



San Juan Mine Remediation and Restoration Study

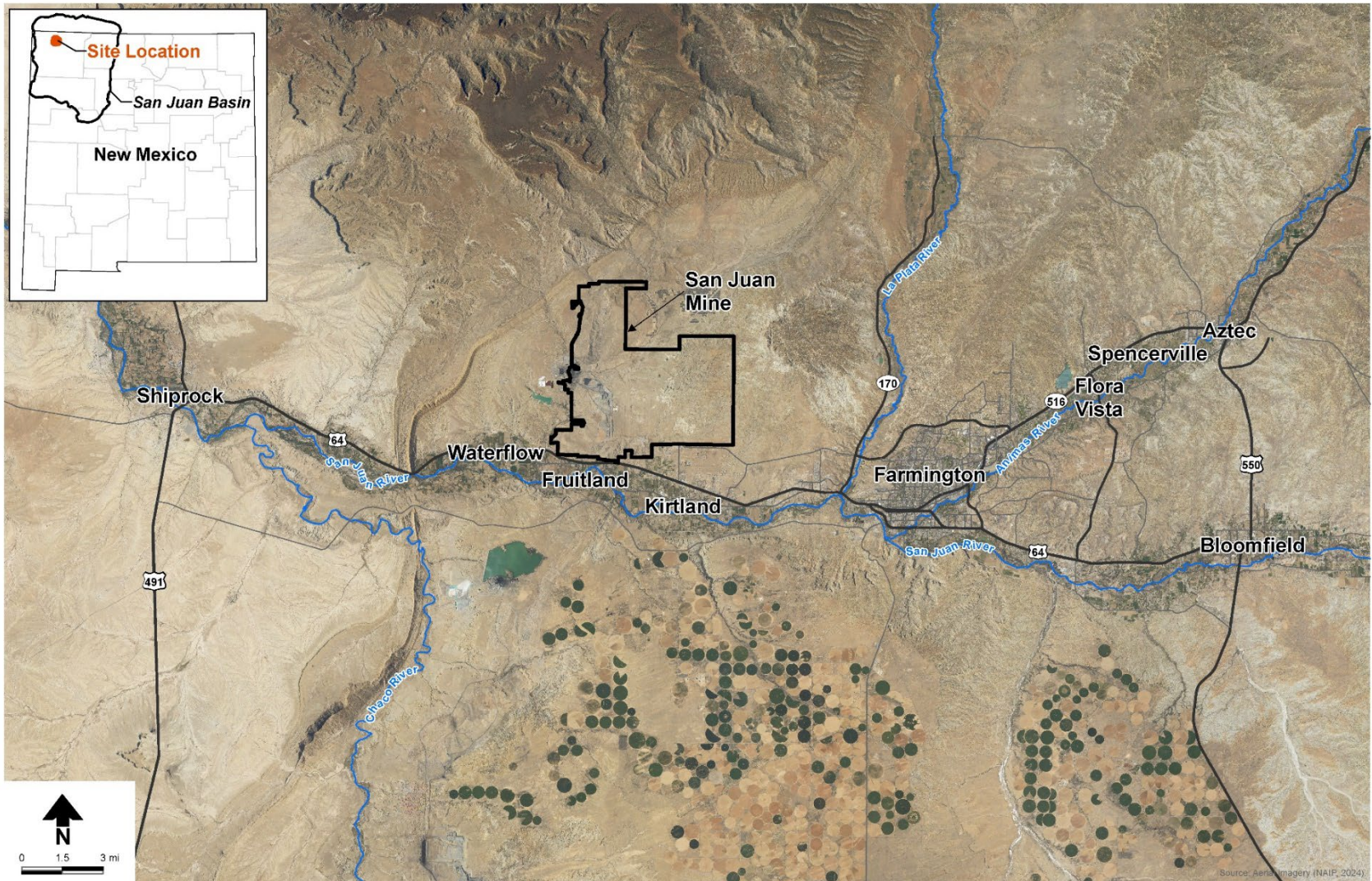
July 11, 2025

Specifics of the Act

- Section 74-4H-1 to 74-4H-4, NMSA 1978
- Perform studies to determine if there has been any environmental contamination of lands and waters on or adjacent to the generating facility (NMED) and mine (EMNRD)
- Reclamation and restoration planning
- Guide future regulatory actions



San Juan Mine Location and Geography



History of the San Juan Mine

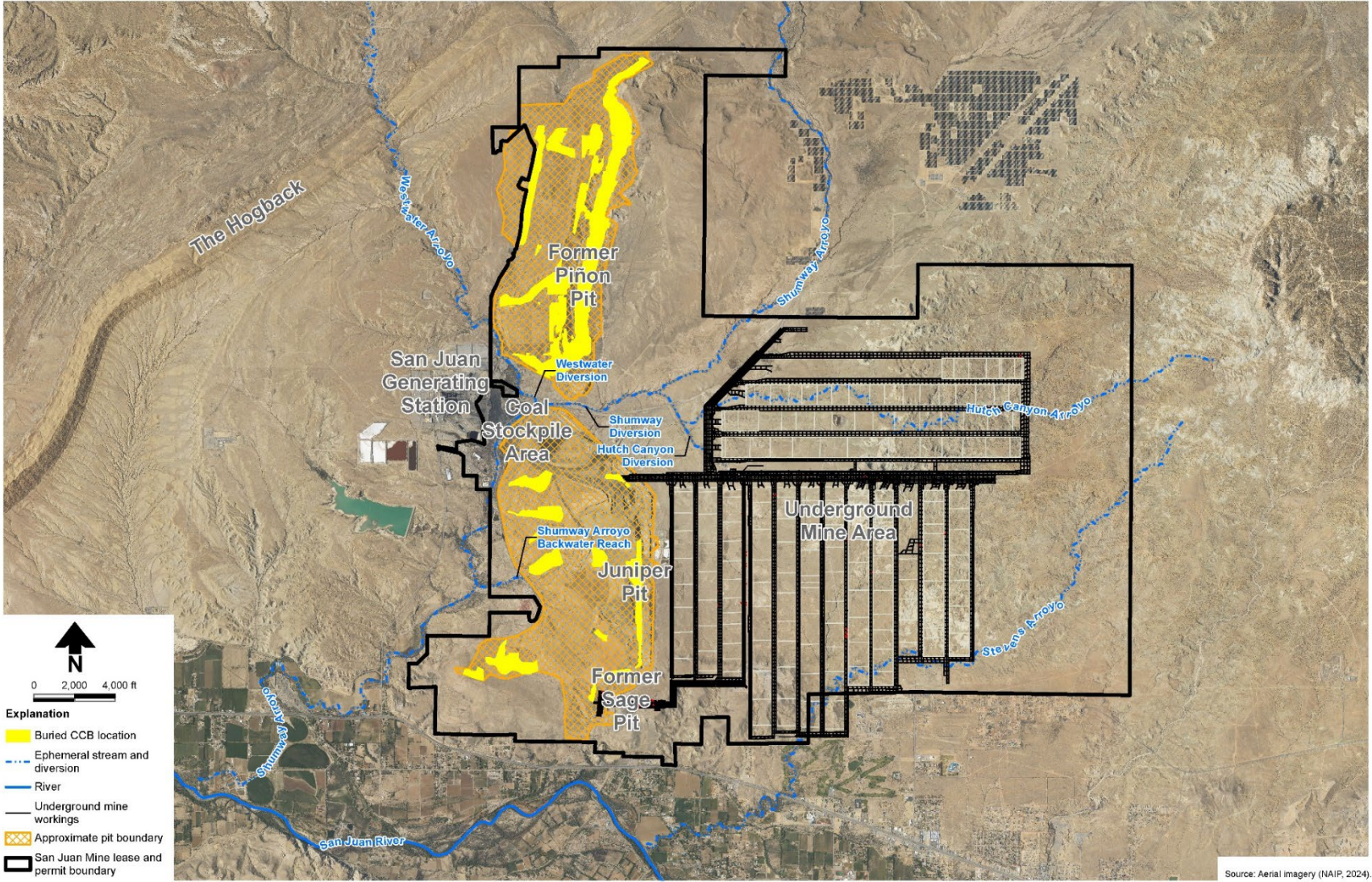
- Surface strip mining began in the early 1970s
- Mining operations switched to underground mining in 2002
- An underground fire halted mining in 2011
 - Otherwise, continuous operation since 1970s
- Mining resumed in June 2012 and continued until end of September 2022



NpDES #1 and pond 33

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Existing Features at the San Juan Mine



Current Mine Status

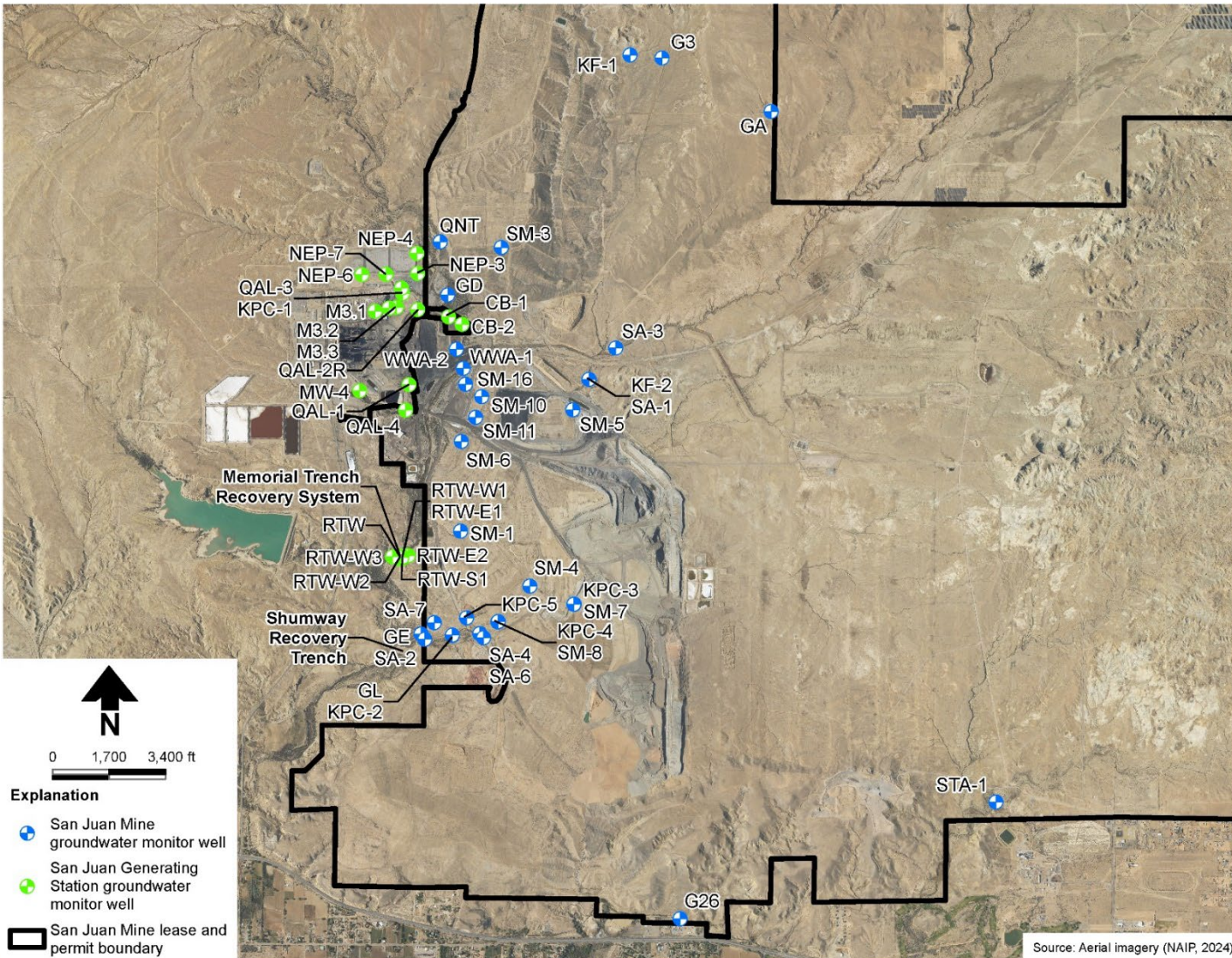
- Westmoreland is the current owner/operator
- Active Permit #19-01
- September 29, 2022 was the last operating day as an active mine
- Currently backfilling Juniper Pit
- MMD conducts monthly mine inspections
- Mine conducts quarterly water sampling



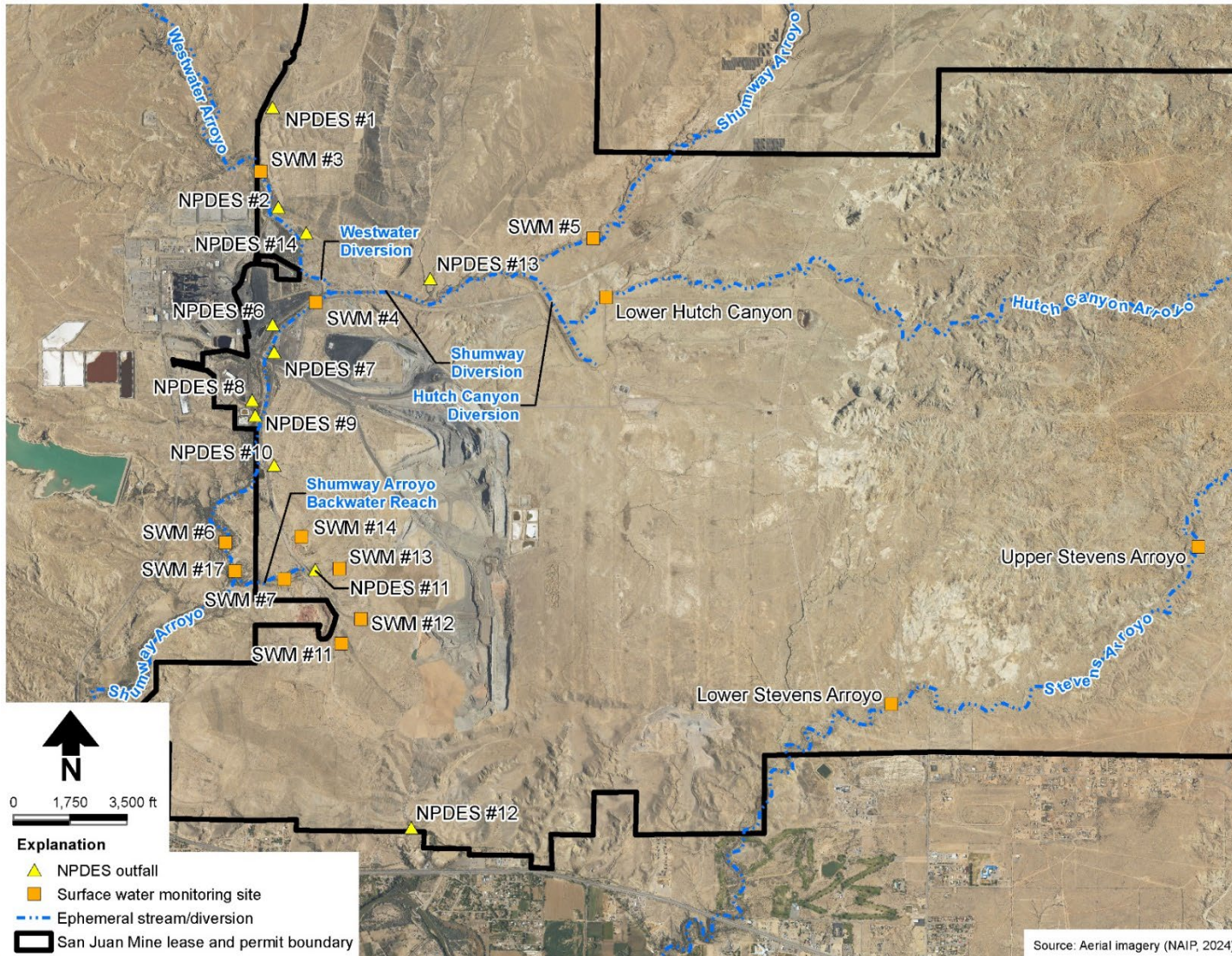
Pre-Investigation Tasks

- Site reconnaissance on May 9, 2024
 - Joined by representatives from MMD and Westmoreland
 - To familiarize DBS&A with site conditions, operations, and existing features of the mine's environmental monitoring program
- Conducted public notice and outreach
 - Newspaper and radio ads, website postings, public meeting
 - Received public comments to consider as part of the study
- Data compilation and review
 - Considered information from several existing studies
 - Developed Access database and GIS with existing data
 - Assessed and documented data quality and usefulness

Existing Groundwater Monitoring Locations



Existing Surface Water Monitoring Locations

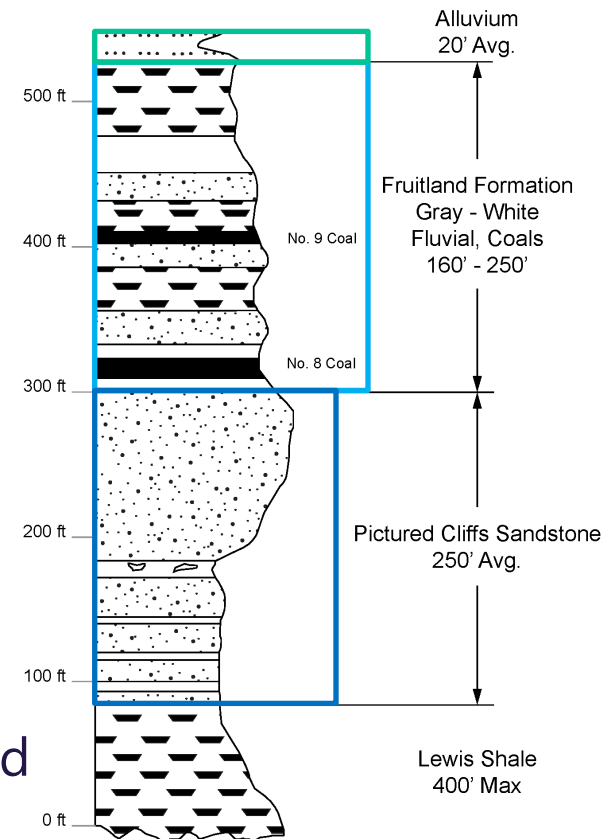


Study (Desktop Investigation)

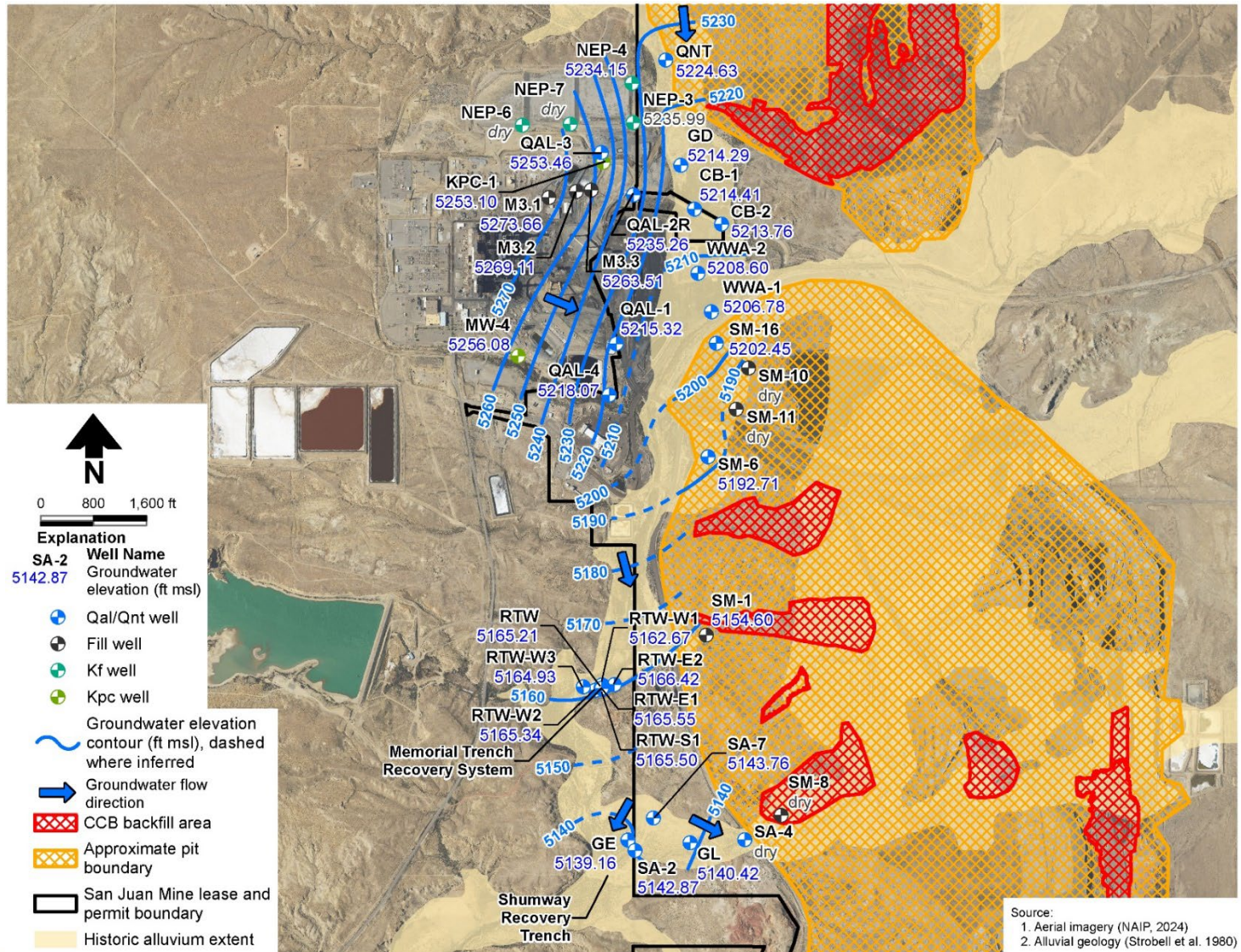
- Purpose: characterize site conditions and identify any mine impacts and threats to potential receptors
- Reviewed existing documents and reports
- Evaluated existing monitoring data
 - Site geology
 - Groundwater occurrence and flow directions
 - Chemical constituent distributions (i.e., maps)
 - Temporal water level and water quality trends
 - Statistical analyses
 - Importance of existing groundwater water abatement measures
- Assess potential threats to nearby receptors

Study Findings

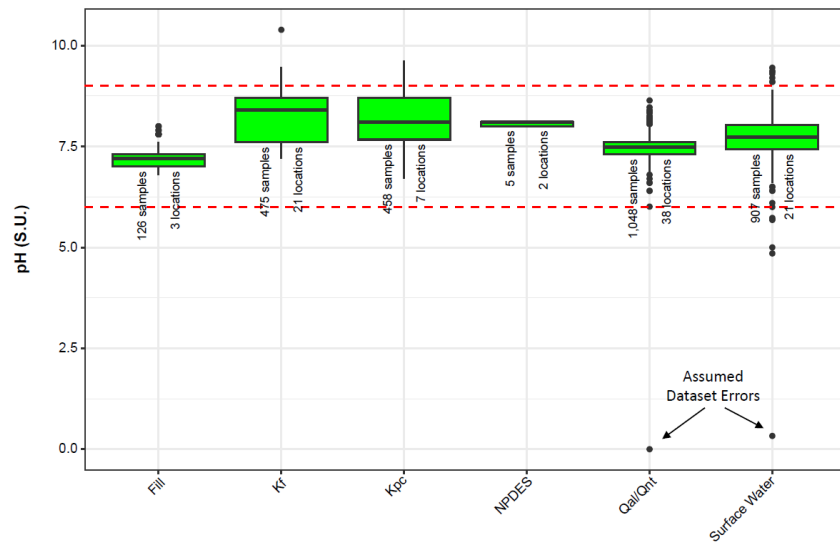
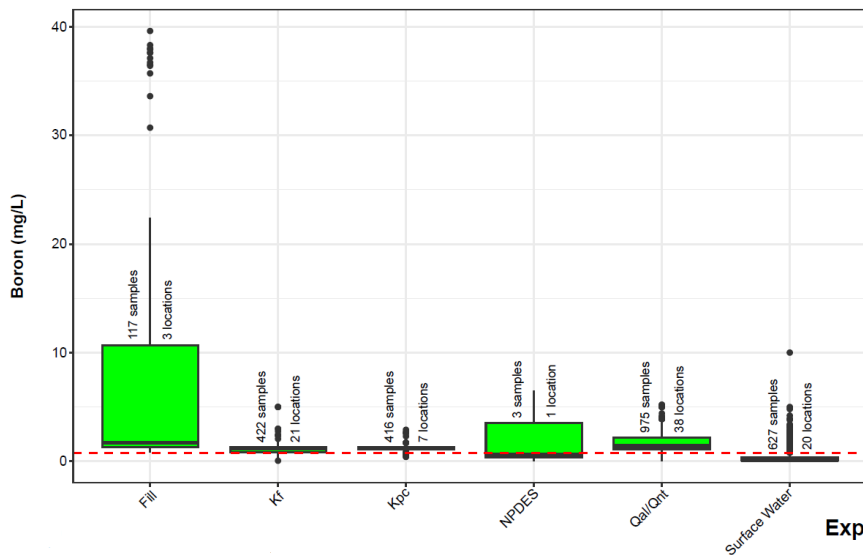
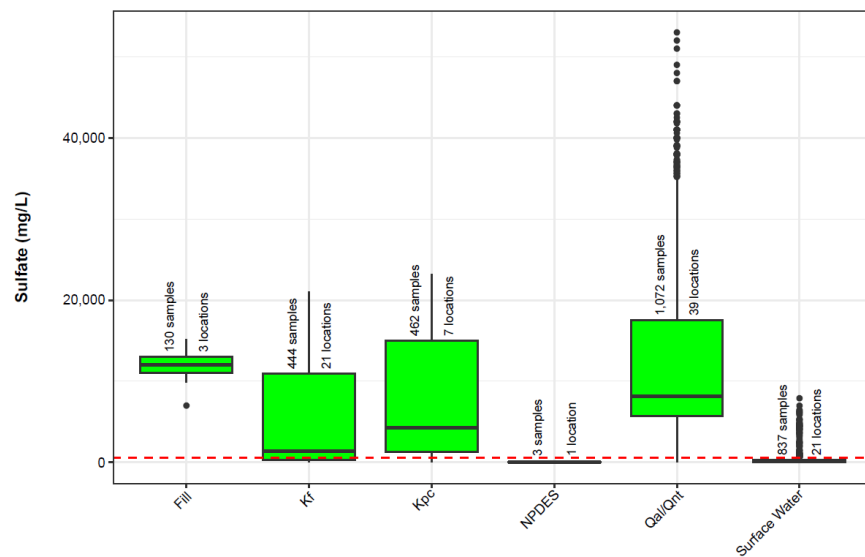
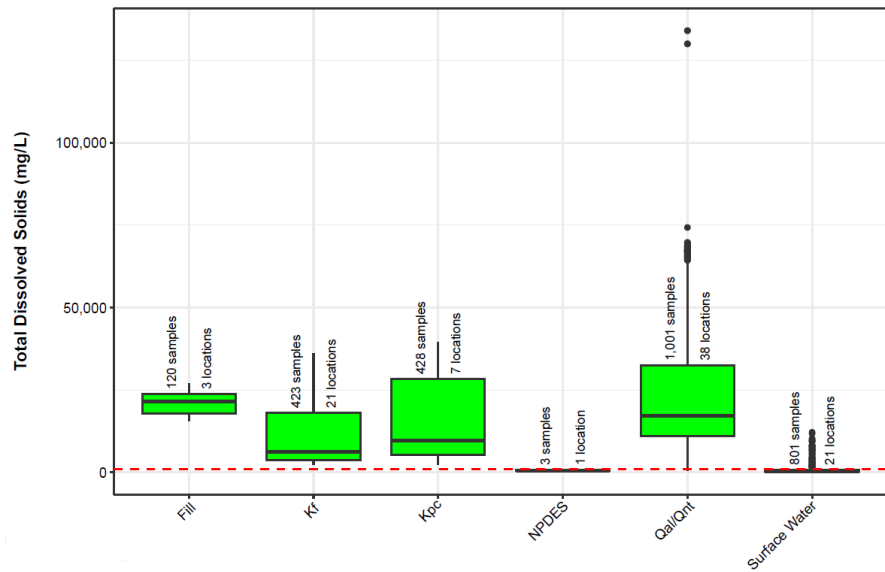
- Three water-bearing rock units
- Groundwater quality is poor, meaning constituent concentrations are higher than water quality standards
- Some concentrations appear to be naturally elevated
- Concentrations are greatest in alluvial groundwater
 - Upgradient groundwater is also of poor water quality but needs to be better defined
 - Historical discharges from the generating station to Westwater Arroyo



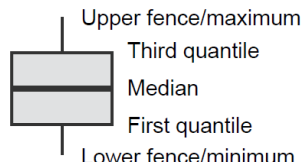
Alluvial Potentiometric Surface, Second Quarter 2024



Box and Whisker Plots

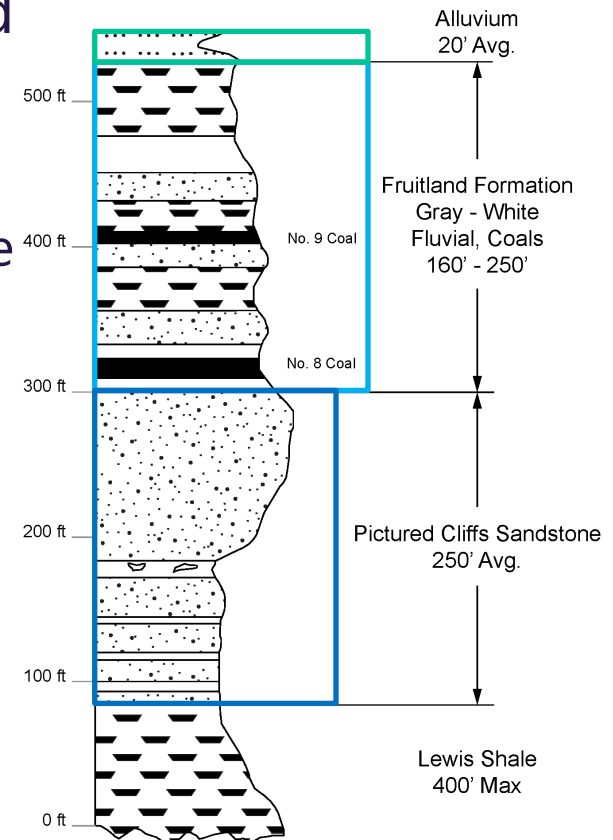


Explanation



Study Findings

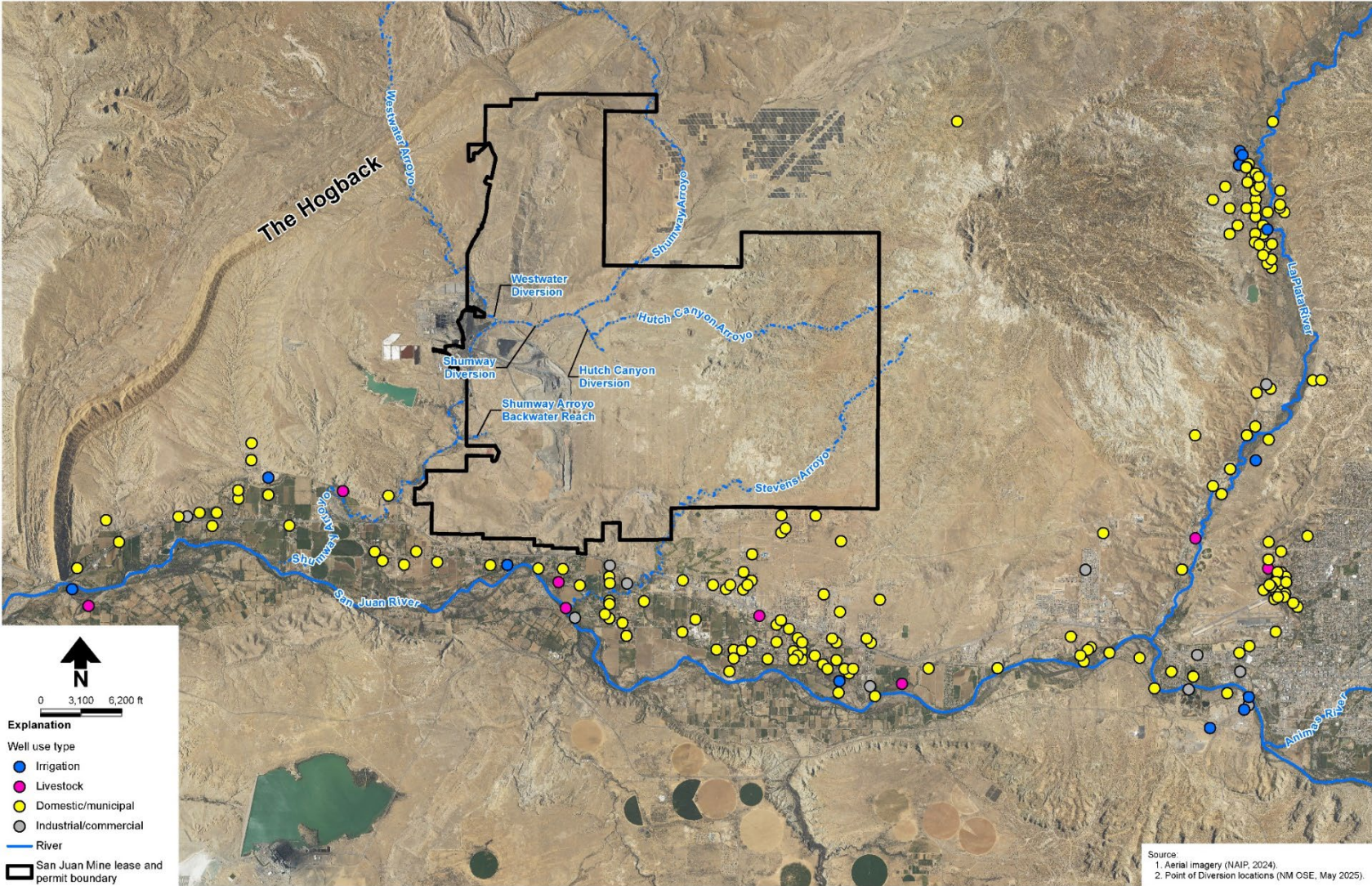
- Water-bearing Fruitland Formation and Pictured Cliffs Sandstone
 - Low permeability rocks with low well yields
 - Water levels expected to recover due to the cessation of mine dewatering
- Buried CCBs present a low risk to groundwater quality
 - Topic of UNM and USGS studies
 - Most constituent concentrations in CCB leachate are comparable to those of native groundwater
 - Long travel times (1000s of years) to San Juan River



Study Findings

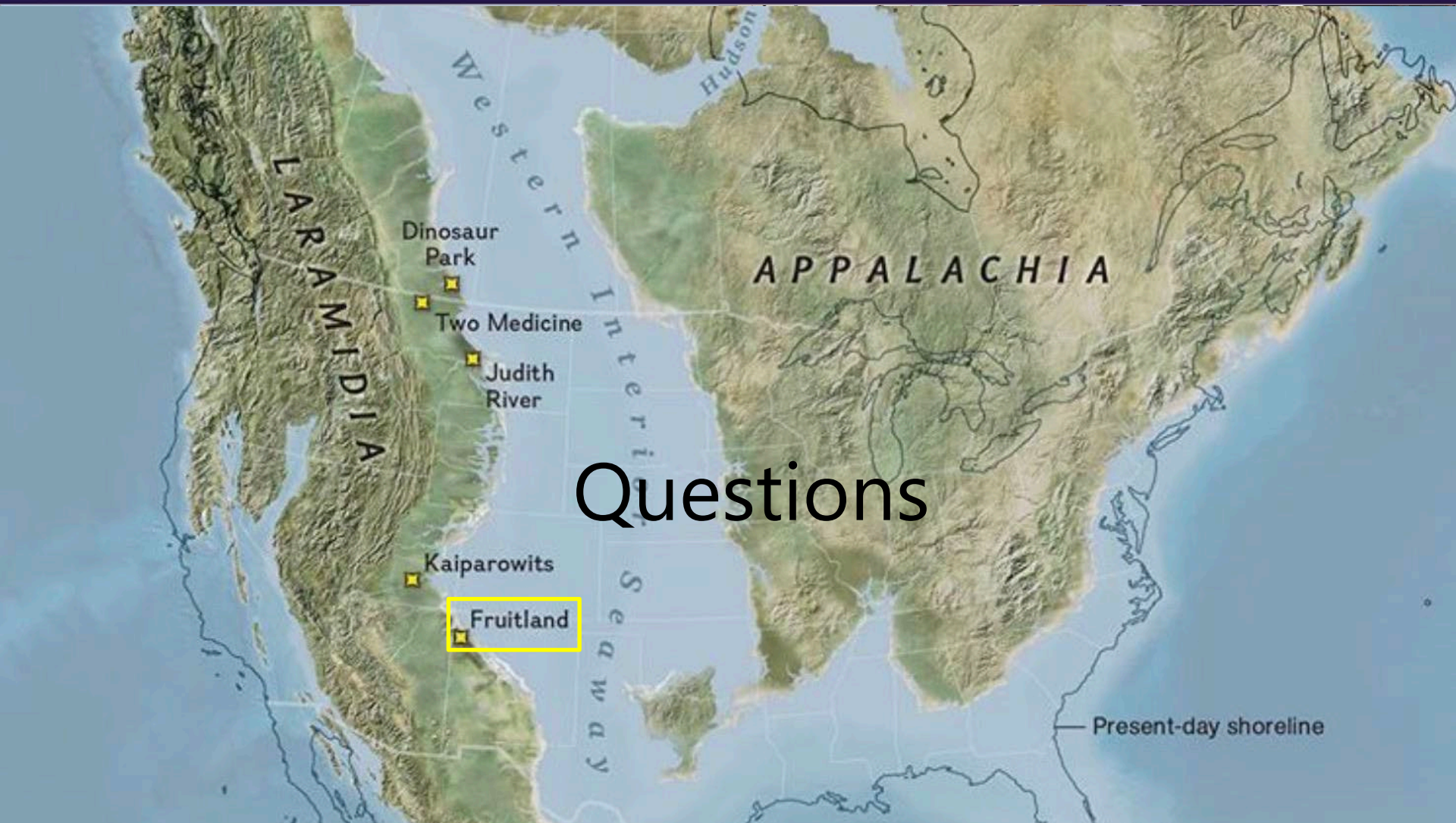
- Surface water quality is better than groundwater quality
 - Poorest quality along Westwater and Lower Shumway Arroyos
- Stormwater impoundments at the mine effective at preventing discharges to the arroyos
- Two areas of primary concern:
 - Alluvial groundwater beneath Westwater Arroyo and the Shumway Arroyo Backwater Reach
 - Sediment of Westwater Arroyo appears to be impacting surface water quality
- Investigation report identifies a few data gaps
 - Additional monitor wells

Potential Hydrologic Receptors



Reclamation and Restoration

- Existing mine closure plan is adequate
 - Primary reclamation method is to backfill, regrade, cover, and revegetate
- Expected to limit infiltration but groundwater levels are expected to recover
- Continued operation of Shumway Arroyo Recovery Trench important to containment
- Otherwise, long travel times (thousands of years) to San Juan River
- Clean cover should remove the need for the stormwater impoundments



Questions