



U.S. DEPARTMENT *of* ENERGY

Office of Environmental Management

Hexavalent Chromium Plume at LANL

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Hexavalent Chromium Plume

Source: 1956-1972, potassium dichromate, with active ingredient hexavalent chromium, was used as a corrosion inhibitor at LANL's non-nuclear power plant; discharge of cooling tower water into the environment was an accepted practice as the toxicity of hexavalent chromium was not understood at the time

Discovery: 2004 first detection above New Mexico groundwater standard of 50 micrograms per liter ($\mu\text{g/L}$)

Location: In regional groundwater aquifer ~1,000 feet beneath Mortandad & Sandia Canyons at LANL



NO IMMEDIATE THREAT TO PUBLIC OR PRIVATE DRINKING WATER WELLS

Characterizing the Plume

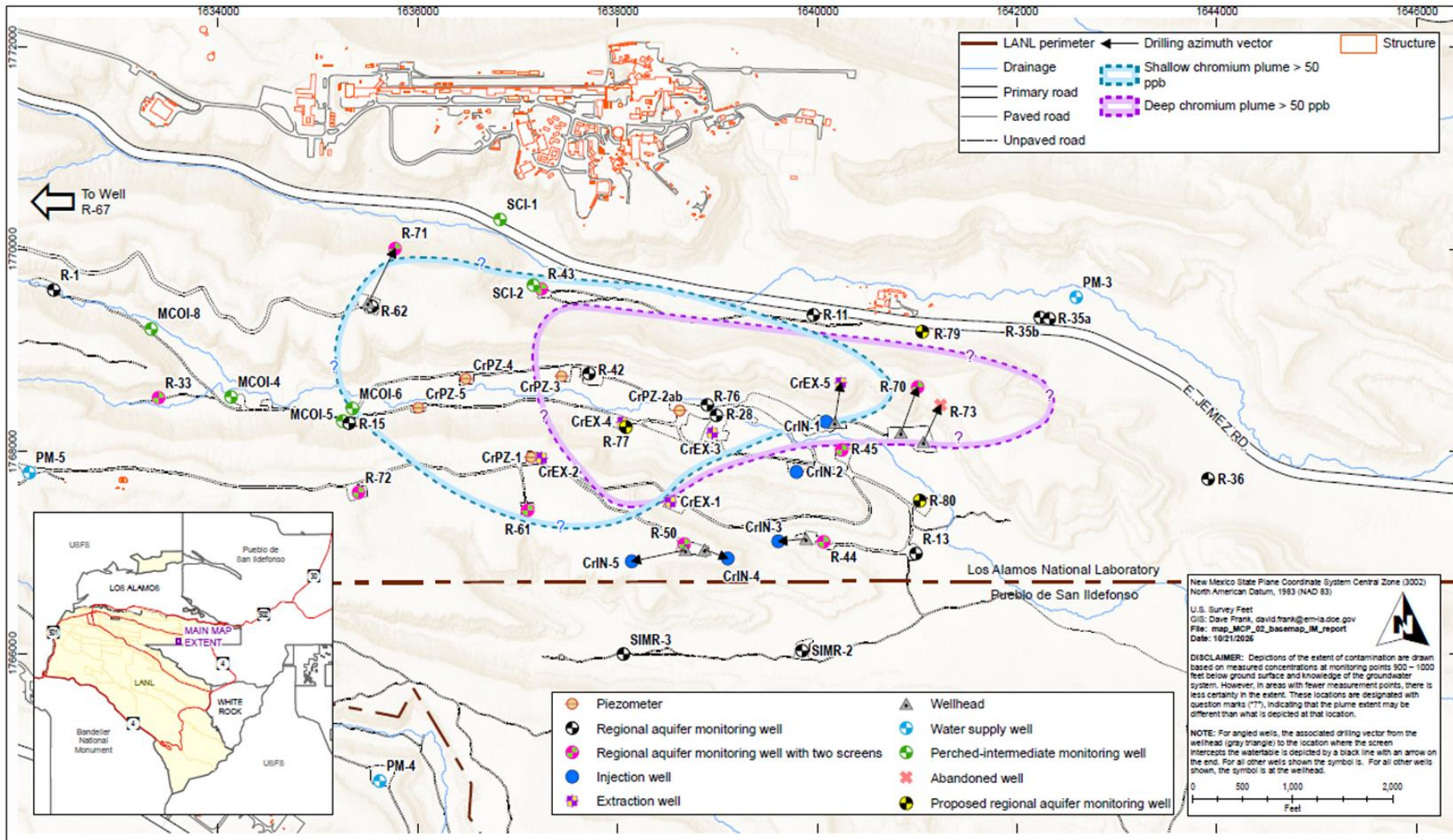


GROUNDWATER SAMPLING ACTIVITIES

Characterizing the Plume

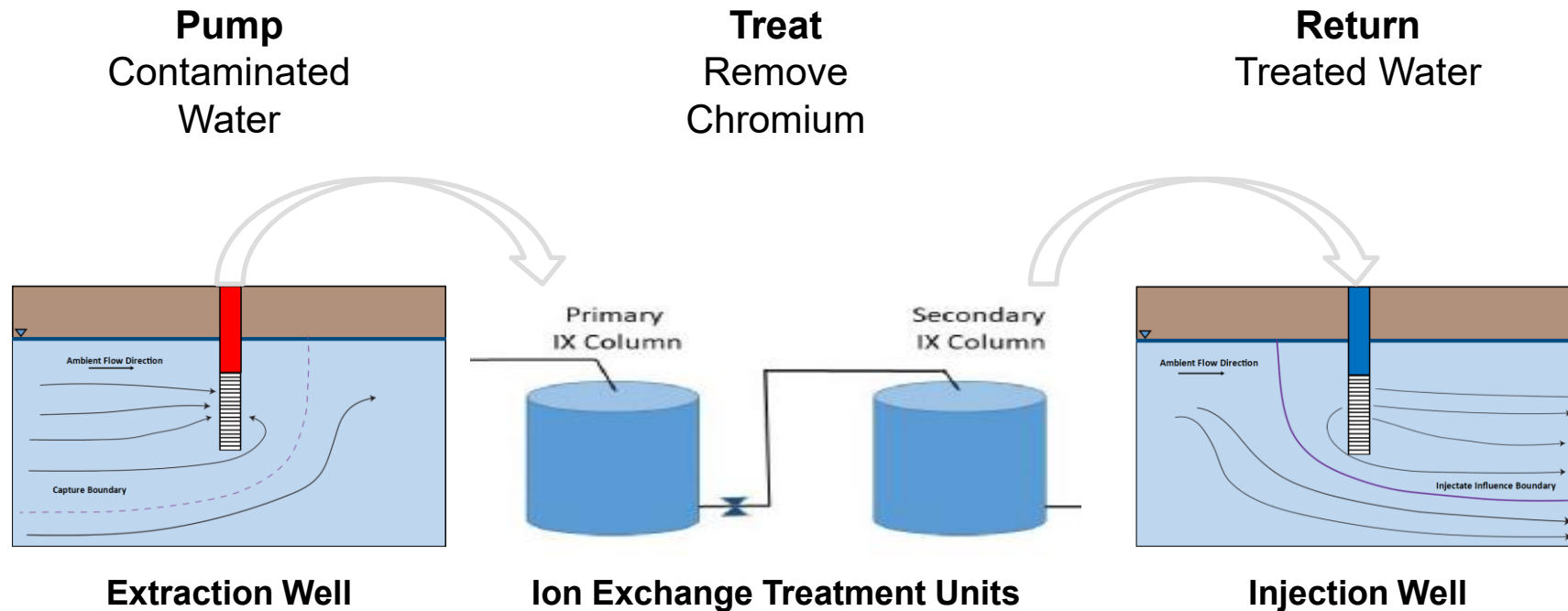
PLUME CHARACTERIZATION ACTIVITIES

- 56 locations sampled
- 380 samples collected per year
- 360 parameters analyzed per sample
- 310,000 groundwater level measurements per year
- 3,600 field measurements per year

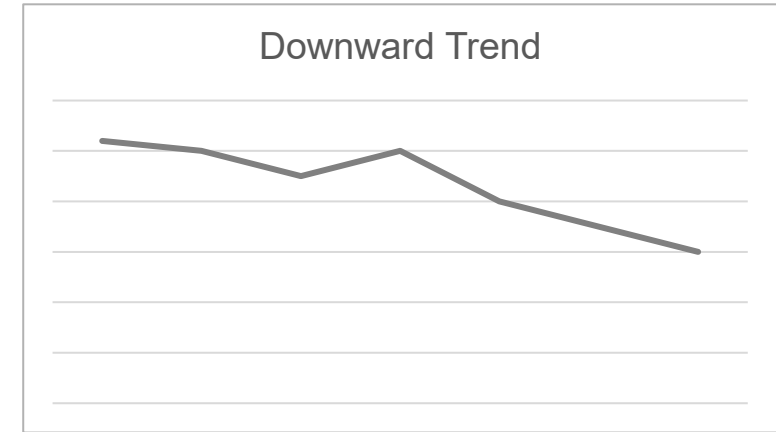
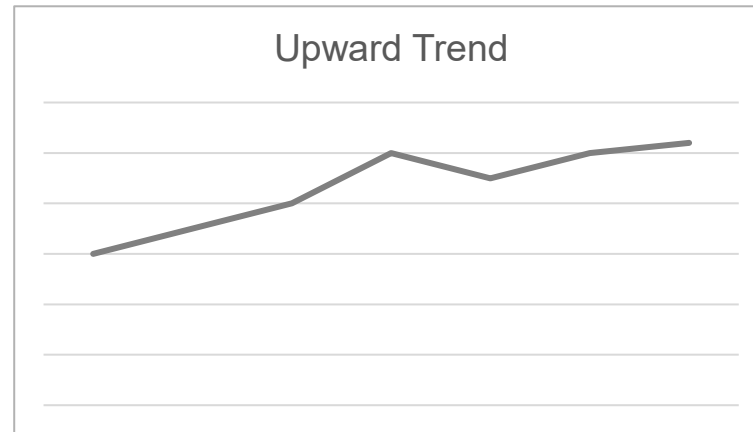
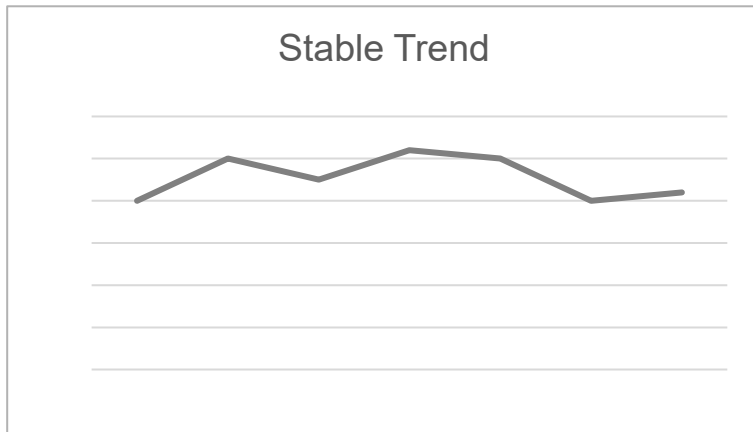


Pump-and-Treat Interim Measure (IM) Operations

Interim Measure: Actions that can be implemented to reduce or prevent migration of site-related Contaminants which have or may result in an unacceptable human or environmental receptor risk while long-term corrective action activities are evaluated and implemented.

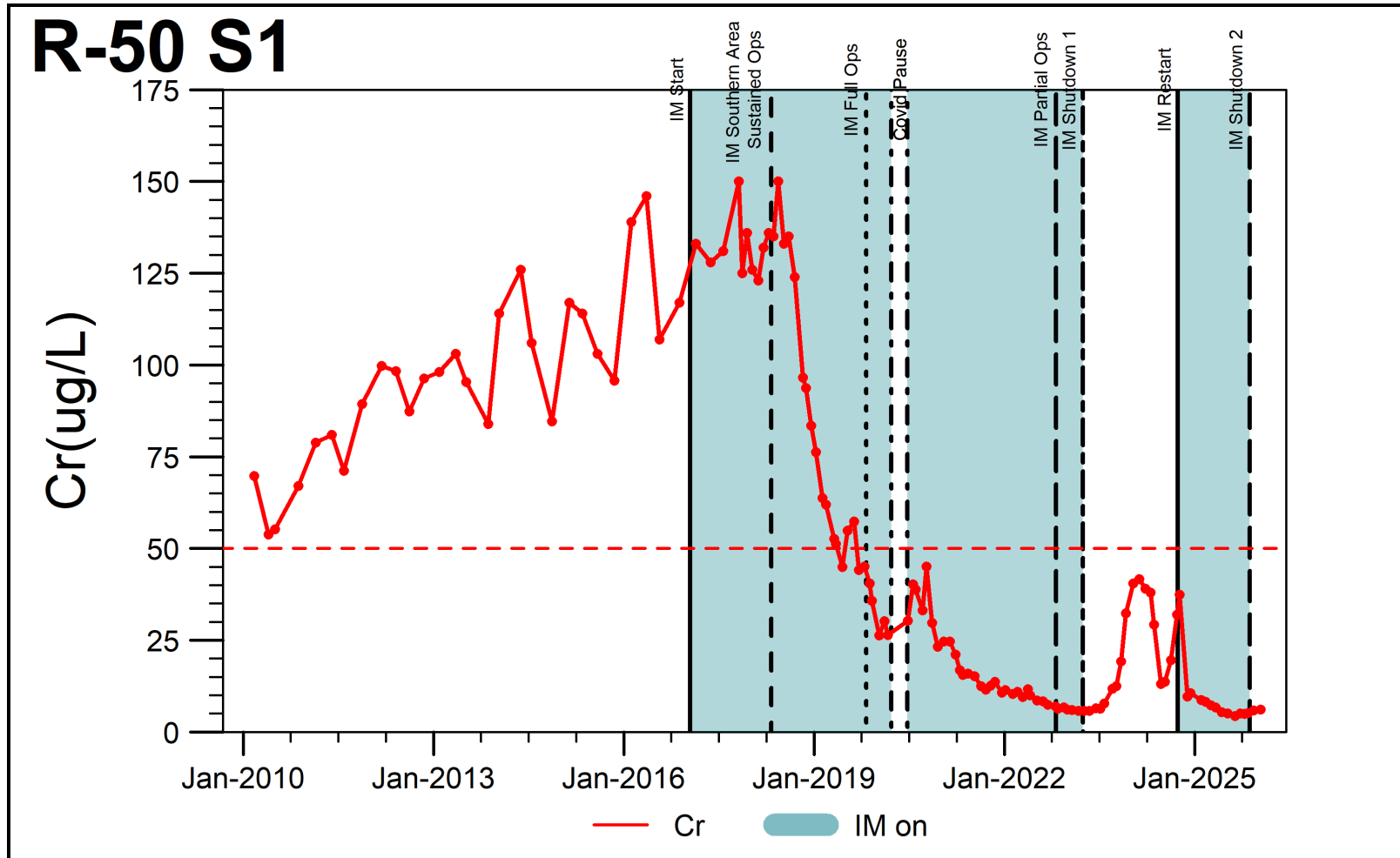


Understanding Concentration Trends

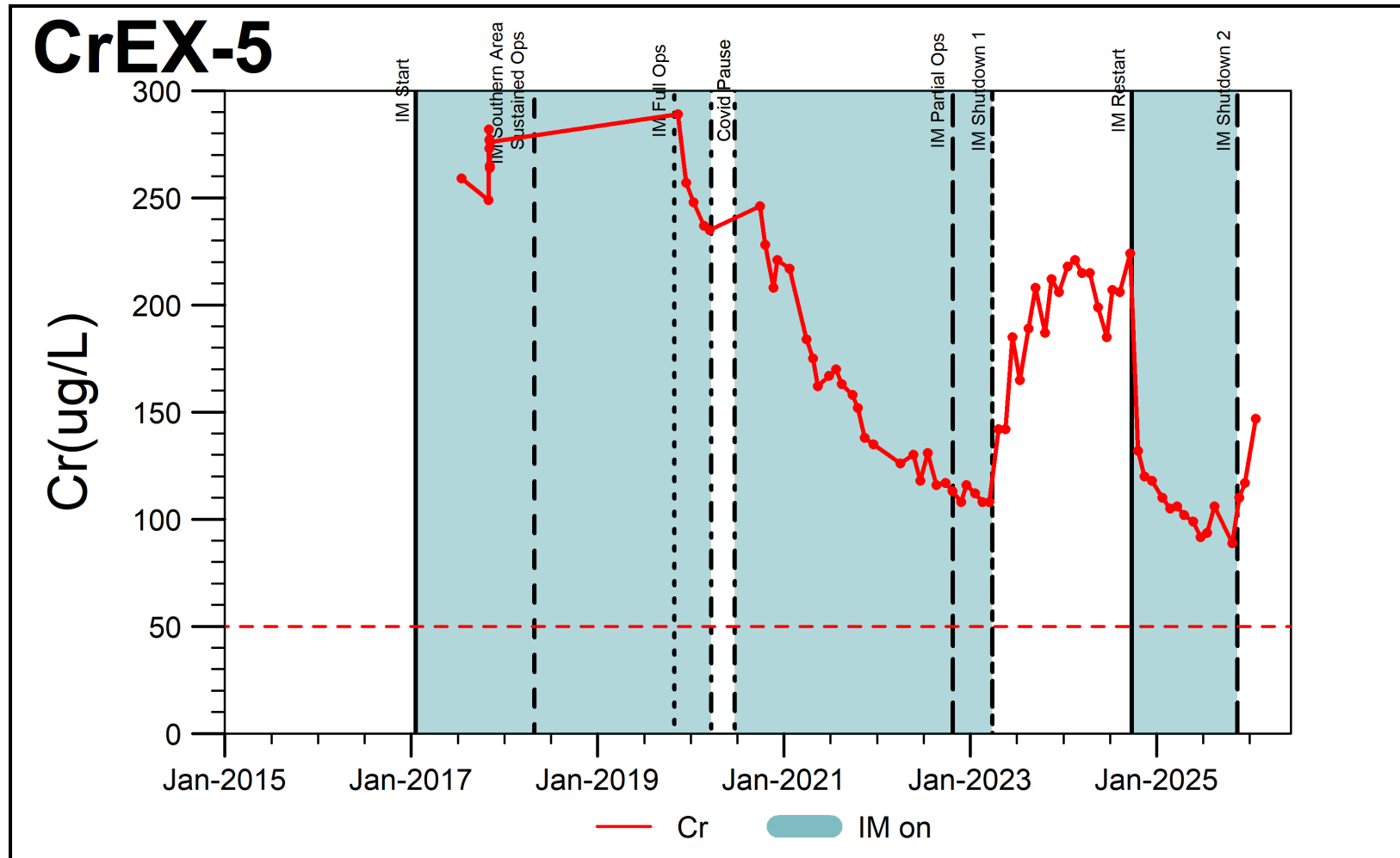


Groundwater data trends reflect sampling results plotted over time

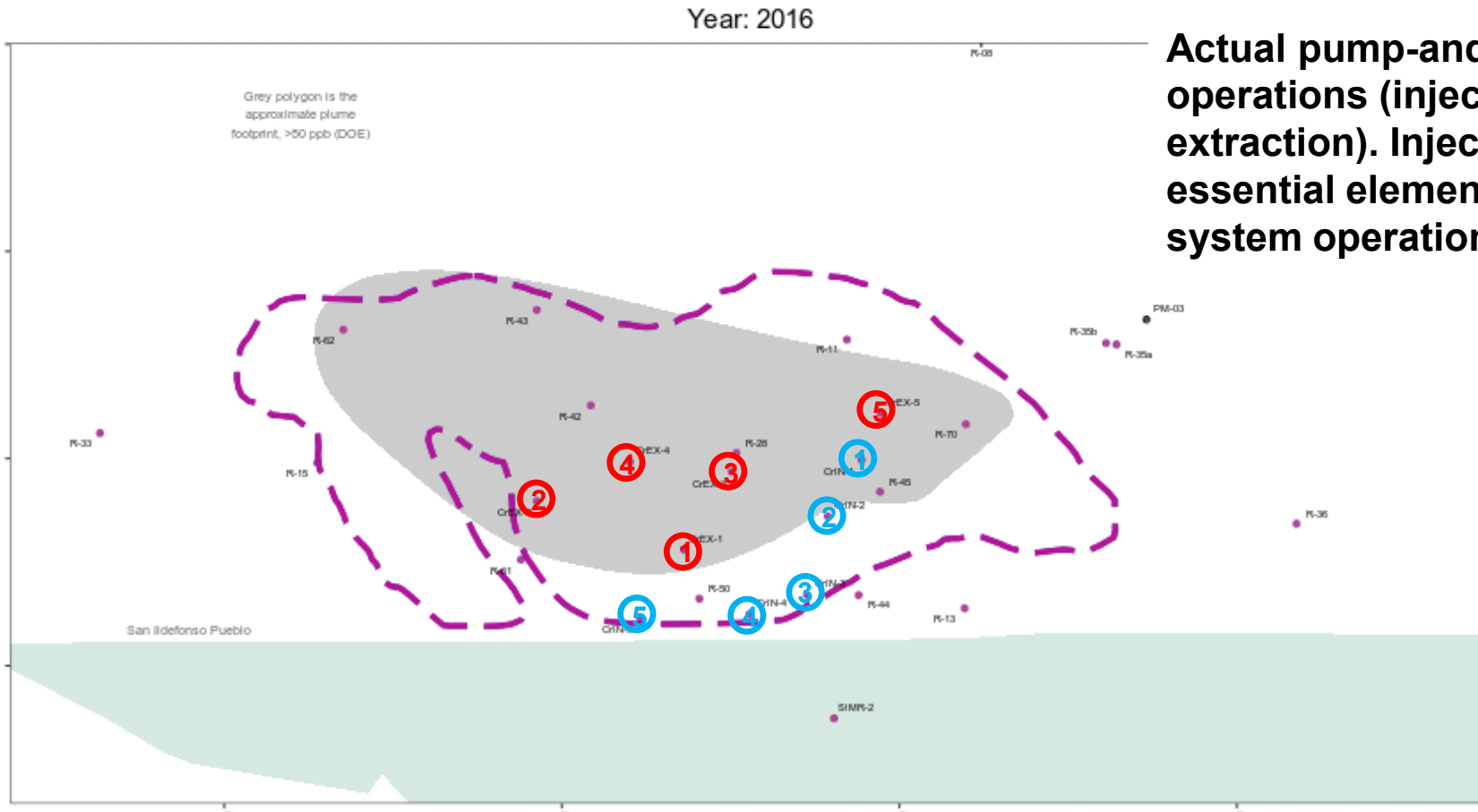
Data Trend at Well R-50 S1



Data Trend at Well CrEX-5



Extraction and Injection is Protective



Actual pump-and-treat operations (injection + extraction). Injection is an essential element of effective system operations.



Key Takeaways

- Groundwater sampling is important for:
 - Decision making for future work
 - Corroborates the effectiveness of the Chromium IM system
 - Data is available to the public
- Plume is currently migrating uncontrolled
- Chromium IM system operation has a positive effect on the plume
- Additional characterization is needed





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