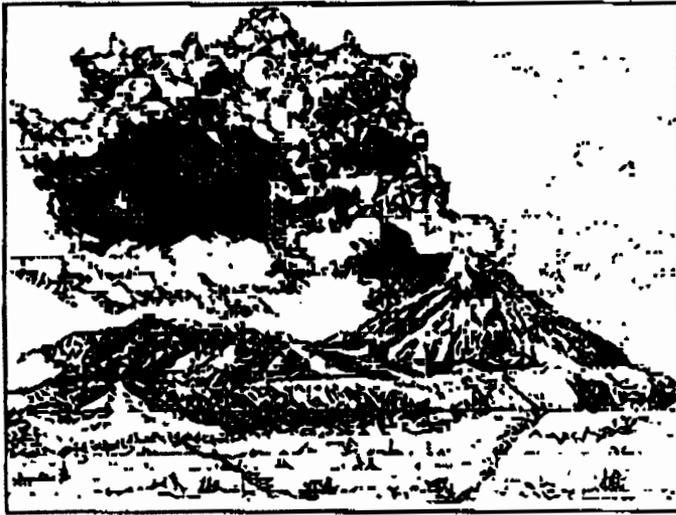


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Los Alamos National Laboratory



Outgoing Facsimile Transmittal

EES-1

**Geology/Geochemistry
P. O. Box 1663, MS D462
Los Alamos, NM 87545**

Telecopler Number
505-665-3285

Confirmation Number
505-667-7590

TO: Terri Davis NMED
FAX 827-1544

FROM: D. Broxton

RE: Terri,
Here is the material I
promised to send you.
Dave

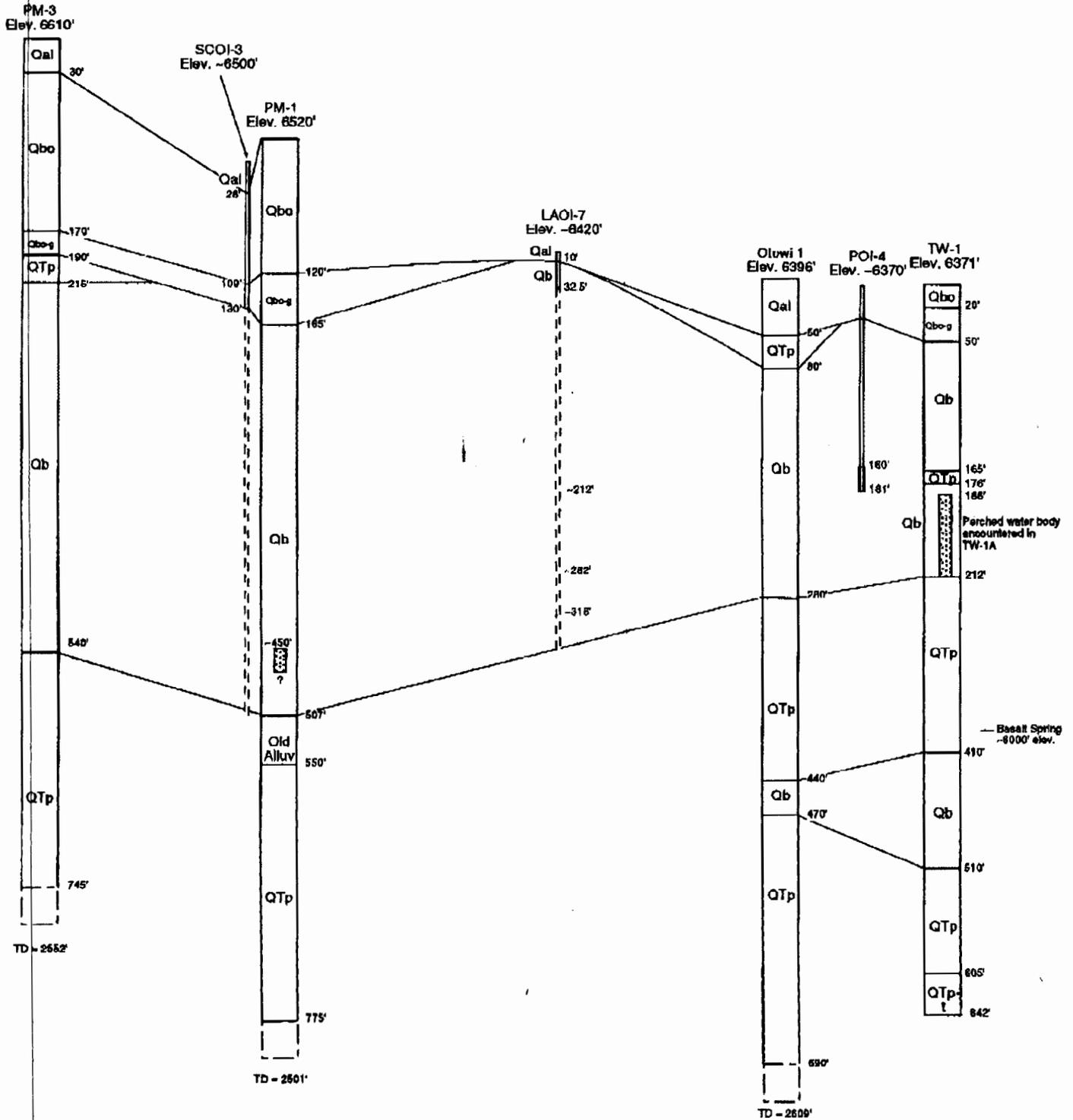
Number of pages including cover sheet: 7 Date: 5/17/96

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Operator's Signature DEB

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Alluvial Well PO-4

Location: Lower Pueblo Canyon

Purpose: Determine chemistry of ground water in contact with contaminated alluvium.

Monitor water quality upgradient of San Ildefonso land.

Provide basis for comparing water in shallow alluvium to water in intermediate perched system in lower Pueblo Canyon and in water emerging from Basalt Spring.

Status: Well drilled from March 11-12 to a T.D. of 73.5'. Water sampling will take place this week.

Significant Findings: Top of alluvial perched system first encountered at 15' depth.

Continuously saturated to the base of the alluvium at a depth of 55' (an initial saturated thickness of 40').

Alluvial perched system is confined to alluvium; the Puye Formation is dry. Due to poor core recovery, we could not examine the aquitard at the base of the saturated alluvium.

As of May 13, the top of the alluvium perched system declined from 15' below ground surface to 43' below ground surface (saturated thickness of 12'). The decline in the saturated thickness of the alluvium perched system is due to the diversion of the main surface water source in the area (effluent released by the Sewage Treatment Plant) to the municipal golf course.

Alluvial Well LAO-1.6g

Location: Just above confluence of Los Alamos and DP Canyons.

Purpose: Determine water quality of alluvial ground water in LA Canyon downstream of TA-21, but upstream of the confluence with DP Canyon.

Provides a basis for identifying contaminants released into Los Alamos Canyon from the south side of TA-21 versus sources further upstream (TA-2, TA-41).

Provides a basis of comparison for identifying contaminants released into Los Alamos Canyon from the north side of TA-21 through DP Canyon.

Provides additional water quality information for alluvial ground water as a potential source of recharge to intermediate perched ground water system(s) in Los Alamos Canyon.

Status: Drilling operations took place from March 15-20. LAO-1.6g was completed to a T.D. of 36'.

Eight different boreholes (LAO-1.6 through LAO-1.6g) were drilled in attempts to reach the alluvium/tuff interface; six were discontinued because of auger refusal caused by boulders and cobbles, one penetrated the alluvium/tuff interface but was dry, and the final hole encountered saturation in the alluvium at a depth of 17.5' and remained saturated into the top of the underlying tuff. The next morning the hole was dry and has remained dry ever since.

Significant Findings: We interpret the water encountered during drilling as a isolated pocket of saturation left over from last year's high runoff conditions. The fact that the hole has remained dry after draining is probably due to the extremely limited runoff in upper Los Alamos Canyon this year.

The dry conditions this year give us an opportunity to evaluate the contribution of ground water from DP Canyon to Los Alamos Canyon.

Intermediate Well POI-4

- Location:** Just above confluence of Los Alamos and Pueblo Canyons, just west of TW-1/1A and north of Otowi-1.
- Purpose:** To determine the extent that contaminants in surface water and alluvial ground water are mobilized and transported to the intermediate perched zone in lower Pueblo Canyon
- Better constrain the geologic setting and geohydrologic properties of intermediate-depth ground water bodies in lower Pueblo Canyon.
- Determine the source(s) of intermediate-depth ground water in lower Pueblo Canyon.
- Characterize the water quality of the intermediate-depth ground water in lower Pueblo Canyon as a potential source of water being discharged to the surface at Basalt Spring.
- Status:** Drilling operations took place from April 4-29. The T.D. for this hole is 181'. Water sampling will take place next week.
- Significant Findings:** Penetrated 29.5' of dry alluvium before hitting basalt.
- Remained in basalt to the T.D. of 181' with the following exceptions: unsaturated dark green clay-rich intervals were encountered from 79'-89' depth and from 121' to 124' depth. The clay-rich intervals are interpreted as basalt-derived sedimentary deposits intercalated between massive basalt lava flows. A severe loss of circulation zone 136'-139' may be a rubbly zone at the top or bottom between two basalt flows.
- Intermediate-depth ground water was first encountered at a depth of 169' in massive basalt. By the next morning the water level had risen to 160'. Saturated thickness of this zone is 21', the base of the zone of saturation was not penetrated.

An initial water sample analyzed for major and trace anions and cations has the clear signature of sewage treatment effluent.

Intermediate Well LAOI-7

Location: Just west of State Road 4 in Los Alamos Canyon.

Purpose: To determine if an intermediate-depth perched water body is present at the Laboratory boundary in Los Alamos Canyon, and if present to determine its relationship to other nearby intermediate perched systems in Pueblo Canyon, Sandia Canyon, and at Basalt Spring.

To determine the extent that contaminants in surface water and alluvial ground water are mobilized and transported to the intermediate perched zone in lower Los Alamos Canyon.

To better constrain the geologic setting and geohydrologic properties of intermediate-depth ground water bodies in Los Alamos Canyon.

Characterize the water quality of the intermediate-depth ground water in Los Alamos Canyon as a potential source of water being discharged to the surface at Basalt Spring.

Status: Drilling operations took place from March 26 - April 3. Hole was drilled to a depth of 32.5' before problems were encountered due to caving of alluvium into the hole. The 10' alluvial section of the hole is cased, and we will bring in an ODEX drilling rig to complete the hole this summer.

Significant Findings: The drilling began in alluvium and basalt was encountered at a depth of 9.5'.

Intermediate Well SCQI-3

Location: West of State Road 4 in Sandia Canyon, just west of PM-1.

Purpose: To determine the nature of intermediate-depth perched water body identified during the drilling of PM-1.

To determine the relationship of intermediate-depth perched water in Sandia Canyon to other nearby intermediate perched systems in Pueblo Canyon and at Basalt Spring.

To better constrain the geologic setting and geohydrologic properties of intermediate-depth ground water bodies near the Laboratory boundary.

Characterize the water quality of the intermediate-depth ground water in Sandia Canyon as a potential source of ground water being discharged to the surface springs and to the Rio Grande.

Status: Drilling operations took place from May 6 - May 10. The upper 25' of the hole is cased, and we are examining the possibility of bringing in an ODEX drilling rig to complete the hole this summer.

Significant Findings: Dry alluvium occurs from 0-28', Otowi Member ignimbrites occur from 28'-109', the Guaje Pumice Bed (dry) occurs from 109'-130', a brick-red sandy soil occurs from 130'-131', and basalt occurs from 131'-132' (T.D.).