

NMED

New
Mexico
Environment
Department



EVALUATION OF CHROMIUM PLUME LOS ALAMOS NATIONAL LABORATORY

November 3,
2017

Bruce Yurdin
Director, Water Protection Division
New Mexico Environment Department

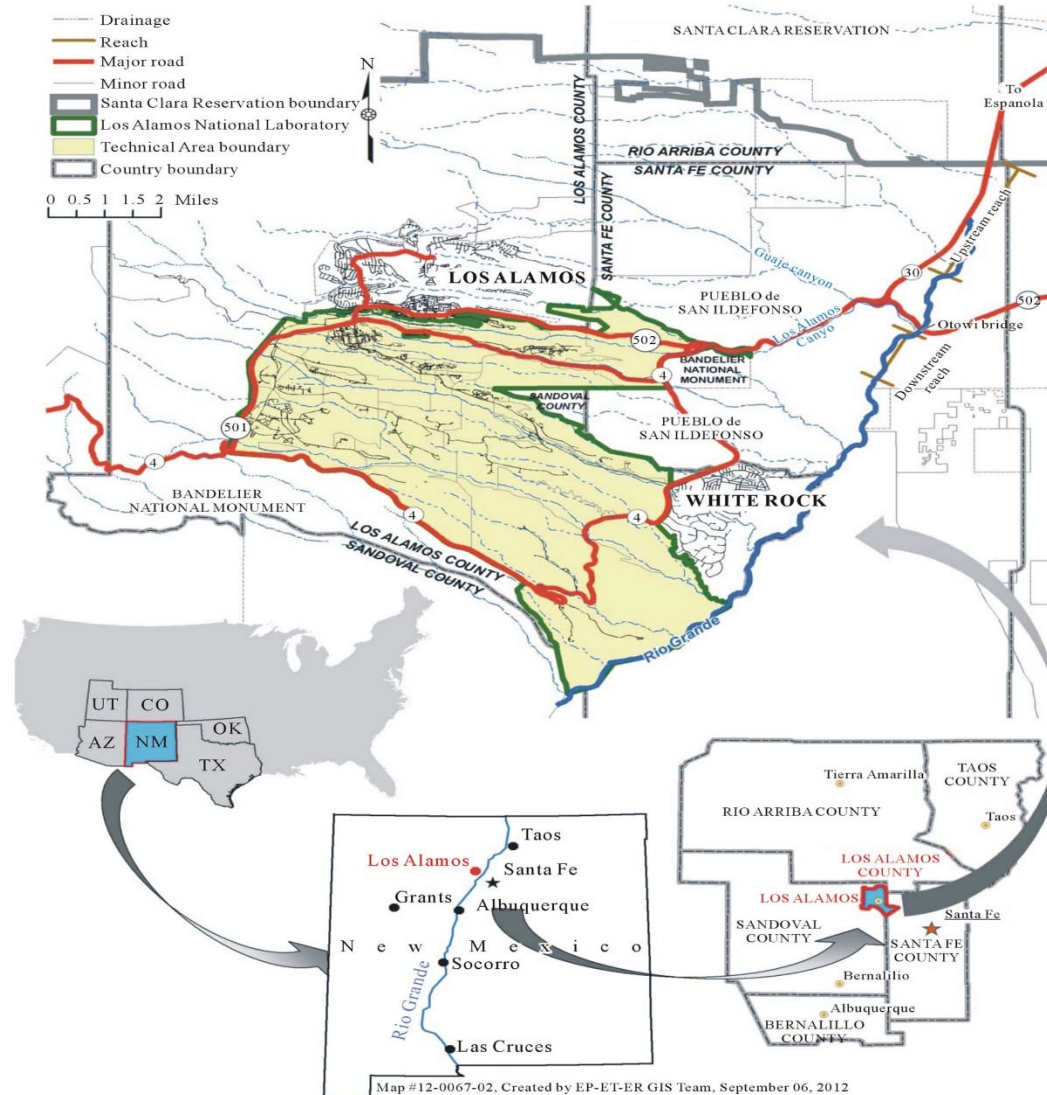
Objectives of Presentation

2

- Describe Chromium (Cr) plume geometry and location of Los Alamos County supply wells.
- Review Consent Order/RCRA Facility Investigation (RFI) Interim Measure Work Plan for Chromium Plume Control, and the NMED Groundwater Quality Bureau discharge permit.
- Discuss Cr occurring at CrIN-6.

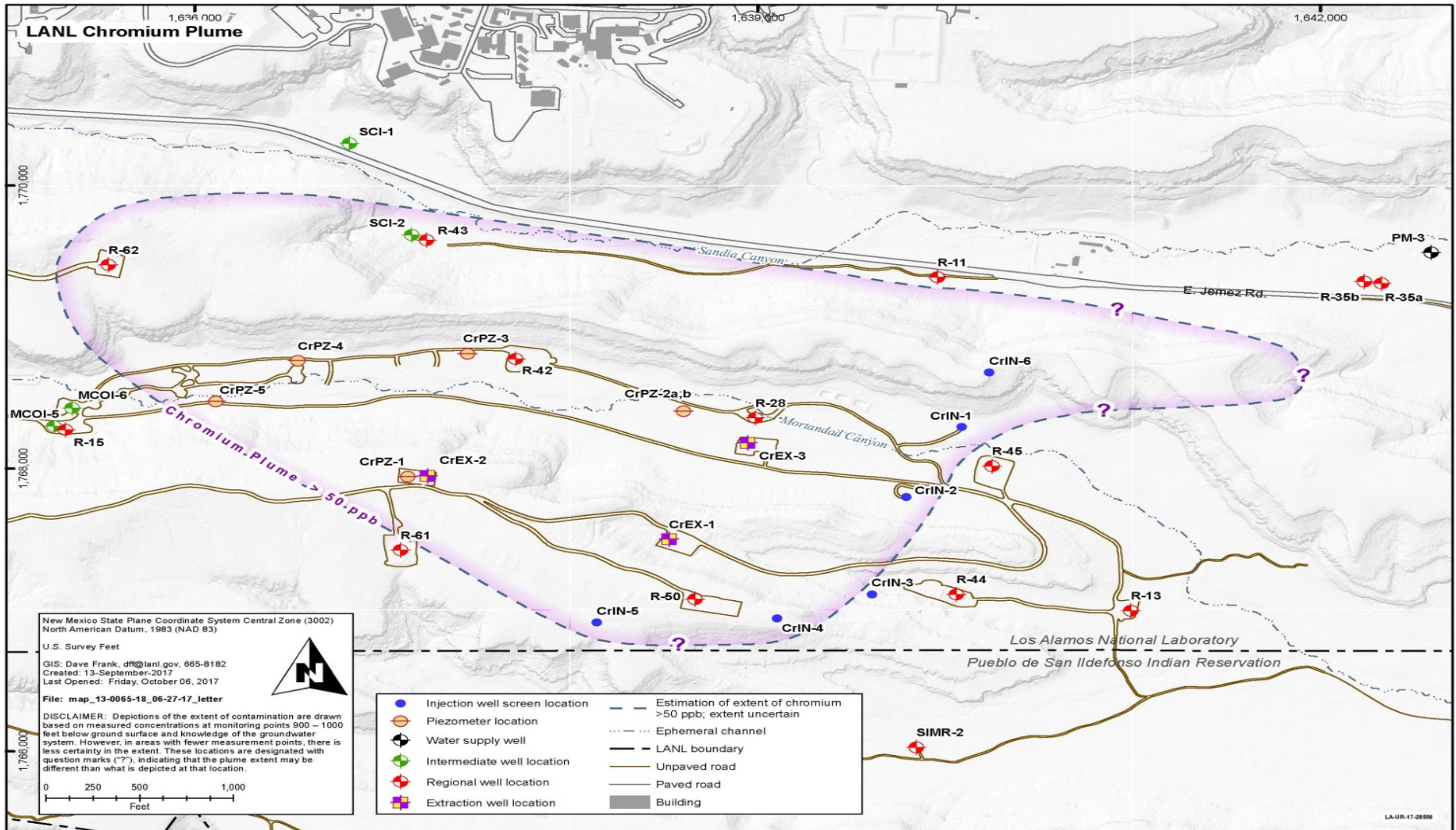


Location Map for Los Alamos National Laboratory



LANL Wells and Cr Plume Configuration

4



2015 LANL Interim Measures Work Plan

5

- NMED is working closely with LANL and DOE on the implementation of LANL's 2015 Interim Measures (IM) Work Plan, as required under the Consent Order, as required under the federal Resources Conservation and Recovery Act (RCRA).
- Pumped and treated water is land-applied or injected in accordance with approved discharge permits issued by the NMED's Ground Water Quality Bureau.
- Installation of three Cr extraction wells and six injection wells has been completed by LANL.
- Installation of a central Cr treatment plant and associated influent and effluent piping have been completed by LANL.



2015 LANL Interim Measures Work Plan

6

- Numerous multi-well tests consisting of aquifer pumping, injection, and monitoring, will be performed by LANL this fall and winter.
- NMED and LANL closely monitor all Los Alamos County drinking water production wells. All drinking water wells are in compliance with Safe Drinking Water Act standards.
- Three of the production wells are located beyond the outer perimeter of the Cr plume. These include Pajarito Mesa PM-3, PM-4, and PM-5.



2015 LANL Interim Measures Work Plan

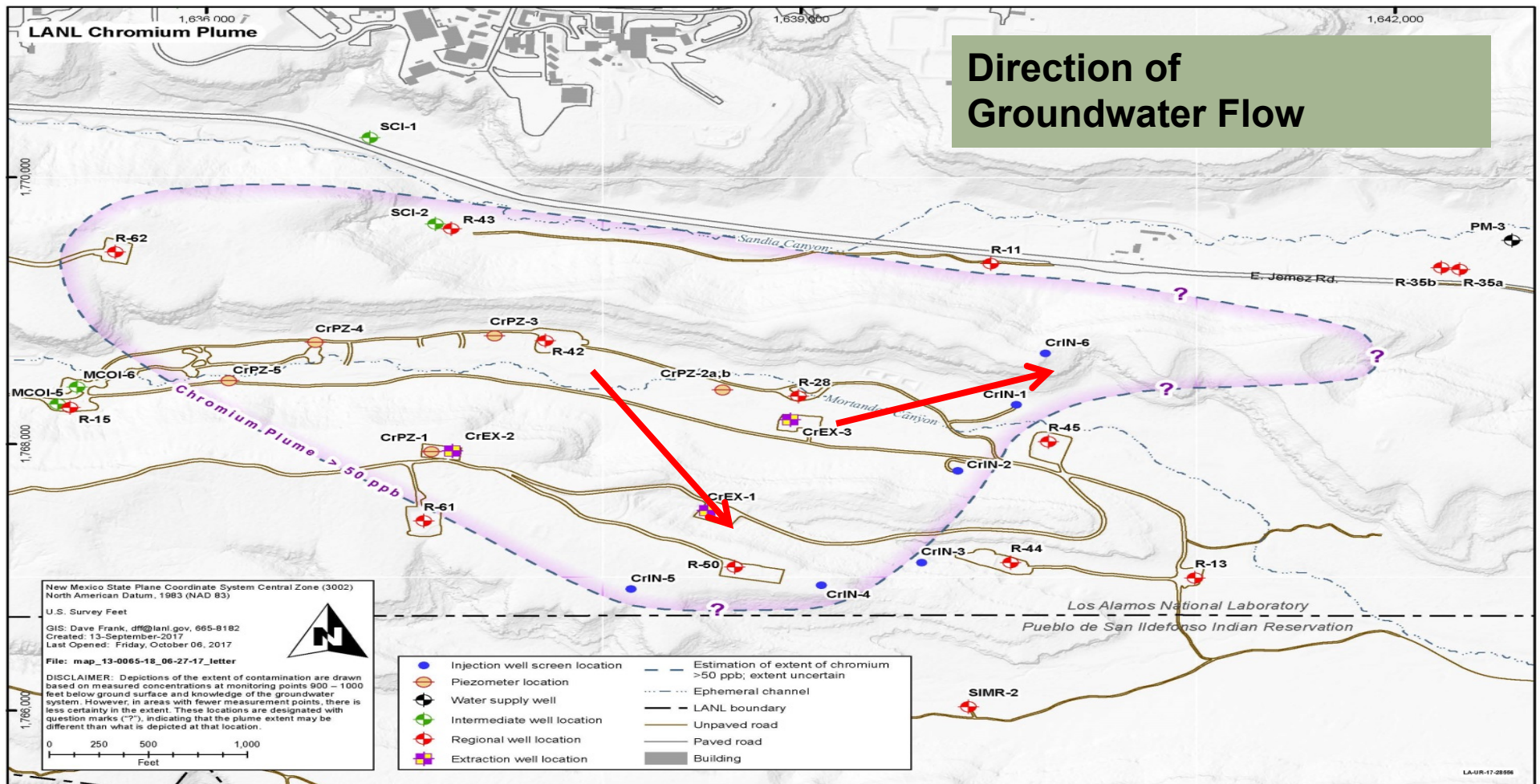
7

- A pump, treat, and injection system for Cr for functional performance was just completed by LANL.
- Concurrent with the Interim Measures, in-situ biological and chemical-amendment injection tests are currently underway at regional aquifer wells R-28 and R-42 using molasses and sodium dithionite, respectively.
 - Both molasses and sodium dithionite are used widely in other Cr spills.
 - Results in other cases indicate Cr(VI) will be reduced to <50ppm.
- The two amendments convert toxic Cr(VI) to non-toxic Cr(III) in short periods of time.



Cr occurring at CrIN-6

- CrIN-6 has a similar geochemical signature to the center of the plume, including wells R-28, CrEX-2, and CrPZ-1, supporting Cr plume migration to the east and northeast. This geochemical relationship significantly emphasizes the need for protection of PM-3.



Path Forward

9

- Continue to critically evaluate migration of Cr in the regional aquifer at LANL, including investigation at CrIN-6 to protect PM-3.
- Use the Consent Order to thoroughly investigate the extent of Cr contamination east-northeast of CrIN-6.
- Evaluate operational testing of aquifer investigation remediation, including hydraulic control of plume migration.
- Continue working with LANL to evaluate pilot scale testing of biological and chemical amendments to transform toxic Cr(VI) to nontoxic Cr(III).



Questions?

10

Bruce Yurdin

Director, Water Protection Division

New Mexico Environment Department

Bruce.Yurdin@state.nm.us

(505) 827-2855

