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Title: Cr Field Testing

Author(s): Reimus, Paul William

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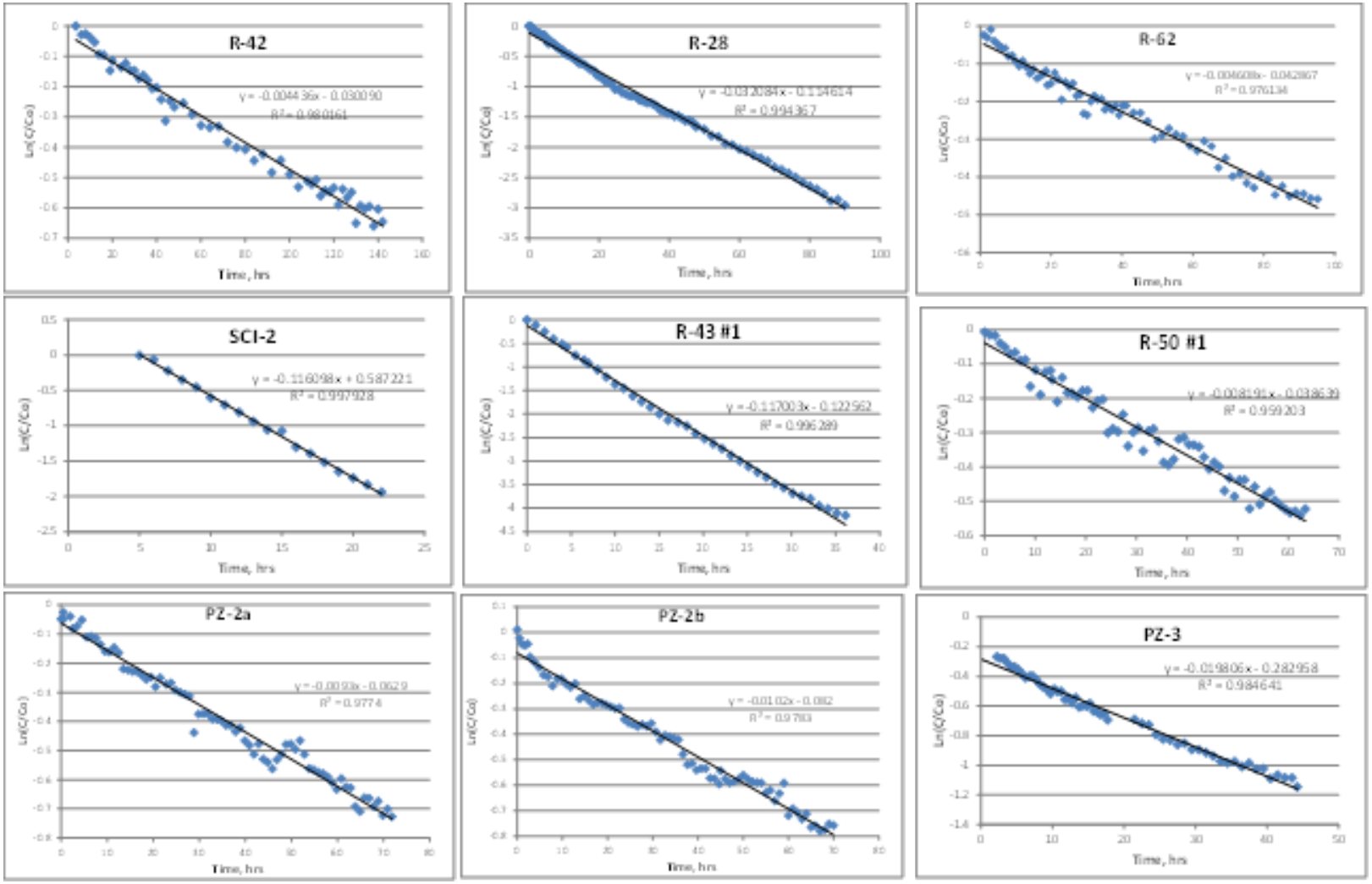
Summary of Cr Project Field Tests

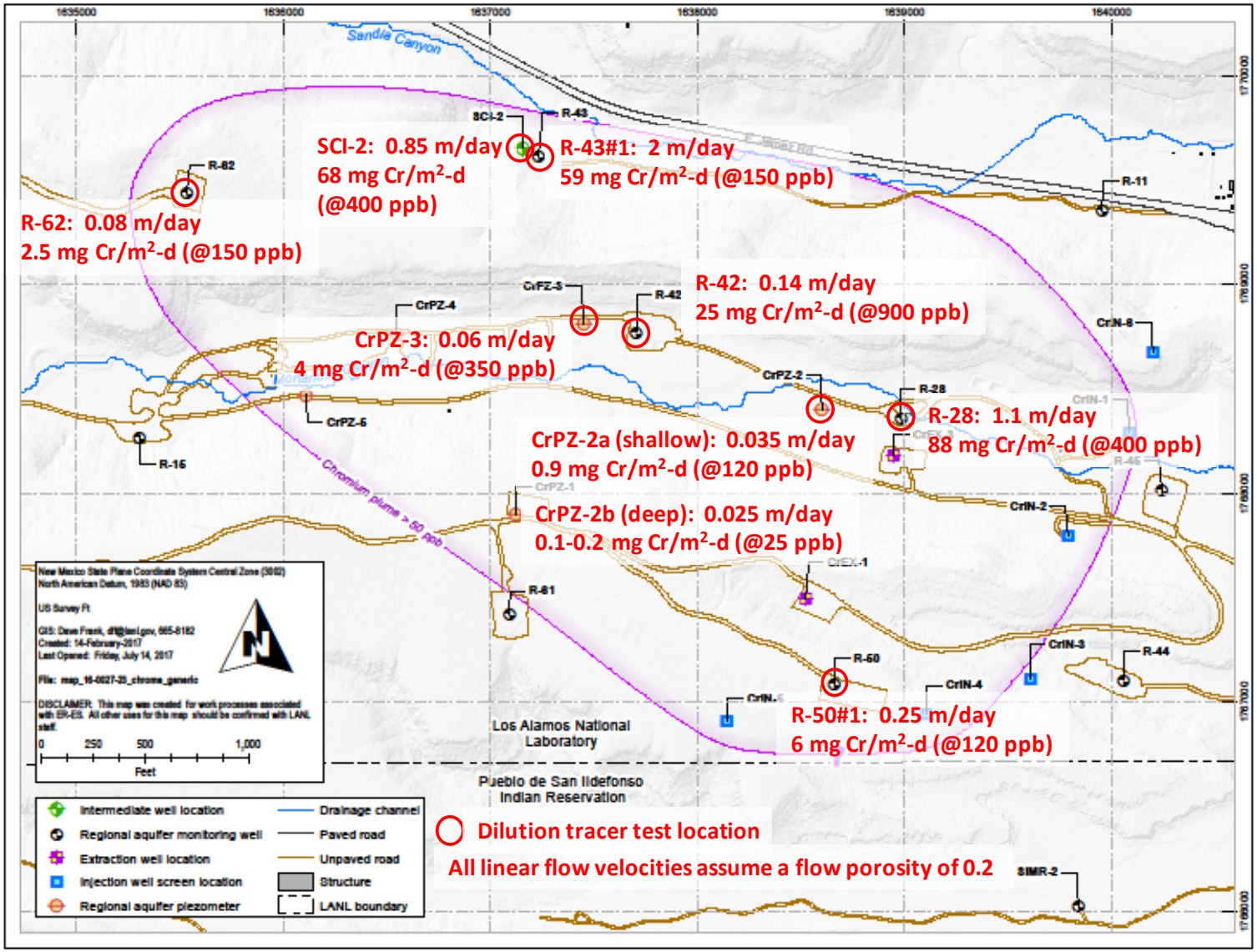
- Borehole Dilution Tracer Tests (Point Estimates of Flow Velocity)
- Push-Pull Tracer Tests at R-42 and R-28 (Flow Velocity and Dual-Porosity)
- Long Term Pump Test Trends
- Carbonate/Bicarbonate Injection in R-42 (Cr desorption?)
- Cross-Hole Tracer Test (CrPZ-2a, CrPZ-2b, R-28 Injections; CrEX-3 Pumping)

- Long-Term Trends in Plume Periphery Monitoring Wells

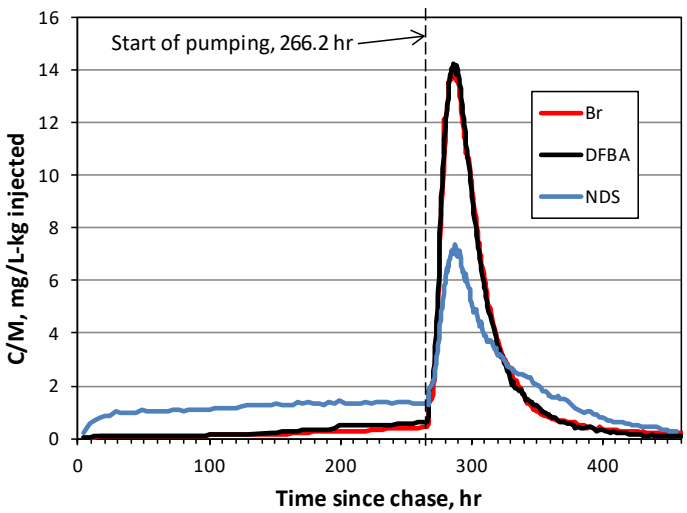
Borehole Dilution Tracer Tests

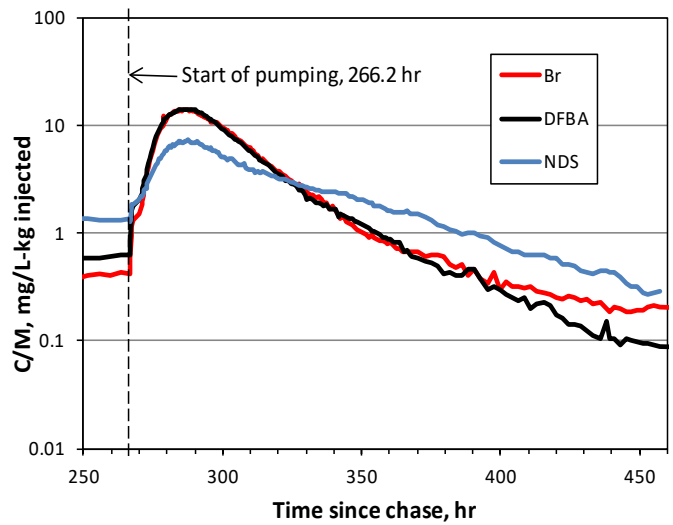


Borehole Dilution Tracer Tests

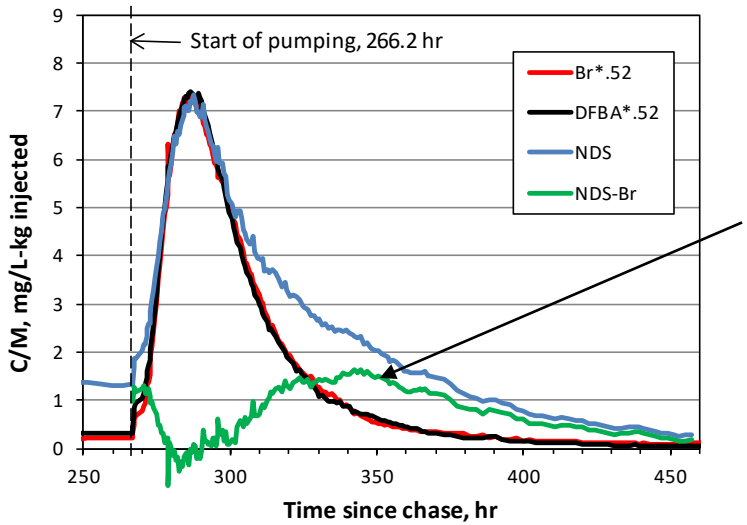


R-42 Push-Pull Test



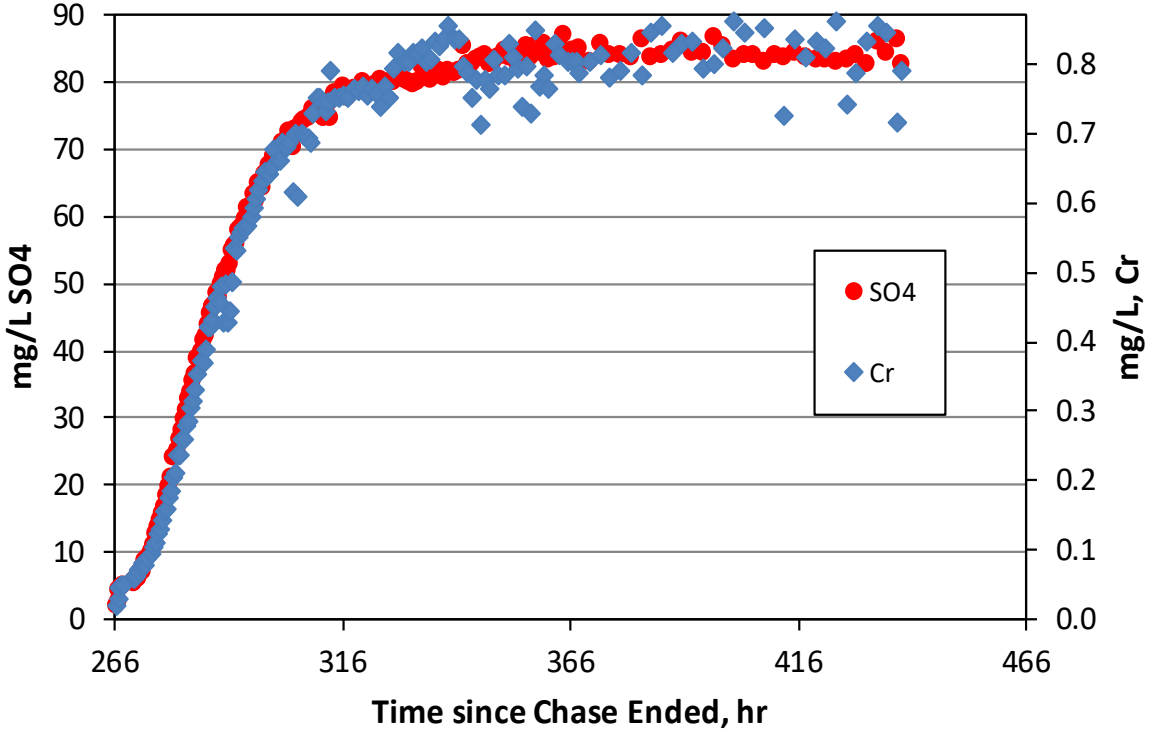


~1400 gals tracer solution (3 hr)
~10,000 gals chase (20 hr)
~7.5 gpm pumping rate

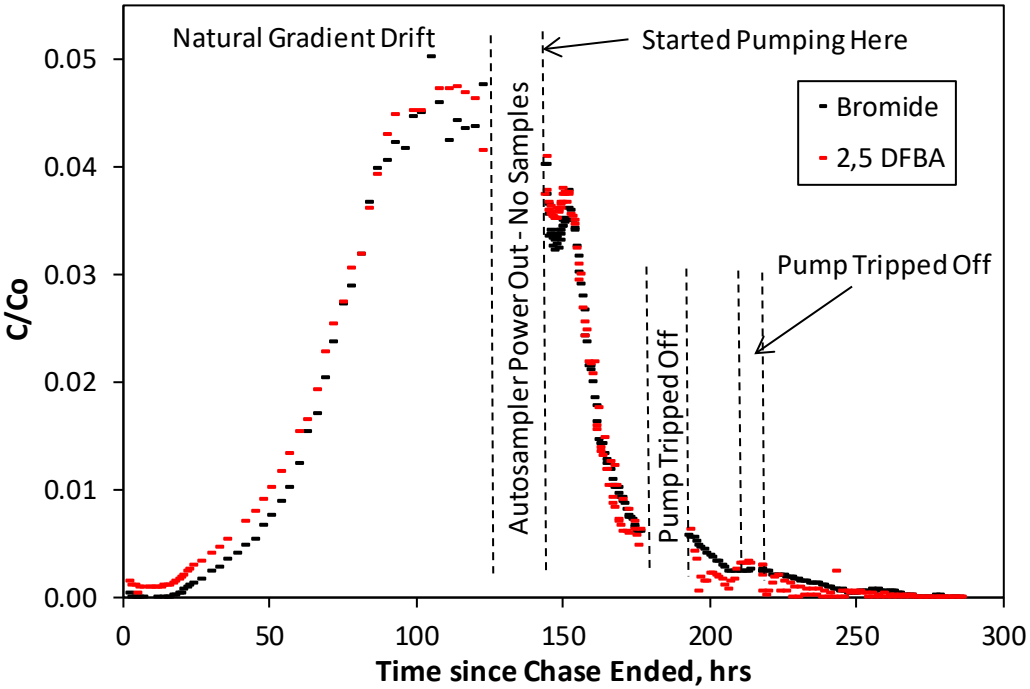


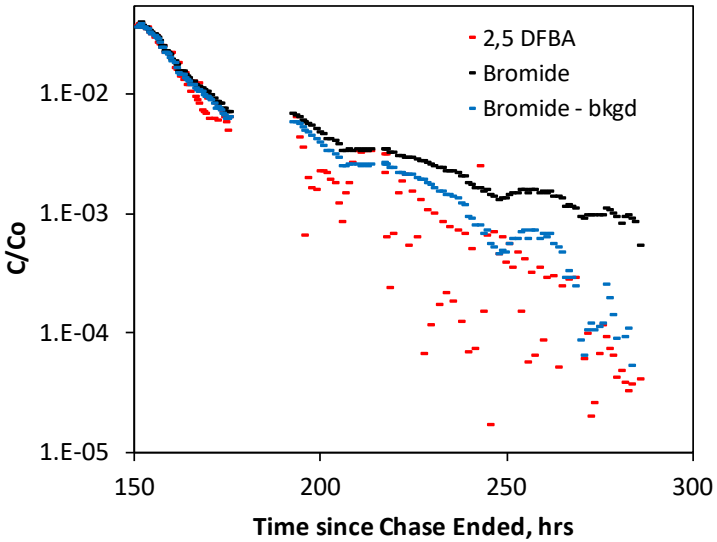
Estimated flow velocity in very good agreement with borehole dilution test

R-42 Push-Pull Test
$SO_4^{=}$ and Cr(VI) Returns



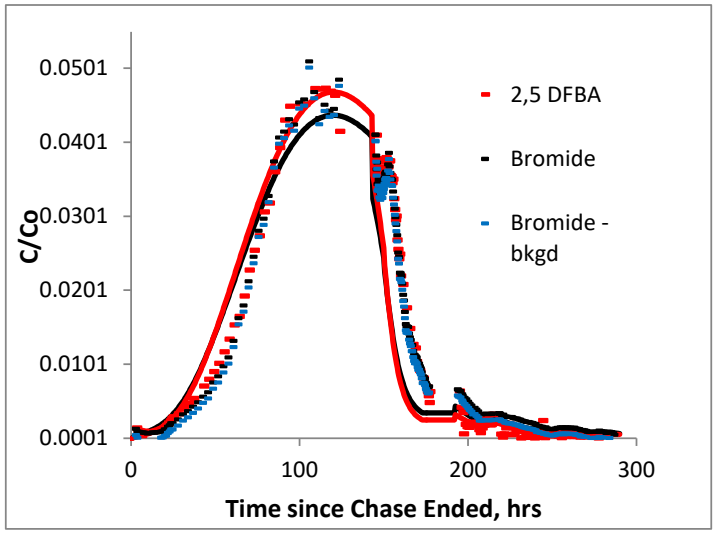
R-28 Push-Pull Test

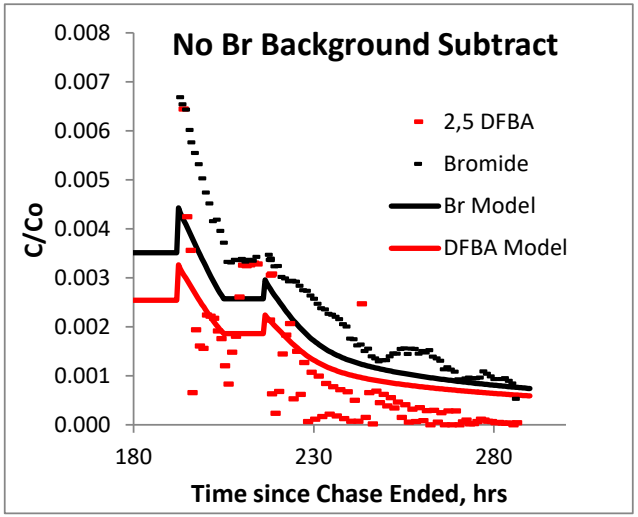


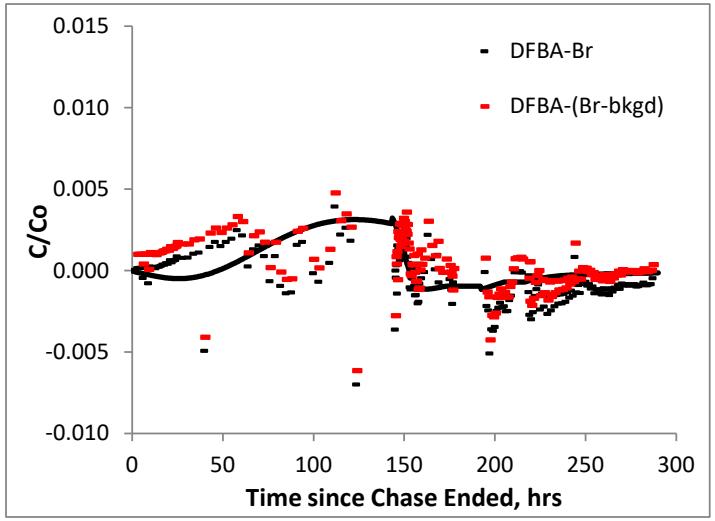


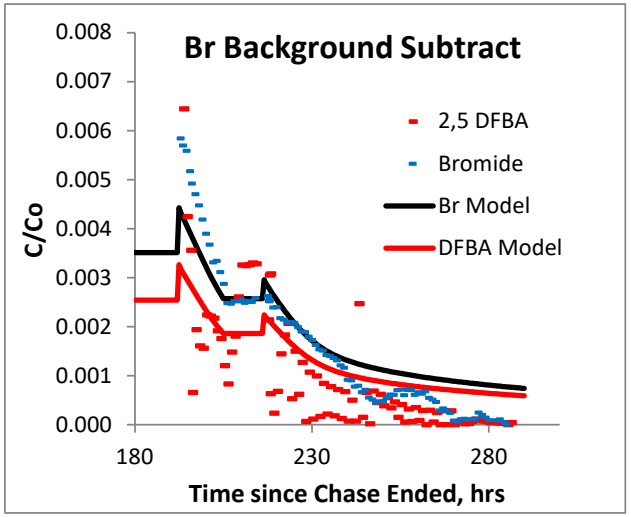
~1400 gals tracer solution (6 hr)
~10,000 gals chase (19 hr)
~16.5 gpm (7 hrs), then 27 gpm pumping rates

R-28 Push-Pull Test

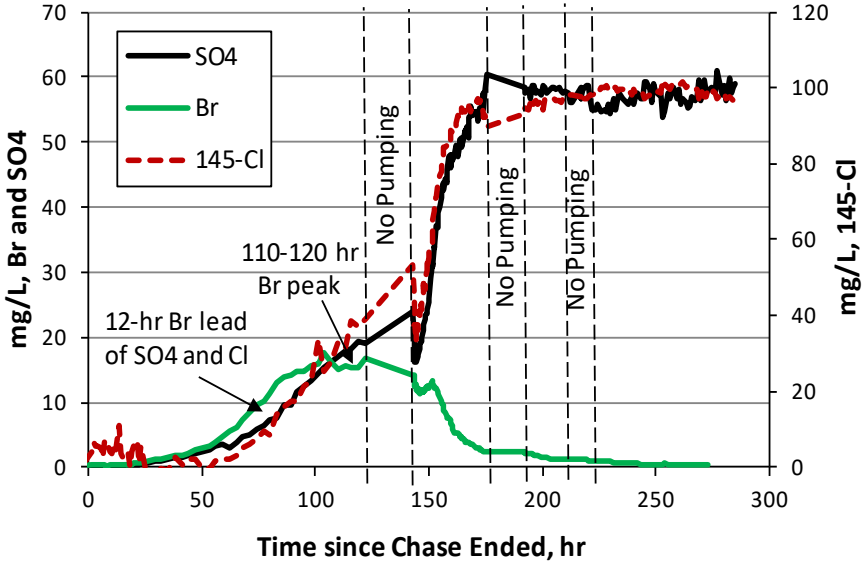


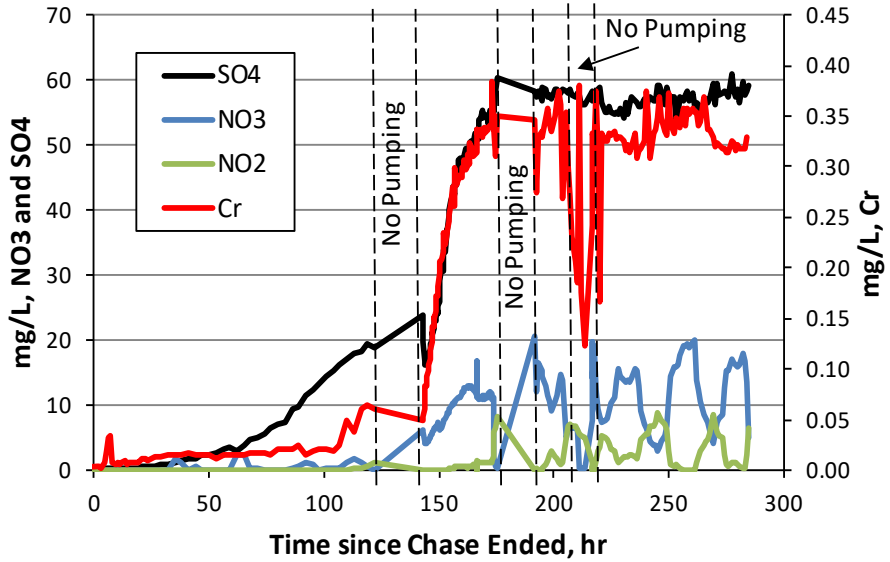


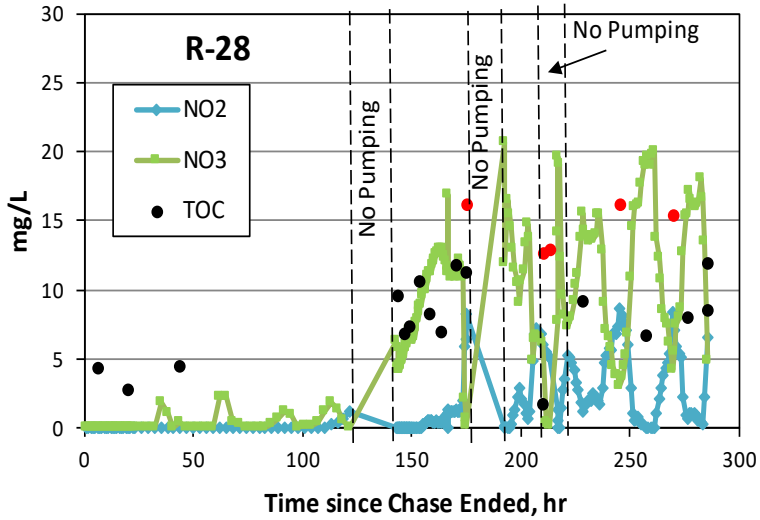


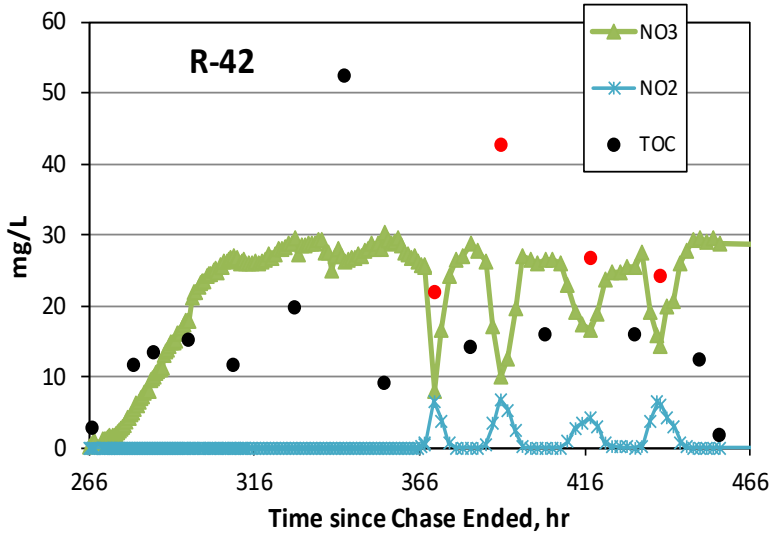


R-28 Push-Pull Test - Returns

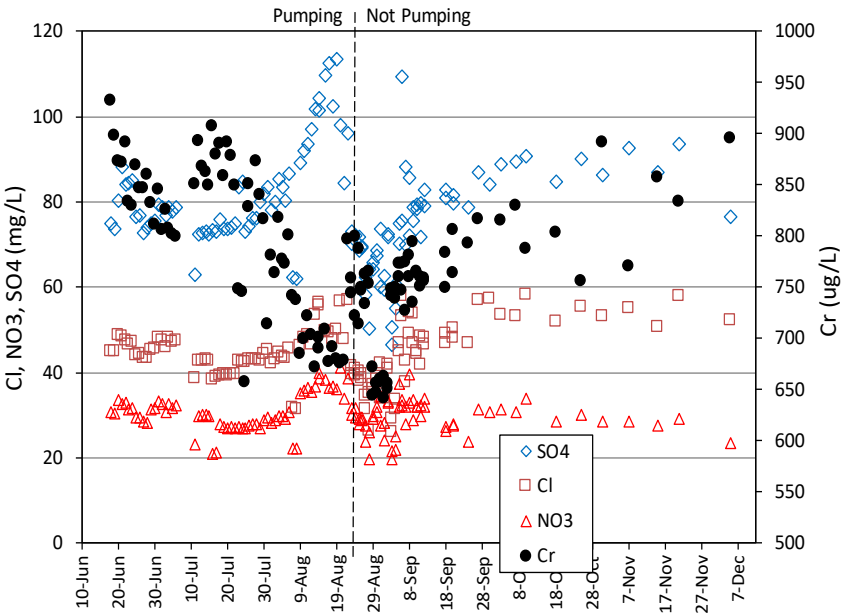


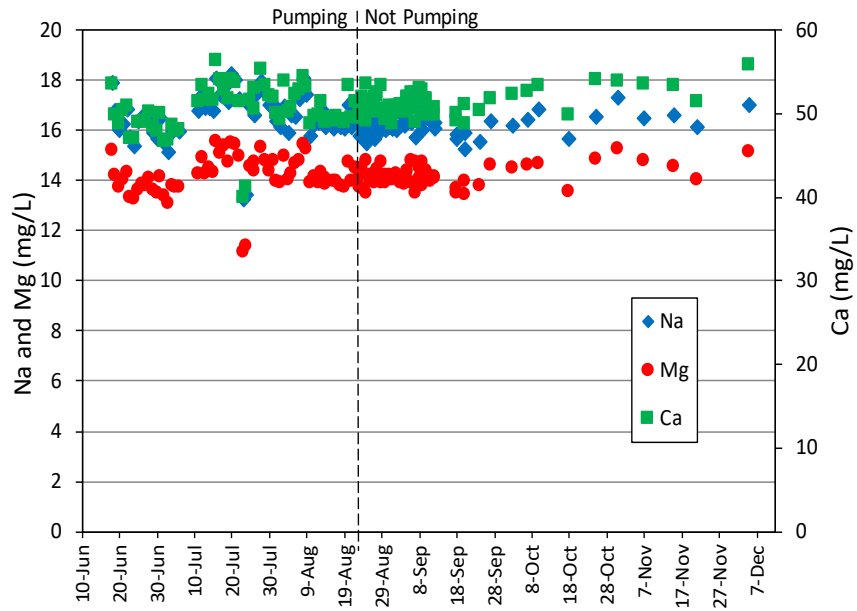


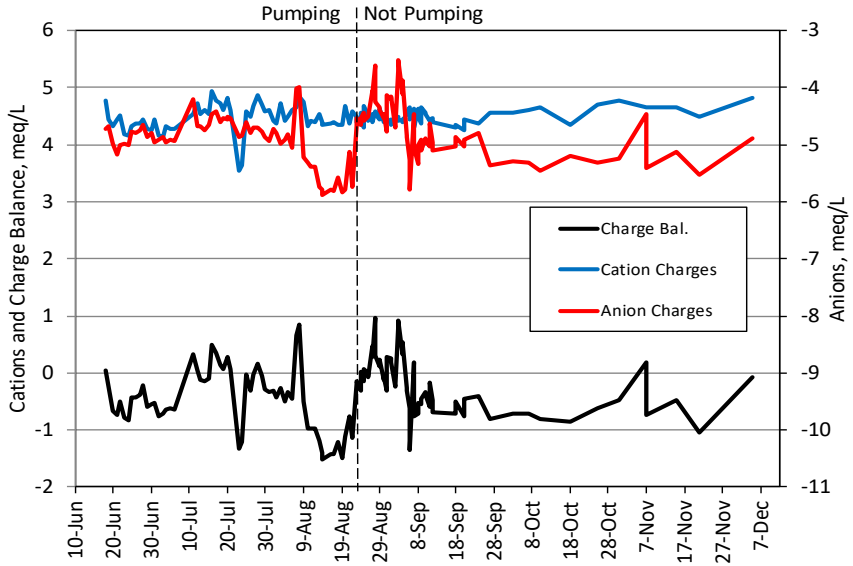




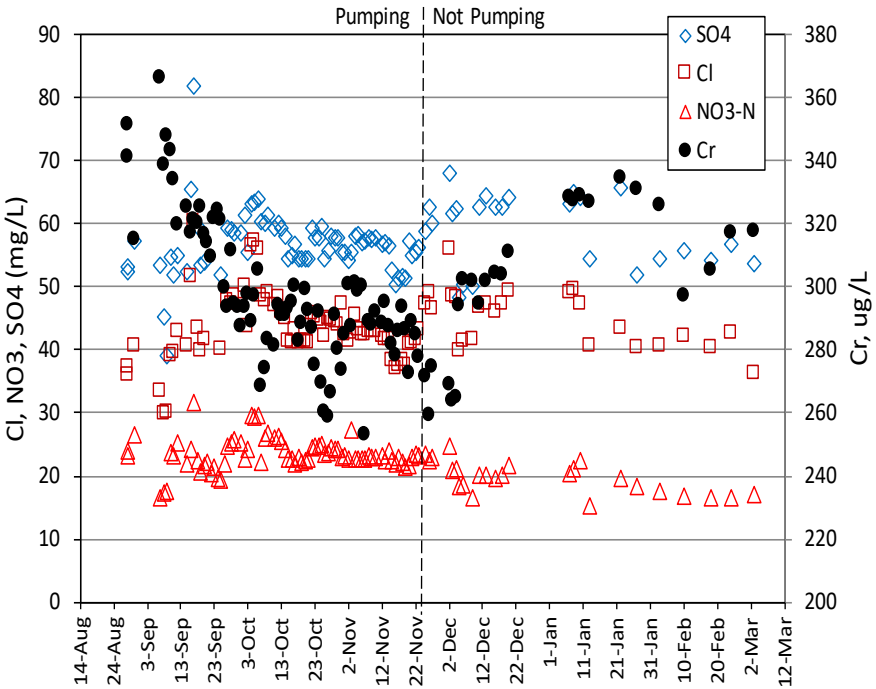
R-42 Long-Term Pumping

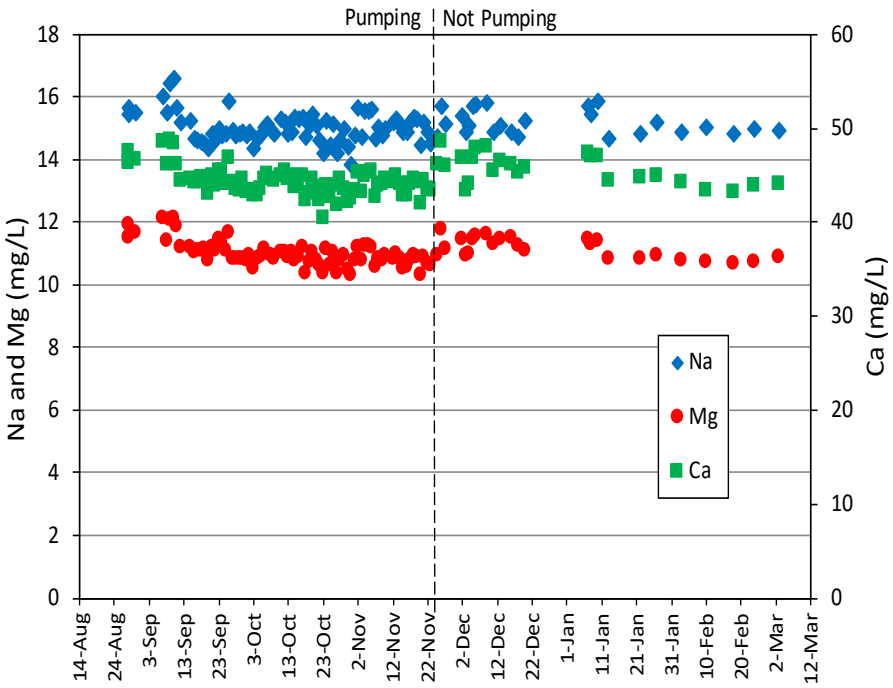




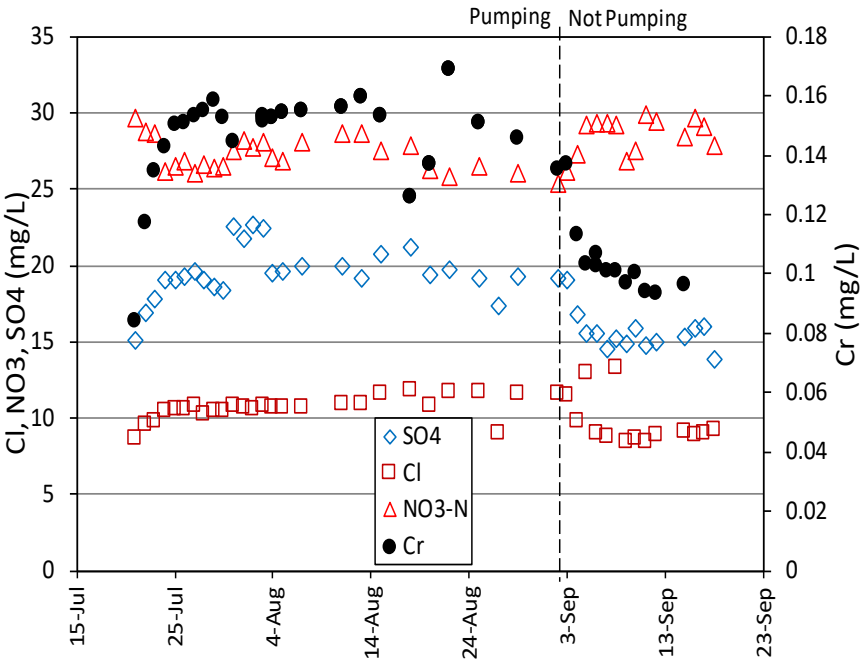


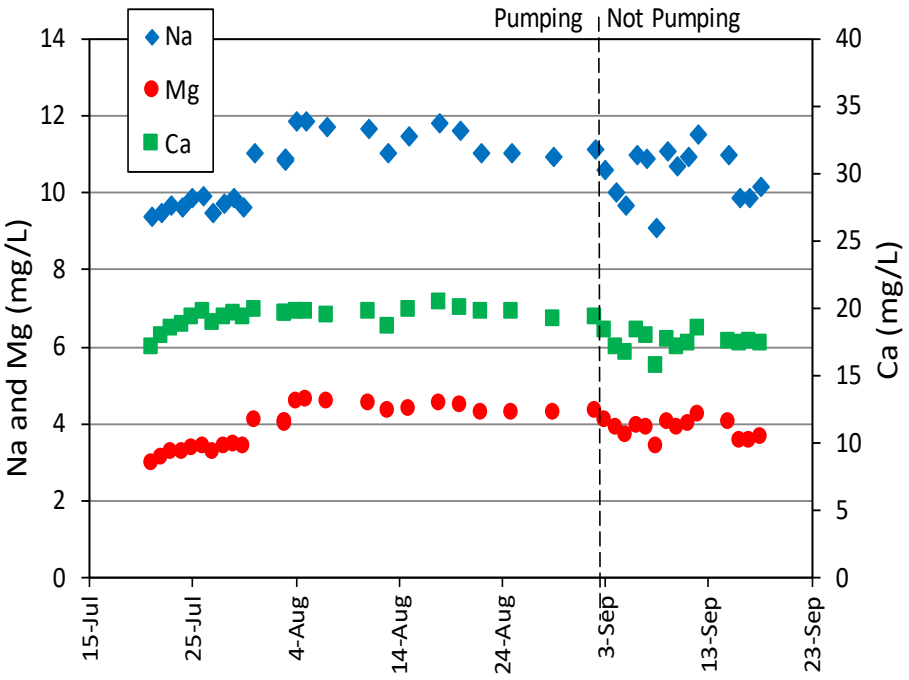
R-28 Long-Term Pumping





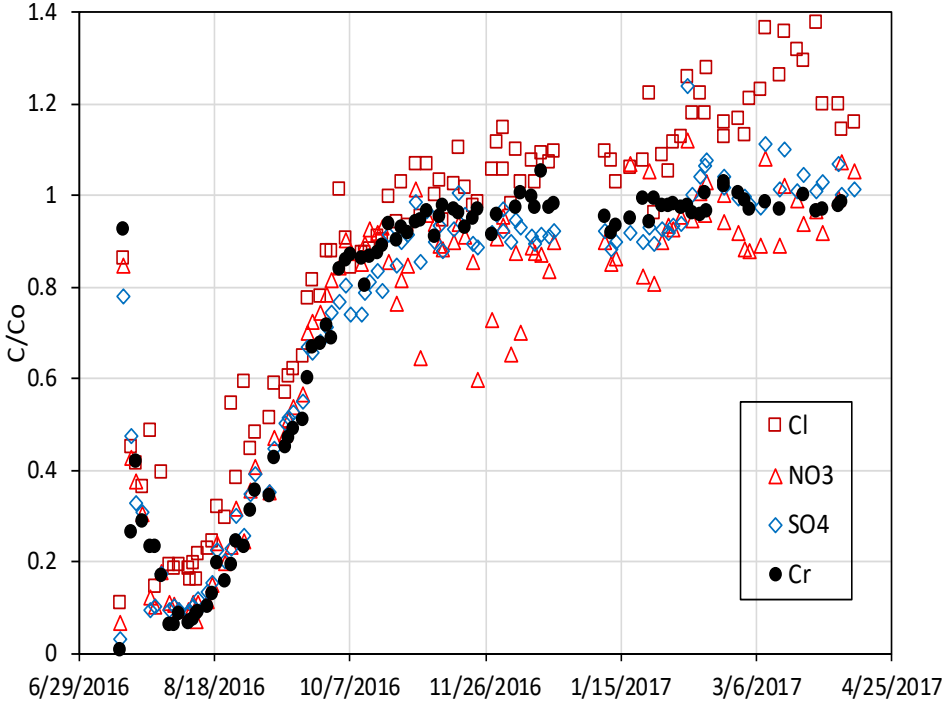
R-43 S1 Long-Term Pumping

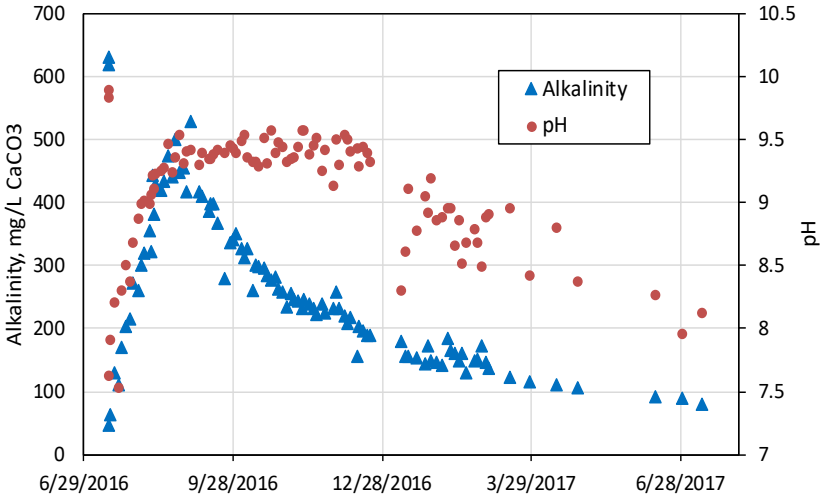


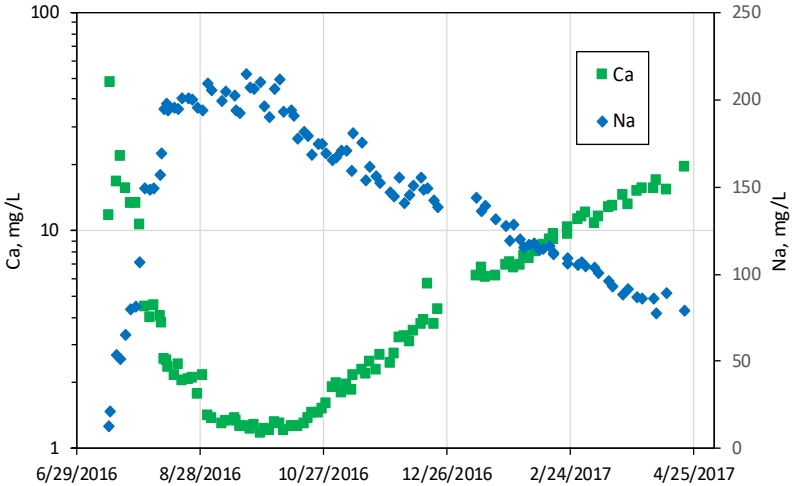


R-42 Carbonate/Bicarbonate Test

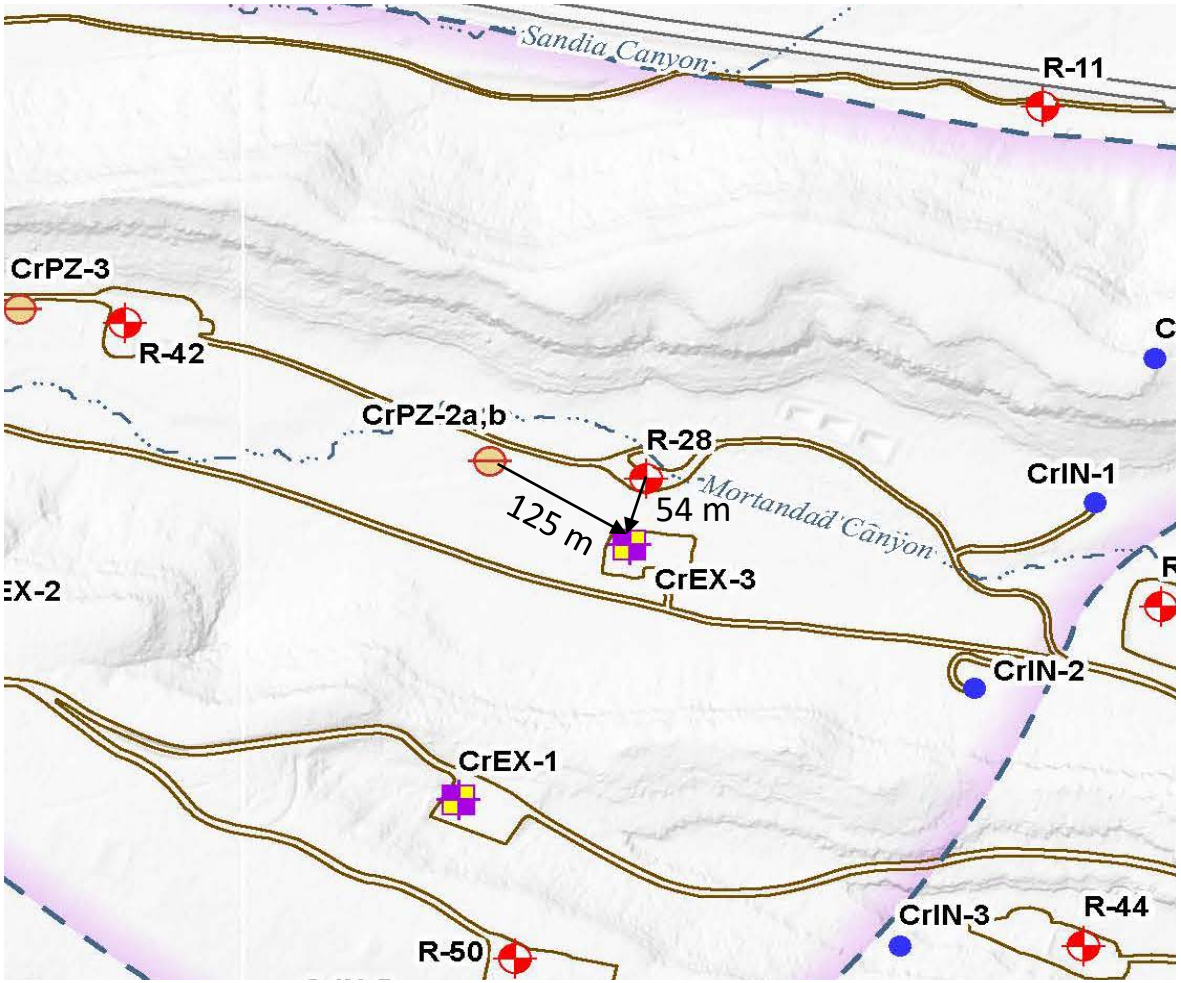
Injected 15,000 gallons of 0.005 M $NaHCO_3$ plus 0.005 M Na_2CO_3 (pH ~9.8)







Cross-Hole Tracer Test

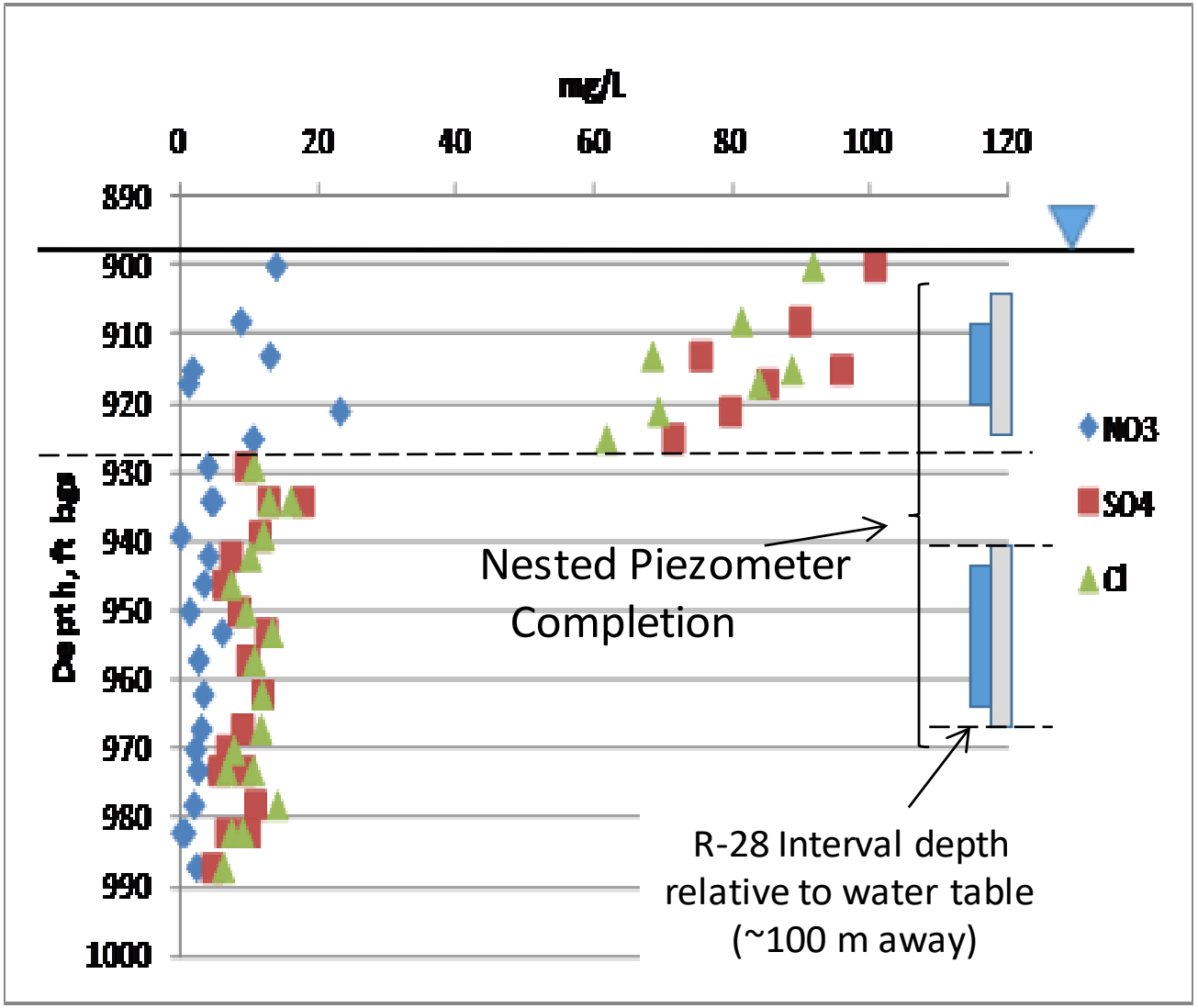


CrPZ-2a (6/15-18/16):
10,000 gals tracer
10,000 gals chase

CrPZ-2b (6/1-7/16):
42,000 gals tracer
21,000 gals chase

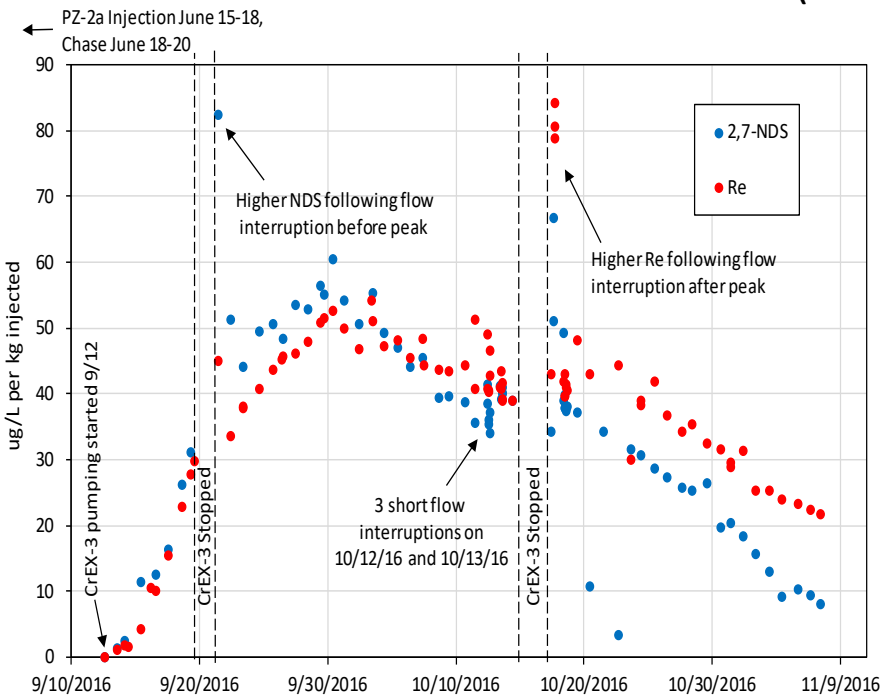
R-28 (9/29/16):
15,000 gals tracer
15,000 gals chase

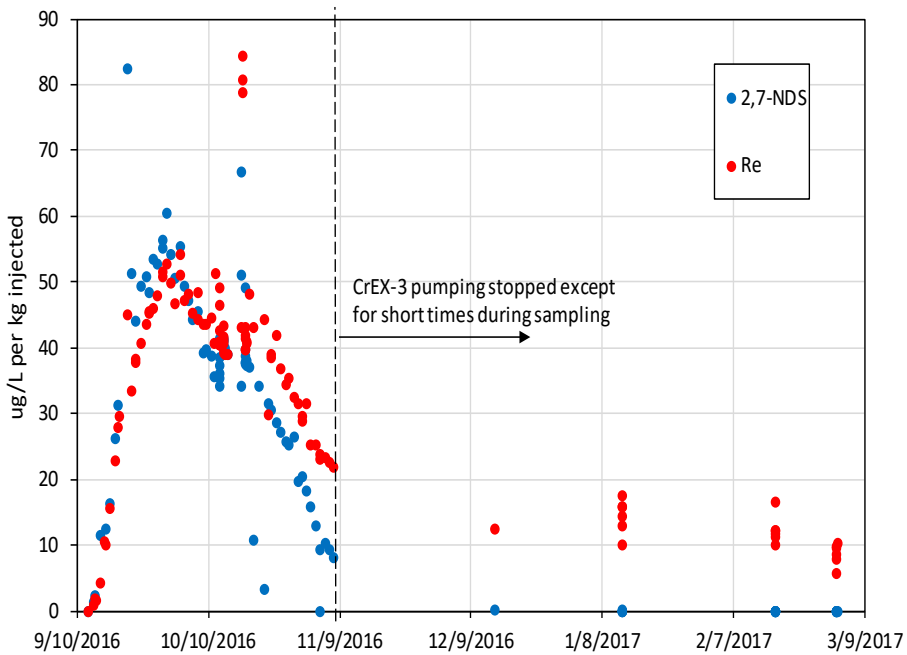
CrPZ-2a Completion and Stratification



Cross-Hole Tracer Test

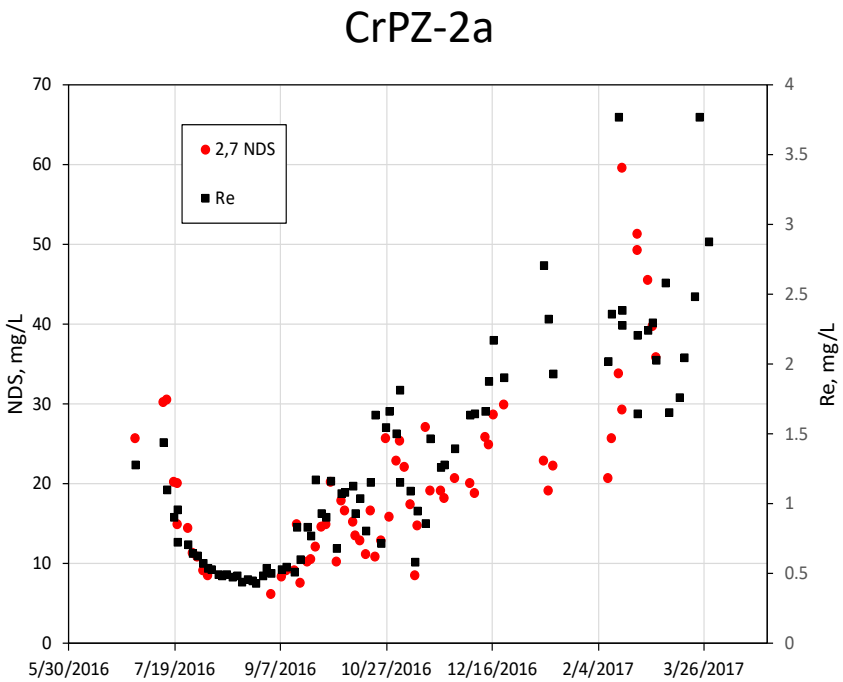
Tracer Responses at CrEX-3 from CrPZ-2a (shallow PZ)
(35-40% Recovery)

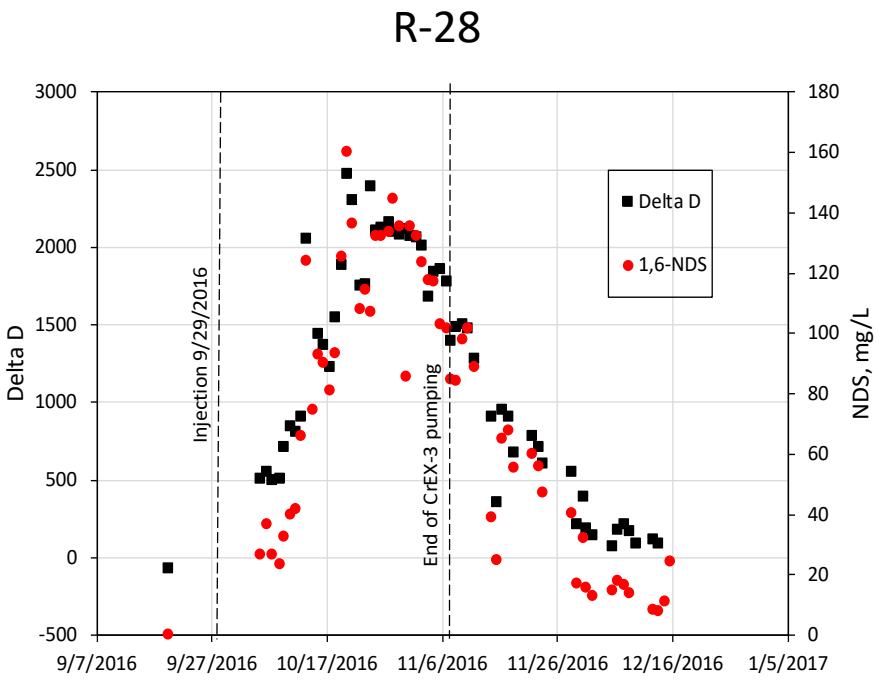




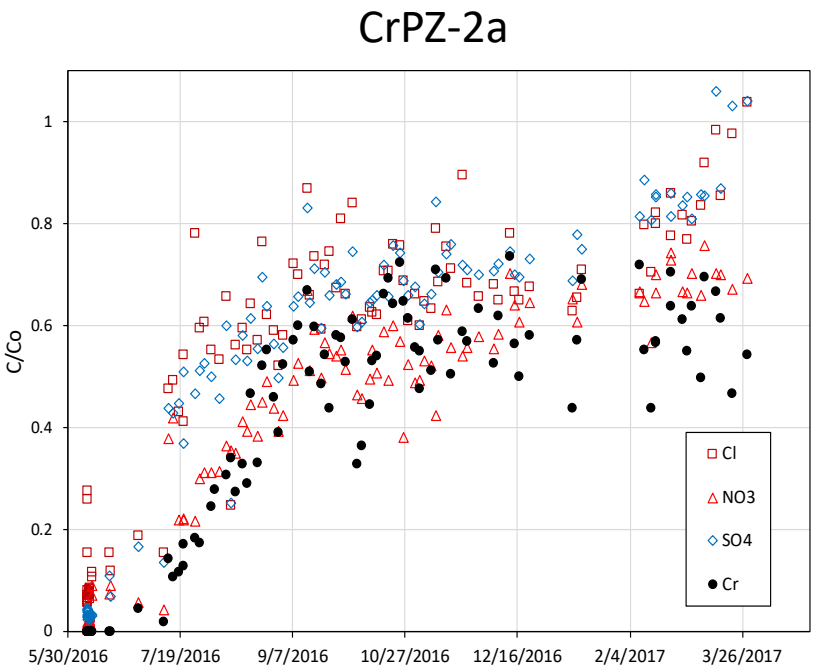
CrEx-3 Pumped at ~40 gpm
No Tracer Responses from CrPZ-2b or R-28

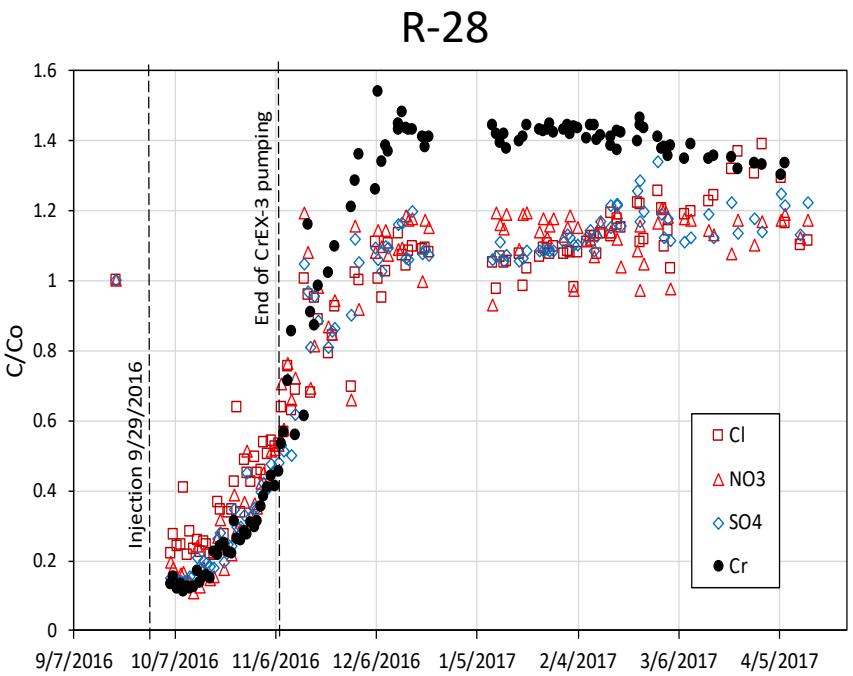
Tracers in CrPZ-2a and R-28



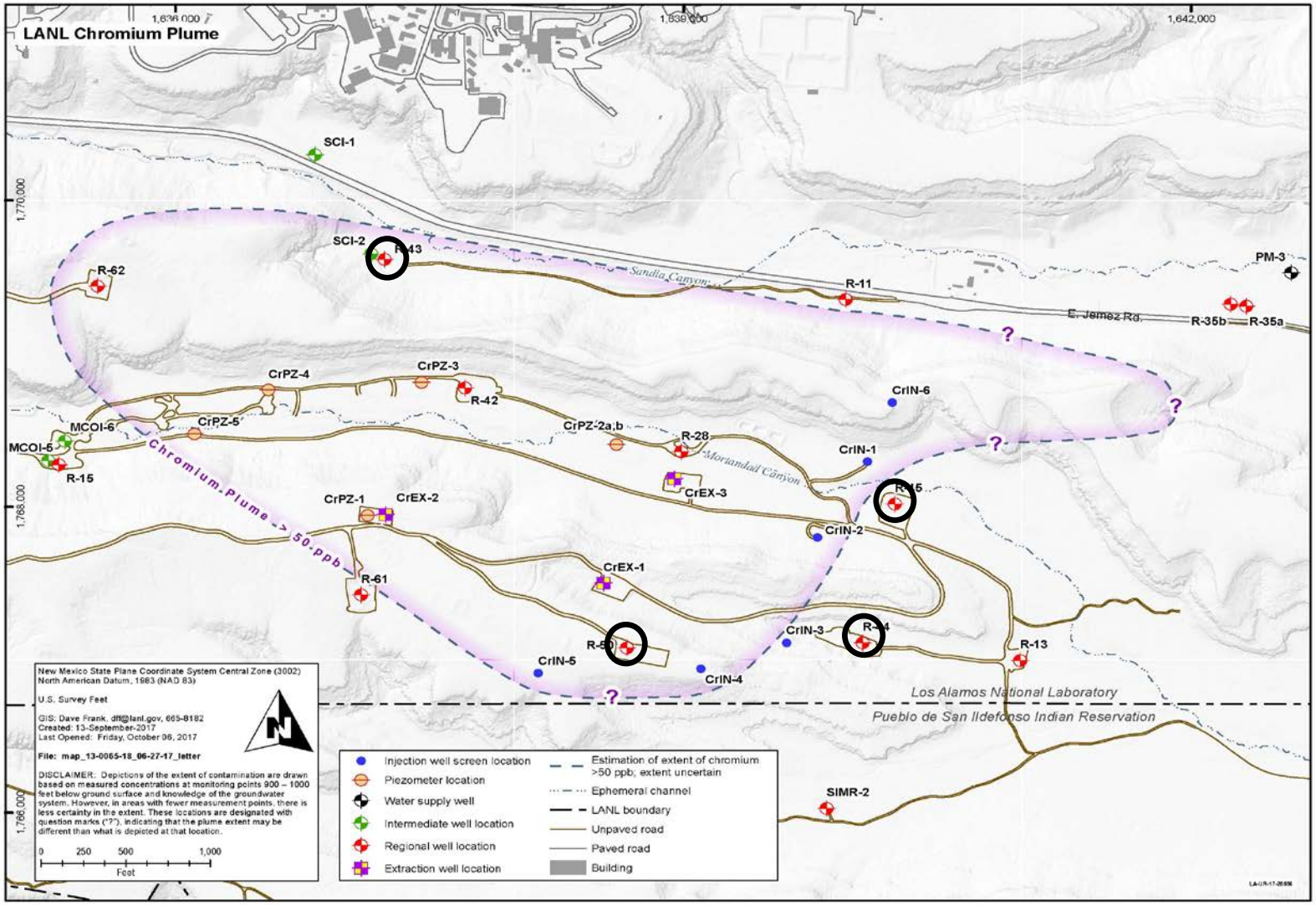
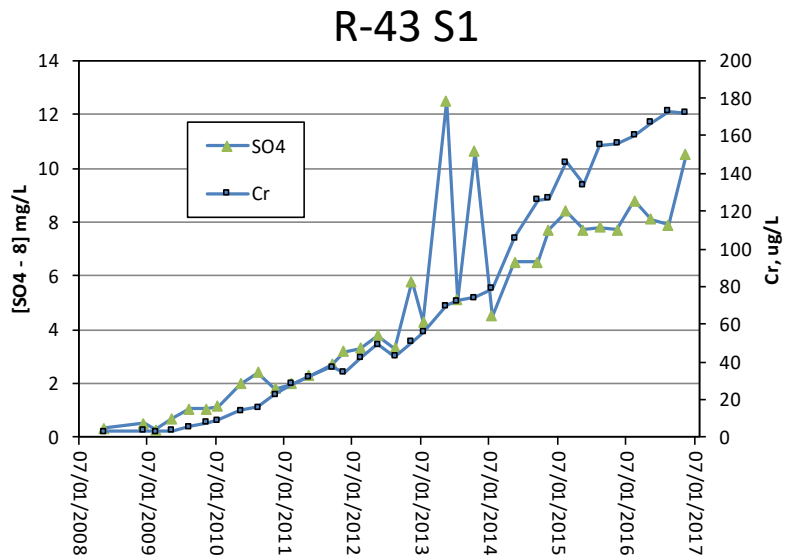
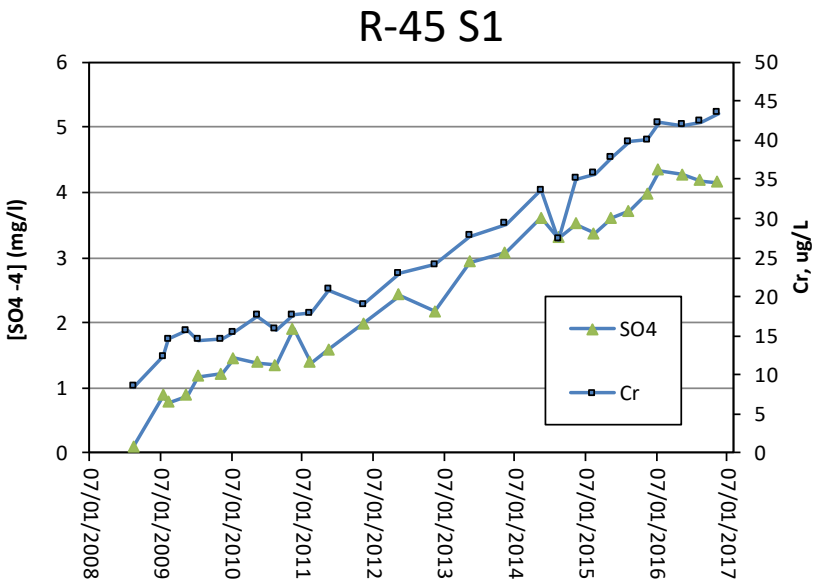
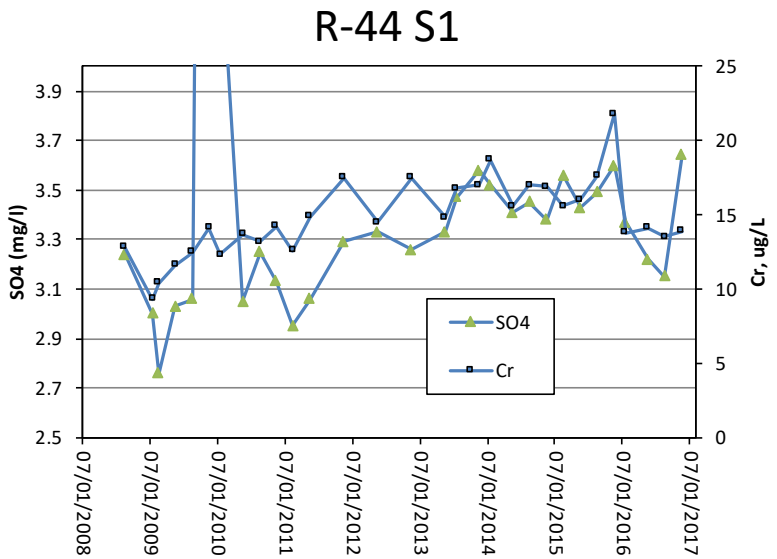
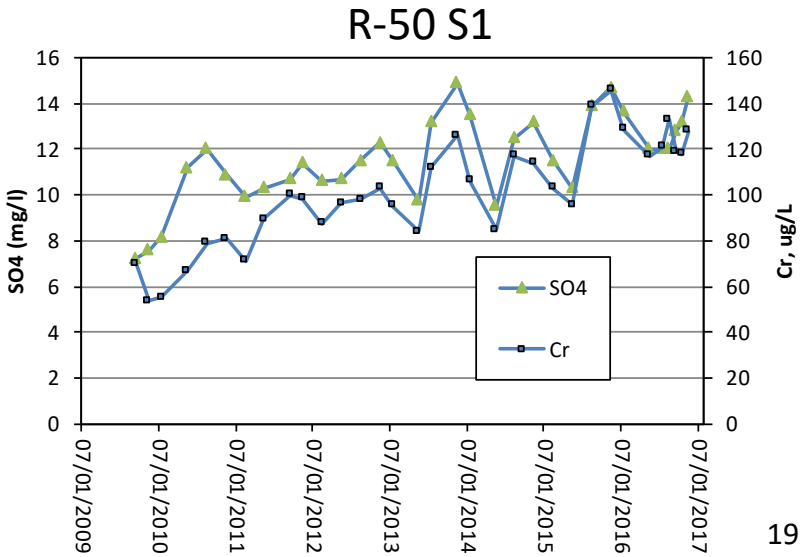


Cr and Anions in CrPZ-2a and R-28





Plume Periphery Trends



Plume Periphery Trends