



Environmental Management Cleanup Forum

Protecting Water Quality: A Comprehensive Approach

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Driving Cleanup • Honoring the Past • Strengthening Communities

Legacy Cleanup Overview

Focus Tonight
Protecting Water
Quality: Nexus
Between These
Two Programs



Groundwater monitoring & remediation
Surface water management
Surface/storm water sampling controls



Surface & subsurface investigation & remediation
Material Disposal Areas (MDAs) remediation
Disposition of remediation waste



Above-ground transuranic (TRU) waste
Below-ground TRU waste
Low-level waste (LLW) & mixed LLW

Setting the Stage: Why This Focus Matters

Protecting Water Quality: A Comprehensive Approach

- ✓ Protecting vital groundwater supplies
- ✓ Addressing contaminated soils to protect downstream water supplies
- ✓ Monitoring seven major watersheds across LANL
- ✓ Designing and implementing systems to manage stormwater

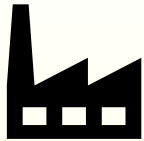
How We Protect Water Quality: High-Level Overview

Contaminant Migration

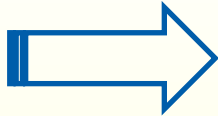
1. Contaminant
2. Pathway
3. Receptor

LANL Legacy Cleanup Options

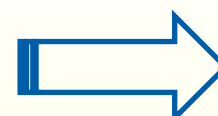
1. Remediate water
2. Remediate soils that could compromise water
3. Develop stormwater controls



**Contaminant
(Source)**



Pathway



Receptor

Goal: Protect the receptor from the contamination

Can address contamination at the source and/or break the pathway to the receptor;
with LANL legacy cleanup, water can be both the pathway and the receptor

Sampling helps determine
whether efforts meet defined goals

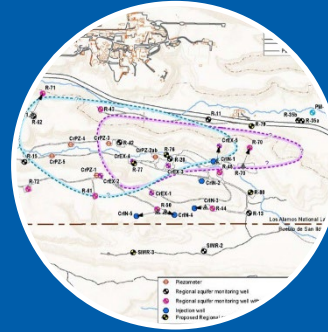
Groundwater At a Glance



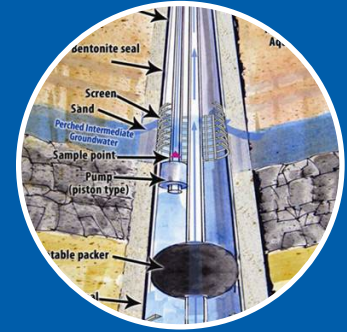
Critical source of regional water supplies



Areas of the regional aquifer contaminated by historical operations



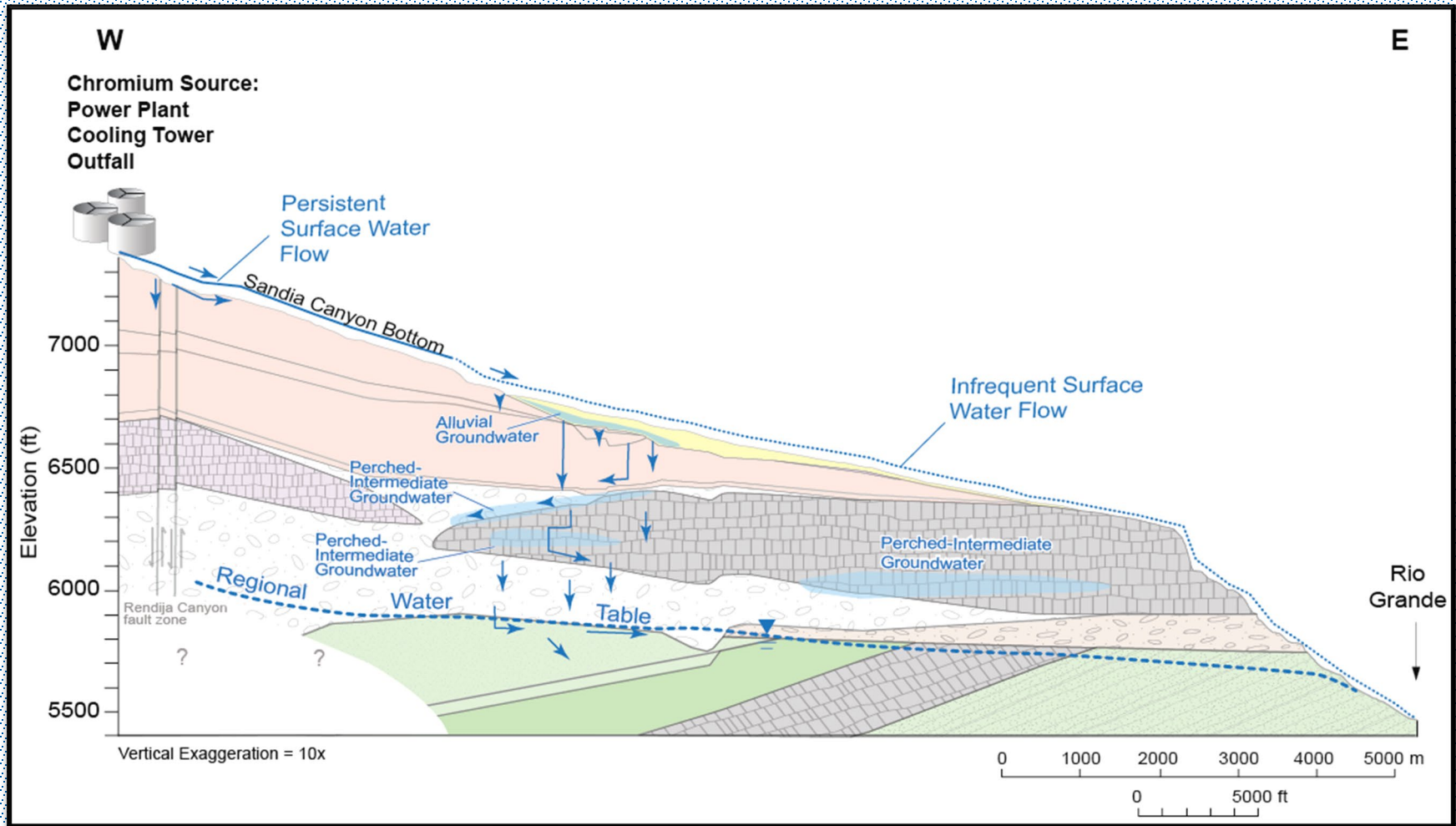
Plumes:
Hexavalent Chromium & Royal Demolition Explosive (RDX)



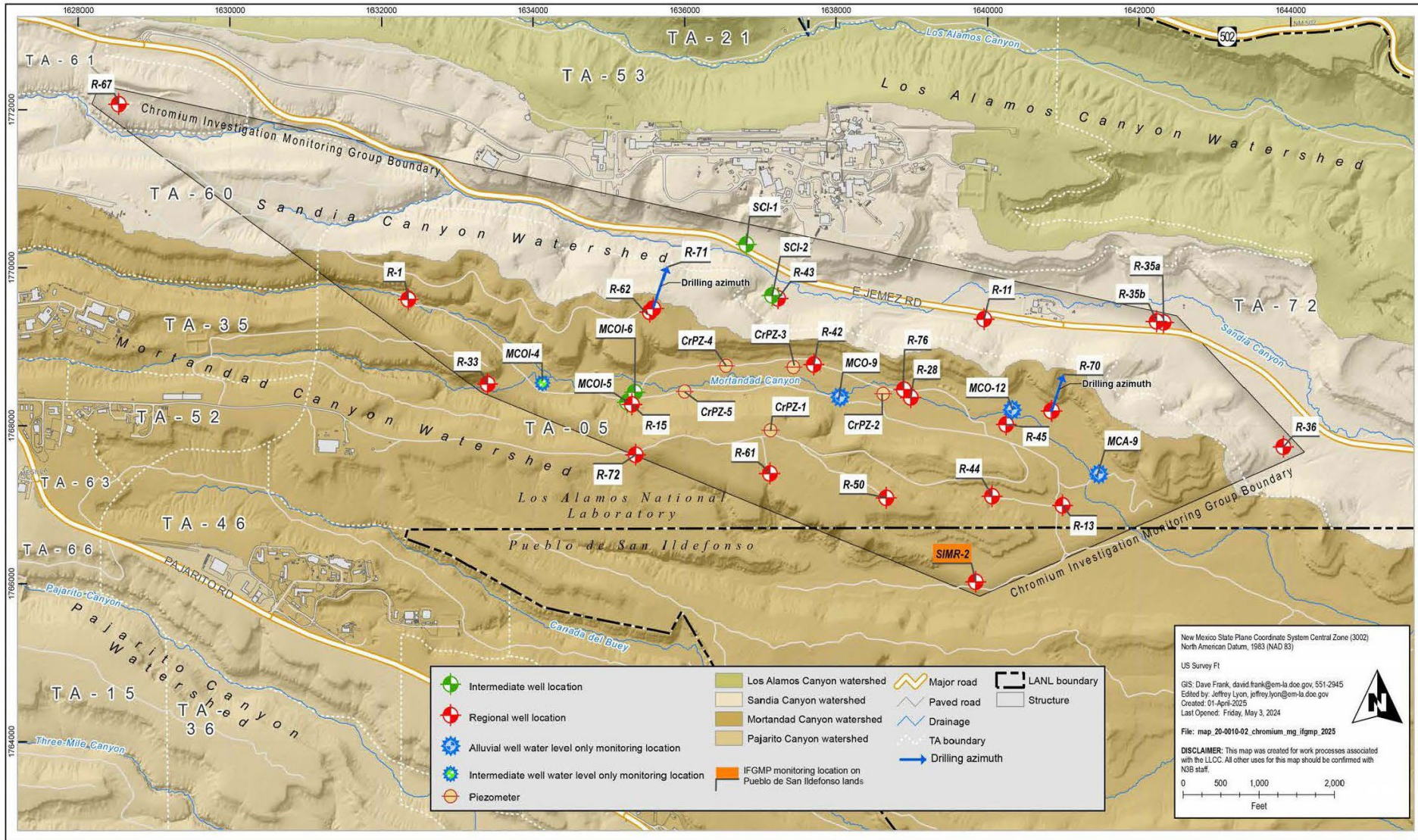
Program includes monitoring & treatment

Work Scope Regulated by New Mexico Environment Department

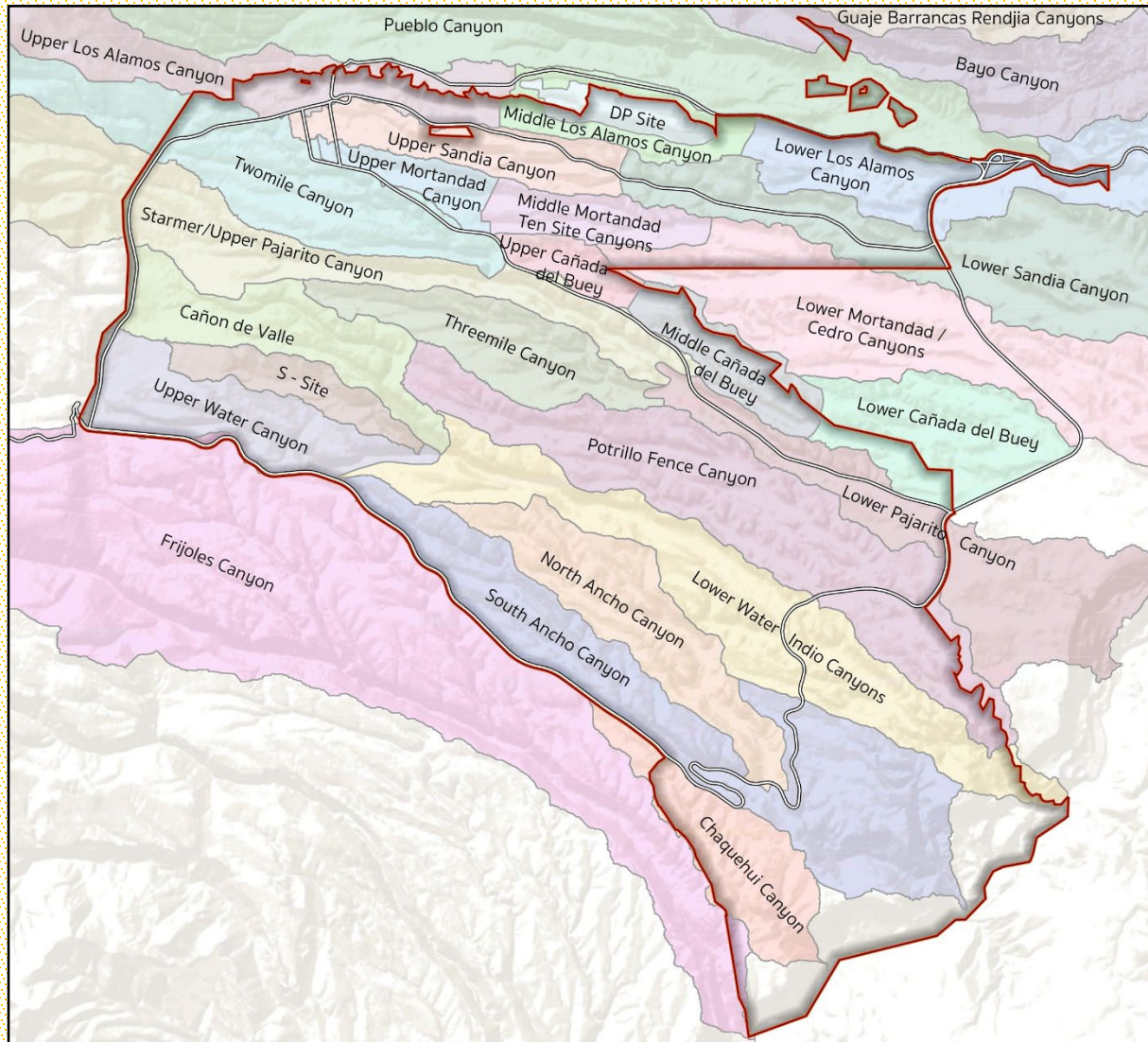
Groundwater Pathway Example: Hexavalent Chromium



Groundwater Monitoring: Hexavalent Chromium Plume



Aggregate Areas: Pivotal Part of Water Quality Protection Strategy

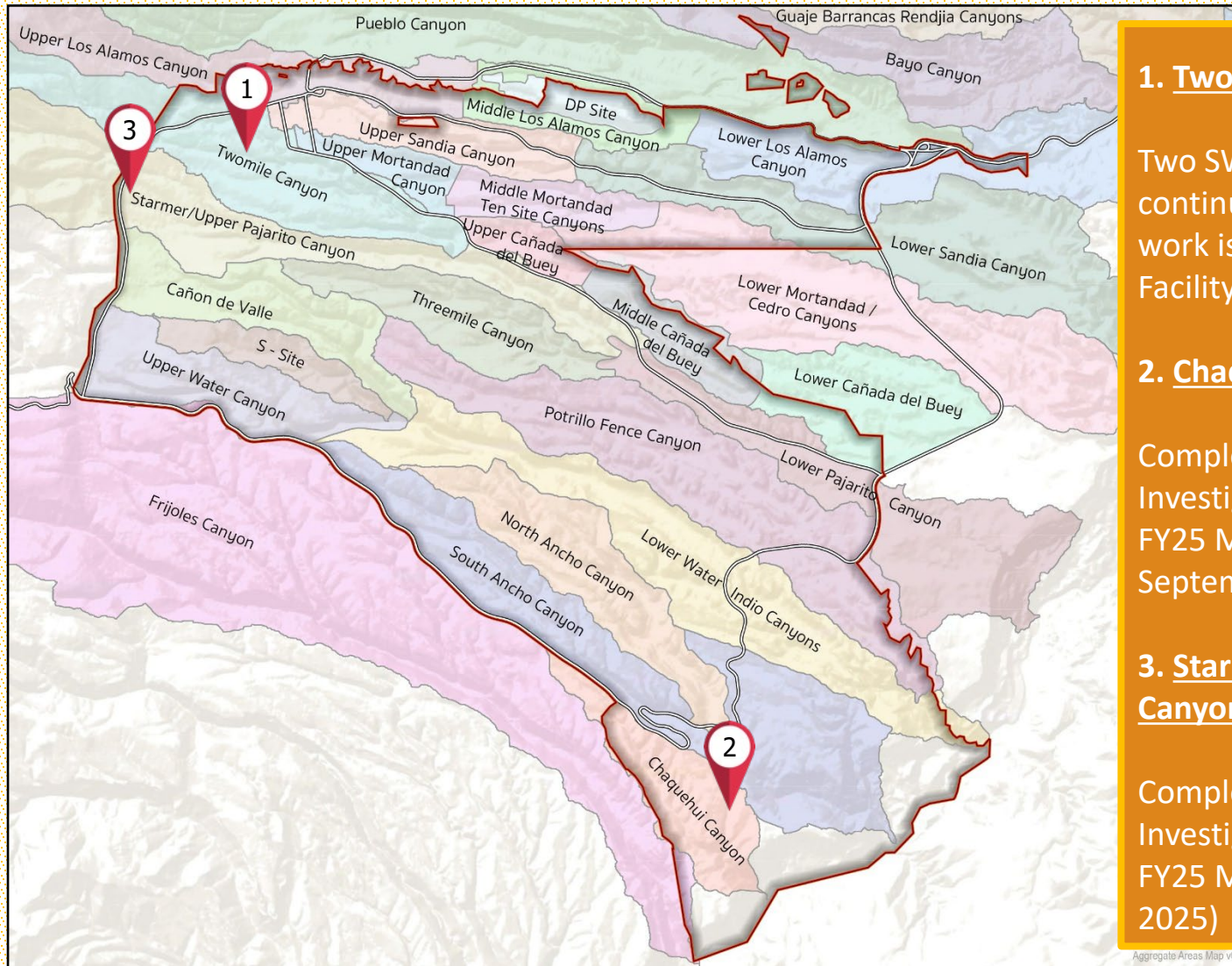


AGGREGATE AREA: An area in a single watershed or canyon comprised of at least one Solid Waste Management Unit or Area of Concern

CLEANUP GOAL: Protect human and ecological health by reducing or eliminating hazards posed by contaminated soil and debris while protecting environmentally sensitive resources

WORK SCOPE: Characterize historical contamination, remediate sites as needed, and ship waste off-site

Aggregate Areas: 2025 Field Work



1. Twomile Canyon

Two SWMUs with PCBs continue to be investigated; work is near Ion Beam Facility

2. Chaquehui Canyon

Completed field work; Investigation Report is a FY25 Milestone (due September 2025)

3. Starmer/Upper Pajarito Canyon

Completed field work; Investigation Report is a FY25 Milestone (due August 2025)

Aggregate Areas Work: In Pictures



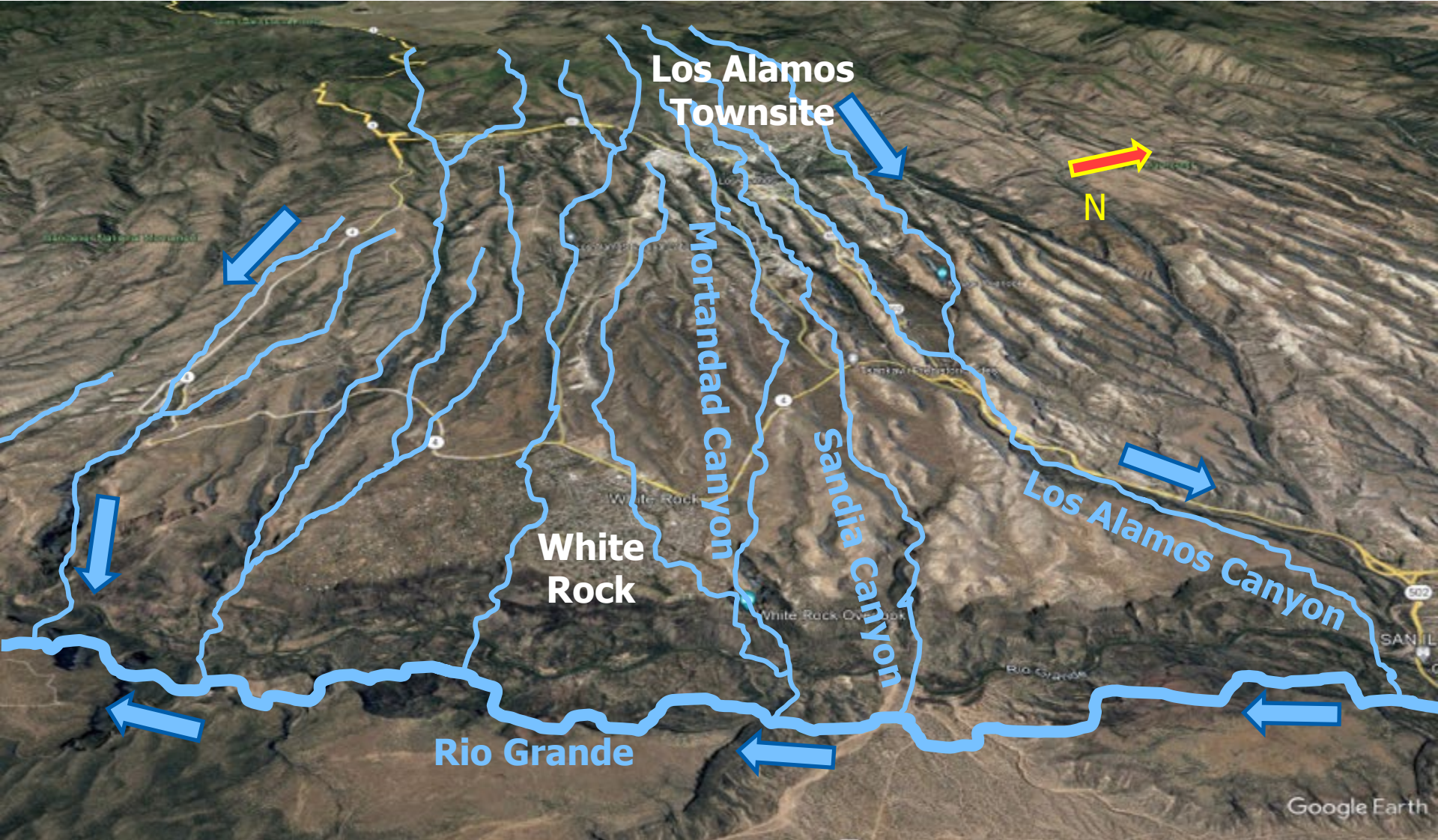
Twomile Canyon Aggregate Area
Hand Auger Sampling

Aggregate Areas Work: In Pictures

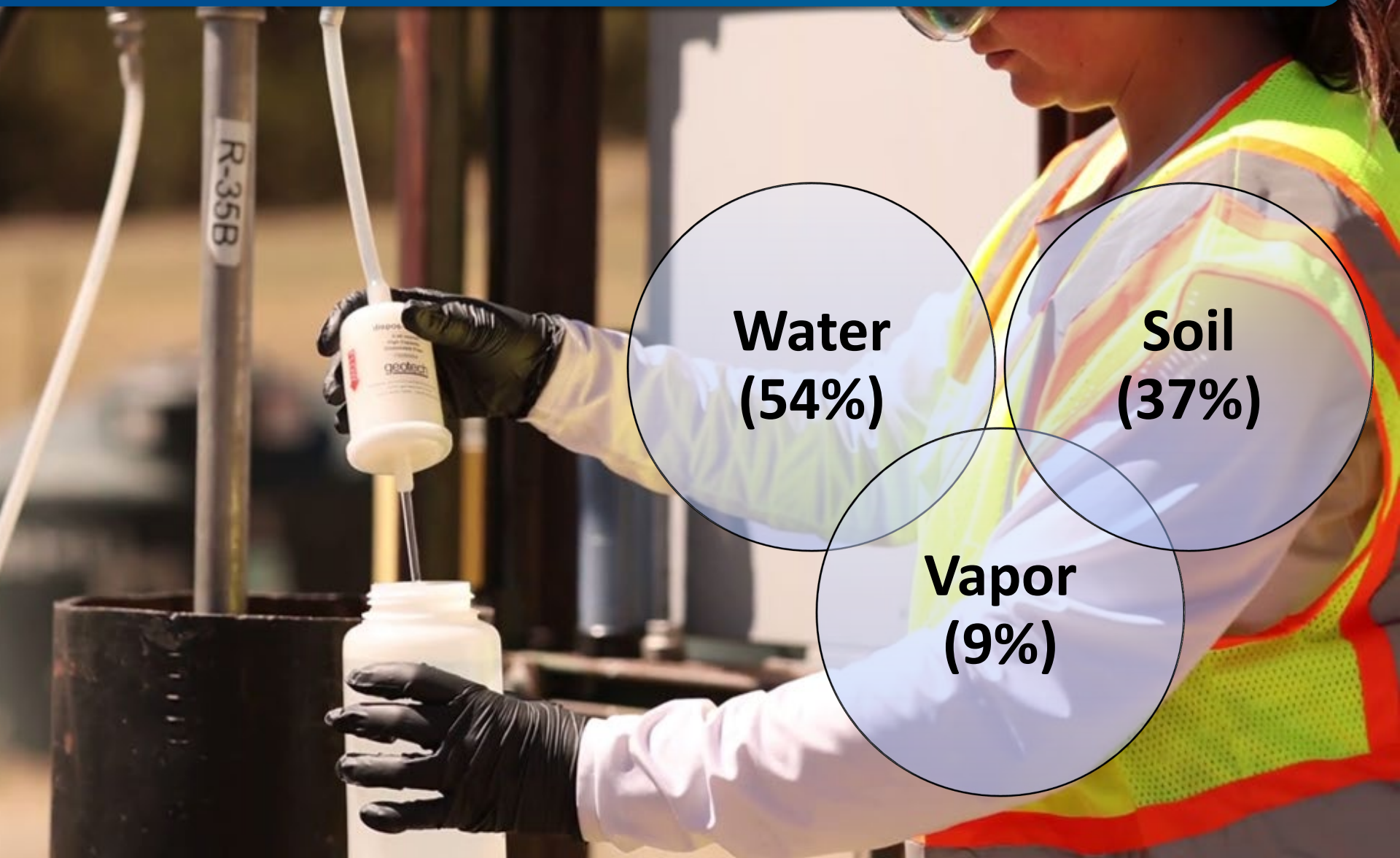


Chaquehui Canyon Aggregate Area
Asphalt Cutting

Surface Water: Flow Direction & Rio Grande



Sampling: Forecasting Issues & Compliance



What Sampling Tells Us...

Through sampling we...

1

Identify the presence or absence of certain constituents and potential impacts

2

Define actions to protect human health and the environment

3

Confirm cleanup is effective (including meeting water quality standards)

Sampling and Aggregate Area Videos

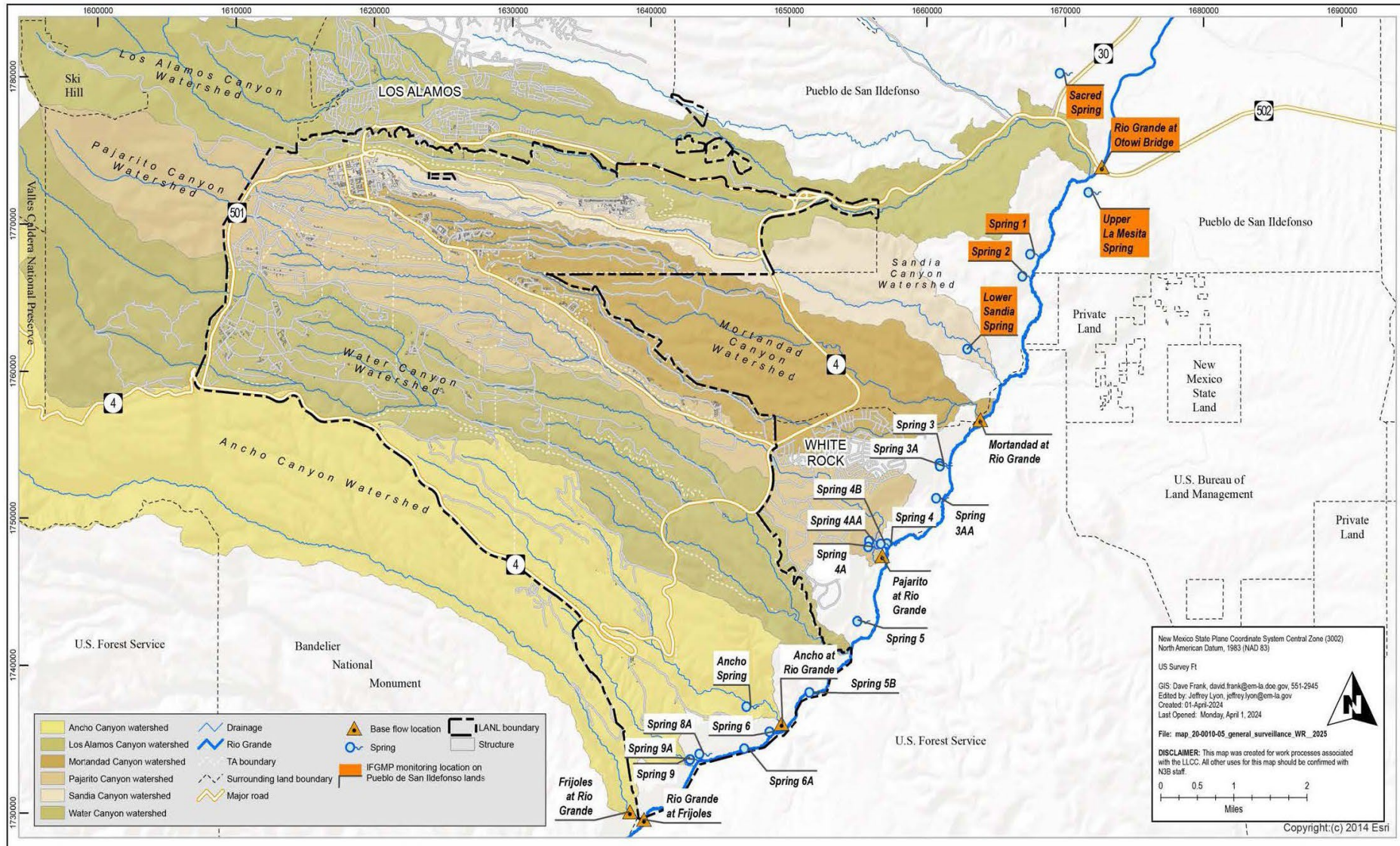
Sampling

- <https://vimeo.com/1040663844?share=copy>

Aggregate Areas

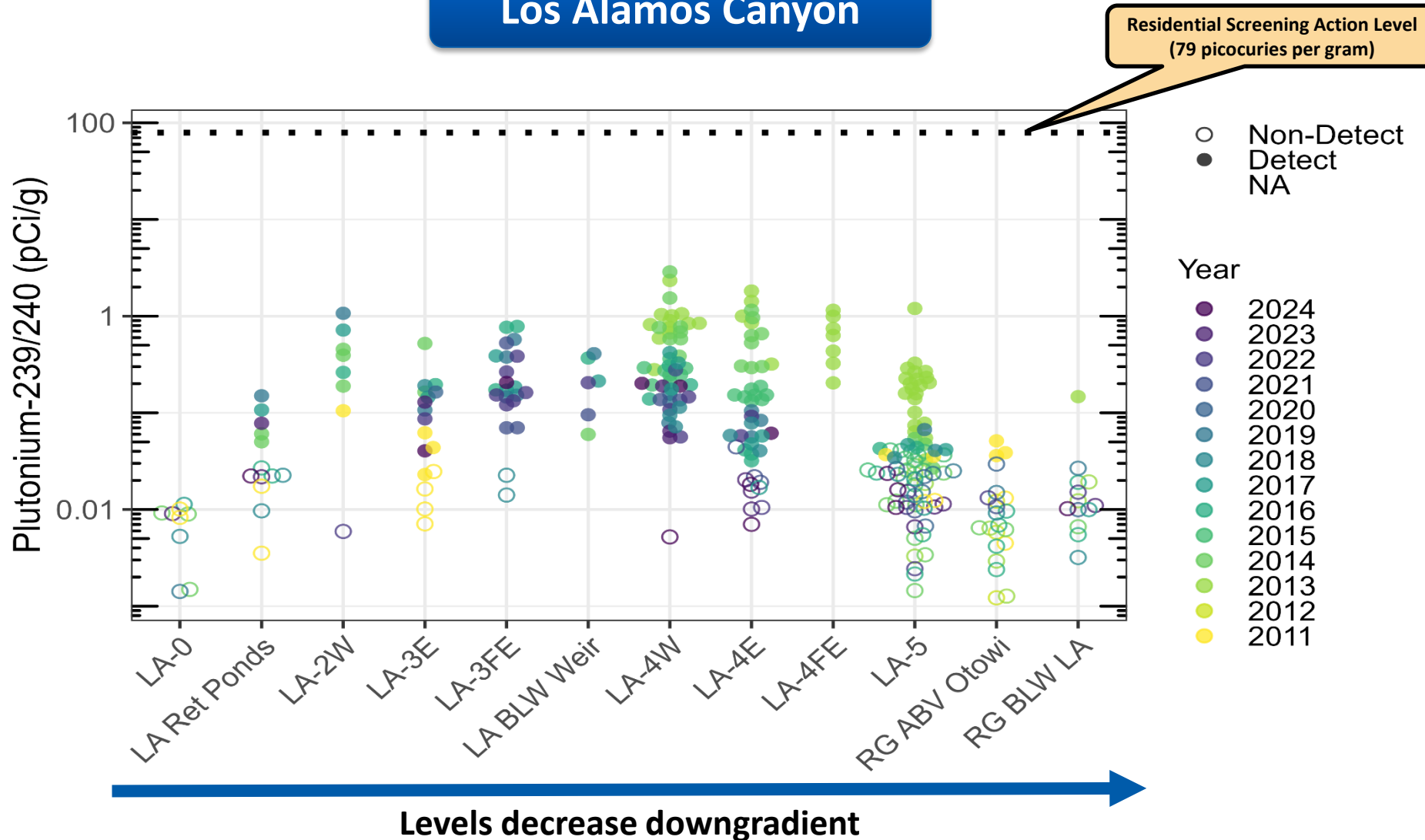
- <https://vimeo.com/1010065061/5631c36586?share=copy>

General Surveillance: White Rock Canyon



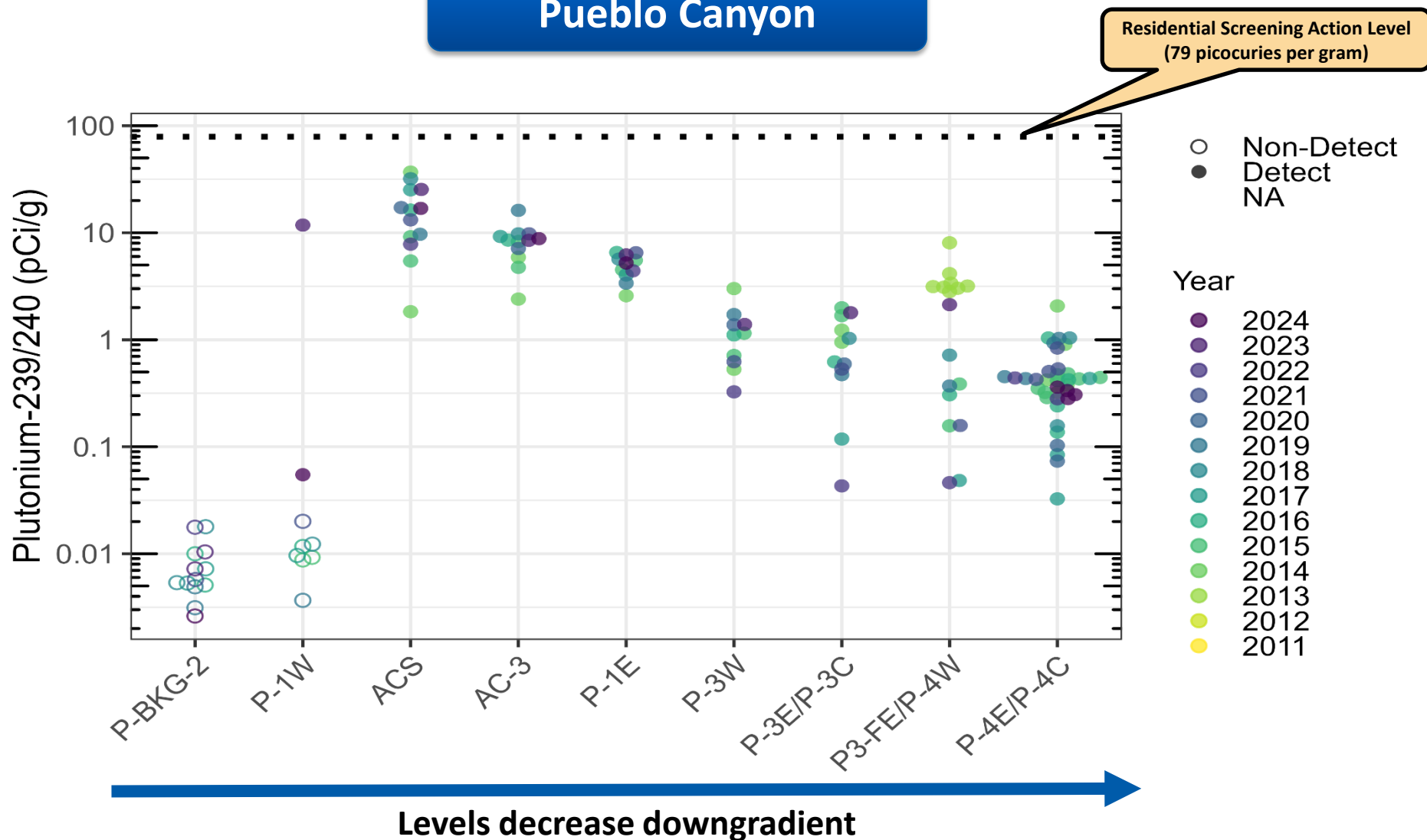
What Sampling Tells Us: An Example

Los Alamos Canyon



What Sampling Tells Us: An Example

Pueblo Canyon

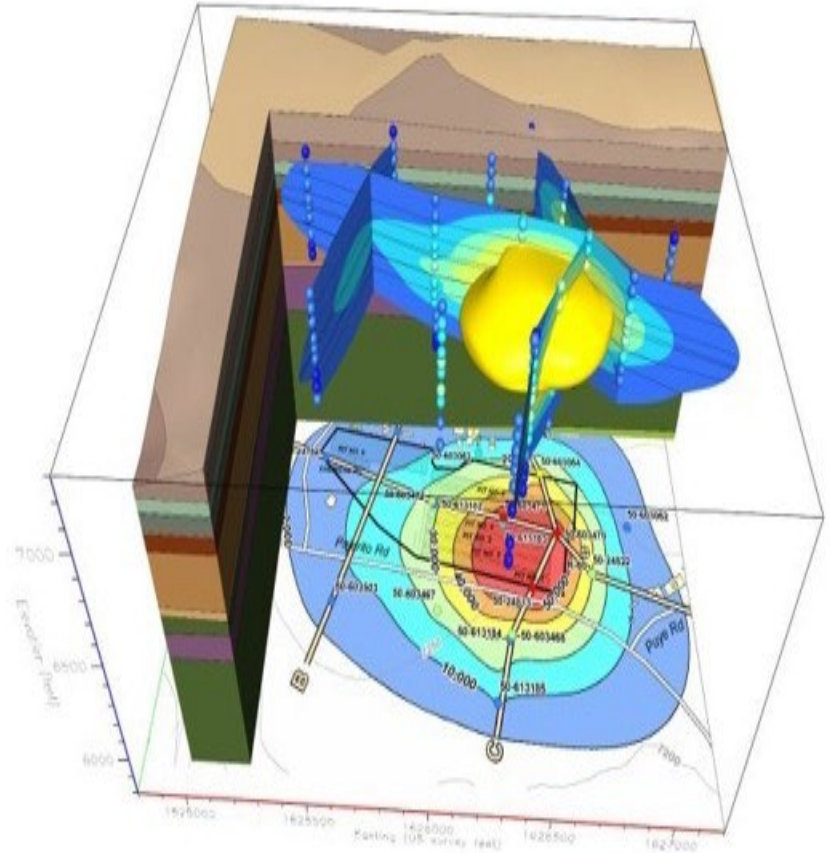


Sampling at Depth: Below a Material Disposal Area

Core and surface soil sampling to characterize nature and extent of contamination

Monitoring

- Vapor-phase contaminant monitoring (volatile organic compounds and tritium) beneath disposal site
- Regional aquifer monitoring



Vapor-phase VOC plume in unsaturated zone beneath the material disposal area

Stormwater Management: Twomile Canyon Aggregate Area

- This site monitors exhaust emissions and outfall
- 10 acres of developed land comprise this drainage area
- The corrective action consisted of expanding an existing sediment basin



Stormwater Management: Starmer/Upper Pajarito Canyon Aggregate Area

- This site monitors a former building outfall
- The corrective action consisted of installing three compost log rows and a base course diversion berm



Stormwater Management: Upper Sandia Canyon Aggregate Area

- This site monitors cooling tower soil contamination and a former outdoor transformer storage area
- The corrective action consisted of installing a shotcrete cap

Shotcrete Video

Shotcrete

- <https://vimeo.com/1041448010/782e1326a3?share=copy>

By the Numbers: May 2018 – March 2025

459M

**Gallons of
Groundwater
Containing
Hexavalent
Chromium Treated**

48,486

**Water, Soil &
Vapor Samples
Collected**

435

**Contaminated Soil
Sites Addressed**

Success Over Time: A Snapshot

Through these efforts, we are...

- Protecting water supplies
- Implementing a comprehensive monitoring program to ensure remedial actions remain protective
- Continuing investigations to define extent of contamination
- Taking action to reduce contamination levels while working on remedies
- Meeting regulatory milestones
- Engaging regularly with stakeholders



