INFORMATION SHEET

Chromium Contamination in Groundwater

ER2006-0444
LALP-06-078

BACKGROUND

Routine groundwater monitoring conducted in 2005 led to the identification of chromium contamination in regional groundwater at monitoring well R-28 located in Mortandad Canyon. Chromium concentrations at that well are approximately 400 µg/L (ppb) exceeding the New Mexico Environment Department (NMED) and Environmental Protection Agency standards of 50 µg/L and 100 µg/L, respectively. The Laboratory has prepared and is implementing an "Interim Measures Work Plan" pursuant to a requirement from the NMED.

Objectives of the Interim Measure Work Plan

- Determine the primary source(s) of chromium contamination and the nature of operations associated with releases
- Characterize the present-day spatial distribution of chromium and related constituents
- Collect data to evaluate the geochemical and physical/hydrologic processes that govern chromium transport
- Collect and evaluate data to help guide subsequent investigations and remedy selection

POTENTIAL SOURCES OF CHROMIUM CONTAMINATION

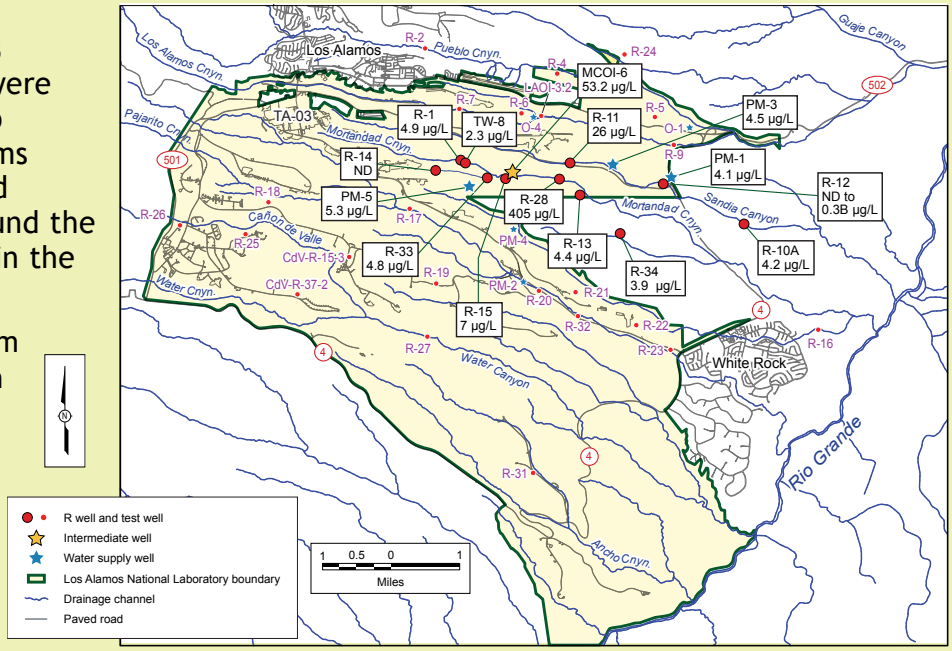
Multiple potential sources of chromium contamination have been identified including electroplating, photoprocessing, and use as a corrosion inhibitor in cooling-tower systems.

The highest chromium usage is believed to be associated with use in the cooling-tower system in TA-03 at the head of Sandia Canyon where potentially large volumes (potentially up to 37 lb/day) of chromate (the highly soluble/mobile form of chromium) were released along with large volumes of water.

EXTENT OF CONTAMINATION IN REGIONAL GROUNDWATER

In January and February 2006, 17 groundwater monitoring wells and 3 production wells surrounding R-28 were sampled for chromium speciation to refine our understanding of the forms of naturally occurring chromium and chromium contamination and to bound the extent of chromium contamination in the groundwater.

- Results showed that of the chromium present in the samples, 100% was in the hexavalent form.
- A background of approximately 3-5 µg/L hexavalent chromium is present beneath the Pajarito Plateau.
- No elevated chromium levels were detected in water-supply wells.



GW Monitoring Results for Chromium

Chromium Contamination in Groundwater

WORK PLAN SCOPE

A series of investigation activities will be implemented in 2006. These activities will help determine the spatial extent, and fate and transport, of chromium contamination, and support eventual remedy selection.

- Conduct quarterly sampling of selected regional aquifer and intermediate groundwater wells
- Investigate surface water and alluvial groundwater loss in Sandia Canyon
- Install six core holes in lower Sandia Canyon
- Install five alluvial wells in lower Sandia Canyon
- Determine chromium distributions in the upper vadose zone from archival and new cores collected from Los Alamos, Sandia, and Mortandad Canyons
- Rehabilitate well R-12 in lower Sandia Canyon
- Refine the understanding of background concentrations and speciation of chromium in groundwater
- Collect and synthesize data and information to support conceptual model development and remedy selection

R-12 Well

SCHEDULE

The initial phase of fieldwork is scheduled to begin in May 2006. With the exception of ongoing groundwater monitoring, the majority of the fieldwork is expected to be complete by late summer–early fall of 2006. An investigation report and a work plan for the next phase will follow.

COMMUNITY INVOLVEMENT, INFORMATION, AND ASSISTANCE

LANL is committed to gathering community input, involvement, and assistance in our groundwater monitoring program. Presentations and other communications venues on groundwater monitoring are available to interested persons.

Opportunities For Public Involvement

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