TA-36

Subject: Fwd: Preliminary well design for R-23
Date: Thu, 19 Sep 2002 17:12:03 -0600
From: Charles Nylander <nylander@lanl.gov>
To: john_young@nmenv.state.nm.us, carolyn_cooper@nmenv.state.nm.us
CC: jmccann@lanl.gov, broxton@lanl.gov, twhitacre@doeal.gov

John and Carolyn: I am forwarding an email from David Broxton that lays out a preliminary conceptual well design for well R-23. As Dave's email states, we will know more about the presence/absence of perched water after we run the geophysics/video (most likely to occur tomorrow). Please let me know if you have any comments, and cc Broxton, McCann, and Whitacre on any emails so we all have the same information. Thanks. Charlie

>X-Sender: broxton@ees-mail.lanl.gov
>Date: Thu, 19 Sep 2002 15:13:08 -0600
>To: nylander@lanl.gov
>From: "David E. Broxton" <broxton@lanl.gov>
>Subject: Preliminary well design for R-23
>
>Charlie,
>
>Here is a preliminary conceptual well design for R-23, which is
>located in Pajarito Canyon near White Rock. The purpose of this
>preliminary design is to identify the general approach we propose for
>constructing this well and to facilitate NMED participation in well design
>decisions in a timely fashion. This conceptual design is based on DQOs for
>the well and an evaluation of well cuttings, water-level measurements, and
>drillers observations. The design may be modified to include new
>information from LANL and Schlumberger borehole video and geophysical logs
>which will be collected tonight and tomorrow.
>
>We are proposing to complete R-23 with a single screen straddling the top
>of the regional zone of saturation. The attached figure shows the location
>of the proposed screen relative to the geology at R-23, R-22, and outcrops
>in White Rock Canyon and to water levels in the regional aquifer.
>
>The borehole was completed last night at a total depth of 926 ft. The
>static water level for the regional aquifer measured when the borehole was
>at 926 ft ft depth was 817.5 ft. The upper part of the regional aquifer
>consists of a thin zone at the base of Cerros del Rio basalts and
>underlying medium to coarse, poorly cemented sands of the Santa Fe Group.
>Based on cuttings returns, there are no apparent confining layers such as
>clays or cemented deposits.
>
>The proposed screen will be located at a depth of 812.5 to 847.5 ft. Sand
>packs will extend about 8 ft above and 5 ft below the screen. Foam was the
>only additive used in the drilling, so development of the well should be
>relatively straightforward.
>
>There is an important caveat to our single screen proposal. Perched water
>may be present at R-23, and a decision to install multiple screens in R-23
>or to install a separate, dedicated perched zone well is being deferred
>until more data are collected. During drilling, the site geologist and
>drillers noted that the foam went flat in the following intervals: 403 to
>421 ft, 566 to 571 ft, and 580 to 585 ft. The drilling supervisor believes
>the last two intervals of flat foam resulted from improper formulation of
>the drilling foam by the drillers. The behavior of the foam in the 403 to
>421 ft interval is less easy to explain because the foam returned to a
>normal condition at 421 ft without changing the formulation. Today, as the
>borehole was being cleaned out, water was air lifted out of the hole with
>the drill bit at 470 ft depth. This may indicate that perched water is

5' above / 30' below

No

2366

>accumulating above a bridged-off section of the borehole. We are
>monitoring water levels to see if the borehole is recharging at this
>depth, and when hole cleaning continues we will look for possible bridges
>that can be holding the water up. The geophysical logs and borehole video
>will provide us with additional information with which to evaluate the
>possible presence of perched groundwater.
>
>Let me know if you have any questions.
>
>Dave
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>**********
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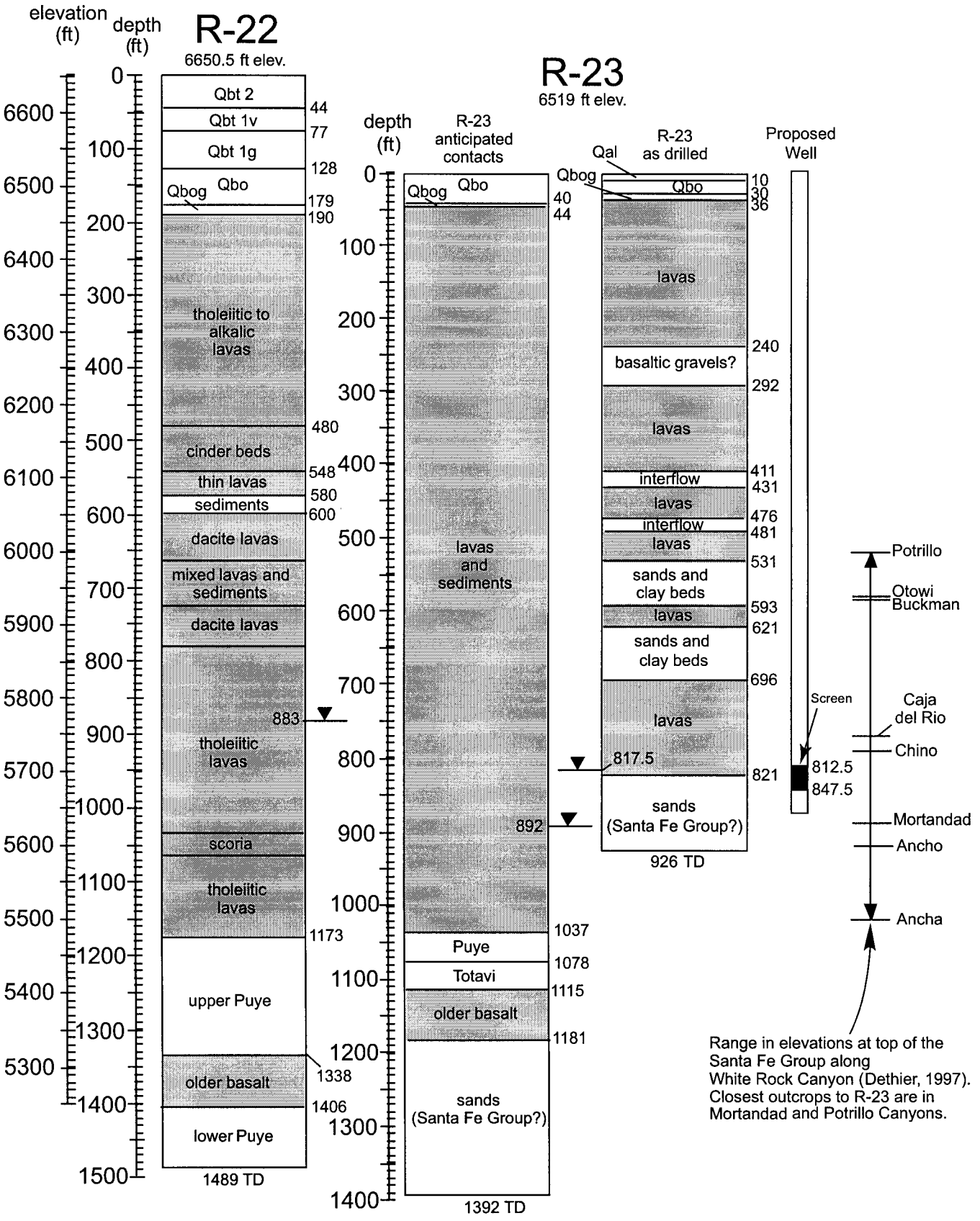
R23ProposedWell=Geology.pdf	**Name:** R23ProposedWell=Geology.pdf **Type:** Portable Document Format (application/pdf) **Encoding:** base64


elevation (ft)
depth (ft)
R-22
6650.5 ft elev.
Qbt 2
Qbt 1v
Qbt 1g
Qbog
Qbo
tholeiitic to alkalic lavas
cinder beds
thin lavas
sediments
dacite lavas
mixed lavas and sediments
dacite lavas
tholeiitic lavas
scoria
tholeiitic lavas
upper Puye
older basalt
lower Puye
44
77
128
179
190
480
548
580
600
883
1173
1338
1406
1489 TD
R-23
6519 ft elev.
depth (ft)
R-23 anticipated contacts
Qbog
Qbo
lavas and sediments
Puye
Totavi
older basalt
sands (Santa Fe Group?)
40
44
892
1037
1078
1115
1181
1392 TD
R-23 as drilled
Qal
Qbog
Qbo
lavas
basaltic gravels?
lavas
interflow
lavas
interflow
lavas
sands and clay beds
lavas
sands and clay beds
lavas
sands (Santa Fe Group?)
817.5
10
30
36
240
292
411
431
476
481
531
593
621
696
821
926 TD
Proposed Well
Screen
812.5
847.5
Potrillo
Otowi
Buckman
Caja del Rio
Chino
Mortandad
Ancho
Ancha
Range in elevations at top of the Santa Fe Group along White Rock Canyon (Dethier, 1997). Closest outcrops to R-23 are in Mortandad and Potrillo Canyons.