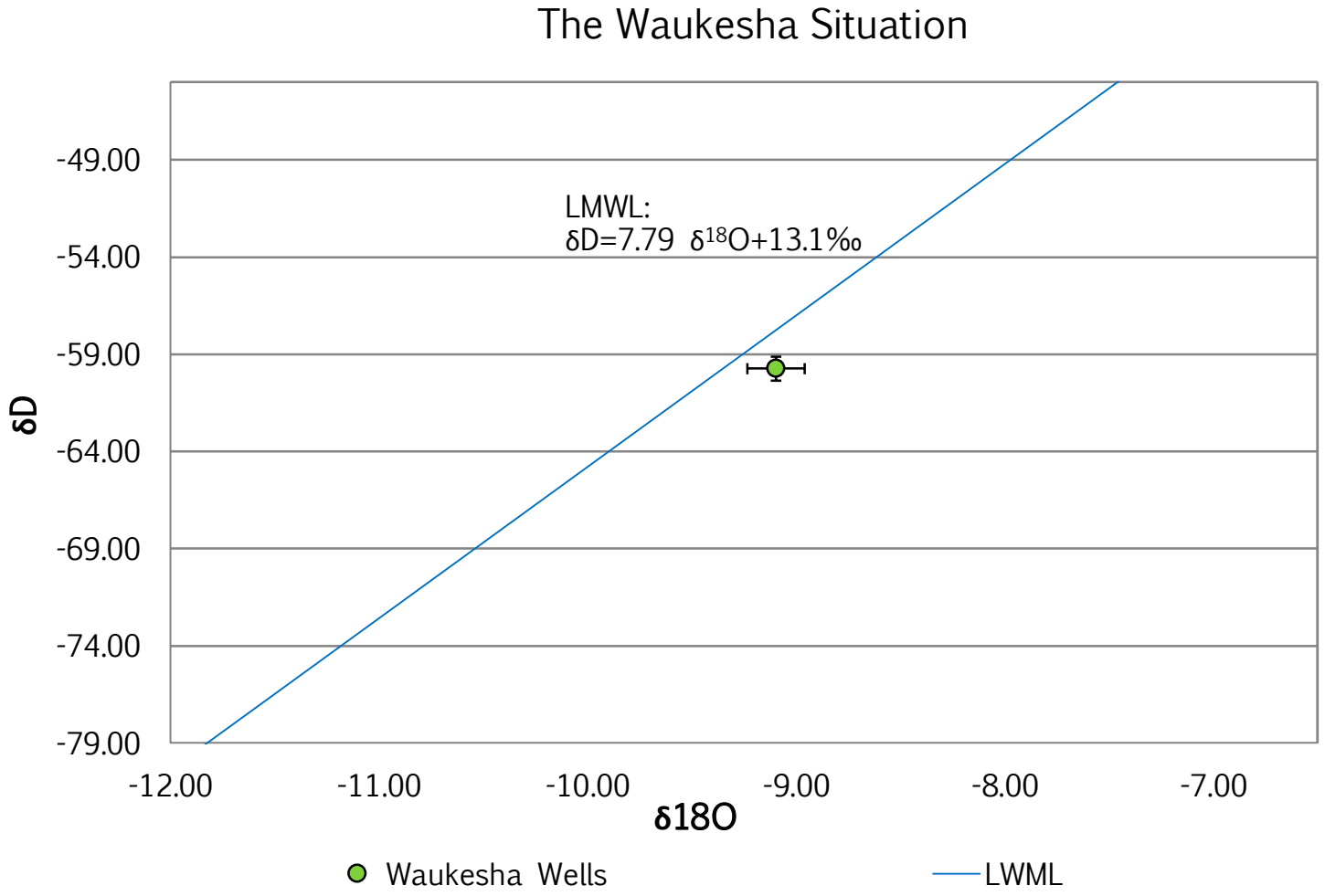


The Auto-Sampler Method

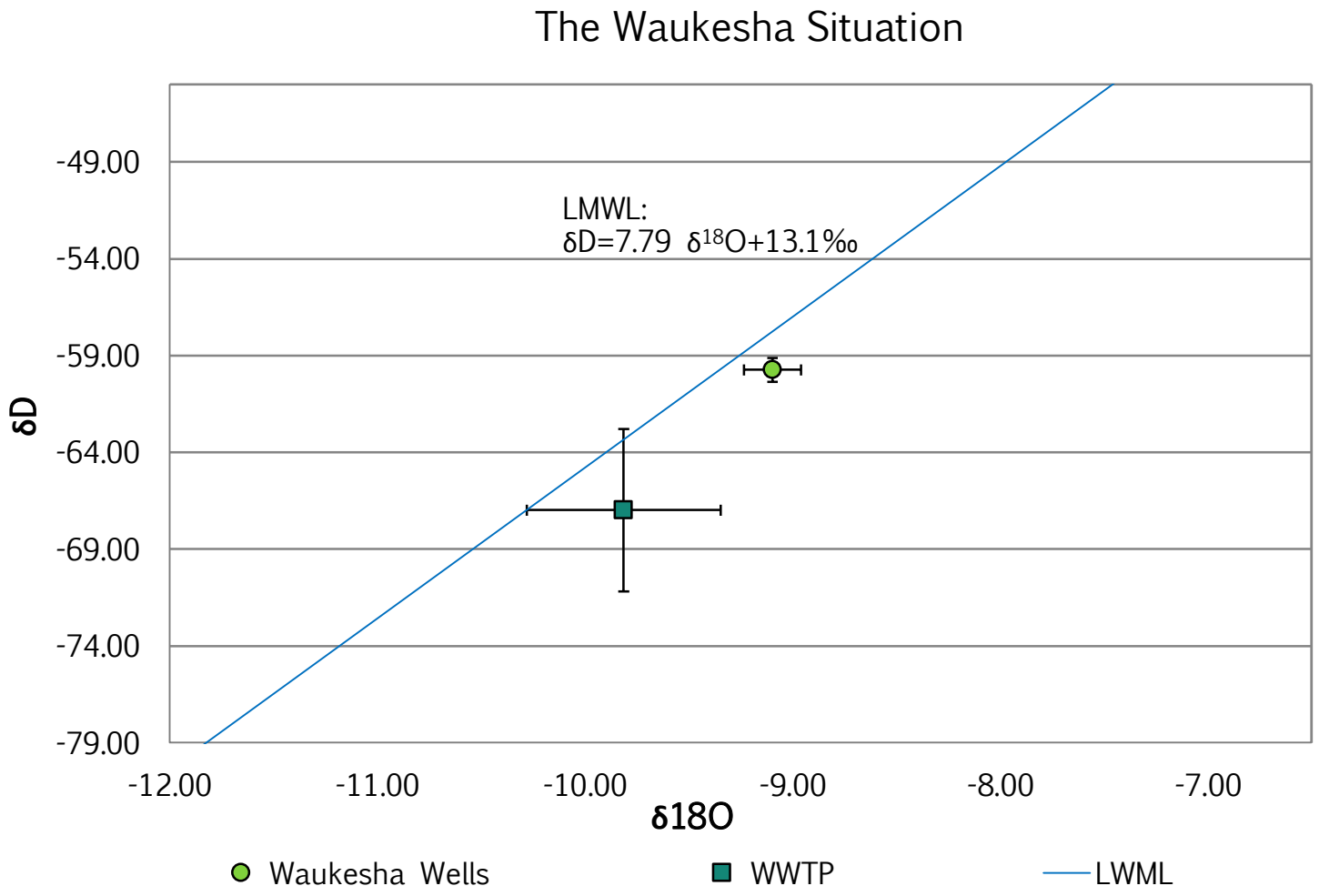
The River: Salt-wise



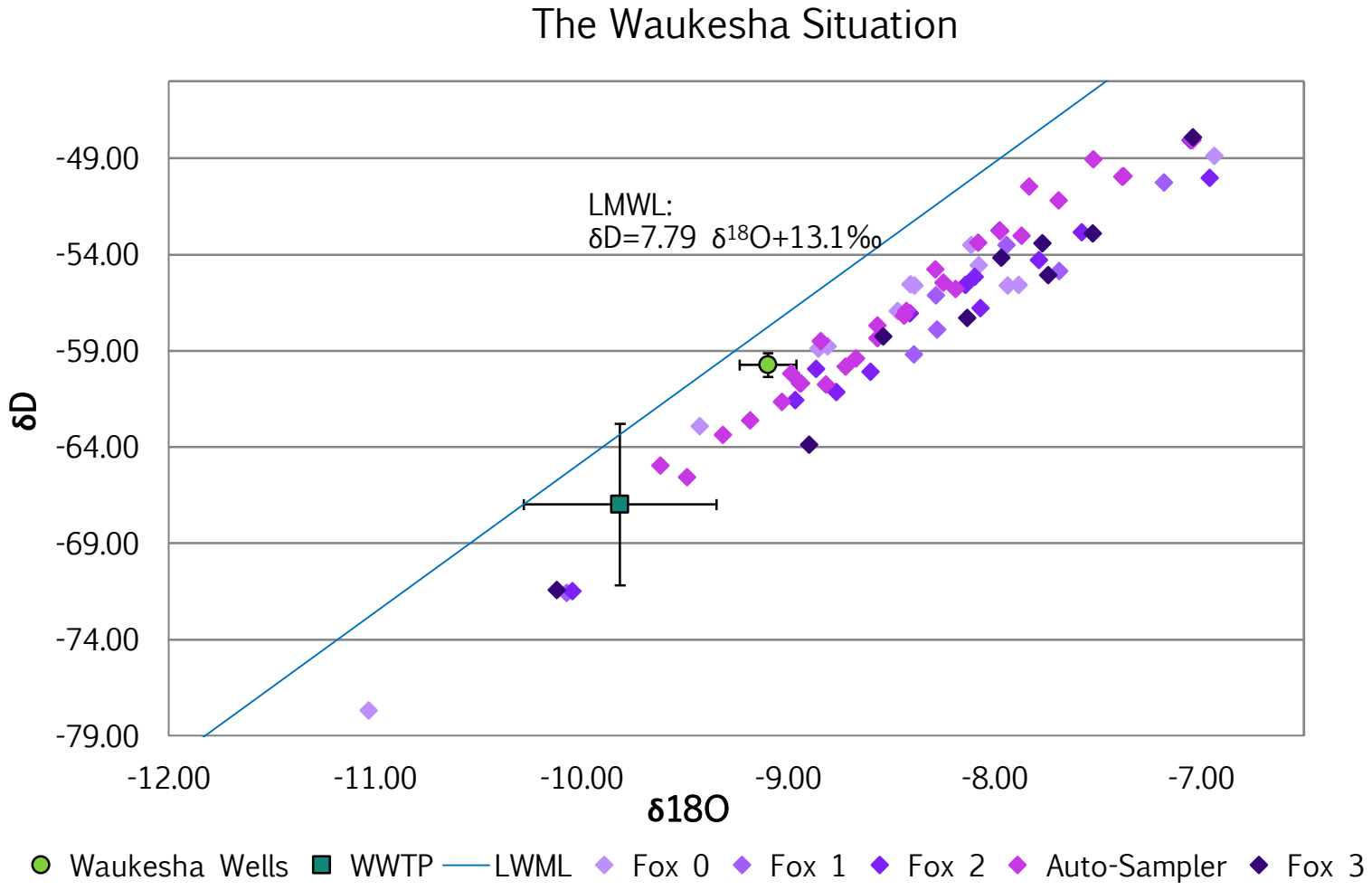
The River: Isotopes



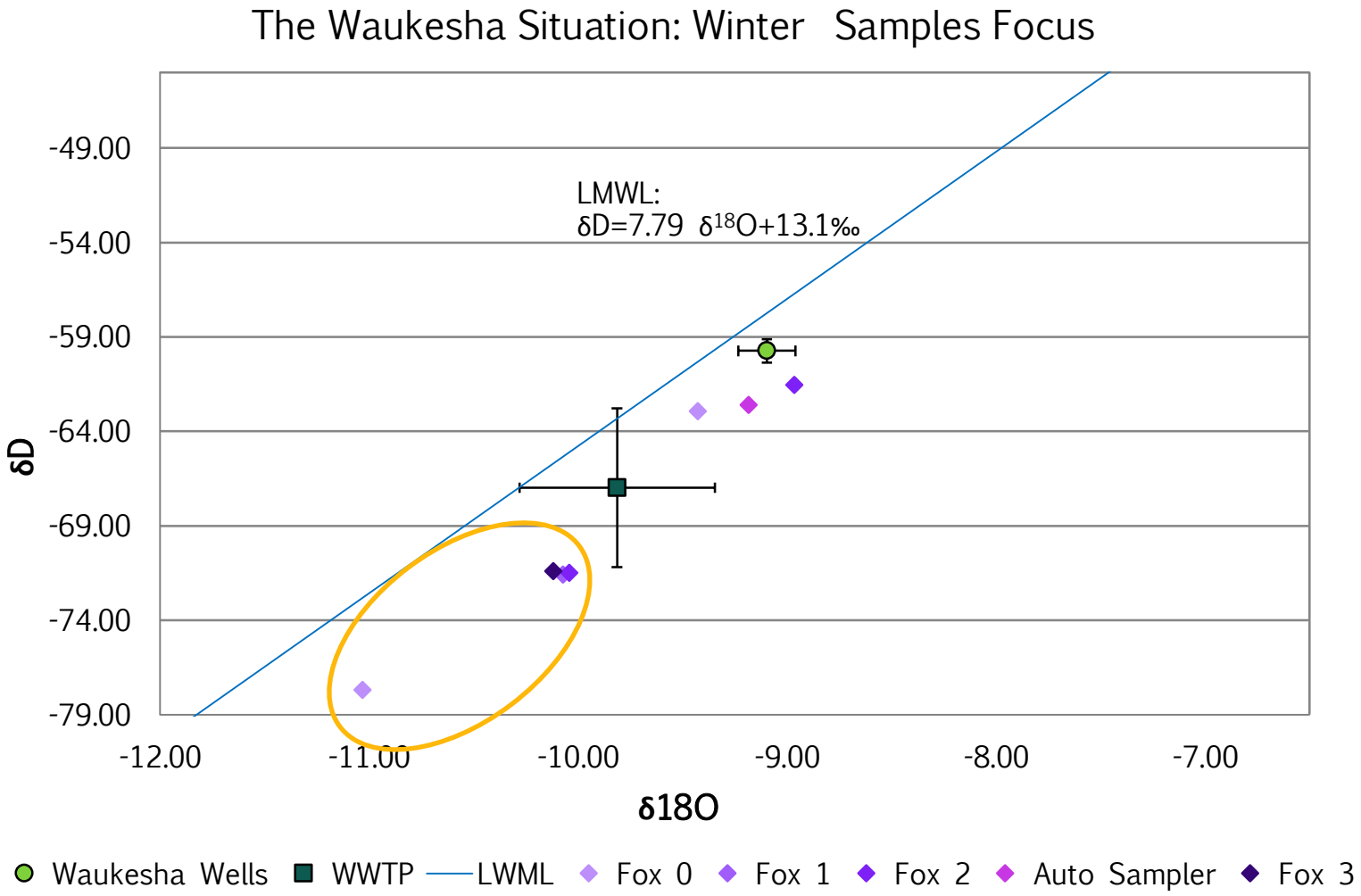
The River: Isotopes



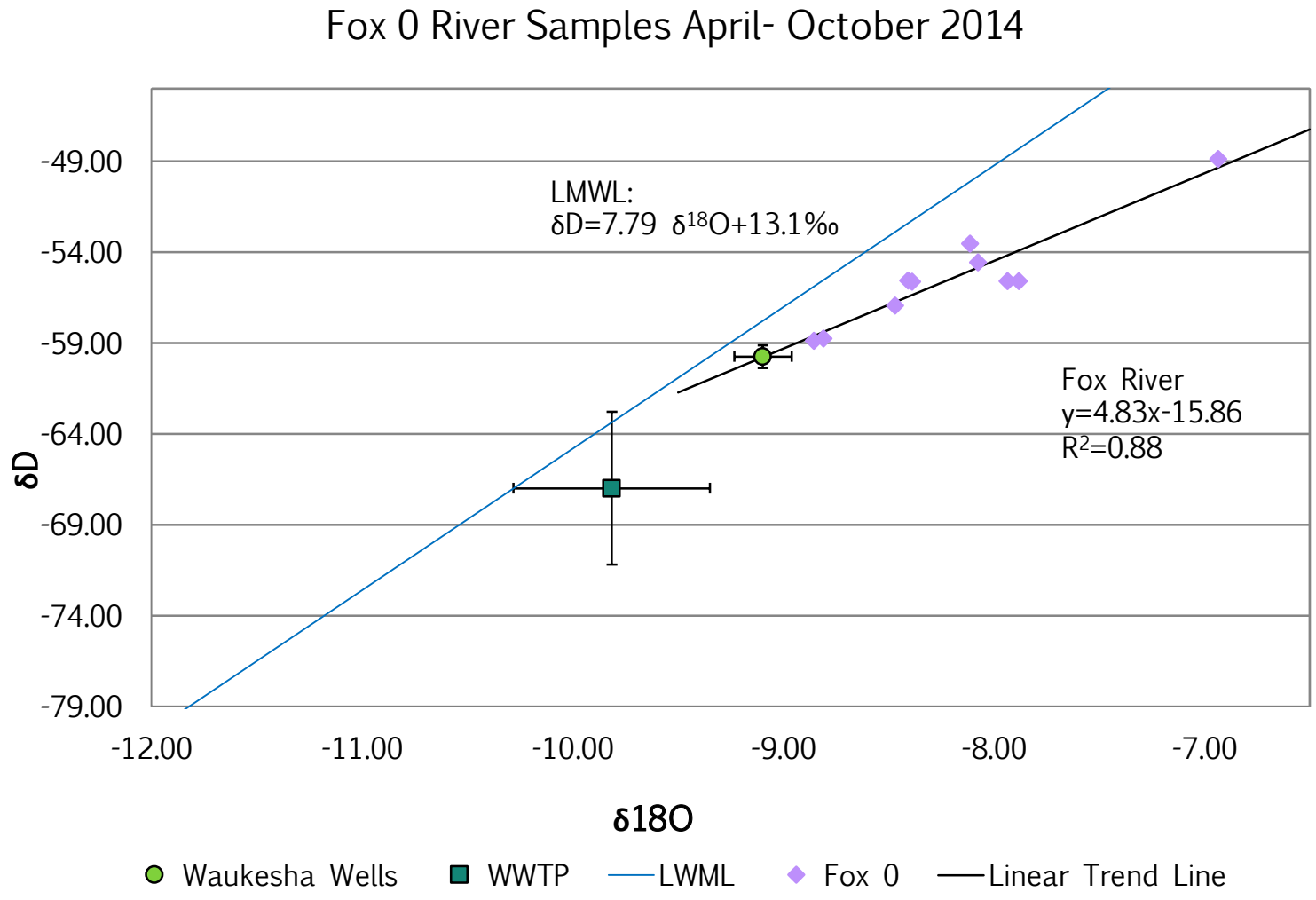
The River: Isotopes



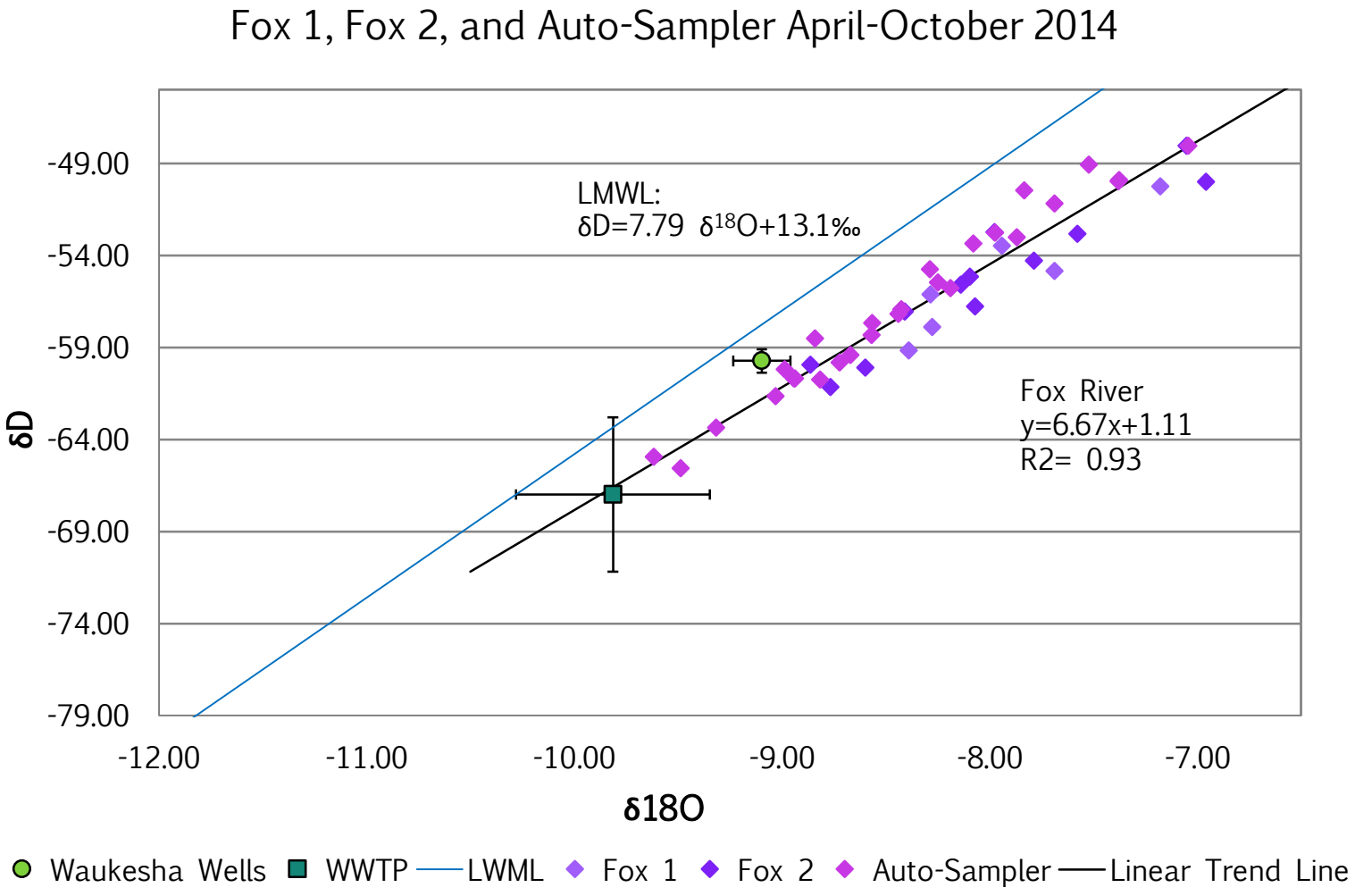
The River: Winter Isotopes



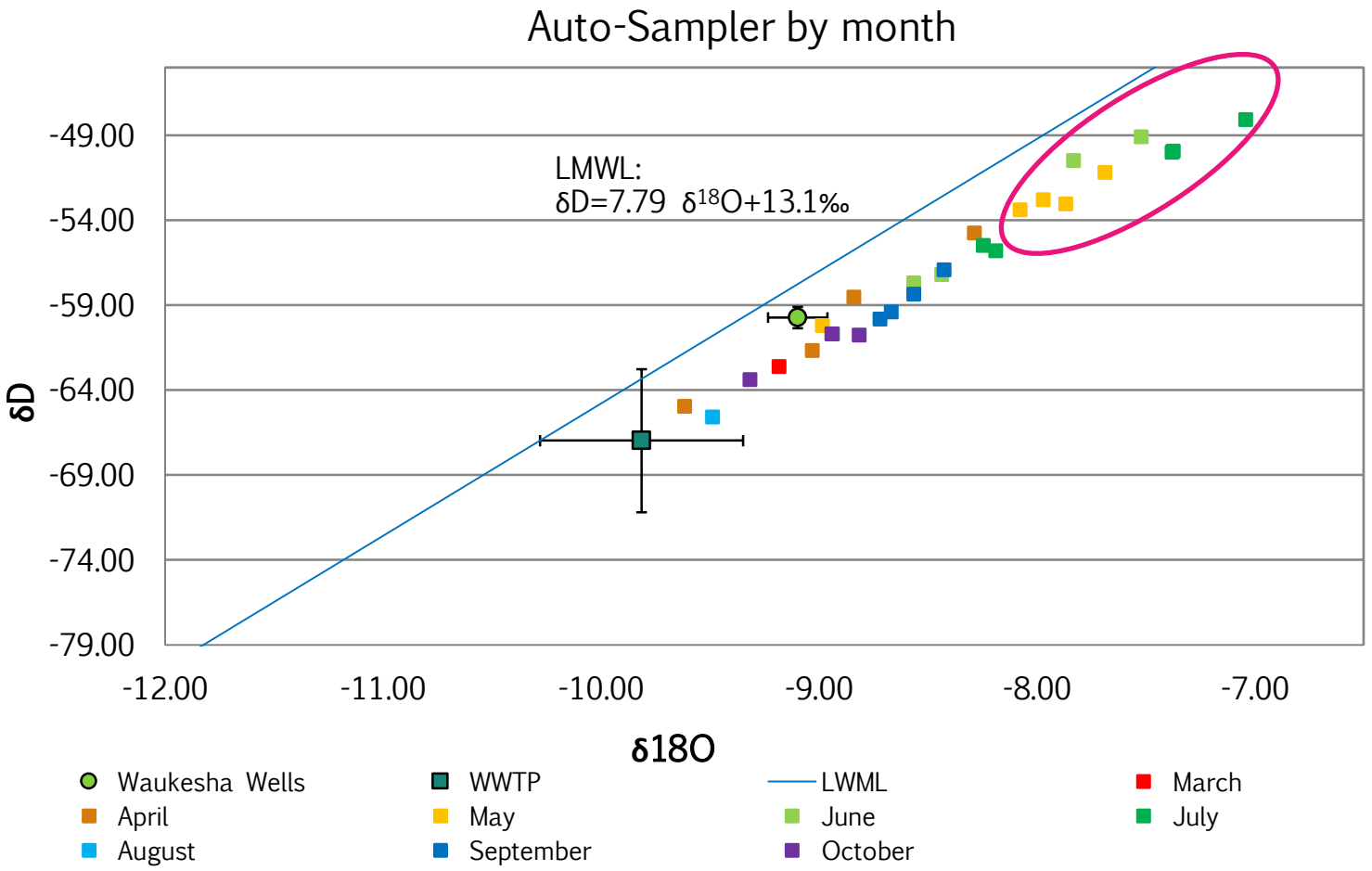
Upstream: Groundwater Influence



Downstream: WWTP Influence



River Isotopic Seasonal Variance



qPCR: Sewage Tracers

	Human Specific bacter (cn/100ml)	Human Specific lachno (cn/100ml)	Non-Specific entero (cn/100ml)	Non-Specific ecoli (cn/100ml)	Cow & Deer Specific ruminant (cn/100ml)
Brookfield WWTP	431,656	746,381	226,544	20,560	0
Sussex WWTP	25,272	27,762	99,717	1,975	0
Waukesha WWTP	8,124	3,623	7,459	565	0
Fox 0	0	0	9,808	274	0
Fox 2	2,832	2,398	9,697	579	0
RL 255	0	0	0	0	0
RL 256	0	0	0	0	0
WK 947	0	0	0	0	0

Take Home Message

1. Wells: Pre-aquifer cation exchange capacity exhausted
2. River:
   - Spring melt: unique
   - Isotope seasonal variation
   - River isotopically influenced by effluent
3. In the Works:
   - DNA analysis: consortium of bacteria
   - Geochemical Tracers: Boron, bromine, lithium, and gadolinium
   - Determine time until pollutant breakthrough

Thank you

References

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