WATER RECHARGE THROUGH THE PAJARITO FAULT ZONE, UPPER PAJARITO CANYON, LOS ALAMOS, NEW MEXICO

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Abstract

Assessing ground-water recharge through the Pajarito fault zone is incomplete because of the paucity of data. The present conceptual hydrogeologic model for the Pajarito fault zone is incomplete because of the paucity of data. This paper presents an overview of the preliminary results of a new study to determine if surface water flow is the upper reach of a previously unknown conduit within the Pajarito fault zone. Such a conduit could serve as a ground-water recharge source to the Pajarito fault zone at a headwater area of the upper Pajarito River near Pajarito Springs. A new conduit would result in a new drainage basin for the upper Pajarito River.

Physical processes of ground-water recharge to supplies beneath the Los Alamos region are not well understood. In particular, there is limited knowledge concerning the role of the Pajarito fault zone as a ground-water recharge mechanism ( conduit and/or barrier). The present conceptual hydrogeologic model for the Pajarito fault zone is incomplete because of the paucity of data. The Pajarito fault zone is a topographically complex, tectonically active, fault zone with a major slip event in 1999 that may have resulted in a major event in 1999 that may have resulted in a major increase in ground-water recharge to the Pajarito fault zone at a headwater area of the upper Pajarito River near Pajarito Springs. A new conduit could result in a new drainage basin for the upper Pajarito River.

DATA SOURCES:
Map Produced by K. Granzow, Sept, 2005

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Study Area

PC SPRING
Fault
500 ft Contour
³
Study Area

G
Drainage
Flow
US Geological Survey
US Department of the Interior,
NMED DOE Oversight Bureau

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Conclusions

1. Seepage-run data show loss of 114 and 134 lpm across the PFZ.
2. Water-balance measurements at PFZ (PA-10.6) and below springs nearly equivalent.
3. Localized seepage provides some recharge to the springs.
4. Hydrochemical data collected from 1997 through 2003 indicate the PFZ is a recharge conduit between PA-10.6 and some springs (Homestead and Starmer).
5. Water quality at PA-10.6 is impacted by monsoon flooding after the Cerro Grande fire, impacts traced to Homestead and Starmer springs to less than one month.

Bulldog Spring, which contains LANL derived contaminants, is discharged by a nearby source with minor contributions from PA-10.6.