

Field Logs of Borehole Drilled for Monitoring Well at Dome Road Site,
Cañada de Cochiti Grant, Sandoval County, New Mexico

Prepared for
Office of State Engineer

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a division of New Mexico Tech

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Summary and Interpretation of Borehole Data

A borehole was drilled at the Dome Road site, about four miles NW of Cochiti Dam (Fig. 1), for the purpose of monitoring deep groundwater levels in the Santa Fe Group aquifer. A reconnaissance geologic map of the site (Fig. 2) shows that the well was collared in lower Bandelier Tuff, about 500 ft east of a minor normal fault downthrown 20–30 feet to the east. The small tuff outcrops and minor faults shown on Figure 2 are not shown on the regional geologic map of the Jemez Mountains (Smith, Bailey and Ross, 1970).

Historical data for this monitoring well are summarized in Table 1. The Dome Road well was drilled to a depth of 1312 feet during August and September of 1998. This well also provides local characterization of the basin-fill aquifer in the Cochiti area, which lies in a structural transition between the Española Basin, east of Pajarito fault, and the northern Albuquerque Basin, west of La Bajada fault (Kelley, 1977, figs. 13 and 19). Note that the generalized map of Figure 1 would not include the Dome Road site within the Albuquerque Basin.

This borehole log is submitted to the New Mexico Office of the State Engineer (OSE) as partial fulfillment of an intergovernmental agreement between OSE and the New Mexico Bureau of Mines and Mineral Resources, a division of New Mexico Tech. Cuttings, core material and detailed geophysical logs used to prepare this report are available for inspection at the Bureau in Socorro.

Major textural and lithologic units intersected in the Dome Road well are graphically summarized on Figure 3 and described in Table 2. Figure 3 also illustrates geophysical logs for the well and allows comparison of geophysical patterns with each other and with the graphic log. A sharp decrease in “dt” on the sonic log at 582 feet (far left column) is interpreted as the top of

the saturated zone. With the well collar estimated at an elevation of 5818 (± 5) feet (Fig. 2), this places the water table at about 5236 (± 5) feet. The mapped channel of the Rio Grande, 3.8 mi ESE of the well (down regional gradient), lies at an elevation of approximately 5270 feet (USGS, Cochiti Dam 7.5' quadrangle). These observations suggest a groundwater trough lies west of the Rio Grande in this area.

Geologic interpretations shown on the graphic log of Figure 3 are based on the integration of lithologic data (Tables 2, 3, 4 and 5) with geophysical logs (Fig. 3) and the reconnaissance geologic map (Fig. 2). Correlation and nomenclature of lithostratigraphic units are generally consistent with recent redefinition of the Cochiti Formation (Smith and Lavine, 1996) and recent mapping of the Santo Domingo Pueblo SW 7.5' quadrangle (Smith and Kuhle, 1998), a few miles SW of the well site. Smith and Lavine (1996) redefine the Cochiti Formation as being of *entirely* volcanoclastic composition; if this definition was strictly applied then the minor component of nonvolcanic (eolian?) quartz seen in the Dome Road well (cf. Table 2) would disqualify these beds from Cochiti nomenclature. Smith and Kuhle (1998), however, recognize as much as 10% nonvolcanic quartz and feldspar occurs locally in their upper Cochiti Formation; they attribute this nonvolcanic component to recycling of middle Santa Fe deposits. We follow the example of Smith and Kuhle (1998) in their less strict and more practical usage of the term Cochiti Formation to include sands and gravels of *almost entirely* volcanoclastic composition.

In the Santo Domingo Pueblo SW area, the Cochiti Formation demonstrably intertongues with quartzite-rich axial-river gravels and sands of the ancestral Rio Grande that are assigned to the Sierra Ladrones Formation (Smith and Kuhle, 1998). On structurally higher blocks, west of the Pajarito fault, the combined stratigraphic interval of Cochiti Formation plus Gravel of

Lookout Park, that lies above the Sierra Ladrones Formation, is about 20–400 feet (Smith and Kuhle, 1998, cross section B-B'). The much greater thickness of these units at the Dome Road well (>1310 ft) indicates the Cochiti Dam area has been a zone of relatively rapid extension and subsidence since about 6.7 million years ago.

Perturbations in the temperature log (Fig. 3, second column) suggest that small normal faults may effect local ground-water flow patterns. Assuming an ESE dip of 60–70° for the minor normal fault exposed 500 feet west of the well (Fig. 2), this fault should have been intersected by the well at a depth between 950 and 1450 feet. The most notable perturbation of the temperature log (Fig. 3) in this range occurs at 1030 feet. This perturbation is tentatively interpreted as a reflection of the minor normal fault, if this interpretation is correct then the dip of the fault would be 62° ESE.

The most surprising aspect of the Dome Road well is that it did not intersect quartzite-rich axial gravels of the ancestral Rio Grande, even though it lies only one mile west of ancestral Rio Grande deposits exposed in lower Cochiti Canyon (Smith, Bailey and Ross, 1970, unit QTg). Published regional map data imply that the volcanic-rich Cochiti gravels and sands prograded far to the southeast over the older quartzite-rich river gravels (QTal over QTg of Smith, Bailey and Ross, 1970). Thus axial gravels were expected to be found in lower levels of the Dome Road well. We suspect the Dome Road well could have intersected late Miocene Peralta Tuff within a few hundred feet of its present total depth (1312 feet).

Lithologic observations of core material (Table 4), cuttings (Table 5), and differential resistivity logs (Fig. 3; 5th column from left) all imply that the lower Cochiti Formation is an unusually well sorted and transmissive *piedmont-facies* aquifer. Pump tests should be conducted to quantify its potential.

Dr. Charles E. Chapin, Director
 Dr. Paul W. Bauer, Geologic Mapping Program Manager

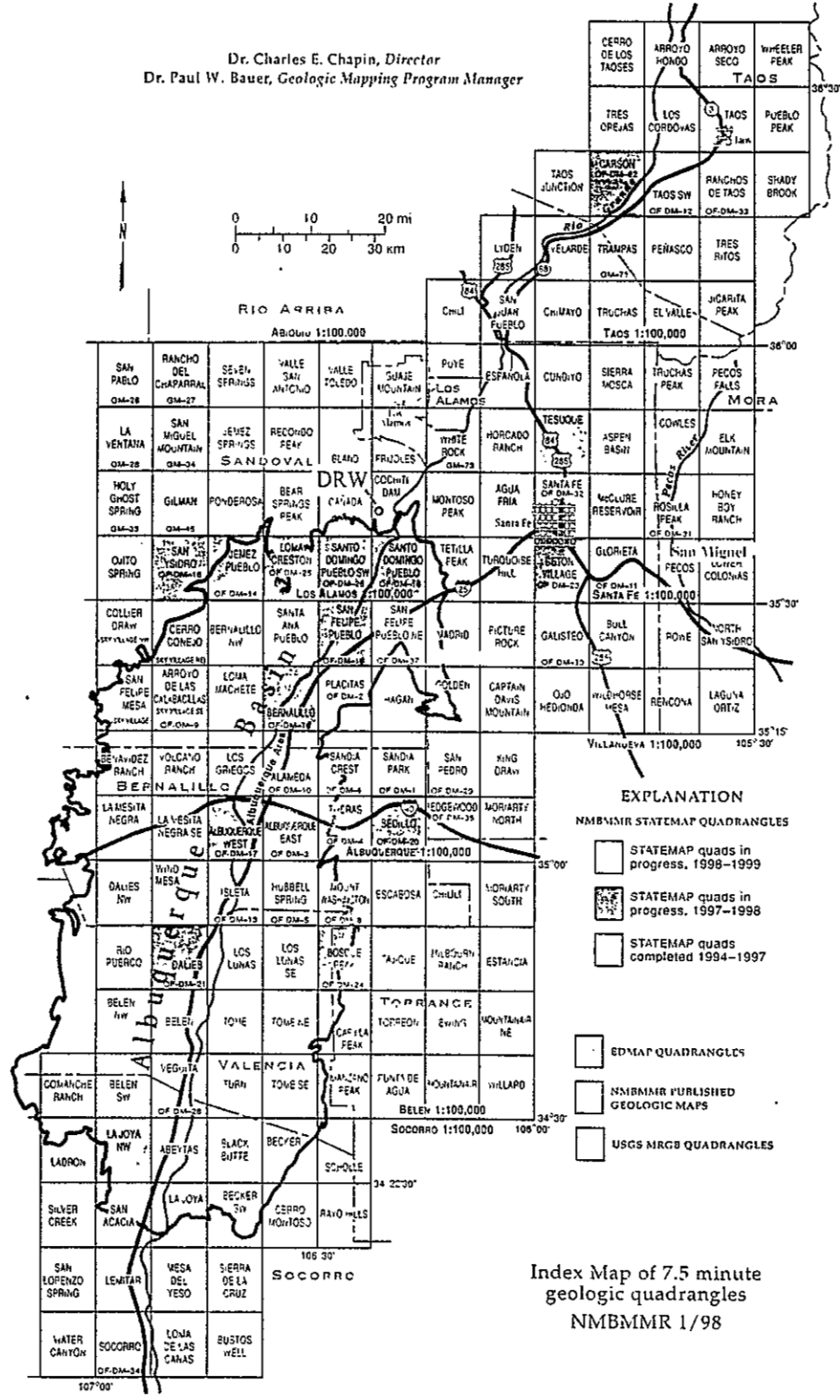


Figure 1. Index map showing location of Dome Road monitoring well (DRW) relative to the Albuquerque Basin (middle Rio Grande Basin) and geologic quadrangle maps.

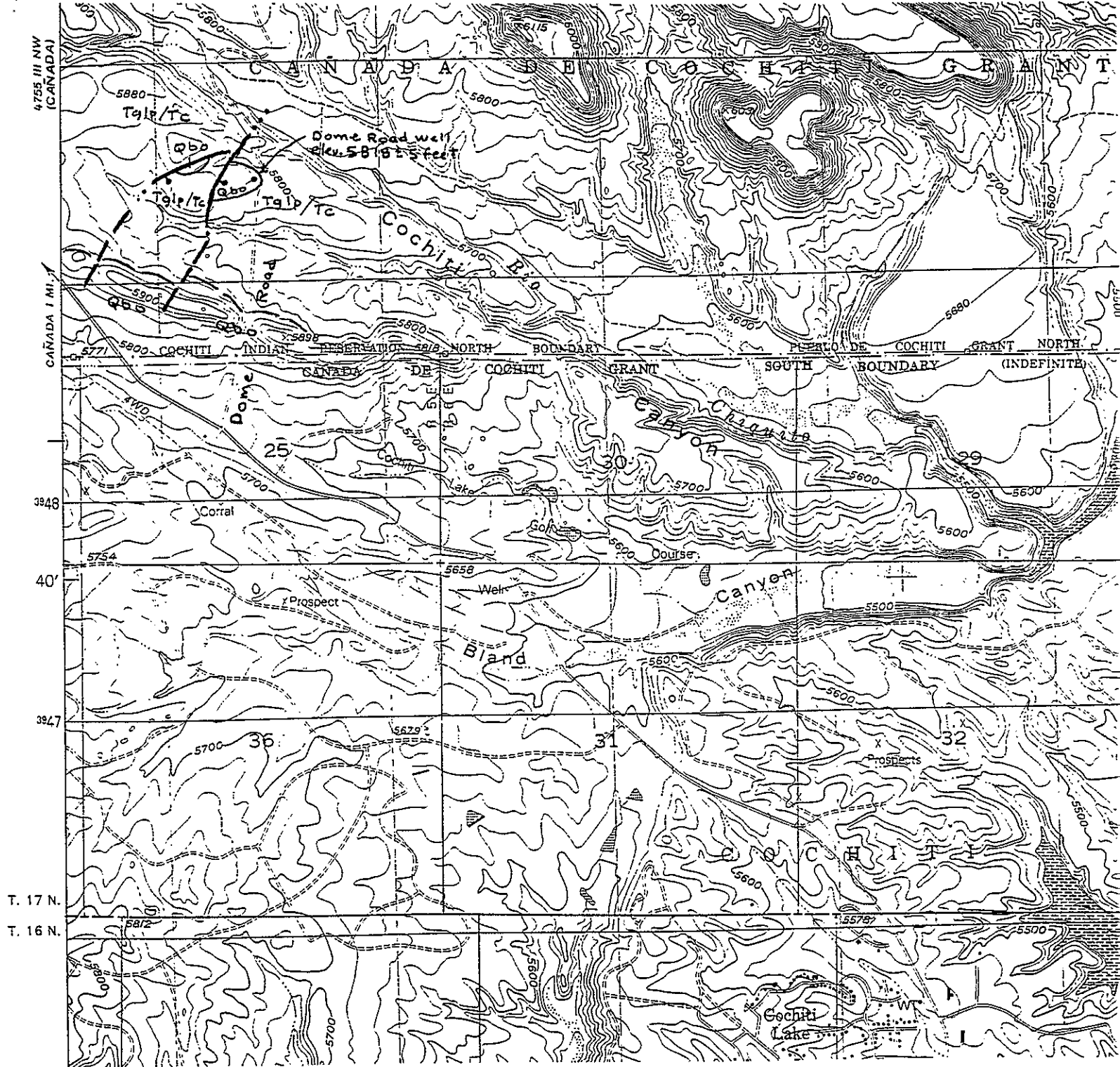
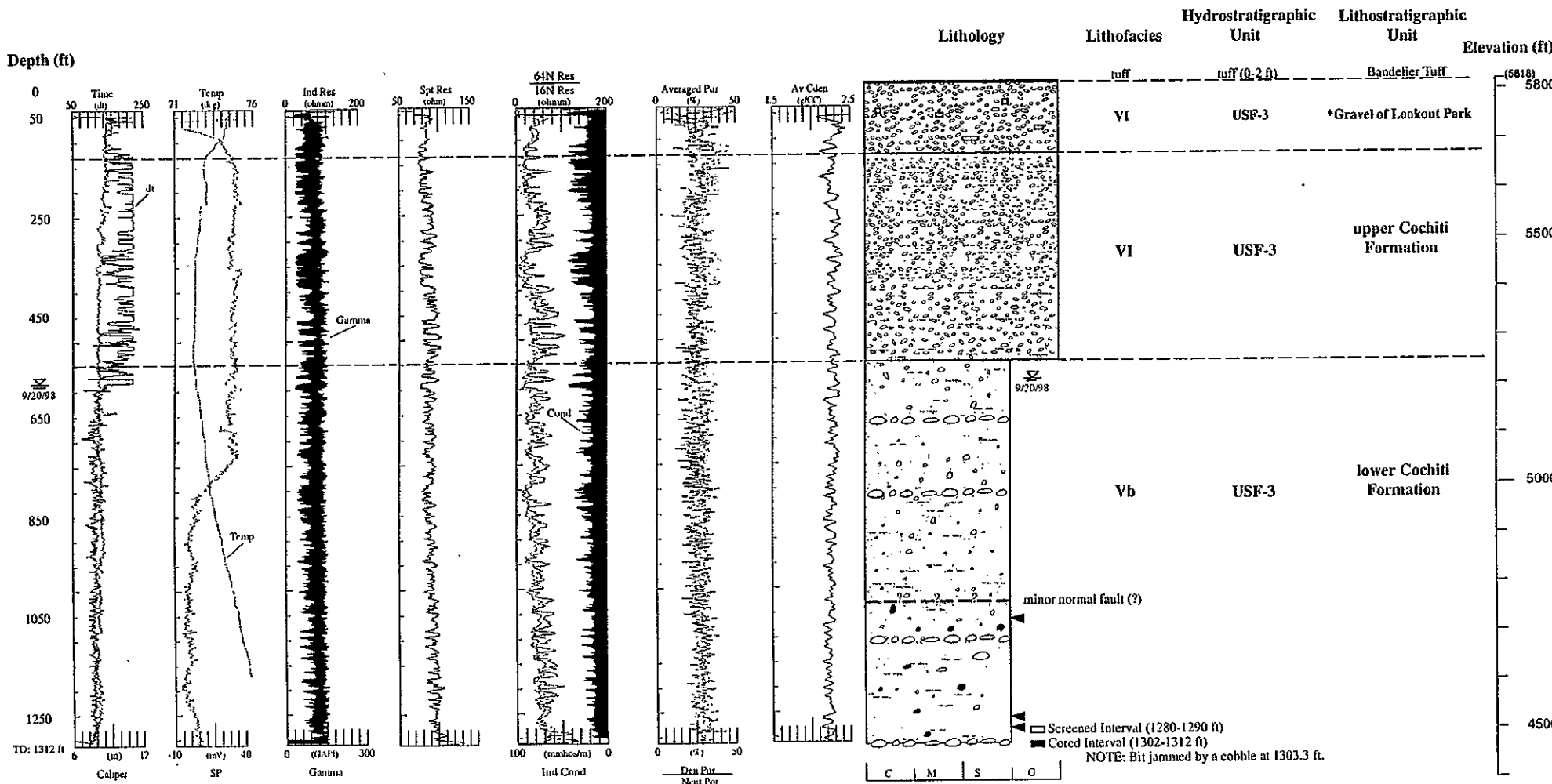


Figure 2. Reconnaissance geologic map in vicinity of Dome Road monitoring well. Qbo = lower Bandelier Tuff (Otowii member), Tglp/Tc = Gravel of Lookout Park over Cochiti Formation (contact may be difficult or impossible to map here). Ball and bar on dextral side of normal fault. Geology by R. M. Chamberlin, 8/24/98.

Figure 3: Dome Road Monitoring Well: Geophysical Logs, Graphic Lithologic Column, Hydrostratigraphic and Lithostratigraphic Units



*: Inferred contact between Gravel of Lookout Park and Upper Cochiti Formation may be difficult or impossible to map consistently; in which case, the upper map unit should be subsumed into the Cochiti Formation.

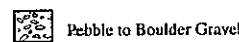
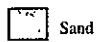
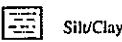

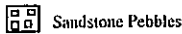
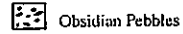

-  Pebble to Boulder Gravel
-  Sand
-  Silt/Clay
-  Obsidian sample for Ar/Ar dating
-  Sandstone Pebbles
-  Obsidian Pebbles
-  Groundwater Table (582 ft, 9/20/98)

Table 1. Historical data for Dome Road monitoring well, Cañada de Cochiti Grant, Sandoval County, New Mexico.

Location: T17N, R5E, Sec. 24.344 (unsurveyed); just west of Dome Road near hill crest about 0.7 mi north of road to Dixon Apple Farm, Cochiti Dam 7.5' quadrangle. Latitude: 35°40.990'N, Longitude 106°21.915'W.

Elevation: 5818 (\pm 5) feet, estimated from topographic map.

Project Coordinator: Conde Thorn (USGS)

Drilling Contractor: U.S. Geological Survey

Driller: Jeff Eman, assisted by Justin Rhoads and John Palmer.

Date Started: August 22, 1998

Date Completed: September 27, 1998

Total Depth: 1312 ft (driller)

Water Level: 582 ft (from sonic log 9/20/98)

Casing: 8" steel casing from 0–52 ft; 4 3/8" (id) black iron casing from 52–1280 ft, stainless steel screen from 1280–1290 ft; black iron sump from 1290–1300.

Screened Interval: 1280–1290 ft.

Sample Intervals: every 10 ft; fine sand fractions were also collected from shaker table at 690, 780, 850, 940, 1050, 1150, 1200, 1260 and 1300 ft.

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Geophysical Logging: R. Miller (Southwestern Geophysical Inc.)

Log Synthesis: Richard Chamberlin (NMBMMR)
Patricia Jackson (NMBMMR)
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Log Graphics: Sean Connell (NMBMMR)
Patricia Jackson (NMBMMR)

Table 2. Description of major textural and lithologic units in the Dome Road monitoring well (New Mexico Office of State Engineer). Colors represent that of dry cuttings.

Depth (ft)	Description
0-2	Rhyolite ash-flow tuff. Light gray, pumiceous nonwelded tuff; contains sparse phenocrysts of bipyramidal quartz and sanidine. Basal zone of Otowi member of Bandelier Tuff (observed in west wall of mud pit about 50 ft SW of well; see Fig. 2).
2-130	Volcanic derived cobble to boulder gravel with minor pebbly sand interbeds; well exposed in canyon walls north of well site. Bulk color of cuttings averages gray to reddish gray (5YR6/1-4/2); mottled with whites; reds, pinks, browns and rare blacks. In decreasing order of abundance clast types include phenocryst-poor rhyolites, silicified rhyolitic tuffs, andesite porphyries, olivine/iddingsite basalts, hornblende, dacites and rare pebbles of reddish brown silicified sandstone (moderately quartzose). The latter most likely represent recycling of hydrothermally altered middle Santa Fe Group deposits. Silicified rhyolites range from porcelaneous white to greenish white to pink and light yellowish brown (pyritic). Propylitized andesites and basalts are greenish to purplish gray and often contain amygdaloidal blue-green celadonite. Low gamma response at top of well (0-52 ft) due to shielding effect of steel surface casing. Unit represents proximal western facies of the upper Santa Fe Group (USF-3); coarse grain size, stratigraphic position below Bandelier Tuff, and recycled Santa Fe clasts support correlation with the Gravel of Lookout Park as mapped by Smith and Kuhle (1998) about 10 miles to southwest of well.
130-545	Volcanic derived pebble to cobble gravels with moderately abundant beds of silty sand and pebbly sand; probably contains some bouldery beds. Dominantly gray to reddish gray gravels that are lithologically very similar to overlying unit. Moderately abundant beds of light brownish gray silty sands (5-15 ft thick) and downward disappearance of recycled sandstone clasts help distinguish this slightly less coarse unit from the overlying Gravel of Lookout Park (would be difficult to map at surface, however). Silty sands appear to correlate with moderately elevated conductivity zones (>40 mmohs/m; Fig. 3). Sands are volcanic lithic arenites with sparse to rare grains of pyramidal volcanic-derived quartz and smaller rounded grains of vitreous and frosted quartz. The latter probably represents non-volcanic quartz recycled from a minor eolian component. Assigned to proximal to medial western piedmont facies of the upper Santa Fe Group (USF-3); generally correlative with the Cochiti Formation as mapped by Smith and Kuhle (1998) in the Santo Domingo Pueblo SW quadrangle.
545-1303.3	Volcanic derived sand and gravelly sand with minor silty sands and occasional pebble/cobble lenses. Gray (10YR6/2-5/2) and yellowish brown (10YR5/4) sands are lithic-rich volcanic arenites with sparse to rare quartz of volcanic and non-volcanic origin (as above). Subrounded to subangular pebbles are lithologically very similar to the overlying unit, and consist mostly of rhyolites silicified tuffs, andesites and basalts. Rare clast types include hornblende dacites, sandy silicified tuff breccias, chert-like manganiferous vein silica and very rare sand-sized grains of black obsidian; the latter has been observed sporadically from 1050 to 1300 feet. Shallower occurrences of obsidian may have been overlooked. Slow in situ hydration of obsidian pebbles to light gray flaky perlite produces progressively smaller obsidian nodules with increasing age of the formation. Obsidian grains have been sampled for Ar-Ar dating (Fig. 3), and will most likely yield a late Miocene age equivalent to the Bearhead Rhyolite and Peralta Tuff (ca. 6.7 Ma). The Peralta Tuff is known to intertongue with the lower Cochiti Formation as redefined by Smith and Lavine (1996). See Table 4 for description of core material recovered from 1302 to 1303.3 ft. Unit represents medial to distal piedmont facies of the upper Santa Fe Group (USF-3). The occurrence of small obsidian nodules is consistent with its assignment to the lower Cochiti Formation as redefined by Smith and Lavine (1996).

Table 3. Summary of lithofacies (modified from Hawley and Haase, 1992) assigned to major textural/lithologic units in the Dome Road monitoring well.

Lithofacies	Dominant Textural Classes	Dominant Depositional Setting
VI	cobble to boulder gravels and pebbly sands	proximal to medial piedmont-slope, alluvial fan
Vb	coarse sand and pebbly sand with silty (loamy) sand, lenses of sand, gravel and silty clay	distal to medial piedmont slope, alluvial fan; associated with small steep watersheds, debris flow, sheet flood and distributary channel
tuff	ash and pumice lapilli	hot ash-flow tuff (ignimbrite)

Table 4. Description of core (depth 1302–1312 ft), Dome Road monitoring well. Description by R. M. Chamberlin.

Interval	Lithology and Color
1302–1302.6	Volcanic derived pebble gravel; loose subrounded and occasionally subangular pebbles (mostly 1–5 cm; some broken and some cut pebbles, includes one small rhyolite cobble, min. cut ~6 cm). At least 26 discrete pebbles and fragmented pebbles were observed; in decreasing order of occurrence, they consist of phenocryst-poor rhyolites (5 of 26), plagioclase-pyroxene andesite porphyries (6 of 26), silicified rhyolitic tuffs (6 of 26), olivine-iddingsite basalts (4 of 26), silicified sandy rhyolitic tuff breccias (2 of 26), manganiferous silica vein material (2 of 26), and hornblende-biotite dacite (1 of 26). All lithologies, except dacite, show evidence of hydrothermal alteration prior to transport and deposition. Approximately half of each pebble type, except tuffs, show alteration; rhyolitic tuffs and tuff breccias are only recognized as clasts in their silicified form. Rhyolite lava clasts are mostly medium to light gray and grayish red and rarely reddish brown. Silicified tuffs show a wide range of colors from light gray to light brownish gray and occasionally pale red to pink and greenish gray. Andesites are mostly purplish gray and reddish brown, and sometimes medium gray. Basalts are dark gray to dark purplish gray. Silica vein material ranges from jet black to medium gray mottled with yellow brown. One dacite porphyry observed was medium purplish gray. Rhyolite lavas are flow banded to massive and contain sparse (<1–5%) phenocrysts of biotite, ± quartz, ± sanidine, ± plagioclase. Rhyolitic tuffs commonly contain altered biotite ± chalky feldspars ± vitreous quartz. See Appendix II for description of individual clasts.
1302.6–1303.3	Volcanic derived cobble gravel; three small to large cobbles of lithoidal and glassy phenocryst-poor flow-banded rhyolite lava. Upper cobble (>6 cm) consists of light gray, flow banded, vuggy, lithoidal rhyolite with rare fine-grained (<1 mm) phenocrysts of coppery biotite. Large medial cobble (>16 cm) consists of light gray, faintly flow banded, glassy rhyolite with fine to very fine grained (1–0.1 mm) phenocrysts of black to brownish gray biotite. Fine ovoid perlitic fractures cut through the glassy matrix; crushed perlitic glass shows partial alteration to semi-opaque clay minerals under crossed nicols. Megascopic obsidian not observed; microscopic nodules of obsidian might be recognizable in thin section. Lowest cobble (>7 cm) consists of light purplish gray, weakly flow banded, lithoidal rhyolite with sparse (3–5% total) fine to medium grained (1–5 mm) phenocrysts of quartz, plagioclase, sanidine and biotite.
1303.3–1312	No material recovered. Bit apparently jammed by cobble at 1303.3 ft.

Table 5: Field lithologic descriptions of cuttings from the Dome Road monitoring well.

NOTE: Volcanic rock types are characterized by phenocryst assemblages as listed in parentheses after rock type: rhyolite (biotite +- quartz +- sanidine +- plagioclase), andesite (plagioclase +- pyroxene), dacite (plagioclase +- hornblende +- biotite), and basalt (olivine/iddingsite +- pyroxene).

Sample No.	Depth Interval (ft)	Description
DR-1	0-10	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified lapilli tuff, andesite, basalt, silicified sandstone.
DR-2	10-20	Pebble-boulder gravel (95% gravel, 5% silt), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-3	20-30	Pebble-boulder gravel (95% gravel, 5% silt), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-4	30-40	Pebble-boulder gravel (80% gravel, 20% silt), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite with some silicified lapilli tuff, andesite, basalt, silicified sandstone.
DR-5	40-50	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite with some silicified lapilli tuff, andesite, basalt, silicified sandstone.
DR-6	50-60	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-7	60-70	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-8	70-80	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-9	80-90	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-10	0-100	Pebble-boulder gravel (90% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-11	100-110	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-12	110-120	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-13	120-130	Pebble-boulder gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt, silicified sandstone.
DR-14	130-140	Pebble-boulder gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.

DR-15	140-150	Pebble-boulder gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-16	150-160	Sample not available.
DR-17	160-170	Pebble-boulder gravel (95% gravel, 5% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-18	170-180	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-19	180-190	Cobble-pebble gravel (85% gravel, 15% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-20	190-200	Cobble-pebble gravel (85% gravel, 15% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-21	200-210	Cobble-pebble gravel (85% gravel, 15% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-22	210-220	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-23	220-230	Cobble-pebble gravel (95% gravel, 5% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-24	230-240	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-25	240-250	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-26	250-260	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-27	260-270	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-28	270-280	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-29	280-290	Cobble-pebble gravel (85% gravel, 15% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-30	290-300	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-31	300-310	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.

DR-32	310-320	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-33	320-330	Cobble-pebble gravel (85% gravel, 15% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, andesite, basalt.
DR-34	330-340	Silt/clay and cobble-pebble gravel (80% silt/clay, 20% gravel), moderately to well sorted, angular to subrounded clasts. Yellowish brown (10YR 5/4). Rhyolite, basalt, andesite.
DR-35	340-350	Silt/clay and cobble-pebble gravel (80% silt/clay, 20% gravel), moderately to well sorted, angular to subrounded clasts. Yellowish brown (10YR 5/4). Rhyolite, andesite, basalt.
DR-36	350-360	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, altered andesite, basalt.
DR-37	360-370	Silt/clay and cobble-pebble gravel (80% silt/clay, 20% gravel), moderately to well sorted, angular to subrounded clasts. Yellowish brown (10YR 5/4). Rhyolite, basalt, andesite.
DR-38	370-380	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, altered andesite, basalt.
DR-39	380-390	Cobble-pebble gravel (90% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). 60% Rhyolite, 35% intermediate volcanics, 5% basalt.
DR-40	390-400	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). 60% Rhyolite (some in the form of white silica cemented, altered rhyolitic tuff), 35% intermediate volcanics, 5% basalt.
DR-41	400-410	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-42	410-420	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-43	420-430	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-44	430-440	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-45	440-450	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-46	450-460	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-47	460-470	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.

DR-48	470-480	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-49	480-490	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). 50 % Rhyolite, 45% altered andesite, 5% basalt.
DR-50	490-500	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). 50% Rhyolite and rhyolitic tuff, 45% andesite, >5% basalt, and trace pumice (1 clast found).
DR-51	500-510	Cobble-pebble gravel (85% gravel, 15% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, altered andesite, basalt.
DR-52	510-520	Cobble-pebble gravel (100% gravel), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-53	520-530	Cobble-pebble gravel (85% gravel, 15% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-54	530-540	Cobble-pebble gravel (90% gravel, 10% silt/clay), moderately to well sorted, angular to subrounded clasts. Gray to dark red-gray (5YR 6/1-4/2). Rhyolite, silicified rhyolitic tuff, andesite, basalt.
DR-55	540-550	Coarse-grained sand with pebbles (60% sand, 40% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2), mottled with reds, browns, whites, and rare blacks. From 540 to 1300 feet clasts generally consist of abundant rhyolite, and silicified rhyolitic tuffs, common andesite porphyries, sparse dark gray basalt, and rare hornblende dacite. Some samples contain rare chert-like fragments of jet black, maganiferous silica representing vein materials. Very rare sand sized grains of vitreous black obsidian occur sporadically between 1050 and 1300 feet. Clasts of hydrothermally altered volcanic rocks are common.
DR-56	550-560	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-57	560-570	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-58	570-580	Silty coarse-grained sand with pebbles (85% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-59	580-590	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-60	590-600	Silty coarse-grained sand with pebbles (85% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.

DR-61	600-610	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-62	610-620	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-63	620-630	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-64	630-640	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-65	640-650	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-66	650-660	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-67	660-670	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-68	670-680	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-69	680-690	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-70	690-700	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-71	700-710	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-72	710-720	Silty coarse-grained sand with pebbles (85% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-73	720-730	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subrounded, well sorted. Dominantly gray (10YR 6/2-5-2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite: variably altered.
DR-74	730-740	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-75	740-750	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-76	750-760	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.

DR-77	760-770	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-78	770-780	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-79	780-790	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-80	790-800	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-81	800-810	Silty coarse-grained sand with pebbles (85% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-82	810-820	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-83	820-830	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-84	830-840	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-85	840-850	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-86	850-860	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-87	860-870	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-88	870-880	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-89	880-890	Silty coarse-grained sand with pebbles (85% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-90	900-910	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-91	910-920	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-92	920-930	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.

DR-93	930-940	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-94	940-950	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-95	950-960	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-96	960-970	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-97	970-980	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-98	980-990	Silty coarse-grained sand with pebbles (90% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-99	990-1000	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-100	1000-1010	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-101	1010-1020	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-102	1020-1030	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-103	1030-1040	Silty coarse-grained sand with pebbles (80% sand, 15% silt, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2) to yellowish brown (10YR 5/4). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt.
DR--104	1040-1050	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR--105	1050-1060	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR--106	1060-1070	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR--107	1070-1080	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR--108	1080-1090	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.


DR-109	1090-1100	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-110	1100-1110	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-111	1110-1120	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-112	1120-1130	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-113	1130-1140	Silty coarse-grained sand with pebbles (85% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-114	1140-1150	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-115	1150-1160	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-116	1160-1170	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-117	1170-1180	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-118	1180-1190	Silty coarse-grained sand with pebbles (75% sand, 20% silt, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-119	1190-1200	Silty coarse-grained sand with pebbles (80% sand, 15% silt, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-120	1200-1210	Silty coarse-grained sand with pebbles (80% sand, 15% silt, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-121	1210-1220	Silty coarse-grained sand with pebbles (90% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-122	1220-1230	Silty coarse-grained sand with pebbles (90% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.

DR-123	1230-1240	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-124	1240-1250	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt, trace obsidian.
DR-126	1260-1270	Coarse-grained sand with pebbles (95% sand, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-127	1270-1280	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-128	1280-1290	Silty coarse-grained sand with pebbles (85% sand, 10% silt, 5% gravel), angular to subangular, well sorted. Dominantly gray (10YR 6/2-5/2) and mottled. Rhyolite, silicified tuff, andesite, basalt, and rare dacite; variably altered.
DR-129	1290-1300	Coarse-grained sand with pebbles (90% sand, 5% gravel, 5% silt), angular to subangular, well sorted. Gray (10YR 6/2-5-2). Rhyolite, intermediate volcanics, chert-like aphanitic volcanics, trace basalt and obsidian.

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Appendix I: Photolog of cuttings from the Dome Road monitoring well.

	Lithofacies	Hydrostratigraphic Unit	Lithologic Unit
	tuff	tuff	Bandelier Tuff
0-10			
10-20			
20-30			
30-40			
40-50			
50-60	VI	USF-3	Gravel of Lookout Park
60-70			
70-80			
80-90			
90-100			
100-110			
110-120			
120-130			
130-140			
140-150			
150-160			
160-170	VI	USF-3	Upper Cochiti Formation
170-180			
180-190			
190-200			

Lithofacies

Hydrostratigraphic
Unit

Lithologic
Unit

	200- 210
	210- 220
	220- 230
	230- 240
	240- 250
	250- 260
	260- 270
	270- 280
	280- 290
	290- 300
	300- 310
	310- 320
	320- 330
	330- 340
	340- 350
	350- 360
	360- 370
	370- 380
	380- 390
	390- 400

VI

USF-3

Upper Cochiti
Formation

Lithofacies

Hydrostratigraphic
Unit

Lithologic
Unit

	400-410
	410-420
	420-430
	430-440
	440-450
	450-460
	460-470
	470-480
	480-490
	490-500
	500-510
	510-520
	520-530
	530-540
	540-550
	550-560
	560-570
	570-580
	580-590
	590-600

VI

USF-3

Upper Cochiti
Formation



Vb

USF-3

Lower Cochiti
Formation

Lithofacies

Hydrostratigraphic
Unit

Lithologic
Unit

600-610
610-620
620-630
630-640
640-650
650-660
660-670
670-680
680-690
690-700
700-710
710-720
720-730
730-740
740-750
750-760
760-770
770-780
780-790
790-800

Vb

USF-3

Lower Cochiti
Formation

Lithofacies

Hydrostratigraphic
Unit

Lithologic
Unit

800-810
810-820
820-830
830-840
840-850
850-860
860-870
870-880
880-890
890-900
900-910
910-920
920-930
930-940
940-950
950-960
960-970
970-980
980-990
990-1000

Vb

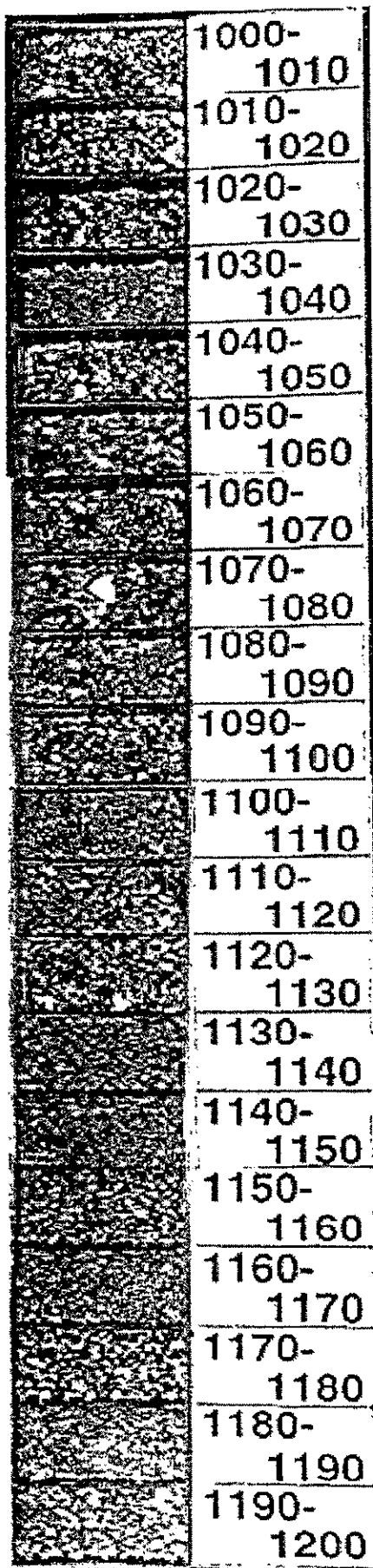
USF-3

Lower Cochiti
Formation

Lithofacies

Hydrostratigraphic
Unit

Lithologic
Unit



← (minor normal fault?)

Vb

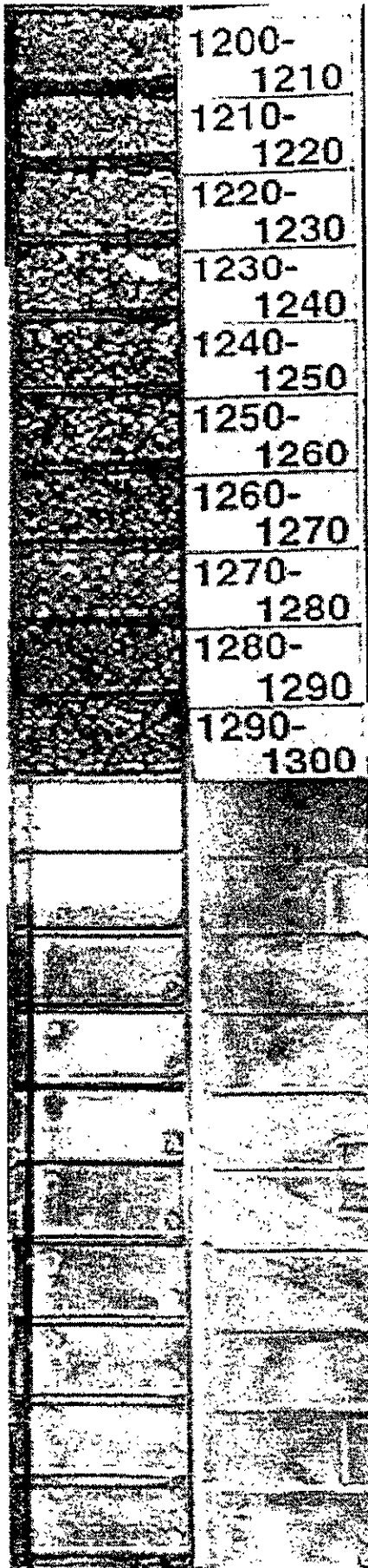
USF-3

Lower Cochiti
Formation

Lithofacies

**Hydrostratigraphic
Unit**

**Lithologic
Unit**



Vb

USF-3

Lower Cochiti
Formation

Cored Interval (1302-1312 feet): recovered 0.6 feet of pebble gravel and 0.7 feet of cobble gravel (See Table 4).

Appendix II. Description of twenty-five pebbles and one cobble recovered from Dome Road monitoring well "core" at depth of 1302 to 1302.6 ft. Loose pebbles recovered from core barrel above plug formed by rhyolite cobble at 1303.3 ft. Listed in two groups of generally decreasing clast size, representing slightly different stratigraphic levels (with some mixing).

Group 1: 1302–1302.4 ft

1. small cobble (>6 cm), of light gray flow-banded lithoidal rhyolite with sparse quartz, biotite and sanidine(?)
2. subrounded to well rounded large pebble (~5 cm) of dark gray fine-grained basalt with trace of fine iddingsite.
3. subrounded pebble (4 cm) of reddish brown, weakly silicified(?), rhyolite with sparse phenocrysts of cloudy feldspar and quartz.
4. subrounded pebble of reddish brown silicified pyroxene andesite with sparse phenocrysts of hematized pyroxene and yellowish brown cloudy plagioclase
5. subrounded to subangular pebble (2 cm) of jet black manganese silica (probably vein material)
6. subangular pebble (2 cm) of phenocryst-poor, reddish-brown silicified andesite(?) with trace of yellowish brown altered plagioclase
7. subrounded pebble (2 cm) of purplish gray andesite porphyry with approximately 10% crystals of plagioclase and trace of pyroxene.
8. subrounded pebble of grayish red rhyolite with sparse (2–3% total) phenocrysts of yellow brown altered plagioclase, quartz, sanidine and trace of biotite
9. subangular pebble of brownish gray intensely silicified rhyolitic tuff with trace of phenocrystic quartz and biotite
10. platy subrounded pebble of light gray to light brownish gray silicified rhyolite tuff with chalky feldspar and trace of quartz
11. subrounded small pebble of purplish gray silicified andesite porphyry with chalky plagioclase and chloritic(?) pyroxene
12. subrounded small pebble of dark purplish gray to greenish gray propylitized olivine-pyroxene basalt; olivine → iddingsite and pyroxene → chlorite + quartz
13. small subangular pebble of vuggy purplish gray andesite with 10–15% phenocrysts of fine-grained plagioclase and pyroxene
14. small broken pebble (3 fragments) of mottled light gray to moderate purplish gray silicified rhyolite tuff breccia or silicified rhyolitic (tuffaceous) sandstone; no phenocrysts
15. small pebble (2 fragments) of light greenish gray silicified rhyolite tuff with trace of biotite

Group 2: 1302.4–1302.6 ft

16. large rounded pebble (>4 cm) of medium gray moderately phenocryst rich (15%) andesite porphyry with 1–3 mm long phenocrysts of plagioclase and fine pyroxene(?); cut by core bit
17. well rounded pebble (2.5 cm) of dark purplish gray olivine/iddingsite basalt with trace of slender plagioclase phenocrysts; some red and green silica
18. subrounded to subangular pebble of medium gray fine grained silica with trace of goethite (after pyrite?) and streaks of manganese oxide; probably silica vein material
19. angular pebble of light brownish gray to pink silicified rhyolite tuff breccia (aphyric) with one clast of pink aphyric flow banded rhyolite
20. subrounded small pebble of grayish red rhyolite with trace of sanidine phenocrysts

21. subrounded small pebble of medium gray lithoidal rhyolite with trace of quartz phenocrysts
22. small subrounded pebble of dark gray microvesicular fine grained basalt with trace of iddingsite
23. small subrounded pebble (1.5 cm) of streaked pale red to yellowish brown silicified tuff with sparse sand grains; aphyric, probably rhyolitic
24. small subrounded pebble of light brownish gray silicified rhyolitic(?) tuff; similar to no. 23 but without sand grains
25. small subangular pebble of medium gray, moderately crystal rich (~10%) rhyolite with small quartz and fresh black biotite
26. subangular small pebble (1 cm) of medium purplish gray, moderately phenocryst-rich plagioclase, hornblende, biotite dacite porphyry

NOTE: See Table 4 for description of rhyolitic cobbles intersected between 1302.6 to 1303.3 ft.