NMBMMR Open-file Report 426

Field boring log reports, City of Albuquerque piezometer nests

Sisters City Park
Del Sol Dividers
Hunters Ridge Park 1
West Bluff Park
Garfield Park

by
Peggy Johnson, S. D. Connell,
B. Allred, and B. D. Allen

Sister Cities Park

New Mexico Bureau of Mines & Mineral Resources
Socorro, NM 87801

A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Information: 505-835-5420
Publications: 505/835-5410
FAX: 505/835-6333

April 24, 1996

Mr. Norman Gaume
Water Resources Program
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Field Boring Log for Sister Cities Park Piezometers

Dear Norm:

I am pleased to submit the New Mexico Bureau of Mines' final report and field boring log for the Sister Cities Park piezometer nest. The report includes a summary stratigraphic column for the boring, as well as a lithologic summary and hydrogeologic interpretation. Attachments include detailed field descriptions for five-foot intervals and the geophysical logs produced by the U.S. Geological Survey's geophysics team.

We are pleased that installation of the piezometers is progressing on schedule. Drilling for the Del Sol Dividers Park piezometer was completed on Friday, April 19; accordingly, we expect to finalize the boring log for this site by about Monday, May 13. If you have any questions or comments, or if I can be of further assistance, please feel free to call.

Sincerely,

Charles E. Chapin
Director and State Geologist

/al

Enclosures

Sister Cities Park

Screened Intervals

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350 - 450 ft

789 - 794 ft

1298 - 1303 ft

Field Boring Log for Sister Cities Park
City of Albuquerque Piezometer Nest
FY 1996

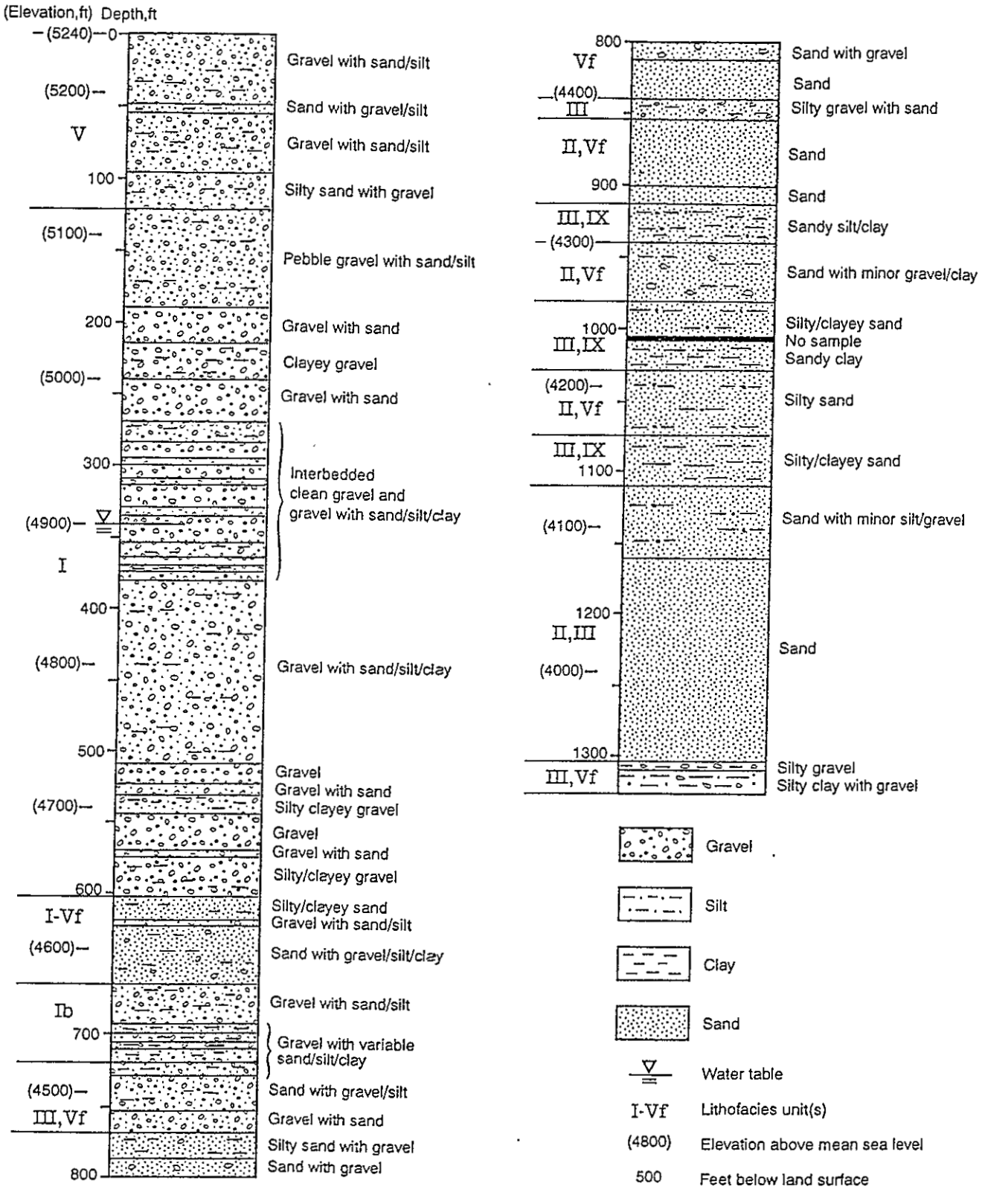
The following borehole logs were completed for the piezometer nest located at Sister Cities Park, Albuquerque, New Mexico, and installed by the U.S. Geological Survey for the City of Albuquerque in March 1996. This log is submitted in fulfillment of reporting requirements under the Intergovernmental Services Agreement between New Mexico Bureau of Mines and Mineral Resources and the City of Albuquerque, for collection and interpretation of monitor well drill cuttings. The log describes sample intervals, lithologic characteristics and interpretations, supplemental drilling information, borehole geophysical logging information and interpretation, and hydrogeologic interpretations. The lithologic descriptions were made in accordance with ASTM Standard Practice D2488-90 for Description and Identification of Soils (Visual-Manual Procedure), Figure 2 (Flow Chart for Identifying Coarse-Grained Soils (less than 50% fines)), except that the gravel-sand division was defined at a particle size of 2 mm. Additionally, the drilling fluids prevented a complete evaluation of the fine fraction according to ASTM criteria. The field lithologic descriptions include the following information:

1. Major textural class
2. Grain size distribution by major textural classes: silt/clay (<0.075 mm), sand (0.075-2 mm), gravel (>2 mm)
3. Grading and range of grain and clast size
4. Angularity and particle shape
5. Clast composition, in descending order of abundance
6. Color (Munsell Soil Color Chart) for fine matrix (<2 mm) unless otherwise noted
7. Other characteristics and driller's comments

Hydrogeologic interpretations classify the materials according to the descriptive system of unit nomenclature developed by Hawley and Haase (NMBMMR Open-file Report 387, 1992) and describe the hydrostratigraphic unit (RA, VA, PA, USF, MSF, LSF) and lithofacies subdivisions (I to X). It is important to note that the lithologic summary (page 3) provides descriptions based solely on grain size characteristics, and the lithofacies and hydrogeologic interpretations (page 6) are based on several integrated criteria including grain size, clast composition and geographic location within the basin. Both lithologic descriptions and lithofacies interpretations are illustrated in the stratigraphic column in Figure 2. A detailed log of the full lithologic field description by 5-foot sample interval is provided as Attachment A. The borehole geophysical logs are included as Attachment B.

Location:	T 11N, R 3E, Section 25.3.2.2 (projected). NW corner of Sister Cities Park, McKinney and Harper Streets, Albuquerque. Alameda 7.5′ quadrangle.
Elevation:	5240 ft (land surface estimate from topographic base map)
Drilling Method:	Mud Rotary
Drillers:	Tod Hunter, Dan Sweeney (U.S.G.S.)
Date Started:	March 1, 1996
Date Completed:	March 20, 1996
Sample Interval:	5 feet
Total Depth:	1325 ft (below land surface)
Geological Logging:	Sean Connell, Barry Allred, Peggy Johnson (NMBMMR)

Figure 1. Stratigraphic Column
Sister Cities Park



Lithologic Summary and Borehole Geophysical Interpretations

Depth (ft)	Lithologic Description
0–50	Gravel with sand and minor silt. Moderately to well graded with clasts up to 4 mm. Red to light yellowish brown granite wash. K-feldspar, plagioclase, quartz, and variable amounts of amphibole, limestone/dolomite. Buried calcic soil at 20–25 ft.
50–55	Fine to very coarse sand with gravel and silt. Moderately graded with clasts/grains 1–3 mm. Red to brown granite wash with K-feldspar, plagioclase, quartz.
55–95	Gravel with sand and minor silt. Moderately to well graded, angular to subangular with clasts to 4 mm. Coarse interval at 60 to 65 ft, with 18 mm clasts. Weak red to brownish yellow granite wash with K-feldspar, quartz, plagioclase, amphibole.
95–120	Silty sand with gravel. Moderately to well graded, angular to subrounded. Fining upward sequence with gravel clasts to 20 mm at base. Weak red to yellowish brown granite wash, with quartz, K-feldspar, plagioclase; plus chert, limestone/dolomite, quartzite, caliche-coated precambrian granite at base.
120–190	Pebble gravel with sand and silt. Moderately to well graded, angular to subrounded, with maximum clast size between 8 and 20 mm. Yellowish brown to brownish yellow. Mixed clast mineralogy/petrology with quartz, quartzite, K-feldspar, limestone/dolomite, basalt, plagioclase, precambrian gneiss/granite/volcanics, sandstone; pumice grains at 185 to 190 ft.
190–215	Gravel (≥85%) with minor sand. Poorly graded, angular to subrounded, with maximum clast size between 10 and 20 mm. Very dark grayish brown to light yellowish brown. Mixed clast mineralogy/petrology with quartz, quartzite, basalt, granite, various volcanics.
215–240	Gravel with silt/clay and clayey gravel. Well graded, angular to subrounded. Brown to light yellowish brown. Quartz, quartzite, basalt, granite.
240–270	Gravel (≥85%), with minor sand. Poorly graded, angular to subrounded, with maximum clast size to 25 mm. Light yellowish brown. Quartz, quartzite, granite, basalt, occasional pumice.
270–285	Gravel with sand/silt/clay. Moderately to well graded, angular to rounded. Yellowish brown. Granite, basalt, quartz, pumice.
285–295	Gravel (≥85%). Poorly graded, angular to subrounded. Moderate to light yellowish brown. Granite, basalt, quartz, pumice.
295–300	Gravel with sand. Moderately graded, angular to subrounded. Light yellowish brown. Granite, basalt, quartz, pumice.
300–310	Gravel (≥85%). Poorly graded, angular to subrounded. Light yellowish brown. Quartz, quartzite, granite, basalt, pumice.
310–315	Gravel with sand. Moderately graded, angular to rounded. Light yellowish brown. Quartz, quartzite, granite, basalt.
315–330	Gravel (≥85%). Poorly graded, angular to rounded with clasts to 25 mm. Light yellowish brown to dark yellowish brown. Quartz, quartzite, granite, basalt, sandstone.
330–335	Gravel with sand. Moderately graded, angular to rounded. Light yellowish brown. Quartz, quartzite, granite, basalt, sandstone.
335–355	Gravel (≥85%) with minor silt/clay. Poorly graded, angular to subrounded with clasts to 25 mm. Moderate to light yellowish brown. Quartz, quartzite, basalt, granite. Water table at 340 ft based on geophysics.
355–365	Gravel with silt/clay. Moderately graded, angular to subrounded. Reddish brown. Quartz, quartzite, granite, basalt.
365–370	Gravel (≥85%). Poorly graded, angular to rounded. Reddish brown. Quartz, quartzite, basalt, granite.
370–375	Gravel with silt/clay. Moderately graded, angular to subrounded. Brown. Quartz, quartzite, basalt, granite.

Depth (ft)	Lithologic Description
375–380	Gravel (≥85%). Poorly graded, angular to subrounded. Light brown. Quartz, quartzite, basalt, granite.
380–510	Gravel with sand/silt/clay. Moderately to well graded, angular to rounded, with maximum clast size between 15 and 20 mm. Reddish yellow. Quartz, quartzite, granite, basalt.
510–525	Gravel (≥85%). Poorly graded, angular to subrounded, with clasts to 20 mm. Reddish yellow. Quartz, quartzite, granite, basalt.
525–530	Gravel with sand. Moderately graded, angular to subrounded. Light yellowish brown. Quartz, quartzite, granite, basalt.
530–545	Silty-clayey gravel with sand. Well graded, angular to rounded. Light brown to light yellowish brown. Quartz, quartzite, granite, basalt.
545–570	Gravel (≥85%). Poorly graded, angular to rounded, with maximum clast size between 15 and 20 mm. Reddish yellow to light yellowish brown. Basalt, granite, quartz, quartzite, sedimentary clasts.
570–575	Gravel with sand. Moderately graded with clasts to 15 mm, angular to rounded. Reddish yellow. Quartz, quartzite, basalt, granite, sedimentary clasts.
575–605	Silty-clayey gravel with sand. Well graded, angular to rounded, with maximum clast size between 15 and 25 mm. Reddish yellow to very pale brown. Quartz, quartzite, basalt, granite.
605–620	Silty-clayey sand with gravel. Well graded, angular to rounded. Light yellowish brown. Quartz, quartzite, basalt, granite.
620–625	Gravel with sand/silt/clay. Well graded, angular to subrounded. Light yellowish brown. Quartz, quartzite, basalt, granite.
625–665	Sand with gravel/silt/clay. Well graded (very fine to very coarse), angular to subrounded. Light yellowish brown. Quartz, quartzite, basalt, granite, sedimentary clasts, limestone.
665-695	Gravel with sand/silt. Variably graded, subangular to rounded. Reddish brown to pale brown to dark grayish brown. Quartz, K-feldspar, quartzite, chert, volcanics, subvolcanics, sandstone.
695-700	Clay/silt (based on geophysics, no cuttings recovered)
700-705	Gravel with sand/silt. Moderately graded, subangular to rounded. Reddish brown to pale brown to dark grayish brown. Volcanics, quartz, granite, pumice.
705-710	Silty/clayey gravel with sand. Moderately graded, subangular to subrounded. Reddish brown to brown to dark grayish brown. Volcanics (basalt, snowflake obsidian), quartzite.
710-720	Gravel with sand/silt. Moderately graded, subangular to subrounded. Reddish brown to brown to dark grayish brown. Volcanics (basalt, granite), quartzite. Poorly cemented.
720-730	Silty gravel with sand; large clay component at 722-730 ft from geophysics and cuttings. Moderately graded, subangular to subrounded. Reddish brown to brown. Volcanics (basalt, granite), quartzite.
730-755	Sand (50-70%) with gravel/silt. Moderately graded, subangular to subrounded. Reddish brown to brown/pale brown. Volcanics (basalt, granite), quartzite, metamorphics, sandstone.
755-770	Gravel with sand and/or silt. Moderately graded, angular to subrounded. Pinkish gray to light brown. Volcanics (mafic, granite), quartzite, metamorphics, muscovite. Poorly cemented
770-790	Silty sand with gravel; large clay component at 776-780 ft from geophysics and cuttings. Moderately graded, subangular to subrounded. Pinkish gray to light brown/light yellowish brown. Granite, quartzite, metamorphics.
790-815	Sand with gravel. Poorly to moderately graded, subangular to subrounded. Light brown. Granite, quartz, quartzite, metamorphics, obsidian.

Depth (ft)	Lithologic Description
815-840	Sand. Well to moderately graded, subangular to subrounded. Light brown. Quartz, quartzite, metamorphics, limestone.
840-855	Silty gravel with sand. Moderately graded, angular to subrounded. Light brown. Granite, quartz, feldspar, quartzite, metamorphics, red-brown welded (Amalia?) tuff.
855-915	Sand (≥85%) with minor gravel. Poorly to moderately graded, angular to rounded. Pink to pale brown. Quartz/quartzite, granite, limestone, feldspar, metamorphics, miscellaneous volcanics, obsidian.
915-940	Sandy silt to sandy clay; large clay component 916-928 ft from geophysics and cuttings. Moderately graded, subangular to rounded. Very pale brown to light yellowish brown. Quartz (clear and yellow), granite, mafics, metamorphics, feldspar.
940-980	Sand with minor gravel and silt. Well to moderately graded, angular to subrounded. Pink to pale brown to very pale brown. Quartz, feldspar, granite, mafics, metamorphics, chert, limestone.
980-1005	Silty-clayey sand with minor, variable gravel (significant [20-40%] silt/clay, based on cuttings and geophysics). Well to moderately graded, angular to subangular. Very pale brown. Quartz, feldspar, granite, mafics, metamorphics, chert, obsidian.
1005-1010	No data
1010-1030	Sandy clay and silty clay to sandy silt. Moderately to poorly graded, angular to subrounded. Red to reddish yellow, to brownish yellow. Metamorphics, quartz, chert, feldspar.
1030-1075	Silty sand, with minor, variable clay and gravel. Sand (70-85%) with a significant component of clay at 1032-1044 ft based on geophysics, and at 1045-1050 ft based on cuttings. Well to moderately graded, angular to subrounded. Very pale brown to light yellowish brown to brown. Quartz, feldspar, granite, metamorphics, chert, sandstone.
1075-1110	Silty/clayey sand to sandy silt/clay. Significant clay component 1070-1100 ft based on geophysics. Green and red-brown variegated clay at 1090-1100 ft. Moderately to poorly graded, angular to subrounded. Generally reddish brown to light yellowish brown to very pale brown. Quartz, feldspar, granite, dark gray chert, red-brown tuff.
1110-1160	Sand with minor, variable silt and gravel. Dirty sand with 10-40% gravel. Well to moderately graded, angular to subrounded. Light gray to very pale brown. Quartz, feldspar, tuff, miscellaneous volcanics, granite, quartzite, chert.
1160-1305	Sand (≥85%). Very clean sand, well to moderately graded, angular to rounded. Light gray to grayish brown to very pale brown. Quartz (clear and rose), sandstone, quartzite, feldspar, volcanics, basalt, limestone, chert, occasional pumice. Geophysics suggests clay component 1270-1286 ft.
1305-1310	Silty gravel. Poorly graded, subrounded. Grayish brown to brown. Quartz, quartzite, basalt, granite.
1310-1325	Silty clay with gravel. Poorly graded, subangular to subrounded. Light yellowish brown. Quartz, quartzite, basalt, granite.

Hydrogeologic Interpretation

Depth (ft)	Hydrostratigraphic Unit	Lithofacies
0–120	Medial to distal piedmont–slope alluvium (PA)	V
120–605	Undifferentiated ancestral river channel alluvium, gravel dominated (≥50%) with interbedded sand/silt/clay (USF-2)	I
605–620	Ancestral river channel alluvium, sand (50–70%) with significant gravel/silt/clay (USF-2)	II, III
620–625	Ancestral river channel alluvium, gravel (50–70%) with interbedded sand/silt/clay (USF-2)	Ib
625–665	Ancestral river channel alluvium and interbedded floodplain facies, sand (50–70%) with significant gravel/silt/clay, possibly interbedded with distal piedmont slope alluvium (USF-2)	II, III Vf
665–720	Ancestral river channel alluvium, gravel dominated (≥50%), with interbedded silt/sand/clay (USF-2)	Ib
720–765	Ancestral river channel alluvium and interbedded floodplain facies, possibly interbedded with distal piedmont slope distributary channel alluvium; variably mixed silt, sand, and gravel (USF-2/USF-1)	III, Vf
765–840	Medial to distal alluvial fan and piedmont slope distributary channel alluvium, possibly associated with Sandia Mountain source; variably mixed silt, sand, and gravel; clean sand at 815–840 (USF-1)	Vf
840–855	Ancestral river channel and interbedded floodplain alluvium; variably mixed silt, sand, and gravel (USF-2)	III
855–915	Ancestral river channel or basin floor alluvium interbedded with distal piedmont slope distributary channel alluvium having Sandia Mountain source; sand (≥85%) (USF-1/USF-2)	II, Vf
915–940	Basin floor alluvial flat and playa lake deposits (≥50% silt/clay) (USF-2)	III, IX
940–980	Ancestral river channel or basin floor alluvium and interbedded distal piedmont slope distributary channel alluvium with Sandia Mountain source (USF-1/USF-2)	II, Vf
980–1030	Basin floor alluvial flat, playa lake and interbedded floodplain alluvium; variably mixed clay, silt, sand, and minor gravel (USF-2)	III, IX
1030–1075	Ancestral river channel or basin floor alluvium interbedded with distal piedmont slope distributary channel alluvium having Sandia Mountain source; sand (50–70%) (USF-1/USF-2)	II, Vf
1075–1110	Basin floor alluvial flat, playa lake, and interbedded floodplain alluvium; variably mixed clay, silt and sand (USF-2)	III, IX
1110–1305	Ancestral river channel or basin floor alluvium and interbedded floodplain facies; sand (60–90%) with significant silt/clay/gravel (USF-2)	II, III
1305–1325	Ancestral river channel and interbedded floodplain; possibly interbedded with distal piedmont slope alluvium; variably mixed silt, sand and gravel with limited clast composition (USF-2 to MSF-2 transition)	III, Vf

Attachment A
Field Lithologic Descriptions
Sister Cities Park Piezometer Nest

Sample No.	Depth (ft)	Description
SCS-1	0–5	Gravel (<10% silt, ~10% sand, ~80% gravel). Well graded. K-feldspar, plagioclase, quartz. 7.5YR5/4 fine, 5YR5/4 coarse. Granite wash.
SCS-2	5–10	Gravel with sand (<5% silt, ~15% sand (vf–c), 80% gravel). Well graded. K-feldspar, plagioclase, quartz. 7.5YR5/4 fine, 2.5YR4/6, 2.5YR5/4, N 7/0 coarse.
SCS-3	10–15	Gravel with sand and silt (<10% silt, 30% sand, 60% gravel). Well graded with clasts to 4 mm. K-feldspar, plagioclase, quartz. 7.5YR4/6 fine, 2.5YR4/6, 2.5YR5/4, N7/0 coarse.
SCS-4	15–20	Gravel with sand (<5% silt, ~25% sand, ~70 gravel). Well graded. K-feldspar, plagioclase, quartz. 10YR4/4 fine, 2.5YR4/6 to N7/0 coarse.
SCS-5	20–25	Gravel with sand (<5% silt, 25% sand, 70% gravel). Well graded. K-feldspar, plagioclase, quartz. 10YR7/4 fine, 2.5YR4/6 to N7/0 coarse. Buried calcic soil.
SCS-6	25–30	Gravel with sand (<5% silt, 15% sand (vf–f), 80% gravel). Moderately graded. K-feldspar, plagioclase, quartz. 10YR6/4 fine, 2.5YR4/6 to N7/0 coarse.
SCS-7	30–35	Gravel with sand and silt (<10% silt, 20% sand (vf–f), 70% gravel). Moderately graded. K-feldspar, plagioclase, quartz. 10YR6/4 fine, 2.5YR4/6 to N7/0 coarse.
SCS-8	35–40	Gravel with sand and silt (same as above). 10YR5/4 fine, 2.5YR4/4, 10YR6/4, N7/0 coarse.
SCS-9	45–50	Gravel with sand and silt (<10% silt, 40% sand (vf–vc), 50% gravel). Well graded with clasts to 4 mm. K-feldspar, plagioclase, quartz. 10YR6/4 fine, 2.5YR4/4, 10YR6/4, N7/0 coarse.
SCS-10	50–55	Sand with gravel and silt (<10% silt, 70% sand (f–vc), 20% gravel). Moderately graded with ~1–3 mm grains and clasts. K-feldspar, plagioclase, quartz. 10YR6/4 fine, 2.5YR5/6 to 7.5YR5/4 coarse.
SCS-11	55–60	Gravel with sand (<5% silt, ~35% sand (vc), ~60% gravel). Moderately graded. K-feldspar, plagioclase, quartz. 5YR6/4 fine, 2.5YR5/6 to 7.5YR5/4 coarse.
SCS-12	60–65	Gravel with sand (0% silt, ~30% sand, ~70% gravel). Well graded, angular to subangular, with 2–18 mm clasts. K-feldspar, plagioclase, quartz. 2.5YR4/6 to 10YR6/6 coarse.
SCS-13	65–70	Gravel with very coarse sand (0% silt, ~20% sand (vc), ~80% gravel). Well graded, subangular. K-feldspar, plagioclase, quartz. 2.5YR4/6 to 10YR6/6 coarse.
SCS-14	70–75	Gravel (<5% silt, ~10% sand (f), ~90% gravel). Well graded, angular to subangular. 10YR6/4 fine, 2.5YR4/6 to 10YR6/6 coarse.
SCS-15	77	Gravel with sand (<5% silt, ~40% sand (vf–f), 55% gravel). Well graded, subangular. 10YR6/4 fine, 2.5YR4/6 to 10YR6/6 coarse.
SCS-16	80–85	Pebbly gravel with sand (<5% silt, ~30–35% sand, ~60% gravel). Moderately graded, subangular to angular, with 2–4 mm clasts. Quartz, K-feldspar, plagioclase, amphibole. 10YR5/4.
SCS-17	85–90	Pebbly gravel with sand (<5% silt, ~45% sand, ~55% gravel). Moderately graded, subangular to angular, with 2–4 mm clasts. Quartz, K-feldspar, plagioclase, amphibole. 10YR5/4.

Sample No.	Depth (ft)	Description
SCS-18	90–95	Pebbly gravel with sand and silt (<10% silt, ~40% sand, ~55% gravel). Moderately graded, angular, with 2–4 mm clasts. K-feldspar, quartz, plagioclase, chert, amphibole. 10YR5/4 fine, 2.5YR5/4 coarse.
SCS-19	95–100	Silty sand (~15% silt, ~75% sand (f–vc), <10% gravel). Well graded, angular. K-feldspar, quartz, plagioclase, amphibole. 2.5YR4/2 to 10YR4/1 fine, 2.5YR5/4 to 10YR5/4 coarse. Low retrieval.
SCS-20	100–105	Silty sand (~15% silt, 80% sand (f–vc), <5% gravel). Moderately graded, angular to subangular. Quartz, chert, K-feldspar, plagioclase, 2.5YR4/2 to 10YR4/1 fine, 2.5YR5/4 to 10YR5/4 coarse. Low retrieval.
SCS-21	105–110	Silty sand with gravel (<10% clay, ~25% silt, ~45% sand (vf–c), ~20% gravel). Moderately graded, angular to subangular, with 2–8 mm clasts. K-feldspar, plagioclase, quartz. 7.5YR5/4. Low retrieval.
SCS-22	110–115	Silty sand with gravel (~10% clay, ~25% silt, ~45% sand (vf–c), ~20% gravel). Moderately graded, angular to subangular, with 2–8 mm clasts. K-feldspar, limestone/dolomite, quartz, plagioclase. 10YR5/6. Low retrieval.
SCS-23	115–120	Silty sand with gravel (20% clay, ~15% silt, ~40% sand (vf–c), ~25% gravel). Well graded, subangular to subrounded, with 2–20 mm clasts. Limestone, quartzite, basalt, plagioclase, K-feldspar, quartz, 10YR5/6. Caliche-coated Precambrian granite grains.
SCS-24	120–125	Pebbly gravel with sand and silt (10% clay, ~15% silt, ~30% sand (vf–c), ~45% gravel). Well graded, subangular to subrounded, with 2–15 mm clasts. Limestone, quartzite, gneiss, basalt, K-feldspar, quartz, plagioclase, Precambrian volcanics. 10YR5/6. Caliche-coated Precambrian granite grains.
SCS-25	125–130	Pebbly gravel with sand and silt (10–20% clay, ~15–25% silt, 10–20% sand (vf–c), 45% gravel). Moderately to well graded, subangular to subrounded, with 2–15 mm clasts. Limestone, quartzite, gneiss, basalt, K-feldspar, quartz, plagioclase, 10YR5/6. Caliche-coated Precambrian granite grains.
SCS-26	130–135	Pebbly gravel with sand and silt (~20% silt/clay, 20% sand (vf–c), ~60% gravel). Moderately graded, angular to subangular, with 2–10 mm clasts. K-feldspar, quartzite, limestone, plagioclase, quartz. 10YR5/6. Caliche-coated Precambrian granite grains.
SCS-27	135–140	Pebbly gravel with sand and silt (~15% silt/clay, 20% sand (vf–c), 65% gravel). Well graded, angular to subrounded, with 2–10 mm clasts. K-feldspar, quartzite, plagioclase, basalt, volcanics, limestone, quartz. 10YR5/6. <2 mm basalt grains are rounded.
SCS-28	140–145	Pebbly gravel with sand (≤10% silt/clay, 25% sand (vf–c), 65% gravel). Well graded, angular to subrounded, with 2–8 mm clasts. K-feldspar, quartzite, plagioclase, basalt, volcanics, limestone, quartz. 10YR5/6. <2 mm basalt grains are rounded.
SCS-29	145–150	Pebbly gravel with sand (≤5 silt/clay, 30% sand (vf–c), 65% gravel). Well graded, angular to subrounded, with 2–8 mm clasts. K-feldspar, quartzite, plagioclase, basalt, volcanics, limestone, quartz. 10YR6/6. <2 mm basalt grains are rounded.
SCS-30	150–155	Same as above.
SCS-31	155–160	Pebbly gravel with sand and silt (~10–15% silt/clay, ~30% sand (vf–c), ~55% gravel). Well graded, angular to subrounded, with 2–20 mm clasts. Quartz, quartzite, basalt, K-feldspar, volcanics, plagioclase. 10YR6/6.

Sample No.	Depth (ft)	Description
SCS-49	245–250	Gravel (<5% silt/clay, 5% sand, 90% gravel). Poorly graded, angular to subrounded. Quartz, quartzite, granite, basalt. 10YR6/4.
SCS-50	250–255	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Quartz, quartzite, granite, basalt. 10YR6/4.
SCS-51	255–260	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Quartz, quartzite, granite, basalt, pumice(?). 10YR6/4.
SCS-52	260–265	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Granite, basalt, quartz, quartzite. 10YR6/4.
SCS-53	265–270	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Granite, basalt, quartz, pumice(?). 10YR6/4.
SCS-54	270–275	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Moderately graded, angular to subrounded. Granite, basalt, quartz, pumice(?). 10YR5/4. Gravel size is smaller.
SCS-55	275-280	Gravel with silt/clay (10% silt/clay, 10% sand, 80% gravel). Well graded, angular to rounded. Granite, basalt, quartz, pumice(?). 10YR5/4. More clay present.
SCS-56	280–285	Gravel with silt/clay (10% silt/clay, 10% sand, 80% gravel). Well graded, angular to subrounded. Granite, basalt, quartz, pumice(?). 10YR5/4.
SCS-57	285–290	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Granite, basalt, quartz, pumice(?). 10YR5/4.
SCS-58	290–295	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Granite, basalt, quartz, pumice(?). 10YR6/4.
SCS-59	295–300	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Moderately graded, angular to subrounded. Granite, basalt, quartz, pumice(?). 10YR6/4.
SCS-60	300–305	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Granite, basalt, quartz, pumice(?). 10YR6/4.
SCS-61	305–310	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subrounded. Quartz, quartzite, granite, basalt. 10YR6/4 ("drilling mud color").
SCS-62	310–315	Gravel with sand (<5% silt/clay, 15% sand, 80% gravel). Moderately graded, angular to rounded. Quartz, quartzite, granite, basalt. 10YR6/4.
SCS-63	315–320	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to rounded. Quartz, quartzite, granite, basalt. 10YR6/4.
SCS-64	320–325	Gravel (<5% silt/clay, 5% sand, 90% gravel). Poorly graded, angular to rounded, with 2–25 mm clasts. Quartz, quartzite, granite, basalt, sed. clasts. 10YR6/4.
SCS-65	325–330	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to rounded. Quartz, quartzite, granite, basalt, sed. clasts. 10YR3/4.
SCS-66	330–335	Gravel with sand (<5% silt/clay, 15% sand, 80% gravel). Moderately graded, angular to rounded. Quartz, quartzite, granite, basalt, sed. clasts. 10YR6/4.
SCS-67	335–340	Gravel (<5% silt/clay, 5% sand, 90% gravel). Poorly graded, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-68	340–345	Same as above.

Sample No.	Depth (ft)	Description
SCS-69	345–350	Gravel (5% silt/clay, <5% sand, 90% gravel). Poorly graded, with 2–25 mm clasts, angular to subrounded. Quartz, quartzite, basalt. 10YR5/6. Minor amounts of clay/silt.
SCS-70	350–355	Gravel with silt/clay (10% silt/clay, <5% sand, 85% gravel). Poorly graded, angular to subrounded. Quartz, quartzite, basalt. 10YR6/4.
SCS-71	355–360	Gravel with silt/clay (15% silt/clay, <5% sand, 80% gravel). Moderately graded, angular to subrounded. Quartz, quartzite, basalt. 5YR5/4. Clay amount increasing.
SCS-72	360–365	Gravel with silt/clay (20% silt/clay, <5% sand, 75% gravel). Moderately graded, angular to subrounded. Quartz, quartzite, basalt. 5YR5/4.
SCS-73	365–370	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to rounded. Quartz, quartzite, basalt, granite. 5YR5/4. Gravel size is smaller.
SCS-74	370–375	Gravel with silt/clay (15% silt/clay, 10% sand, 75% gravel). Moderately graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR5/4.
SCS-75	375–380	Gravel (5% silt/clay, 5% sand, 90% gravel). Poorly graded, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-76	380–385	Gravel with sand (5% silt/clay, 25% sand, 70% gravel). Moderately graded, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-77	385–390	Gravel with sand (<5% silt/clay, 25% sand, 70% gravel). Moderately graded, with clasts up to 20 mm, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR 6/4 ("drilling mud color").
SCS-78	390–395	Same as above.
SCS-79	395–400	Gravel with sand/silt/clay (10% silt/clay, 20% sand, 70% gravel). Moderately graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR6/6.
SCS-80	400–405	Gravel with silt/clay (10% silt/clay, 10% sand, 80% gravel). Moderately graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR6/4.
SCS-81	405–410	Gravel with silt/clay (10% silt/clay, 5% sand, 85% gravel). Well graded, with clasts up to 15 mm, angular to subangular. Quartz, quartzite, basalt, granite. 10YR5/4.
SCS-82	410–415	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Moderately graded, angular to rounded. Quartz, quartzite, basalt, granite. 10YR5/4.
SCS-83	415–420	Gravel with sand (<5% silt/clay, 25% sand, 70% gravel). Moderately graded, with clasts up to 15 mm, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4 ("drilling mud color").
SCS-84	420–425	Gravel with sand (<5% silt/clay, 20% sand, 75% gravel). Moderately graded, with clasts up to 15 mm, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-85	425–430	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Moderately graded, with clasts up to 15 mm, angular to subrounded. Quartz, quartzite, basalt, granite, pumice. 10YR6/4.
SCS-86	430–435	Gravel with sand (<5% silt/clay, 15% sand, 80% gravel). Moderately graded, with clasts up to 15 mm, angular to subrounded. Quartz, quartzite, basalt, granite, pumice. 10YR6/4.
SCS-87	435–440	Gravel with silt/clay/sand (20% silt/clay, 15% sand, 65% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR5/6. Significant amount of clay-silt present.

Sample No.	Depth (ft)	Description
SCS-88	440–445	Gravel with silt/clay (20% silt/clay, 10% sand, 70% gravel). Well graded, angular to rounded. Quartz, quartzite, basalt, granite. 7.5YR5/6. Significant amount of clay-silt present.
SCS-89	445–450	Gravel with sand/silt/clay (15% silt/clay, 20% sand, 65% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR5/6.
SCS-90	450–455	Gravel with silt/clay (15% silt/clay, 10% sand, 75 gravel). Well graded, with clasts up to 20 mm, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR6/6.
SCS-91	455–460	Gravel with sand/silt/clay (10% silt/clay, 20% sand, 70% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR6/6.
SCS-92	460–465	Gravel with sand (5% silt/clay, 35% sand, 60% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR6/6.
SCS-93	465–470	Gravel with sand/silt/clay (10% silt/clay, 20% sand, 70% gravel). Well graded, angular to subrounded. Quartz, quartzite, granite, basalt. 7.5YR6/4.
SCS-94	470–475	Gravel with sand/silt/clay (30% silt/clay, 20% sand, 50% gravel). Well graded, angular to subrounded. Quartz, quartzite, granite, basalt. 7.5YR6/4. Clayey silt or silty clay "globs" contain up to 50% very fine sand.
SCS-95	475–480	Gravel with sand/silt/clay (25% silt/clay, 25% sand, 50% gravel). Well graded, angular to rounded. Quartz, quartzite, granite, basalt. 7.5YR6/4. Clayey silt or silty clay "globs" contain up to 50% very fine sand.
SCS-96	480–485	Gravel with sand/silt/clay (20% silt/clay, 30% sand, 50% gravel). Well graded, angular to subangular. Quartz, quartzite, granite, basalt. 7.5YR6/4.
SCS-97	485–490	Gravel with silt/clay (10% silt/clay, 10% sand, 80% gravel). Well graded, angular to subrounded. Quartz, quartzite, granite, basalt. 5YR6/6.
SCS-98	490–495	Gravel with sand/silt/clay (20% silt/clay, 30% sand, 50% gravel). Well graded, angular to subrounded. Quartz, quartzite, granite, basalt. 7.5YR6/6.
SCS-99	495–500	Gravel with sand/silt/clay (15% silt/clay, 35% sand, 50% gravel). Well graded, angular to subrounded. Quartz, quartzite, granite, basalt. 7.5YR6/6.
SCS-100	500–505	Gravel with sand/silt/clay (10% silt/clay, 20% sand, 70% gravel). Well graded, angular to subangular. Quartz, quartzite, granite, basalt. 7.5YR6/6.
SCS-101	505–510	Gravel with sand/silt/clay (20% silt/clay, 30% sand, 50% gravel). Well graded, angular to subrounded. Quartz, quartzite, granite, basalt. 7.5YR6/6.
SCS-102	510–520	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to subangular. Quartz, quartzite, granite, basalt. 7.5YR6/6.
SCS-103	520–525	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, with 2–20 mm clasts, angular to subrounded. Quartz, quartzite, granite, basalt. 7.5YR6/6.
SCS-104	525–530	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Moderately graded, angular to subrounded. Quartz, quartzite, granite, basalt. 10YR6/4 ("drilling mud color").
SCS-105	530–535	Silty-clayey gravel (40% silt/clay, 10% sand, 50% gravel). Well graded, angular to subangular. Quartz, quartzite, granite, basalt. 10YR6/4.
SCS-106	535–540	Silty-clayey gravel with sand (40% silt/clay, 20% sand, 40% gravel). Well graded, angular to subrounded. Quartz, quartzite, granite, basalt. 7.5YR6/4.

Sample No.	Depth (ft)	Description
SCS-107	540–545	Silty-clayey gravel with sand (30% silt/clay, 20% sand, 50% gravel). Well graded, angular to rounded. Quartz, quartzite, granite, basalt. 7.5YR6/4.
SCS-108	545–550	Gravel (<5% silt/clay, 10% sand, 85% gravel). Poorly graded, with 2–15 mm clasts, angular to subrounded. Basalt, granite, quartz, quartzite. 10YR6/4 ("drilling mud color").
SCS-109	550–555	Same as above.
SCS-110	555–560	Gravel (5% silt/clay, 5% sand, 90% gravel). Poorly graded, with 2–20 mm clasts, angular to rounded. Basalt, granite, quartz, quartzite. 10YR6/4. Poor recovery.
SCS-111	560–565	Gravel (5% silt/clay, 5% sand, 90% gravel). Poorly graded, with 2–20 mm clasts, angular to rounded. Quartz, quartzite, basalt, granite, sed. clasts. 7.5R6/6.
SCS-112	565–570	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, angular to rounded. Quartz, quartzite, basalt, granite, sed. clasts. 7.5YR7/6.
SCS-113	570–575	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Moderately graded, with 2–15 mm clasts, angular to rounded. Quartz, quartzite, basalt, granite, sed. clasts. 7.5YR6/6.
SCS-114	575–580	Silty-clayey gravel with sand (15% silt/clay, 25% sand, 60% gravel). Well graded, with 2–15 mm clasts, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR6/4.
SCS-115	580–585	Silty-clayey gravel with sand (30% silt/clay, 30% sand, 40% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 7.5YR6/6.
SCS-116	585–590	Silty-clayey gravel with sand (30% silt/clay, 30% sand, 40% gravel). Well graded, with 2–15 mm clasts, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/6.
SCS-117	590–595	Silty-clayey gravel with sand (20% silt/clay, 40% sand, 40% gravel). Well graded, with 2–20 mm clasts, angular to subrounded. Quartz, quartzite, basalt, gravel. 10YR6/4.
SCS-118	595–600	Silty-clayey gravel with sand (15% silt/clay, 35% sand, 50% gravel). Well graded, with 2–25 mm clasts, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4. Very large pebbles.
SCS-119	600–605	Silty-clayey gravel with sand (30% silt/clay, 30% sand, 40% gravel). Well graded, with 2–15 mm clasts, angular to rounded. Quartz, quartzite, basalt, granite. 10YR7/4. Pebble size much smaller than previous sample.
SCS-120	605–610	Silty-clayey sand with gravel (15% silt/clay, 60% sand (vf–vc), 25% gravel). Well graded, angular to rounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-121	610–615	Sand with gravel/silt/clay (10% silt/clay, 60% sand (vf–vc), 30% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-122	615–620	Sand with gravel/silt/clay (10% silt/clay, 50% sand (vf–vc), 40% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-123	620–625	Gravel with sand/silt/clay (10% silt/clay, 30% sand, 60% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-124	625–630	Sand with gravel/silt/clay (10% silt/clay, 50% sand (vf–vc), 40% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite, sed. clasts. 10YR6/4.
SCS-125	630–635	Sand with gravel/silt/clay (10% silt/clay, 60% sand (vf–vc), 30% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite, sed. clasts. 10YR6/4.
SCS-126	635–640	Same as above.

Sample No.	Depth (ft)	Description
SCS-127	640–645	Sand with gravel/silt/clay (15% silt/clay, 60% sand (vf–vc), 25% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite, sed. clasts. 10YR6/4.
SCS-128	645–650	Sand with gravel/silt/clay (20% silt/clay, 60% sand (vf–vc), 20% gravel). Well graded, angular to subrounded. Quartz, quartzite, basalt, granite, sed. clasts. 10YR6/4.
SCS-129	650–655	Same as above.
SCS-130	655–660	Same as above.
SCS-131	660–665	Same as above.
SCS-132	665–670	Gravel with sand/silt (≤10% silt/clay, 20% sand (vf–vc), 70% gravel). Moderately graded, subrounded to rounded. Pink feldspars, quartz, chert, volcanic, sandstone, subvolcanic, white volcanic. 10YR6/3.
SCS-133	670–675	Gravel with sand/silt (≤10% silt/clay, 30% sand (f–vc), 60% gravel). Well graded, subrounded to round. Pink feldspars, quartz, chert, volcanic, sandstone, subvolcanic, white volcanic. 10YR6/3–4 (fines), 2.5YR4/4–7.5YR5/1–6 (coarse). Rounded volcanic clasts.
SCS-134	675–680	Gravel with sand/silt (≤10% silt/clay, 30% sand (vf–vc), 60% gravel). Well graded, subangular to rounded. Quartzite, K-feldspar, volcanic. 10YR6/4 and 7/2 (fines), 2.5YR4/4–7.5YR5/1–6 (coarse). Light gray $CaCO_3$ nodules.
SCS-135	680–685	Gravel with sand (≤5 silt/clay, 25% sand (m–vc), 70% gravel). Moderately to poorly graded, subangular to rounded. Quartz, pink feldspar, granite, volcanic, subvolcanic. 10YR6/2 (fines), 2.5YR4/4, 10YR4/2, 7.5YR5/1–6 (coarse). Abundant rounded clasts, some cut by bit (more angular).
SCS-136	685–690	Gravel with sand (0% silt/clay, 40% sand (m–vc), 60% gravel). Moderately to poorly graded, subangular to rounded. Volcanic, subvolcanic (includes basalt, andesite(?), and rhyolite(?)), quartz, granite. 10YR6/2 (fines), 2.5YR4/4, 10YR4/2, 7.5YR5/1–6 (coarse). Loose, minor cement.
SCS-137	690–695	Gravel with sand/silt (10% silt/clay, 20% sand (vf–c), 70% gravel). Well to moderately graded, subangular to rounded. Volcanic, quartz, granite. 10YR6/4 (fines), 2.5YR4/4, 10YR4/2, 7.5YR5/1–6 (coarse). Poor recovery.
	695–700	Sampling error. No recovery.
SCS-138	700–705	Gravel with sand/silt (10% silt/clay, 20% sand (vf–vc), 70% gravel). Moderately graded, subangular to subrounded. Volcanic, minor quartz and granite, pumice. 10YR6/3 (fines), 2.5YR4/4, 10YR4/2, 7.5YR5/1–6 (coarse). Very poor recovery.
SCS-139	705–710	Silty-clayey gravel with sand (15% silt/clay, 25% sand (vf–c), 60% gravel). Well to moderately graded, subangular to subrounded. Volcanic (basalt, snowflake obsidian), quartzite. 10YR5/3 (fines), 2.5YR4/4, 10YR4/2, 7.5YR5/1–6 (coarse). Slightly clayey. Poor recovery.
SCS-140	710–715	Gravel with sand/silt (≤10% silt/clay, 15% sand (vf–vc), 75% gravel). Moderately graded, subangular to subrounded. Volcanic, quartzite, granite. 10YR5/3 (fines, 2.5YR4/4, 10YR4/2, 7.5YR5/1–6 (coarse).
SCS-141	715–720	Gravel with silt (≤10% silt/clay, ≤10% sand, 80% gravel). Moderately graded, angular to subrounded. Volcanic (basalt), quartzite, pink granite. 10YR5/3 (fines), 2.5YR4/4, 10YR4/2, 7.5YR5/1–6 (coarse). Poorly cemented. Poor recovery.

Sample No.	Depth (ft)	Description
SCS-142	720–725	Silty gravel with sand (15% silt/clay, 40% sand (vf–c), 45% gravel). Well to moderately graded, subangular to subrounded. Volcanic (basalt), quartzite, pink granite. 10YR5/3. Good recovery.
SCS-143	725–730	Silty-clayey gravel with sand (25% silt/clay, 35% sand (f–m), 40% gravel). Moderately graded, angular to subangular. Quartzite, granite. 10YR5/3, 5YR5/3–4. Clayey. Poor recovery.
SCS-144	730–735	Silty sand with gravel (20% silt/clay, 50% sand (f–c), 30% gravel). Moderately to poorly graded, subangular to subrounded. Volcanic, metamorphic, granite. 10YR5/3, 5YR5/3–4. Poor recovery.
SCS-145	735–740	Silty sand with gravel (20% silt/clay, 60% sand (vf–m), 20% gravel). Moderately to poorly graded, subangular to subrounded. Basalt, quartzite. 10YR6/3.
SCS-146	740–745	Sand with gravel and silt (≤10 silt/clay, 50% sand (vf–vc), 40% gravel). Moderately graded, subangular to subrounded. Quartzite. 5YR5/4, 10YR6/3. Very poor recovery.
	745–750	No recovery.
SCS-147	750–755	Sand with gravel/silt (≤10 silt/clay, 70% sand, 20% gravel). Well to moderately graded, subangular to subrounded. Basalt, quartzite, breccia, sandstone. 10YR7/4 (fine), 10YR3/1, N8/0, 2.5YR5/6, 5YR6/3 (coarse). Poor recovery.
SCS-148	755–760	Silty gravel with sand (~15% silt/clay, 25% sand (vf–vc), 60% gravel). Moderately graded, subangular to subrounded. Volcanic-mafic intrusive, quartzite, granite. 7.5YR6/2. Poorly cemented.
SCS-149	760–765	Gravel with sand (0% silt/clay, 30% sand (f–vc), 70% gravel). Moderately graded, angular to subrounded. Volcanic, mafic, quartzite, mica (muscovite). Color is variable. Poorly cemented Sandia piedmont facies. Moderate to poor recovery.
SCS-150	765–770	Silty gravel with sand (25% silt/clay, 25% sand (vf–c), 50% gravel). Moderately graded, angular to subrounded. Metamorphic, granite, quartzite. 7.5YR6/2–4 (fine), variable colors (coarse). Most gravel cut by bit. Sandia piedmont. Poor recovery.
SCS-151	770–775	Silty sand with gravel (25% silt/clay, 50% sand (f–vc), 25% gravel). Moderately graded, subangular to subrounded. Granite, quartzite. 7.5YR6/2–4 (fine), variable colors (coarse). Sandia piedmont. Poor recovery.
SCS-152	775–780	Silty sand with gravel (35% silt/clay, 40% sand (vf–vc), 25% gravel). Well to moderately graded, subangular to subrounded. Granite and metamorphic. 7.5–10YR6/4 (fine), variable colors (coarse). Slightly clayey. Sandia piedmont. Poor recovery.
	780–785	Very poor recovery. Not sampled.
SCS-153	785–790	Silty sand (15–20% silt/clay, 70–75% sand (vf–vc), 10% gravel). Well to moderately graded, subangular to subrounded. Granite and metamorphic. 7.5YR6/4 (fine), variable colors (coarse). Sandia piedmont. Poor recovery.
SCS-154	790–800	Sand with silt and gravel (10% silt/clay, 65% sand (vf–vc), 25% gravel). Moderately graded, subangular to subrounded. Quartz/quartzite, metamorphic. 7.5YR6/4. Combined samples for interval 790–800 ft due to very poor recovery. Sandia piedmont.
SCS-SS-B	800–810	Sand with gravel (0% silt/clay, 85% sand (m–vc), 15% gravel). Well to moderately graded, angular to subrounded. Shaker sample.

Sample No.	Depth (ft)	Description
SCS-155	800–810	Sand with gravel (≤5% silt/clay, 55% sand (f-vc), 40% gravel). Moderately graded, subangular to rounded. Granite, metamorphic, quartz, obsidian. 7.5YR6/4. Very poor recovery 10 ft interval. Obsidian may be reworked during drilling.
SCS-156	810–815	Sand with gravel (0% silt/clay, 60% sand (m-vc), 40% gravel). Poorly graded, subangular to subrounded. Metamorphic, granite. 7.5YR6/4. Sandia piedmont(?). Very poor recovery.
SCS-SS-C	815–830	Sand (≤5% silt/clay, 85% sand (m-vc), 10% gravel). Moderately graded, angular to subrounded. Shaker sample.
SCS-157	815–830	Sand (≤5% silt/clay, 90% sand (f-vc), ≤5 gravel). Well to moderately graded, subangular to subrounded. Quartz, metamorphic, limestone. Color is variable. Sandia piedmont(?). Poor recovery.
SCS-158	830–840	Sand (≤5% silt/clay, 90% sand (f-vc), ≤5 gravel). Well to moderately graded, subangular to subrounded. Quartz, metamorphic, granite. 7.5YR6/4. Very poor recovery.
SCS-SS-D	830–845	Gravel with sand (≤5% silt/clay, 30% sand, 65% gravel. Moderately to poorly graded, angular to round. Quartz, quartzite, granite, gray volcanic and obsidian(?). Rio Grande source. Shaker sample.
SCS-159	845–855	Silty gravel with sand (35% silt/clay, 15% sand (vf-c), 50% gravel). Moderately graded, angular to subrounded. Quartz, granite, feldspar, metamorphic, red-brown welded tuff. 7.5YR6/4. Clayey red-brown tuff may be Amalia tuff. Poor recovery.
SCS-SS-E	855–865	Sand with gravel (0% silt/clay, 85% sand (m-vc), 15% gravel). Moderately graded, subangular to subrounded. Quartz, metamorphic limestone(?), volcanic(?). Rio Grande source. Shaker sample.
SCS-160	855–860	Sand with silt (≤10% silt/clay, 80% sand (m-vc), 10% gravel). Poorly graded, subangular to rounded. Quartz, metamorphic, granite. Poor recovery.
SCS-161	860–870	Sand (≤5% silt/clay, 90% sand (m-vc), 5% gravel). Poorly graded, subangular to rounded. Quartz, feldspar, granite, metamorphic. Minor white $CaCO_3$ nodules. Very poor recovery.
SCS-SS-F	870–880	Sand (0% silt/clay, 90% sand (m-vc), 10% gravel). Moderately graded, subangular to subrounded. Quart/quartzite, metamorphic, granite. Shaker sample.
SCS-162	870–880	Sand (≤5% silt/clay, 90% sand (m-vc), 5% gravel). Poorly graded, angular to rounded. Quartz/quartzite, granite and feldspar, metamorphic, obsidian, volcanic. 7.5YR7/4. Rio Grande source. Very poor recovery.
SCS-SS-G	880–890	Sand with gravel (0% silt/clay, 85% sand (m-vc), 15% gravel). Poorly graded, angular to subrounded. Quartz, metamorphic, granite, volcanic. Shaker sample.
SCS-163	880–885	Sand (≤5% silt/clay, 90% sand (f-vc), 5% gravel). Moderately to poorly graded, subangular to rounded. Quartz, granite, feldspar, metamorphic, obsidian. 7–10% obsidian. Very poor recovery.
SCS-164	885–890	Sand (0% silt/clay, 90% sand (m-vc), 10% gravel). Poorly graded, angular to rounded. Quartz, granite, quartzite, metamorphic, volcanic andesite. Very poor recovery.
SCS-SS-H	890–895	Sand with gravel (0% silt/clay, 85% sand (m-vc), 15% gravel. Moderately graded, angular to subrounded. Quartz, granite, metamorphic, limestone(?), volcanic. Shaker sample.

Sample No.	Depth (ft)	Description
SCS-165	890–905	Sand (≤10% silt/clay, 80% sand (f–vc), 10% gravel). Moderately graded, subangular to subrounded. Quartz, granite, igneous, metamorphic, volcanic. 10YR6/4. Volcanics are obsidian and red-brown tuff. Very poor recovery.
SCS-SS-I	905–910	Sand with gravel (0% silt/clay, 80% sand (m–vc), 20% gravel). Moderately graded, subangular to subrounded. Shaker sample.
SCS-166	905–915	Sand (≤10% silt/clay, 80% sand (vf–vc), 10% gravel). Well graded, subangular to subrounded. Quartz, granite, miscellaneous igneous. 10YR6/2 to 7.5YR7/4. Put through #200 sieve. Very poor recovery.
SCS-167	915–920	Silty-clayey sand (15% silt/clay, 75% sand (vf–vc), 10% gravel). Well to moderately graded, angular to subrounded. Quartz, granite, feldspar, miscellaneous igneous. Slight clay. Very poor recovery.
---	920–925	Very poor recovery; interval not described.
SCS-168	925–930	Sandy silt to sandy clay (55% silt/clay, 45% sand (vf–m), 5% gravel). Moderately graded. Granite. 10YR7/4. Changed sampling method to include driller's screen sample; clayey.
SCS-169	930–935	Sandy silt to sandy clay (55% silt/clay, 45% sand (vf–c), 5% gravel). Moderately graded, subangular to rounded. Quartz, mafic and metamorphic, feldspar. 10YR6/4. Clayey.
SCS-170	935–940	Sandy silt to sandy clay (50% silt/clay, 45% sand (vf–c), 5% gravel). Moderately graded, subangular to rounded. Clear and yellow quartz, mafic, feldspar. 10YR7/4. Clayey.
SCS-171	940–945	Sand (≤5% silt/clay, 90% sand (f–vc), 5% gravel). Poorly graded, subangular to subrounded. Clear quartz, miscellaneous igneous (epidote), mafic. 10YR6/2–3. Very poor recovery.
SCS-172	945–950	Silty sand (15% silt/clay, 80% sand (vf–vc), 5% gravel). Well to moderately graded, subangular to subrounded. Quartz, feldspar, miscellaneous mafic. 7.5–10YR7/4. Sandia Mountains piedmont source?
SCS-173	950–955	Sand with silt (10% silt/clay, 80% sand (vf–vc), 10% gravel). Well graded, subangular to subrounded. Quartz, feldspar, miscellaneous igneous and granite, chert. 10YR7/3–4. Sandia Mountains piedmont source?
SCS-174	955–960	Silty sand (15% silt/clay, 75% sand (vf–vc), 10% gravel). Well to moderately graded, angular to subrounded. Quartz, feldspar, mafic, angular limestone, chert, epidote. 10YR7/3–4. Sandia Mountains piedmont source?
SCS-175	960–965	Sand with gravel and silt (10% silt/clay, 65% sand (vf–vc), 25% gravel). Well to moderately graded, subangular to subrounded. Quartz, feldspar, metamorphic, chert, epidote. 10YR7/3. Sandia Mountains piedmont source?
SCS-176	965–970	Sand with gravel and silt (10% silt/clay, 80% sand (vf–vc), 15% gravel). Well to moderately graded, angular to subrounded. Quartz, chert(?), feldspar, dark gray metamorphic. 10YR8/3. Sandia Mountains piedmont source?
SCS-177	970–975	Sand with gravel (≤5 silt/clay, 75% sand (vf–vc), 20% gravel). Well to moderately graded, angular to subrounded. Quartz, granite and feldspar, mafic, dark gray metamorphic, light gray volcanic(?). 7.5YR8/2. Rio Grande source? (Drillers' log: clayey silt).

Sample No.	Depth (ft)	Description
SCS-178	975–980	Sand with gravel (≤5 silt/clay, 75% sand (f–vc), 20% gravel). Moderately graded, angular to subrounded. Quartz, feldspar, quartzite, chert, metamorphic. Sandia Mountains source?
SCS-179	980–985	Silty sand with gravel (25% silt/clay, 55% sand (vf–c), 20% gravel). Moderately graded, angular to subangular. Quartz, feldspar and granite, mafic, metamorphic, angular obsidian. 7.5YR7/4 and 6/6. Drillers log: increased clay 980–1006 ft. Increase in angular grains.
SCS-180	985–990	Silty sand with gravel (20% silt/clay, 65% sand (vf–c), 15% gravel). Well graded, angular to subangular. Quartz, chert(?), mafic. 10YR7/3. Generally finer grained.
SCS-181	990–995	Silty sand (30–40% silt/clay, 60–70% sand (vf–m), 0% gravel). Well graded, angular to subangular. Rounded chert, quartz, feldspar. 10YR7/4. Silty and finer grained.
SCS-182	995–1000	Silty sand to clayey sand (40% silt/clay, 55% sand (vf–m), 5% gravel). Moderately graded, subangular to subrounded. Chert, feldspar, quartz. 7.5 and 10YR7/4. Clayey and silty.
SCS-183	1000–1005	Silty sand. Moderately graded, angular to subrounded. Quartz, feldspar, sandstone. 7.5YR6/4 and 10YR8/1. Sandy.
---	1005–1010	No sample taken. Drillers' log (1005–1025).
SCS-184	1010–1015	Sandy clay to sandy silt (65–70% silt/clay, 20% sand (vf–vc), ≤10–15% gravel). Moderately graded, subangular to subrounded. Metamorphic, quartz, chert. 2.5YR5/6, 7.5YR6/6. Reddish clay and fine grained.
SCS-185	1015–1020	Sandy clay to sandy silt (70% silt/clay, 25% sand (vf–f, vc), ≤5% gravel). Poorly graded, angular to subrounded. Metamorphic, quartz, feldspar. Color same as above. Clayey and reddish.
SCS-186	1020–1025	Sandy clay to sandy silt (65% silt/clay, 25% sand (vf–f), ≤10% gravel). Poorly graded, subangular to subrounded. Metamorphic, quartz, feldspar. 2.5YR5/6. Clayey and reddish.
SCS-187	1025–1030	Silty clay (80% silt/clay, 10% sand (vf–m), ≤5% gravel). Poorly to moderately graded, angular to subangular. Chert, metamorphic, quartz. 10YR6/4. Clayey, Sandia piedmont source.
SCS-188	1030–1035	Silty sand (15% silt/clay, 75% sand (vf–vc), 10% gravel). Well to moderately graded, subangular to subrounded. Quartz, feldspar, chert. 10YR5/3. Sandy.
SCS-189	1035–1040	Sand with silt (≤10% silt/clay, 85% sand (vf–vc), ≤5% gravel). Well to moderately graded, subangular to subrounded. Quartz, feldspar, granite, metamorphic, mica. 7.5 and 10YR6/4. Sandy. Mica = chlorite and muscovite.
SCS-190	1040–1045	Silty sand (15–20% silt/clay, 75–80% sand (vf–vc), 5% gravel). Well graded, angular to subrounded. Quartz, feldspar and granite, metamorphic, chert(?), red-brown sandstone. 10YR6/4. Sandy.
SCS-191	1045–1050	Silty-clayey sand (25% silt/clay, 70% sand (vf–m, vc), 5% gravel). Moderately graded, angular to subangular. Quartz, feldspar and granite, metamorphic. 10YR7/3. Clayey.
SCS-192	1050–1055	Silty sand (15% silt/clay, 75% sand (vf–vc), 10% gravel. Moderately graded, angular to subangular. Quartz, feldspar, metamorphic, pedernal(?) chert. 10YR7/3. Silty and sandy, mixed Sandia and Rio Grande source.
SCS-193	1055–1060	Sand with silt (≤10 silt/clay, 80% sand (vf–vc), 10% gravel). Moderately graded, angular to subrounded. Quartz, feldspar, chert, sandstone. 10YR7/3. Sandy.

Sample No.	Depth (ft)	Description
SCS-194	1060–1065	Sand with silt and gravel (≤10% silt/clay, 75% sand (vf–vc), 15% gravel). Well graded, subangular to subrounded. Quartz, chert, feldspar, granite. Sandy.
SCS-195	1065–1070	Silty sand with gravel (15% silt/clay, 65% sand (vf–vc), 20% gravel). Moderately graded, angular to subrounded. Quartz, feldspar and granite, metamorphic, chert. 10YR7/4. Sandy.
SCS-196	1070–1075	Silty sand (15% silt/clay, 75% sand (vf–vc), 10% gravel). Well to moderately graded, angular to subrounded. Quartz, feldspar and granite, metamorphic, chert. 10YR6/4 and 7.5YR6/4. Sandy.
SCS-197	1075–1080	Silty sand to clayey sand (40% silt/clay, 55% sand (vf–m, vc), 5% gravel). Moderately graded, angular to subrounded. Quartz, feldspar, plutonic. 10YR6/4. Clayey.
SCS-198	1080–1085	Silty sand to clayey sand (40% silt/clay, 55% sand (vf–m, vc), 5% gravel). Moderately to poorly graded, angular to subrounded. Feldspar, quartz, dark gray chert, volcanic. 10YR6/4. Volcanic is red-brown tuff. Rio Grande source.
SCS-199	1085–1090	Sandy silt to sandy clay (75% silt/clay, 20% sand (vf–m), ≤5% gravel). Moderately to poorly graded, subangular to subrounded. Feldspar, granite. 10YR6/3. Drillers' log (1085–1090'): clay, sandy, and silty.
SCS-200	1090–1095	Clay (>85% silt/clay, ≤10% sand, ≤5% gravel). 5YR5/4 to 5GY6/1. Green and red-brown variegated clay.
SCS-201	1095–1100	Clay (>85% silt/clay, ≤10% sand, ≤5% gravel). 5YR5/4 to 5GY6/1, 10YR6/4. Clayey same as above. Poor recovery.
SCS-202	1100–1105	Sandy silt with gravel to sandy clay with gravel (70% silt/clay, 15% sand, 15% gravel). 10YR6/4 and 7/2. Clayey.
SCS-203	1105–1110	Silty sand to clayey sand (40% silt/clay, 55% sand (vf–m), ≤5% gravel). Well to moderately graded. Quartz, feldspar. 10YR7/3. Clayey.
SCS-204	1110–1115	Silty sand to clayey sand (20% silt/clay, 70% sand (vf–m, vc), 10% gravel). Moderately graded, subangular to subrounded. Quartz, feldspar. 7.5YR6/2. Clayey-silty.
SCS-205	1115–1120	Silty sand with gravel (20% silt/clay, 60% sand, 20% gravel). Moderately graded, angular to subrounded. Quartz, feldspar, tuff, volcanic. 10YR7/3. Sandy, coarsening. Rio Grande source.
SCS-206	1120–1125	Sand with gravel and silt (10% silt/clay, 65% sand (m–vc), 25% gravel). Moderately graded, subangular to subrounded. Quartz, volcanic, feldspar, quartzite, chert, granite. Sandy.
SCS-207	1125–1130	Sand with gravel and silt (≤10% silt/clay, 60% sand (m–vc), 30% gravel). Well to moderately graded, subangular to subrounded. Quartz, volcanic, feldspar, quartzite, chert, granite. Sandy.
SCS-208	1130–1135	Silty sand with gravel to clayey sand with gravel (15% silt/clay, 65% sand (m–c, vc), 20% gravel). Moderately graded, subangular to subrounded. Quartz, granite, miscellaneous plutonic, volcanic. Slightly clayey.
SCS-209	1135–1140	Sand and gravel (≤5 silt/clay, 60% sand, 35% gravel). Quartz, feldspar, quartzite, granite, volcanic. Sandy.
SCS-210	1140–1145	Sand with gravel and silt ≤10% silt/clay, 65% sand, 25% gravel). Well graded, subangular to subrounded. Quartz, granite, miscellaneous plutonic, volcanic. 10YR7/4. Sandy. Rio Grande source.

Sample No.	Depth (ft)	Description
SCS-211	1145–1150	Sand with gravel (≤5 silt/clay, 80% sand (m–vc), 15% gravel). Well graded, subangular to subrounded. Quartz, feldspar, quartzite, volcanic, granite. 10YR7/4. Sandy. Minor rounded pebbles.
SCS-212-A	1150–1155	Sand with gravel (≤5% silt/clay, 55% sand (f, c–vc), 40% gravel). Well to moderately graded, angular to subrounded. Quartz, feldspar, quartzite, granite, subvolcanic. 10YR8/1 to 7/4. Sandy, rounded pebbles, coarse.
SCS-212-B	1155–1160	Sand with gravel and silt (10% silt/clay, 70% sand (vf–vc), 20% gravel). Well to moderately graded, subangular to subrounded. Quartz, granite, quartzite, miscellaneous plutonic, volcanic, chert. 10YR7/2–7/3, 5Y8/1 (white). Rounded chert(?).
SCS-213	1160–1165	Sand with silt (<10% silt/clay, 90% sand (f–vc), 0% gravel). Moderately to poorly graded, subrounded to subangular. Quartz, sandstone, quartzite, volcanic, basalt, K-feldspar. 10YR7/2 to 7/3. Moderate recovery.
SCS-214	1165–1170	Sand (<5% silt/clay, 95% sand (f–vc), 0% gravel). Well to moderately graded, subrounded to angular. Quartz, sandstone, quartzite, volcanic, basalt, K-feldspar. 10YR7/2 to 7/3. Moderate recovery.
SCS-215	1170–1175	Sand (<5% silt/clay, 85% sand (f–vc), 10% gravel). Well graded, subrounded to angular. Quartz, sandstone, quartzite, volcanics, K-feldspar, white microquartz. 10YR7/2 to 7/3. Moderate recovery.
SCS-216	1175–1180	Sand (<5% silt/clay, 90% sand (vf–vc), 5% gravel). Well graded, rounded to subrounded (fine), subrounded to angular (coarse). Quartz, quartzite, volcanics, K-feldspar, limestone. 10YR6/2–6/3 to 7.5YR6/2–6/4. Good recovery.
SCS-217	1180–1185	Sand with gravel and silt (<10% silt/clay, 75% sand (vf–vc), 15% gravel). Well graded, rounded to subrounded (fine), subrounded to subangular (coarse). Quartz, quartzite, sandstone, K-feldspar volcanics. 10YR7/2–7/3. Good recovery, increasing fine-medium sand, gravel, pebbles to 10 mm.
SCS-218	1185–1190	Sand with silt (<10% silt/clay, 90% sand (vf–vc), 0% gravel). Well to moderately graded, rounded to subrounded. Quartz, volcanic, quartzite, K-feldspar, weathered ash/pumice (white). 10YR7/2–6/3. Good recovery, mostly vf–med sand.
SCS-219	1190–1195	Sand with silt (<10% silt/clay, 85% sand (vf–vc), 5% gravel). Well graded, rounded to subrounded (fine), subrounded to subangular (coarse). Quartz, K-feldspar, volcanics, quartzite. 10YR7/2–6/3. Mostly f–med sand, good recovery, gravel pebbles to 6 mm.
SCS-220	1195–1200	Sand with silt (<10% silt/clay, 90% sand (vf–c), 0% gravel). Well to moderately graded, rounded to subrounded. Quartz, K-feldspar, volcanics, quartzite. 10YR7/2–6/3. Good recovery.
SCS-221	1200–1205	Sand with silt (<10% silt/clay, 85–90% sand (vf–c), <5% gravel). Well graded, rounded to subrounded (fine), subrounded to subangular (coarse). Quartz, K-feldspar, volcanics, quartzite, weathered white and light gray ash/pumice. 10YR6/2–6/3. Good recovery.
SCS-222	1205–1210	Sand (<5% silt/clay, 90% sand (vf–vc), <5% gravel). Well graded, rounded to subrounded (fine), subrounded to subangular (coarse). Quartz, K-feldspar, volcanics, quartzite, weathered white and light gray ash/pumice, and rhyolite. 10YR6/2–6/3. Good recovery. Increasing coarse sand fraction.
SCS-223	1210–1215	Sand with silt (<10% silt/clay, 90% sand (vf–c), 0% gravel). Well to moderately graded, rounded to subrounded. Quartz, K-feldspar, volcanics, quartzite, weathered white and light gray ash/pumice, rhyolite, white microquartz. 10YR6/2–5/2. Good recovery. Increased fine sand fraction.

Sample No.	Depth (ft)	Description
SCS-224	1215–1220	Sand with silt (<10% silt/clay, 85–90% sand (vf–c), <5% gravel). Well to moderately graded, rounded to subrounded (fine), subrounded to angular (coarse). Quartz, volcanics, K-feldspar, white microquartz, rhyolite, pink-purple quartz. 10YR6/2–5/2. Good recovery. Mostly fine–medium sand fraction.
SCS-225	1220–1225	Sand (<5% silt/clay, 95% sand (vf–m), 0% gravel). Well to moderately graded, rounded to subangular. Quartz, volcanics, K-feldspar, white microquartz, rhyolite, pink-purple quartz. 10YR7/2–5/2. Good recovery. Clean vf–m sand.
SCS-226	1225–1230	Sand (<5 silt/clay, 95% sand (vf–m), 0% gravel). Moderately graded, subangular to rounded. Quartz, volcanics, quartzite, white microquartz, rose quartz. 10YR6/2–5/3. Good recovery. vf–med clean sand.
SCS-227	1230–1235	Same as above.
SCS-228	1235–1240	Same as above with quartz, volcanics, white microquartz, K-feldspar, quartzite. 10YR7/2–7/3. Good recovery. vf–med clean sand.
SCS-229	1240–1245	Same as above with quartz, volcanics, white microquartz, K-feldspar, quartzite, green gray sodic plagioclase(?). 10YR7/2–7/3. Good recovery. vf–med clean sand.
SCS-230	1245–1250	Same as above. 10YR7/2–6/2. Good recovery. vf–med clean sand.
SCS-231	1250–1255	Same as above.
SCS-232	1255–1260	Same as above. 10YR6/2–5/2. Good recovery. vf–med clean sand.
SCS-233	1260–1265	Same as above.
SCS-234	1265–1270	Same as above.
SCS-235	1270–1275	Same as above.
SCS-236	1275–1280	Sand (<5% silt/clay, 95% sand (vf–c), 0% gravel). Well to moderately graded, subangular to rounded. Quartz, volcanics, white microquartz, K-feldspar, quartzite, green gray sodic plagioclase(?). 10YR6/2–5/3. Moderate recovery.
SCS-237	1280–1285	Same as above.
SCS-238	1285–1290	Silty sand (<15 silt/clay, ~85% sand (vf–m), 0% gravel). Moderately to poorly graded, subangular to rounded. Quartz, K-feldspar, volcanic, quartzite, very fine-grained sandstone. 10YR5/2–5/3. Increase in vf–f fraction. Poor recovery.
SCS-239	1290–1295	Silty sand (~10–20%? silt/clay, 80% sand (vf–m), 0% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, volcanic, quartzite, very fine-grained sandstone, rounded pumice. 10YR5/3–4/3. Poor recovery. Mostly vf–fine.
SCS-240	1295–1300	No recovery. Interval not described.
SCS-241	1300–1305	Silty sand (<15% silt/clay, ~85% sand (vf–m), 0% gravel). Moderately to poorly graded. Quartz, volcanics, granite, quartzite, K-feldspar, very-fine grained sandstone. 10YR5/2–5/3. Good recovery. Mostly vf–f fraction.
SCS-242	1305–1310	Silty gravel (20% silt/clay, 10% sand, 70% gravel). Poorly graded, subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.
SCS-243	1310–1315	Silty clay with gravel (50% silt/clay, 10% sand, 40% gravel). Poorly graded, subrounded. Quartz, quartzite, basalt, granite. 10YR6/4.

Sample No.	Depth (ft)	Description
SCS-244	1315–1320	Silty clay with gravel (70% silt/clay, 10% sand, 20% gravel). Poorly graded, subangular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4. Interval contains a lot of clay.
SCS-245	1320–1325	Silt/clay with gravel and sand (65% silt/clay, 15% sand, 20% gravel). Poorly graded, subangular to subrounded. Quartz, quartzite, basalt, granite. 10YR6/4. Interval contains a lot of clay.

Del Sol Dividers

New Mexico Bureau of Mines & Mineral Resources
Socorro, NM 87801

A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Information: 505/835-5420
Publications: 505/835-5410
FAX: 505/835-6333

May 14, 1996

COPY

Mr. Norman Gaume
Water Resources Program
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Field Boring Log for Del Sol Dividers Park Piezometers

Dear Norm:

I am pleased to submit the New Mexico Bureau of Mines' final report and field boring log for the Del Sol Dividers Park piezometer nest. The report includes a summary stratigraphic column for the boring, as well as a lithologic summary and hydrogeologic interpretation. Attachments include detailed field descriptions for five-foot intervals and the geophysical logs produced by the U.S. Geological Survey's geophysics team.

This is the second piezometer installation to be completed. As you are probably aware, the third installation is currently proceeding at the Hunter Ridge site just south of Rio Rancho, but it is too early to predict exactly when that hole will be completed. We are pleased that the project is progressing very smoothly. If you have any questions or comments, or if I can be of further assistance, please feel free to call.

Sincerely,

Charles E. Chapin
Director and State Geologist

/al

Enclosures

bxc: Peggy Johnson ✓

Field Boring Log for Del Sol Dividers Park
City of Albuquerque Piezometer Nest
FY 1996

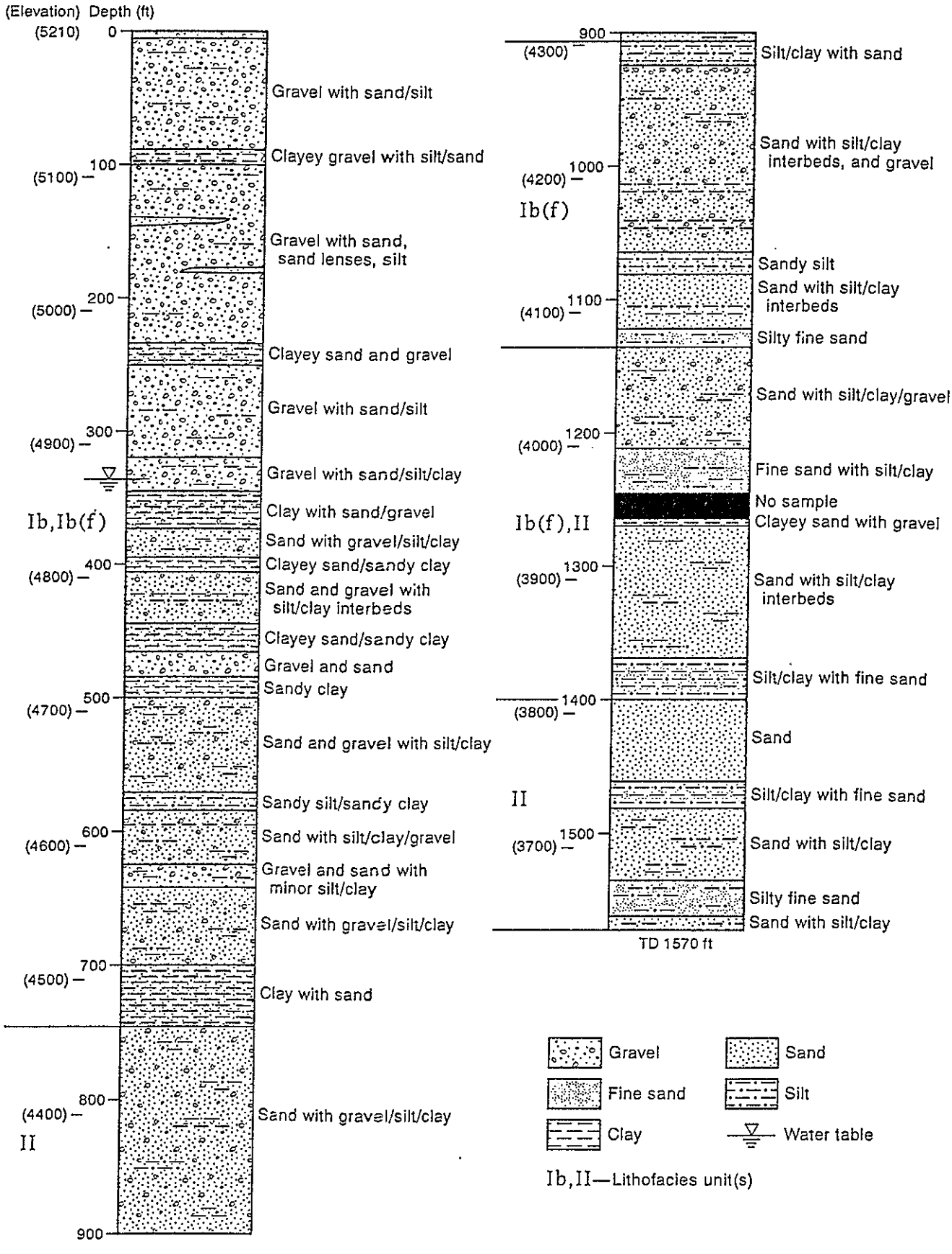
The following borehole logs were completed for the piezometer nest located at Del Sol Dividers Park, Albuquerque, New Mexico, and installed by the U.S. Geological Survey for the City of Albuquerque in April 1996. This log is submitted in fulfillment of reporting requirements under the Intergovernmental Services Agreement between New Mexico Bureau of Mines and Mineral Resources and the City of Albuquerque, for collection and interpretation of monitor well drill cuttings. The log describes sample intervals, lithologic characteristics and interpretations, supplemental drilling information, borehole geophysical logging information and interpretation, and hydrogeologic interpretations. The lithologic descriptions were made in accordance with ASTM Standard Practice D2488-90 for Description and Identification of Soils (Visual-Manual Procedure), Figure 2 (Flow Chart for Identifying Coarse-Grained Soils (less than 50% fines)), except that the gravel-sand division was defined at a particle size of 2 mm. Additionally, drilling fluids prevented a complete evaluation of the fine fraction according to ASTM criteria. The field lithologic descriptions include the following information:

1. Major textural class
2. Grain size distribution by major textural classes: silt/clay (<0.075 mm), sand (0.075–2 mm), gravel (>2 mm)
3. Grading and range of grain and clast size
4. Angularity and particle shape
5. Clast composition, in descending order of abundance
6. Color (Munsell Soil Color Chart) for fine matrix (<2 mm) unless otherwise noted
7. Other characteristics and driller's comments

Hydrogeologic interpretations classify the materials according to the descriptive system of unit nomenclature developed by Hawley and Haase (NMBMMR Open-file Report 387, 1992) and describe the hydrostratigraphic unit (RA, VA, PA, USF, MSF, LSF) and lithofacies subdivisions (I to X). It is important to note that the lithologic summary (page 3) provides descriptions based solely on grain size characteristics, and the lithofacies and hydrogeologic interpretations (page 6) are based on several integrated criteria including grain size, clast composition and geographic location within the basin. Both lithologic descriptions and lithofacies interpretations are illustrated in the stratigraphic column in Figure 1. A detailed log of the full lithologic field description by 5-foot sample interval is provided as Attachment A. The borehole geophysical logs are included as Attachment B.

Location:	T10N, R3E, Section 14.3.2.4 (projected). NE corner of Del Sol Dividers Park, Estrellita Avenue and Avenue La Resolana, Albuquerque. Albuquerque East 7.5' quadrangle.
Elevation:	5210 ft (land surface estimate from topographic base map)
Drilling Method:	Mud Rotary
Drillers:	Dan Sweeney (U.S.G.S.)
Date Started:	April 9, 1996
Date Completed:	April 19, 1996
Sample Interval:	5 feet
Screened Intervals:	315-415 832-837 1557-1562 ~~326–426~~ ft, ~~838–843~~ ft, ~~1558–1563~~ ft (below land surface)
Total Depth:	1570 ft (below land surface)
Geological Logging:	Barry Allred, Peggy Johnson, Sean Connell (NMBMMR)

Figure 1. Stratigraphic Column
Del Sol Dividers Park



Lithologic Summary and Borehole Geophysical Interpretations
Del Sol Dividers Park

Depth (ft)	Lithologic Description
0-5	Sand with pebble gravel. Well to moderately graded, subangular to rounded. Light brownish gray to brown. Rhyolite, andesite, and quartz, with carbonate rinds on clasts.
5-90	Pebble gravel (55-95%) with minor sand and silt. Variably graded, subangular to rounded.Light brownish gray to brown to reddish brown. Volcanics (rhyolite, andesite, Bandelier Tuff, obsidian, pumice), quartz, pink granite, K-feldspar, chert, minor metamorphic and sedimentary clasts.
90-100	Clayey gravel with minor silt/sand. Poorly graded, subrounded to rounded. Light yellowish brown to yellowish brown. Volcanics, Bandelier Tuff.
100-235	Gravel with varying amounts of sand and sand interbeds, and minor silt. Variably graded, subangular to rounded. Pale brown to brown to light yellowish brown and reddish brown. Volcanics (Bandelier Tuff, pumice, basalt), pink granite, quartz, quartzite, minor sandstone and metamorphics.
235-245	Clayey sand and gravel; significant clay interval at 228 to 238 ft based on geophysics. Well graded, subrounded to rounded. Brown. Granite, quartz, basalt, other volcanics.
245-320	Gravel (≥70%) with minor sand and silt. Variably graded, subangular to rounded. Pale brown to brown, light gray, reddish yellow. Granite, rhyolite, basalt, quartz, other volcanics, sedimentary clasts, pumice.
320-345	Gravel (50-60%) with significant silt, clay, and sand. Well graded, subrounded to rounded. Very pale brown to pale brown. Granite, basalt, quartz, and miscellaneous volcanics. Water table at 338 ft based on geophysics.
345-375	Clay with variable sand and gravel; sand/gravel with significant clay. Well graded, subangular to rounded. Pale brown. Basalt, granite, quartz, volcanics.
375-395	Sand with gravel, minor silt/clay. Well to moderately graded, subangular to rounded. Pale brown and other variable colors including pinkish white. Basalt, granite, quartz, volcanics.
395-405	Clayey sand and sandy clay with minor gravel; significant clay interval is set at 386-390 ft based on geophysics. Well graded, subangular to rounded. Pale brown. Basalt, granite, quartz, volcanics.
405-445	Sand and gravel with minor silt; clayey interbeds at 425-430 ft. Well to moderately graded, subangular to rounded. Pale brown. Basalt, granite, quartz, volcanics.
445-465	Clayey sand and sandy clay with minor gravel. Well graded, subangular to rounded. Pale brown. Basalt, volcanics, granite, quartz.
465-485	Gravel and sand with minor silt/clay. Well graded, subangular to rounded. Pale brown. Basalt, volcanics, granite, quartz.
485-500	Sandy clay; significant clay interval at 482-490 ft based on geophysics. Well graded, subangular to rounded. Pale brown. Basalt, volcanics, granite, quartz.
500-570	Sand and gravel with significant silt/clay. Well graded, subangular to rounded. Very pale brown to pinkish brown to brown. Basalt, volcanics, granite, quartz.
570-585	Sandy silt/clay. Well graded, subangular to subrounded. Pinkish brown to pale brown. Basalt, volcanics, granite, quartz.
585-625	Sand (50-90%) with variable silt/clay and gravel; significant silt/clay interval at 592-598 ft based on geophysics. Well graded, poorly graded at base (615-625 ft), subangular to subrounded, rounded at base (615-625). Pale brown. Basalt, volcanics, granite, quartz, K-feldspar.

625-640 Gravel and sand with minor silt/clay. Variably graded, subangular to rounded. Pink to pale brown. Basalt, volcanics, granite, quartz.

640-700 Sand (50-85%) with variable gravel and silt/clay. Variable graded, subangular to rounded. Pink to reddish yellow to pale brown. Basalt, volcanics, granite, quartz.

700-745 Clay with significant sand; large clay interval at 688 to 738 ft based on geophysics. Well graded, subangular to subrounded. Pink to pale brown to light yellowish brown. Basalt, volcanics, granite, quartz.

745-905 Sand (50-90%) with variable silt/clay and gravel. Variably graded, subangular to subrounded. Pink to very pale brown to light yellowish brown. Basalt, volcanics, granite, quartz.

905-925 Silt/clay with significant sand and minor gravel. Well graded, subangular to subrounded. Light yellowish brown. Basalt, quartz, volcanics, granite.

925-1065 Sand (55-85%) with variable silt/clay and minor gravel; gravel interbed at 925-930; significant silt/clay interbeds 954-978 ft, 1014-1020 ft, and 1038-1048 ft based on geophysics. Variably graded, subangular to rounded. Pink to pale brown to very pale brown, light yellowish brown and reddish yellow. Basalt, volcanics, granite, quartz, sedimentary clasts, pumice at 1060-1065.

1065-1080 Sandy silt. Moderately to poorly graded, angular to subrounded. Very pale brown to pale brown to light yellowish brown. Volcanics, quartz, feldspar, granite.

1080-1120 Sand (55-85%) with variable silt/clay; significant silt/clay interval at 1100-1114 ft based on geophysics. Variably graded, angular to subrounded. Pink to pale brown to brown, reddish yellow to light yellowish brown, light gray. Quartz, feldspar, volcanics, granite, sandstone.

1120-1135 Sandy silt and silty fine sand. Poorly graded, subangular to subrounded. Light yellowish brown. Quartz.

1135-1210 Sand (50-80%) with variable silt/clay; minor gravel 1140-1175; significant silt/clay interval at 1142-1170 ft based on geophysics. Variably graded with grains from very coarse to very fine range, angular to subrounded. Light gray to light brownish gray to pale brown, pinkish gray, light yellowish brown. Quartz, volcanics, granite, quartzite, tuff/pumice, chert, K-feldspar, basalt, sedimentary clasts.

1210-1245 Very fine to medium sand with significant silt/clay; silt/clay interval at 1222-1258 ft based on geophysics. Moderately to poorly graded, subrounded to rounded. Pinkish gray to light brownish gray to pale brown, brown, light yellowish brown. Quartz, K-feldspar, volcanics, basalt, sedimentary clasts; carbonate cement 1230-1245.

1245-1265 No recovery, possibly due to fine grained nature of interval.

1265-1270 Clayey sand with gravel. Poorly graded, subangular to subrounded. Dark brown to dark grayish brown to very pale brown. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts.

1270-1370 Sand (60-90%) with variable silt/clay; significant silt/clay intervals at 1332-1340 ft and 1354-1366 ft based on geophysics. Well to moderately graded, subrounded to rounded from 1270- 1345 ft and angular to subrounded from 1345-1370 ft. Dark gray to pink and pinkish gray, reddish brown to pale brown to light yellowish brown. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts, plagioclase, quartzite, fine magnetite sand; carbonate cement 1270-1305 ft.

1370-1400 Silt/clay with very fine to medium sand. Moderately to poorly graded, subrounded to rounded. Pinkish gray to light brownish gray to pale brown, brown, light yellowish brown. Quartz, K-feldspar, volcanics, quartzite, basalt.

1400-1460 Sand (70-95%) with minor silt/clay. Moderately to well graded, angular to rounded. Grayish brown to pale brown to brown and yellowish brown. Quartz, K-feldspar, volcanics, quartzite, basalt, sedimentary clasts; carbonate cement.

1460-1480 Silt/clay with very fine to medium sand; significant clay interval at 1454-1484 based on geophysics. Moderately to poorly graded, subrounded to rounded. Pink to pale brown to brown, yellowish brown, very dark grayish brown. Quartz, basalt, K-feldspar, sedimentary clasts; carbonate cement.

1480-1535 Sand (55-95%) with variable silt/clay. Variably graded, subangular to rounded. Pale brown to brown and light yellowish brown. Quartz, K-feldspar, volcanics, basalt, granite, sedimentary clasts; carbonate cement.

1535-1560 Silty fine sand; significant silt/clay interval at 1534-1550 ft based on geophysics. Poorly graded, subrounded to rounded. Very pale brown to brown. Quartz, K-feldspar, volcanics, basalt, sedimentary clasts, granite; carbonate cement.

1560-1570 Sand (55-70%) with significant silt/clay. Variably graded, subangular to rounded. Pale brown to brown and light yellowish brown. Quartz, K-feldspar, volcanics, basalt, granite, sedimentary clasts.

Depth (ft)	Hydrostratigraphic Unit	Lithofacies
0–235	Ancestral river channel alluvium; gravel dominated (≥50%) with interbedded sand/silt/clay (USF-2)	Ib
235–245	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, sand, and minor gravel (USF-2)	Ib(f)*
245–345	Ancestral river channel alluvium; gravel dominated (≥50%) with interbedded sand/silt/clay (USF-2)	Ib
345–375	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, sand, and minor gravel (USF-2)	Ib(f)
375–395	Ancestral river channel alluvium; sand and gravel with minor silt/clay (USF-2)	Ib
395–405	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, sand, and minor gravel (USF-2)	Ib(f)
405–445	Ancestral river channel alluvium; sand and gravel with minor silt/clay (USF-2)	Ib
445–465	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, clay, sand, and minor gravel (USF-2)	Ib(f)
465–485	Ancestral river channel alluvium; sand and gravel with minor silt/clay (USF-2)	Ib
485–500	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, clay, sand, and minor gravel (USF-2)	Ib(f)
500–570	Ancestral river valley alluvium; sand with significant gravel/silt (USF-2)	Ib
570–625	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, sand, and minor gravel (USF-2)	Ib(f)
625–700	Ancestral river valley alluvium; sand with significant gravel and minor silt/clay (USF-2)	Ib
700–745	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, clay, sand, and minor gravel (USF-2)	Ib(f)
745–905	Interbedded ancestral river valley alluvium, floodplain alluvium and local eolian deposits; sand with silt/gravel (USF-2)	II
905–1135	Ancestral river channel alluvium and interbedded floodplain facies; variably mixed silt, clay, and sand with minor gravel (USF-2)	Ib(f)
1135–1400	Basin floor and floodplain alluvium with local eolian deposits; sand with variable silt/clay and minor or no gravel, locally cemented	Ib(f)
1400–1570	Basin floor and floodplain alluvium and local eolian deposits; sand with variable silt/clay locally cemented (USF-2 to MSF-2 transition(?))	II

* Ib(f) = Ib, fine facies. Ib(f) is texturally and compositionally similar to lithofacies III and forms finer-grained intervals within the gravelly facies of Ib. Ib(f) is too thin to differentiate as a distinctive lithofacies that can be correlated to adjacent wells.

Note: The identification of lithofacies units is interpretative based on several criteria including texture, composition (provenance), and geographic location of the described sample within the basin. The interpretation of lithofacies is tentative, and preliminary due to limitations of the data and the fact that correlation to adjacent wells has not yet been undertaken; accordingly these lithofacies interpretations are subject to revision.

Attachment A
Field Lithologic Descriptions
Del Sol Dividers Park Piezometer Next

Sample No.	Depth (ft)	Description
DSD-1	0–5	Sand with pebble gravel (≤5% silt/clay, 55% sand (f–c), 40% gravel). Well to moderately graded, subangular to rounded. Volcanic (rhyolite, andesite), quartz. 10YR6/2 to 5/3. Good recovery. Carbonate rinds on clasts, Rio Grande lithofacies.
DSD-2	5–10	Gravel with sand (≤5% silt/clay, 35% sand (f–vc), 60% gravel). Well to moderately graded, subrounded to rounded. Volcanic, quartz, minor K-feldspar. 10YR6/2 to 5/3. Good to moderate recovery. Carbonate rinds on clasts, Bandelier Tuff.
DSD-3	10–15	Gravel with sand (≤5% silt/clay, 20% sand, 75% gravel). Moderately graded, subrounded to rounded. Volcanic (abundant rhyolite, minor obsidian and andesite), quartz, pink granite and K-feldspar. Color is variable. Good recovery. Carbonate rinds.
DSD-4	15–20	Gravel with sand (≤5% silt/clay, 20% sand, 75% gravel). Well to moderately graded, subrounded to rounded. Volcanic (Bandelier Tuff, rhyolite, andesite, minor obsidian), pink granite, quartz. Color is variable. Good recovery.
DSD-5	20–25	Gravel with sand (≤5% silt/clay, 15% sand, 80% gravel). Well to moderately graded, subangular to rounded. Volcanic (Bandelier Tuff, red-brown rhyolite, light gray andesite), pink granite, quartz. Color is variable. Good recovery.
DSD-6	25–30	Gravel with silt (10% silt/clay, 10% sand (f–m), 80% gravel). Well to moderately graded, subangular to rounded. Volcanic, quartz, pink granite, minor white pumice. 10YR6–5/3. Good recovery.
DSD-7	30–35	Gravel with sand and clay (10% silt/clay, 35% sand, 55% gravel). Well graded, subangular to rounded. Volcanic, pink granite, quartz. 7.5-10YR5/4. Good recovery. Clayey.
DSD-8	35–40	Gravel (≤5% silt/clay, ≤10% sand, 85% gravel). Moderately to poorly graded, subrounded to rounded. Volcanic, pink granite, quartz. Color is variable. Good recovery.
DSD-9	40–45	Gravel (0% silt/clay, ≤10% sand, 90% gravel). Moderately graded, subangular to rounded. Volcanic, pink granite, quartz, minor chert, minor red-brown basaltic scoria. Color is variable. Good recovery.
DSD-10	45–50	Gravel (0% silt/clay, ≤10% sand, 90% gravel). Moderately to poorly graded, subangular to rounded. Volcanic, minor quartz and metamorphic. Color is variable. Good recovery.
DSD-11	50–55	Pebble gravel (0% silt/clay, ≤10% sand, 90% gravel). Poorly graded, subangular to rounded. Volcanic (obsidian, tuff (5YR6–5/4)), pink granite, quartz, metasedimentary. Color is variable. Good recovery.
DSD-12	55–60	Pebble gravel with silt (≤10% silt/clay, ≤10% sand, 80% gravel). Moderately to poorly graded, subangular to rounded. Volcanic (rhyolite tuff, white pumice, red-brown glassy tuff), pink granite, metamorphic and siltstone fragments. 7.5YR6/3 (silt). Good recovery.
DSD-13	60–65	Pebble gravel (0% silt/clay, ≤10% sand, 90% gravel). Poorly graded, subrounded to rounded. Volcanic, minor welded tuff. Color is variable. Good recovery.
DSD-14	65–70	Pebble gravel (0% silt/clay, ≤5% sand, 95% gravel). Poorly graded, subangular to rounded. Volcanic, minor metamorphic and granite. Color is variable. Good recovery. Subangular metamorphic rhyolite and andesite clasts are pebble to small cobble size.
DSD-15	70–75	Pebble gravel (0% silt/clay, ≤5% sand, 95% gravel). Poorly graded, subangular to rounded. Volcanic (rhyolite, andesite, minor welded tuff, pumice), pink granite, metamorphic. Color is variable. Good recovery. Clasts are pebble to small cobble size.

Sample No.	Depth (ft)	Description
DSD-16	75–80	Pebble gravel with sand (0% silt/clay, 20% sand, 80% gravel). Moderately to poorly graded, subrounded to rounded. Volcanic, subvolcanic, pink granite, welded tuff. Color is variable. Good recovery.
DSD-17	80–85	Pebble gravel (0% silt/clay, ≤10% sand, 90% gravel). Moderately to poorly graded, subangular to rounded. Volcanic, minor sedimentary (sandstone, muddy breccia). Color is variable. Good recovery.
DSD-18	85–90	Pebble gravel with silt/clay (≤10% silt/clay, ≤10% sand, 80% gravel). Moderately to poorly graded, subangular to rounded. Volcanic, minor pink granite, sedimentary. 7.5YR5/4 (clay). Good recovery. Coarser clasts, welded tuff, Bandelier Tuff.
DSD-19	90–95	Clayey gravel (45% silt/clay, ~10% sand, 45% gravel). Poorly graded, subrounded to rounded. Volcanics. 10YR5/4. Good recovery. Bandelier Tuff. Clayey with pebble-size clasts.
DSD-20	95–100	Clayey gravel with sand to silty gravel with sand (30% silt/clay, 20% sand, 50% gravel). Poorly graded, subrounded to rounded. Volcanics. 10YR6/4. Good to moderate recovery. Slightly clayey.
DSD-21	100–105	Sand with gravel and silt (≤10% silt/clay, 55% sand, 35% gravel). Moderately graded, subangular to rounded. Volcanics, pink granite, quartz. Color is variable. Good recovery. Sandy to gravelly with pebble-size clasts.
DSD-22	105–110	Gravel with sand (≤5% silt/clay, ~20% sand (m–c), 75% gravel). Moderately to poorly graded, subangular to rounded. Volcanics, pink granite, quartz. Color is variable. Good recovery. Pebble-size clasts.
DSD-23	110–115	Gravel with sand (≤5% silt/clay, 30% sand (c), 65% gravel). Well to moderately graded, subrounded to rounded. Volcanics, pink granite, quartz, metamorphic, minor basalt. Color is variable. Good recovery. Pebble-size clasts.
DSD-24	115–120	Sand with gravel (≤5% silt/clay, 60% sand, 35% gravel). Well to moderately graded, subangular to rounded. Volcanics, (Bandelier Tuff, pumice, minor basalt), pink granite, quartz. Color is variable. Good recovery. Pebble-size clasts.
DSD-25	120–125	Gravel with sand (≤5% silt/clay, 40% sand, 55% gravel). Well to moderately graded, subrounded to rounded. Volcanics (basalt, tuff), pink quartz, quartz, minor sandstone. Color is variable. Good recovery. Pebble-size clasts and minor cobbles.
DSD-26	125–130	Gravel (≤5% silt/clay, <10% sand, 85% gravel). Moderately to poorly graded, subrounded to rounded. Volcanics (basalt), quartz, pink granite. Color is variable. Good recovery. Clasts are pebble to small cobble size.
DSD-27	130–135	Gravel with sand (≤5% sand/silt, 15% sand, 80% gravel). Moderately to poorly graded, subrounded to rounded. Volcanics, granite and quartz, basalt, minor sandstone (Abo Formation). Color is variable.
DSD-28	135–140	Gravel (≤5% silt/clay, 10% sand, 85% gravel). Poorly graded. Volcanic, granite and quartz, basalt, red-brown tuff. Color is variable. Good recovery.
DSD-29	140–145	Gravel with sand and clay (≤10% silt/clay (clayey), 30% sand, 60% gravel). Well to moderately graded, subangular to rounded. Volcanic, quartz, and plutonic. Color is variable. Good recovery. Increased drilling mud.
DSD-30*	105–145	Pebbles to small cobbles with 10% silt/clay. Subrounded to rounded. Volcanic, plutonic, quartzite. 7.5YR6/4. Drillers screen sample, after increased mud.

Sample No.	Depth (ft)	Description
DSD-31	145–150	Gravel with sand and clay (10% silt/clay, 15% sand, 75% gravel). Moderately to poorly graded, subangular to rounded. Volcanic. Poor recovery.
DSD-32	150–155	Gravel with silt (10% silt/clay, 10% sand, 80% gravel). Poorly graded, subangular to rounded. Volcanics, quartzite. 7.5YR6/4. Good recovery. Increase in basalt.
DSD-33	155–160	Gravel with sand (≤5% silt/clay, 15% sand, 80% gravel (pebble–small cobble)). Poorly graded, subangular to rounded. Volcanic (basalt), quartzite and pink granite. Color is variable. Good recovery.
DSD-34	160–165	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Poorly graded, subangular to rounded. Volcanics, subvolcanics and plutonic, quartzite, pumice. 10YR6/4. Good recovery.
DSD-35	165–170	Gravel (5% silt/clay, 10% sand, 85% gravel). Poorly graded, subangular to rounded. Volcanics, subvolcanic, quartzite. Color is variable. Moderate to poor recovery. Increased basalt.
DSD-36	170–175	Gravel with sand (≤5% silt/clay, 25% sand, 70% gravel). Poorly graded, subangular to rounded. Volcanics, subvolcanics, pink granite, quartzite. Color is variable. Good to moderate recovery.
DSD-37	175–180	Gravel with sand and clay (10% silt/clay (clayey), 30% sand, 60% gravel). Poorly graded, subangular to rounded. Volcanics (basalt), subvolcanic, pink granite. 7.5YR6/4.
DSD-38	180–185	Clayey gravel with sand (15% silt/clay, 30% sand, 55% gravel). Poorly graded, subangular to rounded. Volcanics, plutonic. 5YR6-5/4. Good recovery.
DSD-39	185–190	Gravel (0% silt/clay, 5% sand, 95% gravel). Poorly graded, subrounded to rounded. Volcanic quartz, granite. Color is variable. Poor recovery.
DSD-40	190–195	Gravel with silt/clay (10% silt/clay, 10% sand, 80% gravel). Well graded, subrounded to rounded. Basalt, granite, quartz. 10YR7/4. Very poor recovery.
DSD-41	195–200	Gravel (0% silt/clay, 5% sand, 95% gravel). Poorly graded, subrounded to rounded. Basalt, quartz, granite, pumice. Color is variable. Good recovery.
DSD-42	200–205	Gravel (0% silt/clay, 5% sand, 95% gravel). Poorly graded, subrounded to rounded. Basalt, quartz, granite, other volcanics. Color is variable. Good recovery.
DSD-43	205–210	Silty gravel with sand (15% silt/clay, 15% sand, 70% gravel). Well graded, subrounded to rounded. Basalt, quartz, granite, other volcanics. 10YR5/4. Good recovery.
DSD-44	210–215	Same as above.
DSD-45	215–220	Silty gravel (15% silt/clay, 10% sand, 75% gravel). Well graded, subangular to rounded. Basalt, quartz, granite, other volcanics. 10YR5/4. Good recovery.
DSD-46	220–225	Gravel with silt/clay (10% silt/clay, 10% sand, 80% gravel). Well graded, subrounded to rounded. Basalt, quartz, granite, other volcanics. 10YR5/4. Good recovery.
DSD-47	225–230	Gravel with sand (0% silt/clay, 25% sand, 75% gravel). Moderately graded, subangular to rounded. Basalt, quartz, granite, other volcanics. Color is variable. Moderate recovery. Gravel size much smaller.
DSD-48	230–235	Gravel with clay (10% silt/clay, 10% sand, 80% gravel). Well graded, subangular to rounded. Basalt, quartz, granite, other volcanics. 7.5YR5/4. Good recovery.
DSD-49	235–240	Clayey sand and gravel (40% silt/clay, 30% sand, 30% gravel). Well graded, subrounded to rounded. Granite, quartz, basalt, other volcanics. 7.5YR5/4. Good recovery. Interval contains much more clay.

Sample No.	Depth (ft)	Description
DSD-50	240–245	Clay with sand and gravel (50% silt/clay, 30% sand, 20% gravel). Well graded, subangular to rounded. Granite, quartz, basalt, other volcanics. 7.5YR5/4. Good recovery.
DSD-51	245–250	Silty clayey gravel with sand (25% silt/clay, 25% sand, 50% gravel). Well graded, subrounded to rounded. Granite, quartz, basalt, other volcanics. 7.5YR5/4. Good recovery.
DSD-52	250–255	Silty clayey gravel (20% silt/clay, 10% sand, 70% gravel). Well graded, subrounded to rounded. Granite, rhyolite, basalt, quartz, other volcanics. 7.5YR5/4. Good recovery. Clay amount is diminishing.
DSD-53	255–260	Gravel with silt/clay (10% silt/clay, 10% sand, 80% gravel). Well graded, subrounded to rounded. Granite, rhyolite, basalt, quartz, other volcanics. 7.5YR6/4. Good recovery.
DSD-54	260–265	Gravel (5% silt/clay, 10% sand, 85% gravel). Moderately graded, subangular to rounded. Granite, rhyolite, basalt, quartz, other volcanics. 7.5YR5/4. Moderate recovery. Slight acid reaction.
DSD-55	265–270	Gravel (0% silt/clay, 10% sand, 90% gravel). Poorly graded, subrounded to rounded. Granite, volcanics, quartz, some sedimentary clasts. Color is variable. Moderate recovery. Acid reaction on sedimentary clast.
DSD-56	270–275	Gravel with sand and silt/clay (10% silt/clay, 15% sand, 75% gravel). Moderately graded, subrounded to rounded. Granite, quartz, volcanics. 7.5YR5/4. Good recovery.
DSD-57	275–280	Gravel (0% silt/clay, 5% sand, 95% gravel). Poorly graded, subrounded to rounded. Granite, quartz, basalt, sedimentary clasts, pumice, other volcanics. Color is variable. Good recovery.
DSD-58	280–285	Gravel (0% silt/clay, 5% sand, 95% gravel). Poorly graded, subrounded to rounded. Granite, quartz, basalt, other volcanics. Color is variable. Good recovery.
DSD-59	285–290	Gravel (2% silt/clay, 10% sand, 88% gravel). Poorly graded, angular to rounded. Granite, basalt, quartz, volcanics, sedimentary clasts. 10YR7/2. Good recovery.
DSD-60	290–295	Gravel (5% silt/clay, 10% sand, 85% gravel). Moderately graded, subrounded to rounded. Granite, basalt, quartz, volcanics, sedimentary clasts. 10YR7/2. Good recovery.
DSD-61	295–300	Gravel (5% silt/clay, 5% sand, 90% gravel). Poorly graded, subrounded to rounded. Granite, basalt, quartz, volcanics. 7.5YR6/6. Good recovery.
DSD-62	300–305	Gravel (5% silt/clay, 5% sand, 90% gravel). Poorly graded, subrounded to rounded. Granite, basalt, quartz, volcanics, pumice(?). 7.5YR6/4. Good recovery.
DSD-63	305–310	Gravel (5% silt/clay, 5% sand, 90% gravel). Poorly graded, subangular to rounded. Granite, basalt, quartz, other volcanics, some carbonate clasts. 7.5YR6/4. Good recovery. Some clasts react with acid.
DSD-64	310–315	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Moderately graded, subangular to rounded. Granite, basalt, quartz, other volcanics, some carbonate clasts. 10YR7/3. Good recovery. Some clasts react with acid.
DSD-65	315–320	Clayey gravel with sand (15% silt/clay, 20% sand, 65% gravel). Well graded, subrounded to rounded. Granite, basalt, quartz, other volcanics. 7.5YR6/4. Good recovery.
DSD-66	320–325	Clayey gravel with sand (25% silt/clay, 25% sand, 50% gravel). Well graded, subrounded to rounded. Granite, basalt, quartz, other volcanics, carbonate clasts. 7.5YR6/4. Good recovery. Some clasts react with acid.
DSD-67	325–330	Clayey gravel with sand (20% silt/clay, 30% sand, 50% gravel). Well graded, subrounded to rounded. Granite, basalt, quartz, other volcanics. 10YR7/3. Good recovery.

Sample No.	Depth (ft)	Description
DSD-68	330–335	Silty gravel with sand (15% silt/clay, 25% sand, 60% gravel). Well graded, subrounded to rounded. Granite, basalt, quartz, volcanics. 7.5YR6/4. Good recovery.
DSD-69	335–340	Silty gravel with sand (15% silt/clay, 25% sand, 60% gravel). Well graded, subrounded to rounded. Basalt, granite, quartz, volcanics. 7.5YR6/4. Good recovery.
DSD-70	340–345	Silty clayey gravel with sand (25% silt/clay, 25% sand, 50% gravel). Well graded, subangular to rounded. Basalt, granite, volcanics. 7.5YR6/4. Good recovery.
DSD-71	345–350	Clay with gravel and sand (50% silt/clay, 20% sand, 30% gravel). Well graded, subangular to subrounded. Basalt, granite, volcanics. 7.5YR/6/4. Poor recovery.
DSD-72	350–355	Same as above.
DSD-73	355–360	Sandy clay with gravel (60% silt/clay, 20% sand, 20% gravel). Well graded, subangular to subrounded. Basalt, granite, volcanics. 7.5YR6/4. Good recovery.
DSD-74	360–365	Sandy clay (70% silt/clay, 15% sand, 15% gravel). Well graded, subangular to rounded. Basalt, granite, volcanics. 7.5YR6/4. Good recovery.
DSD-75	365–370	Silty clayey sand with gravel (35% silt/clay, 35% sand, 30% gravel). Well graded, subangular to rounded. Basalt, granite, quartz, volcanics. 7.5YR6/4. Poor recovery.
DSD-76	370–375	Same as above. Moderate recovery.
DSD-77	375–380	Sand with gravel (5% silt/clay, 50% sand, 45% gravel). Moderately graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Moderate recovery.
DSD-78	380–385	Sand with gravel and silt/clay (10% silt/clay, 50% sand, 40% gravel). Well graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Moderate recovery.
DSD-79	385–390	Sand with gravel (0% silt/clay, 60% sand, 40% gravel). Moderately graded, subangular to rounded. Basalt, granite, quartz, other volcanics. Color is variable. Moderate recovery.
DSD-80	390–395	Sand with gravel (5% silt/clay, 60% sand, 35% gravel). Moderately graded, subangular to subrounded. Basalt, granite, quartz, other volcanics. 7.5YR8/2. Good recovery.
DSD-81	395–400	Clayey sand and gravel (40% silt/clay, 30% sand, 30% gravel). Well graded, subangular to subrounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Moderate recovery.
DSD-82	400–405	Sandy clay with gravel (60% silt/clay, 20% sand, 20% gravel). Well graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Good recovery.
DSD-83	405–410	Silty sand and gravel (20% silt/clay, 40% sand, 40% gravel). Well graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Good recovery.
DSD-84	410–415	Silty gravel with sand (15% silt/clay, 35% sand, 50% gravel). Well graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Good recovery.
DSD-85	415–420	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Moderately graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Good recovery.
DSD-86	420–425	Gravel with sand and silt (10% silt/clay, 40% sand, 50% gravel). Moderately graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR7/4. Good recovery.
DSD-87	425–430	Sandy clay with gravel to sandy silt with gravel (60% silt/clay, 20% sand, 20% gravel). Well graded, subangular to rounded. Basalt, granite, quartz. 10YR6/4. Poor recovery.
DSD-88	430–435	Silty gravel with sand (20% silt/clay, 30% sand, 50% gravel). Well graded, subangular to rounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Moderate recovery.

Sample No.	Depth (ft)	Description
DSD-89	435–440	Silty gravel with sand (20% silt/clay, 30% sand, 50% gravel). Well graded, subrounded to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-90	440–445	Silty sand with gravel (20% silt/clay, 50% sand, 30% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-91	445–450	Sandy clay with gravel to sandy silt with gravel (55% silt/clay, 25% sand, 20% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-92	450–455	Sandy clay with gravel to sandy silt with gravel (55% silt/clay, 25% sand, 20% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-93	455–460	Silty clayey sand (40% silt/clay, 50% sand, 10% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-94	460–465	Same as above.
DSD-95	465–470	Silty gravel with sand (15% silt/clay, 35% sand, 50% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-96	470–475	Silty gravel with sand (25% silt/clay, 35% sand, 40% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-97	475–480	Silty gravel with sand (25% silt/clay, 35% sand, 40% gravel). Well graded, subrounded to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-98	480–485	Silty clayey sand with gravel (30% silt/clay, 45% sand, 25% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7/5YR6/4. Good recovery.
DSD-99	485–490	Sandy clay (50% silt/clay, 35% sand, 15% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-100	490–495	Sandy clay (60% silt/clay, 30% sand, 10% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-101	495–500	Same as above.
DSD-102	500–505	Clayey sand with gravel to silty sand with gravel (40% silt/clay, 45% sand, 15% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Poor recovery.
DSD-103	505–510	Clayey sand with gravel to silty sand with gravel (30% silt/clay, 50% sand, 20% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-104	510–515	Silty sand with gravel (30% silt/clay, 50% sand, 30% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Good recovery.
DSD-105	515–520	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Moderately graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Good recovery.
DSD-106	520–525	Clayey sand with gravel to silty sand with gravel (40% silt/clay, 40% sand, 20% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-107	525–530	Same as above.

Sample No.	Depth (ft)	Description
DSD-108	530–535	Clayey sand with gravel to silty sand with gravel (35% silt/clay, 35% sand, 30% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-109	535–540	Clayey sand with gravel to silty sand with gravel (35% silt/clay, 35% sand, 30% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 10YR7/3. Good recovery.
DSD-110	540–545	Same as above.
DSD-111	545–550	Silty clayey sand and gravel (40% silt/clay, 30% sand, 30% gravel). Well graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-112	550–555	Clayey sand with gravel to silty sand with gravel (30% silt/clay, 40% sand, 30% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-113	555–560	Silty sand with gravel (15% silt/clay, 45% sand, 40% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR5/4. Moderate recovery.
DSD-114	560–565	Silty clayey sand and gravel (40% silt/clay, 30% sand, 30% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR5/4. Moderate recovery.
DSD-115	565–570	Clayey sand with gravel to silty sand with gravel (40% silt/clay, 40% sand, 20% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-116	570–575	Sandy clay to sandy silt (55% silt/clay, 40% sand, 5% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Poor recovery.
DSD-117	575–580	Sandy clay to sandy silt (55% silt/clay, 40% sand, 5% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 10YR6/3. Poor recovery.
DSD-118	580–585	Same as above.
DSD-119	585–590	Clayey sand (40% silt/clay, 50% sand, 10% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-120	590–595	Clayey sand with gravel to silty sand with gravel (20% silt/clay, 60% sand, 20% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-121	595–600	Clayey sand with gravel to silty sand with gravel (15% silt/clay, 60% sand, 25% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-122	600–605	Clayey sand with gravel to silty sand with gravel (20% silt/clay, 60% sand, 20% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-123	605–610	Silty sand (20% silt/clay, 70% sand, 10% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-124	610–615	Silty clayey sand (30% silt/clay, 60% sand, 10% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-125	615–620	Sand (5% silt/clay, 90% sand, 5% gravel). Poorly graded, subangular to rounded. Quartz, basalt, K-feldspar. 7.5YR6/4. Good recovery.

Sample No.	Depth (ft)	Description
DSD-126	620–625	Sand with silt/clay (10% silt/clay, 85% sand, 5% gravel). Poorly graded, subangular to rounded. Quartz, basalt, K-feldspar. 7.5YR6/4.
DSD-127	625–630	Sand and gravel (0% silt/clay, 50% sand, 50% gravel). Poorly graded, subangular to rounded. Basalt, other volcanics, granite, quartz. Color is variable. Good recovery.
DSD-128	630–635	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Poorly graded, subangular to rounded. Basalt, other volcanics, granite, quartz. 7.5YR6/4. Good recovery.
DSD-129	635–640	Clayey sand with gravel to silty sand with gravel (30% silt/clay, 40% sand, 30% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-130	640–645	Sand with gravel and silt/clay (10% silt/clay, 70% sand, 20% gravel). Well graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Poor recovery.
DSD-131	645–650	Sand with gravel (5% silt/clay, 75% sand, 20% gravel). Poorly graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Good recovery.
DSD-132	650–655	Silty sand with gravel (20% silt/clay, 50% sand, 30% gravel). Well graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR7/6. Moderate recovery.
DSD-133	655–660	Clayey sand with gravel to silty sand with gravel (30% silt/clay, 50% sand, 20% gravel). Well graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR7/6. Moderate recovery.
DSD-134	660–665	Same as above. Poor recovery.
DSD-135	665–670	Same as above.
DSD-136	670–675	Silty clayey sand (30% silt/clay, 60% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/6. Moderate recovery.
DSD-137	675–680	Sand (5% silt/clay, 85% sand, 10% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/6. Moderate recovery.
DSD-138	680–685	Sand with gravel (5% silt/clay, 75% sand, 20% gravel). Poorly graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR6/6. Moderate recovery.
DSD-139	685–690	Sand with gravel (5% silt/clay, 80% sand, 15% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-140	690–695	Sand with gravel (5% silt/clay, 75% sand, 20% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-141	695–700	Sand with gravel (5% silt/clay, 65% sand, 30% gravel). Moderately to poorly graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-142	700–705	Clayey sand (40% silt/clay, 50% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Poor recovery.
DSD-143	705–710	Sandy clay (70% silt/clay, 25% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Poor recovery.
DSD-144	710–715	Same as above.
DSD-145	715–720	Sandy clay (60% silt/clay, 35% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Poor recovery.
DSD-146	720–725	Same as above.

Sample No.	Depth (ft)	Description
DSD-147	725–730	Sandy clay (60% silt/clay, 35% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Poor recovery.
DSD-148	730–735	Same as above. Moderate recovery.
DSD-149	735–740	Clayey sand (45% silt/clay, 50% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-150	740–745	Clayey sand/sandy clay (50% silt/clay, 50% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Poor recovery.
DSD-151	745–750	Silty sand with gravel (20% silt/clay, 50% sand, 30% gravel). Well graded, subangular to rounded. 7.5YR7/4. Moderate recovery.
DSD-152	750–755	Silty clayey sand (35% silt/clay, 60% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-153	755–760	Silty sand (15% silt/clay, 85% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-154	760–765	Same as above.
DSD-155	765–770	Sand with gravel (5% silt/clay, 65% sand, 30% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Good recovery.
DSD-156	770–775	Sand with gravel and silt (10% silt/clay, 60% sand, 30% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Good recovery.
DSD-157	775–780	Silty sand with gravel (25% silt/clay, 60% sand, 15% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-158	780–785	Sand with gravel and silt (10% silt/clay, 75% sand, 15% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Good recovery.
DSD-159	785–790	Sand with gravel and silt (10% silt/clay, 70% sand, 20% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Good recovery.
DSD-160	790–795	Silty sand with gravel (25% silt/clay, 60% sand, 15% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Moderate recovery.
DSD-161	795–800	Sand with gravel (5% silt/clay, 65% sand, 30% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Good recovery.
DSD-162	800–805	Sand with gravel (0% silt/clay, 70% sand, 30% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Good recovery.
DSD-163	805–810	Sand with gravel (5% silt/clay, 65% sand, 30% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Good recovery.
DSD-164	810–815	Same as above.
DSD-165	815–820	Sand with silt (10% silt/clay, 80% sand, 10% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-166	820–825	Sand with gravel (5% silt/clay, 80% sand, 15% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-167	825–830	Sand with gravel (5% silt/clay, 80% sand, 15% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-168	830–835	Silty sand (15% silt/clay, 75% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.

Sample No.	Depth (ft)	Description
DSD-169	835–840	Sand with silt (10% silt/clay, 80% sand, 10% gravel). Poorly graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Moderate recovery.
DSD-170	840–845	Sand with gravel (5% silt/clay, 75% sand, 20% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4.
DSD-171	845–850	Silty sand (25% silt/clay, 65% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Moderate recovery.
DSD-172	850–855	Same as above. Extremely poor recovery.
DSD-173	855–860	Sand (5% silt/clay, 90% sand (vf–vc), 5% gravel). Very well graded. Basalt and other volcanics, granite, quartz. 10YR6/4.
DSD-174	860–865	Silty sand (20% silt/clay, 70% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Poor recovery.
DSD-175	865–870	Sand (5% silt/clay, 90% sand (c), 5% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Good recovery. Coarse sand.
DSD-176	870–875	Silty sand (25% silt/clay, 70% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR7/4. Moderate recovery.
DSD-177	875–880	Silty clayey sand (35% silt/clay, 65% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR7/4. Moderate recovery.
DSD-178	880–885	Silty sand (25% silt/clay, 70% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR7/4. Moderate recovery.
DSD-179	885–890	Silty clayey sand (30% silt/clay, 65% sand, 5% gravel). Well graded, subangular to subrounded. Basalts and other volcanics, granite, quartz. 10YR7/4. Moderate recovery.
DSD-180	890–895	Same as above.
DSD-181	895–900	Silty clayey sand (35% silt/clay, 60% sand, 5% gravel). Well graded, subangular to subrounded. Basalts and other volcanics, granite, quartz. 10YR7/4. Poor recovery.
DSD-182	900–905	Silty clayey sand (40% silt/clay, 55% sand, 5% gravel). Well graded, subangular to subrounded. Basalts and other volcanics, granite, quartz. 10YR7/4. Poor recovery.
DSD-183	905–910	Sandy clay to sandy silt (60% silt/clay, 30% sand, 10% gravel). Well graded, subangular to subrounded. Basalt, quartz. 10YR6/4. Poor recovery.
DSD-184	910–915	Sandy clay to sandy silt (60% silt/clay, 30% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Moderate recovery.
DSD-185	915–920	Sandy clay to sandy silt (55% silt/clay, 35% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Moderate recovery.
DSD-186	920–925	Silty clayey sand (30% silt/clay, 60% sand, 10% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR6/4. Moderate recovery.
DSD-187	925–930	Silty gravel with sand (25% silt/clay, 25% sand, 50% gravel). Well graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR7/6. Good recovery.
DSD-188	930–935	Sand with silt/clay (10% silt/clay, 80% sand, 10% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/6. Good recovery.
DSD-189	935–945	Sand with silt (10% silt/clay, 80% sand, 10% gravel). Poorly graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 7.5YR7/6. Moderate recovery.

Sample No.	Depth (ft)	Description
DSD-190	945–950	Silty sand (15% silt/clay, 80% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/6. Poor recovery.
DSD-191	950–955	Silty sand (25% silt/clay, 70% sand, 5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR6/4. Poor recovery.
DSD-192	955–960	Silty sand to clayey sand (40% silt/clay, 60% sand, 0% gravel). Well graded, subangular to rounded. 7.5YR6/4. Poor recovery may be due to a large amount of fine sand or silt.
DSD-193	960–965	Sand with gravel (5% silt/clay, 85% sand, 10% gravel). Poorly graded, subangular to subrounded. Basalt, other volcanics, granite, quartz, some sedimentary clasts. 10YR7/4. Poor recovery.
DSD-194	965–970	Silty sand to clayey sand (35% silt/clay, 65% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Moderate recovery. Mild acid reaction.
DSD-195	970–975	Silty sand to clayey sand (35% silt/clay, 60% sand, 5% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-196	975–980	Silty sand to clayey sand (40% silt/clay, 55% sand, 5% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery.
DSD-197	980–985	Silty sand to clayey sand (40% silt/clay, 60% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Poor recovery.
DSD-198	985–990	Silty sand to clayey sand (40% silt/clay, 60% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/6. Moderate recovery.
DSD-199	990–995	Same as above.
DSD-200	995–1000	Silty sand to clayey sand (40% silt/clay, 60% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Moderate recovery.
DSD-201	1000–1005	Same as above. Poor recovery.
DSD-202	1005–1010	Silty sand to clayey sand (35% silt/clay, 60% sand, 5% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz, some sedimentary clasts. 7.5YR7/4. Poor recovery.
DSD-203	1010–1015	Silty sand (25% silt/clay, 70% sand, 5% gravel). Well graded, subangular to subrounded. Basalt, other volcanics, granite, quartz, some sedimentary clasts. 7.5YR7/4. Moderate recovery.
DSD-204	1015–1020	Silty sand to clayey sand (30% silt/clay, 70% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Moderate recovery.
DSD-205	1020–1025	Silty sand to clayey sand (30% silt/clay, 70% sand, 0% gravel). Well graded, subangular to rounded. 7.5YR7/4. Poor recovery.
DSD-206	1025–1030	Silty sand to clayey sand (40% silty/clay, 60% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Moderate recovery.
DSD-207	1030–1035	Silty sand to clayey sand (35% silt/clay, 65% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Moderate recovery.
DSD-208	1035–1040	Silty sand to clayey sand (30% silt/clay, 65% sand, 5% gravel). Well graded, subangular to subrounded. Basalt. 7.5YR7/4 (fine), black (coarse). Moderate recovery.
DSD-209	1040–1045	Silty sand to clayey sand (30% silt/clay, 60% sand, 10% gravel). Well graded, subangular to rounded. Basalt and other volcanics, granite, quartz. 10YR7/4. Moderate recovery.

Sample No.	Depth (ft)	Description
DSD-210	1045–1050	Silty clayey sand (20% silt/clay, 70% sand, 10% gravel). Moderately graded, subangular to subrounded. Quartz, granite, volcanic. 10YR6/3 to 7.5YR6/4. Clayey.
DSD-211	1050–1055	Silty sand (15% silt/clay, 80% sand (f), ≤5% gravel). Moderately graded, subangular to subrounded. 7.5YR5/4 to 10YR6/4 and 8/1. Moderate to poor recovery.
DSD-212	1055–1060	Silty clayey sand (~30 silt/clay, 65% sand (vf–f), 5% gravel). Moderately graded, subangular to subrounded. 7.5YR5/4 to 10YR6/4 and 8/1. Poor recovery. Slightly clayey.
DSD-213	1060–1065	Silty clayey sand with gravel (30% silt/clay, 55% sand (vf–m), 15% gravel). Moderately to poorly graded, subangular to subrounded. Volcanics (pumice), quartzite. 7.5YR6/4 (fine), N8/0 (pumice) (coarse). Poor recovery. Drillers add more mud. Slightly clayey.
DSD-214	1065–1070	Sandy silt (70% silt/clay, 30% sand (vf–f), 0% gravel). Moderately to poorly graded, angular to subrounded. Quartz, granite and feldspar, volcanics(?). 10YR6/3 and 7.5YR6/4. Poor recovery.
DSD-215	1070–1075	Sandy silt (60% silt/clay, 40% sand (vf–m), 0% gravel). Moderately graded, angular to subrounded. Volcanics, quartz, feldspar. 10YR7/3–6/4. Poor recovery.
DSD-216	1075–1080	Sandy silt (55% silt/clay, 40% sand (vf–c), 5% gravel). Moderately graded, angular to subrounded. Volcanics, quartz, feldspar. 10YR6/4. Poor recovery. Slight clay.
DSD-217	1080–1085	Silty sand (30% silt/clay, 60% sand (f–c), <10% gravel). Poorly graded, angular to subrounded. Volcanics, granite, feldspar (grains). 10YR6/4. Moderate to poor recovery.
DSD-218	1085–1090	Silty sand (20% silt/clay, 80% sand (f–c), 0% gravel). Moderately graded, angular to subrounded. 10YR7/3 to 7.5YR6/4. Poor recovery.
DSD-219	1090–1095	Silty sand (20% silt/clay, 80% sand (f–m), 0% gravel). Poorly graded, angular to subrounded. Volcanic, quartz, feldspar, sandstone(?). 10YR6/3–4 and 7.5YR6–5/4. Very poor recovery.
DSD-220	1095–1100	Silty sand (≤15% silt/clay, 80% sand (vf–c), ≤5% gravel). Well to moderately graded, angular to subrounded. Quartz, feldspar, volcanics. 7.5YR7/4 to 10YR6/3–4. Poor recovery.
DSD-221	1100–1105	Sand with silt (10% silt/clay, 85% sand (vf–c), ≤5% gravel). Moderately to poorly graded, angular to subrounded. Quartz, feldspar, volcanics. 7.5YR7/4, 10YR6/3–4 to 7/2. Poor recovery. Acid reaction. Drillers add more mud.
DSD-222	1105–1110	Silty sand (25% silt/clay, 75% sand (f–c), 0% gravel). Well to moderately graded, angular to subrounded. 7.5YR6/6 to 10YR6/4. Poor recovery.
DSD-223	1110–1115	Silty sand (~30% silt/clay, 65% sand (f–m), ≤5% gravel). Well to moderately graded, subangular to subrounded. 7.5YR6/6 to 10YR6/4. Poor recovery.
DSD-224	1115–1120	Silty sand (40% silt/clay, 55% sand (vf–f), ≤5% gravel). Moderately to poorly graded, subangular to subrounded. 5YR7/2 to 7.5YR6/4. Moderate to poor recovery. 5YR7/2 clayey; bentonite chip in sample?
DSD-225	1120–1125	Sandy silt (65% silt/clay, 35% sand, 0% gravel). Poorly graded, subangular to subrounded. Dominantly quartz. 10YR6/4 and minor 8/1. Poor recovery. Stopped to repair pump.
DSD-226	1125–1130	Silty clayey sand (40% silt/clay, 55% sand (vf–m), ≤5% gravel). Poorly graded, angular to subrounded. Quartz, plutonic, volcanic. 7.5YR6/4 and 10YR6/4 and 7/2. Poor recovery.
DSD-227	1130–1135	Silty clayey sand (40% silt/clay, 55% sand (vf–m), ≤5% gravel). Poorly graded, subangular to subrounded. Volcanic. 10YR7/2 to 7.5YR6/4. Poor recovery.

Sample No.	Depth (ft)	Description
DSD-228	1135–1140	Silty clayey sand (45% silt/clay, 50% sand (vf–c), 5% gravel). Poorly graded, angular to subrounded. Quartz, volcanic, granite. 7.5YR to 10YR6/4, 5Y7/1 to 5GY7/1 (clay). Poor recovery.
DSD-229	1140–1145	Silty sand (35% silt/clay, 55% sand (vf–c), 10% gravel). Well to moderately graded, subangular to subrounded. Granite, quartz, quartzite, volcanic (tuff), chert(?). N8/0, 7.5YR and 10YR6/4. Poor recovery. Mild acid reaction.
DSD-230	1145–1150	Silty clayey sand with gravel (30% silt/clay, 55% sand (vf–c), 15% gravel). Moderately to poorly graded, subangular to subrounded. Volcanics (dacite?, rhyolite, pumice), quartzite, granite. 10YR6/4 and 7.5YR6/4. Poor recovery.
DSD-231	1150–1155	Silty clayey sand (20% silt/clay, 70% sand (vf–c), 10% gravel). 10% gravel). Moderately to poorly graded, angular to subrounded. Quartz, volcanics, plutonic. 10YR6/4 to 7.5YR6/4. Poor recovery.
DSD-232	1155–1160	Sand with gravel and silt (≤10 silt/clay, 70% sand (vf–f, c–vc), 15% gravel). Well to moderately graded, angular to subrounded. Quartz, quartzite, volcanics, plutonic. 10YR6/3, 7.5YR6/4, N7–8/0. Poor recovery.
DSD-233	1160–1165	Sand with silt (≤10% silt/clay, 80% sand (vf–f; c–vc), 10% gravel). Well to moderately graded, angular to subrounded. Quartz, quartzite, volcanics (rhyolite, plutonic and granite). 7.5YR6/2 to 7.5YR6/4. Poor recovery.
DSD-234	1165–1170	Silty clayey sand with gravel (30% silt/clay, 55% sand (vf–f; c–vc), 15% gravel). Well to moderately graded, angular to subrounded. Quartz, granite, volcanics, miscellaneous plutonic. 7.5YR6/4 and 10YR6/2–3. Poor recovery.
DSD-235	1170–1175	Silty, clayey sand with gravel (25% silt/clay, 50% sand (vf–f; c–vc), 25% gravel). Well to moderately graded, angular to subrounded. Quartz, granite, volcanics, miscellaneous plutonic. 7.5YR6/4, 10YR6/2–3 and N7/0. Poor recovery.
DSD-236	1175–1180	Silty sand (20% silt/clay, 75% sand (vf–c), ≤5% gravel). Moderately to poorly graded, subangular to subrounded. Quartz, volcanics, plutonics. 7.5YR6/4, 10YR6/2–3 and N7/0. Poor recovery.
DSD-237	1180–1185	Silty sand (20% silt/clay, 75% sand (vf–vc), ≤5% gravel). Moderately to poorly graded, subangular to subrounded. Quartz, granite, volcanics. 7.5YR6/2 and 7.5YR6/4. Poor recovery.
DSD-238	1185–1190	Silty sand (25% silt/clay, 70% sand (vf–vc), 5% gravel). Well to moderately graded, subangular to subrounded. Volcanics and quartz. 7.5YR6/2 and 6/4, N7/0. Poor recovery.
DSD-239	1190–1195	Sand with gravel and silt (≤10% silt/clay, 75% sand (vf–c), 15% gravel). Moderately graded, subangular to rounded. Quartz, feldspar, miscellaneous volcanics, mafics, sandstone clasts (10YR6/8), granite. 10YR6/3–6/4. Poor recovery.
DSD-240	1195–1200	Silty sand (15% silt/clay, 80% sand (vf–c), ≤5% gravel). Moderately graded with clasts to 10 mm, subangular to subrounded. Quartz, K-feldspar, miscellaneous volcanics, mafics, plagioclase. 10YR6/3–6/4. Moderate to poor recovery. Quartz is clear, yellow, smoky.
DSD-241	1200–1205	Sand with silt (≤10% silt/clay, 80% sand (vf–c), ≤10% gravel). Moderately graded with clasts to 5 mm, subangular to subrounded. Quartz, K-feldspar, miscellaneous volcanics, mafics, plagioclase, obsidian, basalt, sandstone clasts. 7.5YR6/4–10YR6/4. Moderate recovery. Quartz is clear, yellow, smoky; sandstone is 10YR6/8–8/6.

Sample No.	Depth (ft)	Description
DSD-242	1205–1210	Sand with gravel and silt (≤10% silt/clay, 75% sand (vf–c), 15% gravel). Well graded with clasts to 10 mm, subangular to subrounded. Quartz, K-feldspar, miscellaneous volcanics, basalt, miscellaneous sedimentary clasts. 7.5YR5/2–6/2. Moderate recovery. Sedimentary clasts, light green gray mudstone, buff-brown mudstone, yellow sandstone, white sandstone.
DSD-243	1210–1215	Sand with silt (≤10% silt/clay, 80% sand (vf–m), ≤10% gravel). Moderately to poorly graded with clasts to 10 mm, subangular to subrounded. Quartz, K-feldspar, miscellaneous volcanics, basalt, miscellaneous sedimentary clasts. 7.5YR6/2–6/4. Moderate recovery. Same suite of sedimentary clasts; fining up.
DSD-244	1215–1220	Sand with silt (≤10% silt/clay, 85% sand (vf–m), ≤5% gravel). Poorly graded with clasts to 10 mm, subrounded to rounded. Quartz, K-feldspar, miscellaneous volcanics, basalt, miscellaneous sedimentary clasts. 10YR6/2. Moderate recovery. Same suite of sedimentary clasts; fining up.
DSD-245	1220–1225	Silty clayey sand (20% silt/clay, 75% sand (vf–m), <5% gravel). Poorly graded with clasts to 10 mm, subrounded to rounded. Quartz, K-feldspar, miscellaneous volcanics, basalt, miscellaneous sedimentary clasts. 10YR6/2–6/4. Moderate recovery. Same suite of sedimentary clasts; fining up.
DSD-246	1225–1230	Clayey sand (30% silt/clay, 65% sand (vf), <5% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, miscellaneous volcanics, basalt, miscellaneous sedimentary clasts. 10YR6/2–6/4. Moderate recovery. Same suite of sedimentary clasts; fining up.
DSD-247	1230–1235	Silty clayey sand (30% silt/clay, 65% sand (vf–m, vc), <5% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, miscellaneous volcanics, basalt, miscellaneous sedimentary clasts. 10YR6/3–5/4. Poor recovery. Same suite of sedimentary clasts; fining up. Acid reaction with wet fine fraction.
DSD-248	1235–1240	Silty clayey sand (40% silt/clay, 55% sand (vf–m), <5% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, miscellaneous volcanics, basalt. 10YR6/3–6/4. Poor recovery. Acid reaction.
DSD-249	1240–1245	Silty sand (25% silt/clay, 75% sand (vf–f), 0% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, basalt, miscellaneous volcanics, sedimentary clasts. 10YR5/3–5/4. Poor recovery. Acid reaction.
DSD-250	1245–1250	No recovery—interval not described.
DSD-251	1250–1255	No recovery—interval not described.
DSD-252	1255–1260	No recovery—interval not described.
DSD-253	1260–1265	Looks like silty clay with fine sand? Fine magnetite sand in wash. Virtually no recovery.
DSD-254	1265–1270	Clayey sand with gravel (40% silt/clay, 40% sand (vf–vc), ~20% gravel). Poorly graded with clasts to 10 mm, subangular to subrounded. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts, fine magnetite sand. 7.5–10YR4/2 to 10YR7/3. Poor recovery. Mild acid reaction. Sedimentary clasts = green (5Y6/3) mudstone, buff yellow sandstone.
DSD-255	1270–1275	Silty clayey sand with gravel (15% silt/clay, 70% sand (vf–vc), 15% gravel). Well graded with clasts to 10 mm, subrounded to rounded. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts, fine magnetite sand. 10YR6/2–5/3. Poor recovery. Vigorous acid reaction; same sedimentary clasts.

Sample No.	Depth (ft)	Description
DSD-256	1275–1280	Silty clayey sand with gravel (15% silt/clay, 70% sand (vf–vc), 15% gravel). Well graded with clasts to 8 mm, subrounded to rounded. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts, fine magnetite sand. 5YR5/4–7.5YR5/4. Poor recovery. Moderate acid reaction; same sedimentary clasts.
DSD-257	1280–1285	Sand with silt (≤10% silt/clay, 80% sand (vf–vc), ≤10% gravel). Well graded, subrounded to rounded. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts, fine magnetite sand. Small clumps of 5–7.5YR5/4; other 10YR5/3. Poor recovery. Mild acid reaction; sedimentary clasts = buff yellow sandstone; green-gray mudstone.
DSD-258	1285–1290	Sand with silt (≤10% silt/clay, 85% sand (vf–vc), ≤5% gravel). Well graded, subrounded to rounded. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts, fine magnetite sand and gneiss. 10YR5/3. Poor recovery. Mild acid reaction; sedimentary clasts = buff yellow sandstone; green-gray mudstone.
DSD-259	1290–1295	Sand with silt/clay (≤15% silt/clay, 80% sand (vf–vc), <5% gravel). Well graded, subrounded to rounded. Quartz, K-feldspar, basalt, rhyolite, miscellaneous volcanics, sedimentary clasts, fine magnetite sand, gneiss and quartzite. 10YR5/3. Poor recovery. Mild acid reaction; sedimentary clasts = buff yellow sandstone; green-gray mudstone.
DSD-260	1295–1300	Silty sand (20% silt/clay, 80% sand (vf–m, vc), 0% gravel). Moderately graded, subrounded to rounded. Quartz, miscellaneous fine-grain silicic volcanics, basalt, quartzite, K-feldspar, sedimentary clasts, plagioclase. 10YR5/3. Poor recovery. Sedimentary clasts = buff yellow sandstone, green mudstone.
DSD-261	1300–1305	Silty sand (30% silt/clay, 70% sand (vf–m, vc), 0% gravel). Moderately graded, subrounded to rounded. Quartz, miscellaneous fine-grain silicic volcanics, basalt, quartzite, K-feldspar, sedimentary clasts, plagioclase. 10YR4/1–10YR5/3. Moderate to poor recovery. Sedimentary clasts = buff yellow sandstone, green mudstone; mild acid reaction.
DSD-262	1305–1310	Silty sand (20% silt/clay, 80% sand (vf–vc), 0% gravel). Well to moderately graded, subrounded to rounded. Quartz, miscellaneous fine-grain silicic volcanics, basalt, quartzite, K-feldspar, sedimentary clasts, plagioclase. 10YR5/3. Moderate to poor recovery. Sedimentary clasts = green mudstone, buff yellow sandstone (5GY7/1).
DSD-263	1310–1315	Silty sand (30% silt/clay, 70% sand (vf–c), 0% gravel). Well to moderately graded, subrounded to rounded. Quartz, miscellaneous fine-grain silicic volcanics, basalt, quartzite, K-feldspar, sedimentary clasts, plagioclase. 7.5YR7/4–10YR7/3. Moderate to poor recovery. Sedimentary clasts = green mudstone, buff yellow sandstone (5GY7/1).
DSD-264	1315–1320	Silty sand (30% silt/clay, 70% sand (vf–vc), 0% gravel). Well to moderately graded, subrounded to rounded. Quartz, miscellaneous fine-grain silicic volcanics, basalt, quartzite, K-feldspar, sedimentary clasts, plagioclase. 10YR6/3–5/3. Moderate to poor recovery. Sedimentary clasts = green mudstone, buff yellow sandstone (5GY7/1).
DSD-265	1320–1325	Silty sand (20% silt/clay, 80% sand (vf–vc), 0% gravel). Well to moderately graded, subrounded to rounded. Quartz, miscellaneous fine-grain silicic volcanics, basalt, quartzite, K-feldspar, sedimentary clasts, plagioclase. 10YR6/3–5/3. Moderate to poor recovery. Sedimentary clasts = green mudstone, buff yellow sandstone (5GY7/1).
DSD-266	1325–1330	Sand with silt (≤10% silt/clay, 85% sand (vf–vc), 5% gravel). Well graded with clasts to 4 mm, subrounded to rounded. Quartz, miscellaneous fine-grain silicic volcanics, basalt, quartzite, K-feldspar, sedimentary clasts, plagioclase, chert, epidote and pumice/ash (10YR8/6). 10YR7/3–6/3. Moderate to poor recovery. Sedimentary clasts = green mudstone, buff yellow sandstone (5GY7/1).

Sample No.	Depth (ft)	Description
DSD-267	1330–1335	Silty sand (15% silt/clay, 85% sand (vf–vc), 0% gravel). Well graded, subrounded to rounded. Quartz, fine grained and silicic volcanics, basalt, quartzite, K-feldspar, plagioclase. 10YR6/3. Moderate recovery. Sedimentary clasts same as above.
DSD-268	1335–1340	Sand (≤5% silt/clay, 90% sand (f–vc), ≤5% gravel). Well graded, subangular to rounded. Quartz, fine grained and silicic volcanics, basalt, quartzite, K-feldspar, plagioclase. 10YR6/3. Moderate recovery. Sedimentary clasts same as above.
DSD-269	1340–1345	Silty sand (20% silt/clay, 80% sand (vf–c), 0% gravel). Well graded, subrounded to rounded. Quartz, fine grained and silicic volcanics, basalt, quartzite, K-feldspar, plagioclase. 10YR6/3–6/4. Moderate recovery. Sedimentary clasts same as above.
DSD-270	1345–1350	Sand with silt (10% silt/clay, 80% sand (vf–c), 5–10% gravel). Well graded with clasts to 4 mm, angular to subrounded. Quartz, green silicic volcanics, feldspar, quartzite, miscellaneous fine-grained volcanics, basalt. 10YR8/3–7/3. Green clast is silicified weathered ash from Morrison Fm(?). 5Y7/1–5GY7/1.
DSD-271	1350–1355	Silty clayey sand (~30% silt/clay, 65% sand (vf–vc), ≤5% gravel). Moderately graded, angular to subrounded. Quartz, green silicic volcanics, feldspar, quartzite, miscellaneous fine-grained volcanics, basalt. 7.5YR7/4–6/4. Poor recovery.
DSD-272	1355–1360	Silty clayey sand (15% silt/clay, 75% sand (f–vc), 10% gravel). Moderately graded with clasts to 4 mm, angular to subrounded. Quartz, fine-grained volcanics, feldspar, basalt, quartzite. 7.5YR7/4–6/4. Poor recovery. Large (~10 mm) mudclasts (7.5YR5/4).
DSD-273	1360–1365	Silty clayey sand (40% silt/clay, 60% sand (vf–c), 0% gravel). Moderately graded, angular to subrounded. Quartz, K-feldspar, mafic volcanics, green volcanics. 10YR5/2–5/3 and 10YR6/4. Poor recovery. A little clayey; mild acid reaction.
DSD-274	1365–1370	Silty clayey sand (30% silt/clay, 70% sand (vf–c), 0% gravel). Moderately graded, angular to subrounded. Quartz, K-feldspar, mafic volcanics, green volcanics. 10YR5/3. Poor recovery.
DSD-275	1370–1375	Sandy silt to sandy clay (65% silt/clay, 35% sand (vf–m), 0% gravel). Poorly graded, angular to subrounded. Quartz, K-feldspar, mafic volcanics, green volcanics. 10YR6/3. Poor recovery.
DSD-276	1375–1380	Sandy silt to sandy clay (70% silt/clay, 30% sand (vf–m), 0% gravel). Poorly graded, angular to subrounded. Quartz, K-feldspar, mafic volcanics, green volcanics. 7.5YR6/4–6/6. Poor recovery.
DSD-277	1380–1385	Sandy silt to sandy clay (60% silt/clay, 40% sand (vf–m), 0% gravel). Moderately graded, subrounded to rounded. Quartz, K-feldspar, mafic volcanics, green volcanics. 7.5YR6/4–10YR5/3. Poor recovery.
DSD-278	1385–1390	Sandy silt to sandy clay (65% silt/clay, 35% sand (vf–m), 0% gravel). Moderately graded, subrounded to rounded. Quartz, K-feldspar, mafic volcanics, green volcanics. 10YR5/3–6/3. Poor recovery.
DSD-279	1390–1395	Silty sand (45% silt/clay, 55% sand (vf–m), 0% gravel). Moderately to poorly graded, subrounded to rounded. Quartz, K-feldspar, mafic volcanics, green volcanics. 10YR5/3–6/3. Moderate recovery.
DSD-280	1395–1400	Silty sand (45% silt/clay, 55% sand (vf–m), 0% gravel). Moderately graded, subrounded to rounded. Quartz, K-feldspar, miscellaneous fine-grain volcanics, quartzite, basalt. 10YR5/3. Moderate recovery. Moderate acid reaction.

Sample No.	Depth (ft)	Description
DSD-281	1400–1405	Silty sand (30% silt/clay, 70% sand (vf–m), 0% gravel). Moderately to poorly graded, subrounded to rounded. Quartz, K-feldspar, miscellaneous fine-grain volcanics, quartzite, basalt. 10YR5/3. Moderate recovery. Moderate acid reaction.
DSD-282	1405–1410	Silty sand (25% silt/clay, 70% sand (vf–vc), 5% gravel). Well graded with clasts to 4 mm, subangular to subrounded. Quartz, K-feldspar, miscellaneous fine-grain volcanics, quartzite, basalt and sedimentary clasts (yellow buff sandstone). 10YR5/3. Moderate recovery.
DSD-283	1410–1415	Sand with silt (≤10% silt/clay, 80% sand (vf–vc), ≤10% gravel). Well graded with clasts to 10 mm, angular to subangular. Sedimentary clasts (yellow and buff sandstones, brown-red sandstone), quartz, K-feldspar, quartzite, miscellaneous fine-grained volcanics. 10YR5/3.
DSD-284	1415–1420	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel). Well graded with clasts to 4 mm, angular to subangular. Sedimentary clasts (yellow and buff sandstones, brown-red sandstone), quartz, K-feldspar, quartzite, miscellaneous fine-grained volcanics and plutonic. 10YR5/3. Moderate recovery.
DSD-285	1420–1425	Sand with silt (≤10% silt/clay, 85% sand (vf–vc), ≤5% gravel). Well graded with clasts to 4 mm, angular to subangular. Sedimentary clasts (yellow and buff sandstones, brown-red sandstone), quartz, K-feldspar, quartzite, miscellaneous fine-grained volcanics and plutonic. 10YR5/3. Moderate recovery.
DSD-286	1425–1430	No recovery—interval not described.
DSD-287	1430–1435	Sand (≤5% silt/clay, 90% sand (vf–m), ≤5% gravel). Moderately graded with clasts to 4 mm, subrounded to rounded. Quartz, K-feldspar, miscellaneous fine-grained volcanics, basalt. 10YR5/3–5/4. Moderate to poor recovery. Some, but very little, very coarse sand; mild acid reaction.
DSD-288	1435–1440	Sand (<5% silt/clay, 85% sand (vf–vc), ≤10% gravel). Moderately graded with clasts to 4 mm, subrounded to rounded. Quartz, K-feldspar, miscellaneous fine-grained volcanics, basalt and sedimentary clasts (buff sandstone). 10YR5/2–5/3. Moderate recovery. Predominantly m–vc sand; mild acid reaction.
DSD-289	1440–1445	Sand (0% silt/clay, 95% sand (vf–vc), ≤5% gravel). Moderately graded with clasts to 8 mm, subrounded to rounded. Quartz, K-feldspar, miscellaneous fine-grained volcanics, basalt, sedimentary clasts (buff sandstone, yellow sandstone), granite. 10YR5/2–5/3. Moderate recovery. Mild acid reaction; clumps of carbonate cemented material (~5 mm in diameter).
DSD-290	1445–1450	Sand with silt (≤10% silt/clay, 80% sand (vf–vc), ≤10% gravel). Moderately graded with clasts to 8 mm, subrounded to rounded. Quartz, K-feldspar, miscellaneous fine-grained volcanics, basalt, sedimentary clasts (buff sandstone, yellow sandstone), granite. 10YR6/3–5/3. Moderate recovery. Mild acid reaction; clumps of carbonate cemented material (~5 mm in diameter).
DSD-291	1450–1455	Sand with silt (10% silt/clay, 85% sand (vf–m, vc), ≤5% gravel). Moderately graded with clasts to 8 mm, subrounded to rounded. Quartz, miscellaneous fine-grained volcanics, basalt, sedimentary clasts (buff and yellow sandstone), reddish-brown (5YR5/4–7.5YR4/6) clasts of soft clay-siltstone. 10YR5/3. Moderate recovery. Mild acid reaction.
DSD-292	1455–1460	Sand with silt (10–15% silt/clay, 80% sand (vf–m, vc), ≤5% gravel). Moderately graded with clasts to 4 mm, subrounded to rounded. Quartz, miscellaneous fine-grained volcanics, basalt, sedimentary clasts (buff and yellow sandstone), reddish-brown (5YR5/4–7.5YR4/6) clasts of soft clay-siltstone. 7.5YR5/4–10YR5/4–6/4. Moderate recovery. Mild acid reaction.

Sample No.	Depth (ft)	Description
DSD-307	1530–1535	Silty fine sand (15% silt > clay, 80% sand (vf–vc), ≤5% gravel). Well graded with clasts to 4 mm, subangular to subrounded. Quartz, fine volcanics, K-feldspar, basalt, granite and buff sandstone. 10YR6/3–6/4. Moderate recovery. Mild acid reaction and clumps of $CaCO_3$ cemented material.
DSD-308	1535–1540	Silty fine sand (45% silt/clay, 55% sand (vf–f), 0% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, fine volcanics, basalt, green silicic tephra/ash, red-brown 5YR5/4 mudstone/claystone clasts. 10YR7/3–6/3. Poor recovery. Mild acid reaction.
DSD-309	1540–1545	Silty fine sand (45% silt/clay, 55% sand (vf–f), 0% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, fine volcanic; basalt, red-brown 5YR5/4 mudstone/claystone clasts. 10YR6/3–5/3. Poor recovery. Mild acid reaction.
DSD-310	1545–1550	Fine sandy silt (55% silt > clay, 45% sand (vf–f), 0% gravel). Poorly graded, subrounded to rounded. Quartz, K-feldspar, fine volcanic, basalt, red-brown 5YR5/4 mudstone/claystone clasts. 10YR6/3–5/3. Moderate recovery. Mild acid reaction.
DSD-311	1550–1555	Silty sand (40% silt/clay, 55% sand (vf–f, vc), <5% gravel). Poorly graded with clasts to 4 mm, subrounded to rounded. Quartz, K-feldspar, fine volcanic, basalt. 7.5YR6/4. Moderate recovery. Mild acid reaction.
DSD-312	1555–1560	Silty clayey sand (40% silt ≈ clay, 60% sand (vf–vc), 0% gravel). Well graded, subrounded to rounded. Quartz, K-feldspar, fine volcanic, basalt, granite and buff sandstone. 10YR6/3–5/3. Moderate recovery. Mild acid reaction.
DSD-313	1560–1565	Silty sand (30% silt/clay, 70% sand (vf–vc), 0% gravel). Well graded, subrounded to rounded. Quartz, K-feldspar, fine volcanic, basalt, granite and buff sandstone. 10YR6/3–6/4. Moderate recovery. Mild acid reaction.
DSD-314	1565–1570	Silty clayey sand (45% silt ≈ clay, 55% sand (vf–vc), 0% gravel). Poorly graded, subangular to subrounded. Quartz, K-feldspar, fine volcanic, basalt. 10YR6/3–5/3. Moderate recovery. No acid reaction. Skewed toward fine sand.

Hunters Ridge Park 1

New Mexico Bureau of Mines & Mineral Resources
Socorro, NM 87801

A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Information: 505/835-5420
Publications: 505/835-5410
FAX: 505/835-6333

June 19, 1996

Mr. Norman Gaume
Water Resources Program
Public Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Field Boring Log for Hunters Ridge Park Piezometers

Dear Norm:

I am pleased to submit the New Mexico Bureau of Mines' final report and field boring log for the Hunters Ridge Park deep piezometer nest located in northwest Albuquerque. The report includes a summary stratigraphic column for the boring, as well as a lithologic summary and hydrogeologic interpretation. Attachments include detailed field descriptions for five-foot intervals and the geophysical logs produced by the U.S. Geological Survey's geophysics team.

This is one of two piezometer installations completed at the Hunters Ridge site, the second installation being completed in the shallow aquifer at equivalent depth intervals as the Spartan monitoring wells south of Calabacillas Arroyo. The drilling team is now ready to move to the fourth site, which is located at West Bluff Park along the Rio Grande in west central Albuquerque. We anticipate that drilling should begin at West Bluff early next week. If you have any questions or comments, or if I can be of further assistance, please feel free to call.

Sincerely,

Charles E. Chapin
Director and State Geologist

/al

Enclosures

Field Boring Log for Hunters Ridge Park 1
City of Albuquerque Piezometer Nest
FY 1996

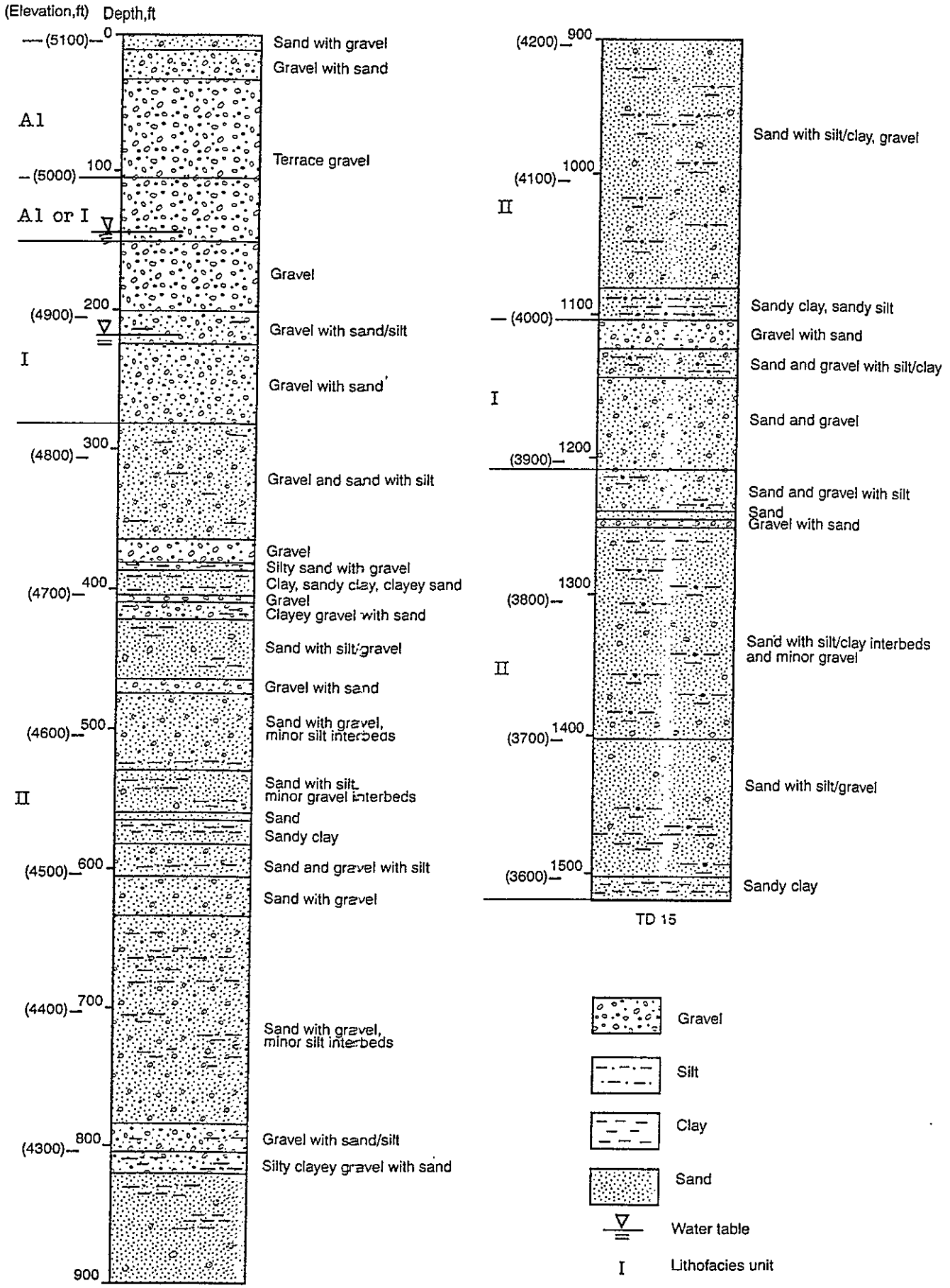
The following borehole logs were completed for the deep piezometer nest located at Hunters Ridge Park, Albuquerque, New Mexico, and installed by the U.S. Geological Survey for the City of Albuquerque in May 1996. This log (Hunters Ridge Park 1) is submitted in fulfillment of reporting requirements under the Intergovernmental Services Agreement between New Mexico Bureau of Mines and Mineral Resources and the City of Albuquerque, for collection and interpretation of monitor well drill cuttings. A second, shallow piezometer nest called Hunters Ridge Park 2 was also installed at this location, but is not described in this report. The log describes sample intervals, lithologic characteristics and interpretations, supplemental drilling information, borehole geophysical logging information and interpretation, and hydrogeologic interpretations. The lithologic descriptions were made in accordance with ASTM Standard Practice D2488-90 for Description and Identification of Soils (Visual-Manual Procedure), Figure 1a (Flow chart for Identifying Inorganic Fine-Grained Soil (50% or more fines)) and Figure 2 (Flow Chart for Identifying Coarse-Grained Soils (less than 50% fines)), except that the gravel-sand division was defined at a particle size of 2 mm. Additionally, drilling fluids prevented a complete evaluation of the fine fraction according to ASTM criteria. The field lithologic descriptions include the following information:

1. Major textural class
2. Grain size distribution by major textural classes: silt/clay (<0.075 mm), sand (0.075–2 mm), gravel (>2 mm)
3. Grading and range of grain and clast size
4. Angularity and particle shape
5. Clast composition, in descending order of abundance
6. Color (Munsell Soil Color Chart) for fine matrix (<2 mm) unless otherwise noted
7. Other characteristics and driller's comments

Hydrogeologic interpretations classify the materials according to the descriptive system of unit nomenclature developed by Hawley and Haase (NMBMMR Open-File Report 387, 1992) and recently revised by Hawley (NMBMMR Open-File Report 402, 1996). The nomenclature describes the hydrostratigraphic units (RA, TA, VA, PA, USF, MSF, LSF), together with the major basin-fill lithofacies classes (I to X), and the valley-fill lithofacies classes (A, including A1, A2 and A3, and B). It is important to note that the lithologic summary (page 3) provides descriptions based solely on grain size characteristics, and the lithofacies and hydrogeologic interpretations (page 6) are based on several integrated criteria including grain size, clast composition and geographic location within the basin. Both lithologic descriptions and lithofacies interpretations are illustrated in the stratigraphic column in Figure 1. A detailed log of the full lithologic field description by 5-foot sample interval is provided as Attachment A. The borehole geophysical logs are included as Attachment B.

Location:	T11N, R3E, Section 7.1.4.1 (projected). 500 ft east of intersection of Chandler Drive and Dunbar Avenue, Albuquerque. Los Griegos 7.5' quadrangle.
Elevation:	5105 ft (land surface estimate from topographic base map)
Drilling Method:	Mud Rotary
Drillers:	Dan Sweeney (U.S.G.S.)
Date Started:	May 9, 1996
Date Completed:	May 27, 1996
Sample Interval:	5 feet
Screened Intervals:	148–228 ft, 845–850 ft, 1508–1513 ft (below land surface)
Total Depth:	1520 ft (below land surface)
Geological Logging:	Barry Allred, Sean Connell, Peggy Johnson (NMBMMR)

Figure 1. Stratigraphic Column
Hunters Ridge Park



Lithologic Summary and Borehole Geophysical Interpretations
Hunters Ridge Park 1

Depth (ft)	Lithologic Description
0-15	Sand (75%) with pebble gravel. Well to moderately graded, subangular to subrounded. Reddish brown to dark brown. Quartz, K-feldspar, granite, minor volcanics, carbonate nodules, and sandstone.
15-35	Pebble gravel (60-90%) with sand. Variably graded, angular to rounded. Sand is light yellowish brown. Pink granite, quartz, quartzite, rounded volcanics and black chert, Pedernal chert, sandstone, jasper, carbonate nodules. At 15–25 ft clasts have carbonate rinds.
35-150	Pebble to cobble gravel (≥90%). Well to moderately graded, subrounded to rounded (angular clasts freshly broken by bit), densely packed terrace gravels. Pink granite, quartz, quartzite, chert and Pedernal chert, volcanics, basalt, volcaniclastics, sandstone. Below 105 ft, pink granite becomes less significant, volcanics become dominant, and basalt and sandstone become significant clasts.
150-200	Pebble gravel (≥90%). Well to moderately graded, poorly graded over lower 15 ft, subangular to rounded (angular clasts freshly broken by bit). Volcanics, basalt, quartz, quartzite, pink granite, sandstone, Pedernal chert.
200-225	Pebble gravel (≥70%) with minor silt and sand. Variably graded, subangular to rounded. Very pale brown to light yellowish brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
225-280	Pebble gravel (≥80%) with minor sand. Poorly graded, subangular to rounded. Light yellowish brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
280-365	Pebble gravel (25-55%) and sand (25–55%) with significant silt; clean gravel/sand intervals at 325–330 ft, 340–345 ft, and 360–365 ft. Well graded, subangular to rounded. Light yellowish brown to very pale brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
365-380	Pebble gravel (≥90%). Poorly graded, subangular to subrounded. Very pale brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
380-385	Silty sand with pebble gravel. Well graded, subangular to subrounded. Very pale brown. Basalt and other volcanics, quartz, granite, sedimentary and red siltstone clasts. Silty interval at 376–386 ft based on geophysics.
385-405	Clay, sandy clay, and clayey sand. Well graded, subangular to subrounded. Light brown to very pale brown. Basalt and other volcanics, quartz, granite.
405-410	Pebble gravel (85%). Poorly graded, subangular to subrounded. Very pale brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
410-420	Clayey gravel with sand. Well graded, subangular to subrounded. Light brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
420-465	Sand (60–90%) with silt and minor pebble gravel; silty sand. Well graded, subangular to subrounded. Light yellowish brown to light brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
465-475	Pebble gravel (60–80%) with sand. Moderately to poorly graded, subangular to subrounded. Basalt and other volcanics, quartz, granite.
475-530	Sand (70–90%) with varying amounts of pebble gravel; silty interval at 515–520 ft. Variably graded, subangular to subrounded. Silt is very pale brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.
530-560	Sand (60–65%) with significant silt and minor pebble gravel. Well graded, subangular to subrounded. Very pale brown. Basalt, quartz, granite.

560-565 Sand (90%). Moderately graded, subangular to subrounded. Very pale brown. Basalt, quartz, granite.

565-585 Sand clay. Well graded, subangular to subrounded. Very pale brown. Basalt, quartz, granite.

585-605 Sand and pebble gravel; minor silty interval at 595–605 ft. Well graded, subangular to subrounded. Very pale brown. Basalt and other volcanics, quartz, granite, sedimentary clasts, green siltstone from 595–605 ft.

605-635 Sand (75–95%) with occasional pebble gravel. Well to moderately graded, subangular to subrounded. Very pale brown. Basalt, volcanics, quartz, granite, brown sedimentary clasts, red and green siltstone.

635-785 Sand (55-85%) with varying amounts of pebble gravel; minor silty intervals at 660–685 ft, 690–700 ft, and 705–745 ft. Well to moderately graded, subangular to subrounded. Very pale brown, light yellowish brown, reddish yellow and pink. Basalt and other volcanics, quartz, granite, sedimentary clasts, and abundant red siltstone/shale clasts at 690–705 ft.

785-805 Gravel (65–80%) with minor sand and silt. Well to moderately graded, subangular to subrounded. Light brown to light yellowish brown and pinkish gray. Quartz, quartzite, K-feldspar, volcanics, sedimentary clasts, miscellaneous metamorphics, Pedernal chert, obsidian.

805-820 Silty clayey gravel with sand. Silt/clay interval at 786–806 ft based on geophysics. Variably graded, subangular to rounded. Light brown to light reddish brown to reddish yellow. Quartz, quartzite, pink granite, K-feldspar, volcanics, sedimentary clasts, miscellaneous metamorphics, Pedernal chert.

820-1080 Sand (60–90%) with variable amounts of silt/clay and gravel; significant silt/clay interbeds at 820–860 ft and 925–1080 ft. Silt/clay intervals at 920–928 ft, 962–970 ft, 994–1018 ft, 1044–1058 ft, and 1066–1080 ft based on geophysics. Well to moderately graded, angular to rounded. Variably colored light brown, light brownish gray, grayish brown, light reddish brown, light yellowish brown to brownish yellow, reddish yellow, and pinkish gray. Pink granite, quartz, igneous/volcanics, K-feldspar, Pedernal chert, sedimentary clasts, carbonate nodules (1040–1075 ft).

1080-1105 Sandy clay and sandy silt. Well to moderately graded, subangular to subrounded. Light brown to light yellowish brown.

1105-1125 Gravel (65–75%) with significant sand. Well to moderately graded, subangular to rounded. Light brown to light yellowish brown. Basalt and other volcanics, granite, quartz, sedimentary clasts, light green volcanic clasts.

1125-1145 Sand and gravel with significant silt/clay. Silt/clay interval at 1122–1130 ft based on geophysics. Well graded, subangular to rounded. Light brown to reddish yellow. Basalt and other volcanics, granite, quartz, sedimentary clasts, light green volcanic clasts.

1145-1210 Gravel (50–90%) with sand, and sand (55–65%) with gravel. Moderately graded, subangular to rounded. Light brown. Basalt and other volcanics, quartz, granite, sedimentary clasts light green volcanic clasts (1145–1180).

1210-1240 Sand (50–70%) with variable amounts of gravel and silt. Well graded, subangular to subrounded. Light brown to very pale brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.

1240-1245 Sand (90%). Well graded, subangular to subrounded. Light brown.

1245-1250 Gravel (50%) with sand. Moderately graded, subangular to subrounded. Light brown. Basalt and other volcanics, quartz, granite, sedimentary clasts.

1250-1405 Sand (50-70%) with significant silt/clay and minor gravel. Silt/clay interbeds at 1260–1265 ft, 1275–1280 ft, and significant silty intervals at 1280–1315 ft and 1345–1390 ft; silt/clay intervals at 1329–1342 ft based on geophysics. Gravelly intervals at 1315–1345, and 1390–1400. Well graded, subangular to subrounded; sometimes rounded. Light brown, light yellowish brown, reddish yellow, and pink. Basalt and other volcanics, granite, quartz, sedimentary clasts, chert.

1405-1505 Sand (70–95%) with minor silt and/or gravel. Silty/clayey intervals at 1455-1470 ft and 1480–1505 ft; silt/clay at 1464–1478 ft and 1492–1504 ft based on geophysics. Well to moderately graded, subangular to subrounded. Light brown and very pale brown to pink and reddish yellow. Basalt, granite, quartz, chert, other volcanics.

1505–1520 Silt/clay (60–70%) with fine sand. Moderately to poorly graded, subangular to subrounded. Brown and strong brown to red.

Hydrogeologic Interpretation
Hunter Ridge Park 1

Depth (ft)	Hydrostratigraphic Unit	Lithofacies
0–105	Modern arroyo-valley alluvium associated with Calabacillas Arroyo; sand and pebble to cobble gravel with clasts having a Nacimiento Mountains source (VA)	A1 (formerly Vv)
105–147	Undifferentiated river channel alluvium; densely-packed cobble gravel associated with terrace deposits of uncertain stratigraphic position (TA or USF-2)	A1 or I
147–280	Ancestral river channel alluvium; sand and gravel dominated (≥50%) with minor silt/clay (USF-2)	I
280–1105	Basin-floor fluvial facies and local eolian deposits; sand and pebbly sand with variably mixed clay and silt (USF-2)	II
1105–1210	Ancestral river channel and basin-floor alluvium; sand and gravel dominated (≥50%) with minor silt/clay (USF-2, 4)	I
1210–1505	Basin-floor fluvial facies and local eolian deposits; sand and pebbly sand with variably mixed clay and silt (USF-2)	II

Note: The identification of lithofacies units is interpretative based on several criteria including texture, composition (provenance), and geographic location of the described sample within the basin. The interpretation of lithofacies is tentative and preliminary due to limitations of the data and the fact that correlation to adjacent wells has not yet been undertaken; accordingly these lithofacies interpretations are subject to revision.

Attachment A
Field Lithologic Descriptions
Hunters Ridge Park Piezometer Nest

Sample No.	Depth (ft)	Description
HRP-1	0–15	Sand with gravel (≤5% silt/clay, 75% sand (f–vc), 20% gravel (pbl)). Well to moderately graded, subangular to subrounded. Quartz, K-feldspar, granite, minor volcanic, $CaCO_3$ nodules, sandstone. 7.5YR4/4 with minor 5YR4/4. Poor recovery. Combined intervals 0–15' because of poor recovery. NOTE: Most of sample is fine sand lost through cleaning of sample.
HRP-2	15–20	Gravel with sand (0% silt/clay, 40% sand (f–vc), 60% gravel (pbl)). Moderately graded, angular to subrounded. Granite, quartz, chert, sediments, $CaCO_3$ rinds, volcanics. 10YR6/4. Moderate recovery. Set surface casing to 20 ft.
HRP-3	20–25	Gravel with sand (0% silt/clay, 15% sand (f–c), 85% gravel (pbl)). Moderately graded, angular to subrounded. Granite, quartz, sediment, Pedernal chert, sandstone, $CaCO_3$ nodules. Good recovery.
HRP-4	25–30	Gravel (0% silt/clay, 10% sand (f–c), 90% gravel (pbl)). Poorly graded, angular to rounded. Pink granite, rounded black chert, volcanic/subvolcanic, Pedernal chert, jasper(?). Good recovery.
HRP-5	30–35	Gravel with sand (0% silt/clay, 20% sand (f–c), 80% gravel (pbl)). Well to moderately graded, angular to rounded. Pink granite, quartz, quartzite, rounded volcanic/subvolcanic, angular chert and Pedernal chert. Good recovery.
HRP-6	35–40	Gravel (0% silt/clay, 10% sand (f–c), 90% gravel). Well graded, angular to rounded. Pink granite, quartz, quartzite, sediments, chert, Pedernal chert, volcanics. Good recovery. $CaCO_3$ rind fragments, from reworked calcic soils.
HRP-7	40–45	Gravel (0% silt/clay, 10% sand, 90% gravel (pbl–cbl)). Well to moderately graded, angular to rounded. Pink granite, quartz, quartzite, sediments, chert, Pedernal chert, volcanics. Good recovery.
HRP-8	45–50	Gravel (0% silt/clay, 10% sand, 90% gravel (pbl–cbl)). Moderately graded, angular to rounded. Pink granite, quartz, chert and Pedernal chert, basalt, volcanic, carbonate rinds. Good recovery. Rounded pebbles and angular/subangular cobbles and pebbles.
HRP-9	50–55	Gravel (0% silt/clay, 5% sand, 95% gravel (pbl–cbl)). Moderately to poorly graded, angular to subrounded. Pink granite, quartz, quartzite, volcanic (tuff and basalt), sediments. Good recovery.
HRP-10	55–60	Gravel (0% silt/clay, 5% sand, 95% gravel (pbl–cbl)). Well to moderately graded, angular to subrounded. Chert, metasediment, pink granite, quartz and quartzite, Pedernal chert, volcanics, basalt, $CaCO_3$ fragments, sandstone. Good recovery. Minor $CaCO_3$ cemented sandstone nodules and rounded petrocalcic soils.
HRP-11	60–65	Gravel (0% silt/clay, ≤10% sand, 90% gravel(pbl–cbl)). Well to moderately graded, angular to subrounded. Pink granite, quartz, quartzite, chert, Pedernal chert, sediment, sandstone, volcanic, basalt. Good recovery. Sandstone clasts $CaCO_3$ cemented. Sample for USGS.
HRP-12	65–70	Gravel (0% silt/clay, 10% sand, 90% gravel (pbl–cbl)). Well to moderately graded, angular to rounded. Pink granite, quartz, volcanic, chert and Pedernal chert. Good recovery.
HRP-13	70–75	Gravel (0% silt/clay, ≤10% sand, 90% gravel (pbl–cbl)). Well to moderately graded, angular to rounded. Pink granite, quartz, volcanics, volcaniclastic, basalt, chert, Pedernal chert, sandstone. Good recovery.
HRP-14	75–80	Same as above.

Sample No.	Depth (ft)	Description
HRP-15	80–85	Gravel (0% silt/clay, ≤5% sand (vc–c), 95% gravel (pbl–cbl)). Moderately graded, angular to subrounded. Pink granite, quartz, volcanics, volcaniclastics, sandstone, Pedernal chert. Good recovery. Mostly angular pebble gravel freshly broken by bit, with 8–10 mm clasts.
HRP-16	85–90	Gravel (0% silt/clay, <5% sand (vc), 95% gravel (pbl–cbl). Moderately graded, angular to subrounded. Pink granite, quartz, volcanics, Pedernal chert, sandstone, rose quartz. Good recovery. 10–20 mm clasts; angular clasts are broken up by bit.
HRP-17	90–95	Gravel (0% silt/clay, <5% sand (vc), 95% gravel (pbl–cbl)). Well to moderately graded, angular to subrounded. Pink granite, volcanics, sandstone, basalt, Pedernal chert, rose quartz. Good recovery. 10–20 mm clasts; angular clasts are broken up by bit.
HRP-18	95–100	Gravel (0% silt/clay, <5% sand (vc), 95% gravel (pbl–cbl)). Well to moderately graded, angular to rounded. Pink granite, volcanics, basalt, sandstone, quartz, chert, rose quartz, Pedernal chert. Good recovery. 10–20 mm clasts; angular clasts are broken up by bit.
HRP-19	100–105	Same as above.
HRP-20	105–110	Gravel (0% silt/clay, <5% sand (vc), 95% gravel (pbl–cbl)). Well to moderately graded, angular to subrounded. Volcanics, pink granite, sandstone, basalt, Pedernal chert, quartz. Good recovery. 10–20 mm clasts; angular clasts are broken up by bit.
HRP-21	110–115	Gravel (0% silt/clay, 5% sand (vc), 95% gravel (pbl–cbl)). Well graded, angular to subrounded. Volcanics, pink granite, sandstone, basalt, Pedernal chert, quartz. Good recovery. 5–20 mm clasts.
HRP-22	115–120	Gravel (0% silt/clay, <5% sand, 95% gravel (pbl–cbl)). Well graded, angular to rounded. Volcanics, pink granite, sandstone, basalt, quartz, Pedernal chert, volcaniclastics, quartzite. Good recovery. 10–20 mm clasts.
HRP-23	120–125	Gravel (0% silt/clay, <5% sand, 95% gravel (pbl–cbl)). Moderately graded, angular to rounded. Volcanics, basalt, quartz, quartzite, pink granite, sandstone, Pedernal chert. Good recovery. 8–15 mm clasts.
HRP-24	125–130	Gravel (0% silt/clay, <5% sand, 95% gravel (pbl–cbl)). Moderately graded, angular to rounded. Volcanics, quartzite, sandstone, quartz, basalt, pink granite, Pedernal chert. Good recovery. 8–15 mm clasts.
HRP-25	130–140	Gravel (0% silt/clay, 0% sand, 100% gravel (pbl–cbl)). Well to moderately graded, angular to rounded. Volcanics, quartzite, basalt, quartz, pink granite, sandstone, Pedernal chert. Good recovery. 8–15 mm clasts; angular clasts are freshly broken by bit.
HRP-26	140–145	Gravel (0% silt/clay, 0% sand, 100% gravel (pbl–cbl)). Well to moderately graded, angular to rounded. Volcanics, quartzite, basalt, quartz, sandstone, pink granite, Pedernal chert. Good recovery. 8–15 mm clasts; angular clasts are freshly broken by bit.
HRP-27	145–150	Gravel (0% sand/silt, ≤5% sand (vc), 95% gravel (pbl–cbl). Well to moderately graded, angular to rounded. Volcanics, quartzite, quartz, basalt, sandstone, pink granite, Pedernal chert. Cobble gravel base at 146.5' per driller; still mostly 8–15 mm clasts with angular pieces broken cobbles.
HRP-28	150–155	Gravel (0% silt/clay, ≤5% sand (m–vc), 95% gravel (pbl)). Well to moderately graded, angular to rounded. Volcanics, quartzite, quartz, basalt, sandstone, pink granite, Pedernal chert. Good recovery. Increase in small pebbles and sand.
HRP-29	155–160	Gravel (0% silt/clay, ≤5% sand (m–vc), 95% gravel (pbl)). Well to moderately graded, angular to rounded. Volcanics, quartzite, quartz, basalt, sandstone, pink granite, Pedernal chert. Good recovery. 5–15 mm clasts with freshly broken angular pieces; ~25% pebbles <10 mm.

Sample No.	Depth (ft)	Description
HRP-30	160–165	Gravel (0% silt/clay, ≤5% sand (m–vc), 95% gravel (pbl)). Well to moderately graded, angular to rounded. Volcanics, quartzite, pink granite, basalt, quartz, sandstone, Pedernal chert. Good recovery. 5–15 mm clasts with freshly broken angular pieces; ~25% pebbles <10 mm.
HRP-31	165–170	Gravel (0% silt/clay, ≤5% sand, 95% gravel (pbl)). Well to moderately graded, angular to rounded. Volcanics, basalt, quartz, quartzite, pink granite, sandstone. Moderate recovery. 5–15 mm clasts with freshly broken angular pieces; ~25% pebbles <10 mm.
HRP-32	170–175	Same as above.
HRP-33	175–180	Gravel (0% silt/clay, ≤10% sand (m–vc), 90% gravel (pbl)). Well graded, angular to rounded. Volcanics, basalt, quartz, quartzite, pink granite, sandstone. Moderate recovery. 5–15 mm clasts with freshly broken angular pieces; ~25% pebbles <10 mm.
HRP-34	180–185	Gravel (0% silt/clay, ≤5% sand (m–vc), 95% gravel (pbl)). Well to moderately graded, angular to rounded. Volcanics, basalt, quartz, quartzite, pink granite, sandstone, Pedernal chert. Good recovery. 5–15 mm clasts with freshly broken angular pieces; ~25% pebbles <10 mm.
HRP-35	185–190	Gravel (0% silt/clay, ≤5% sand (m–vc), 95% gravel (pbl)). Poorly graded, angular to rounded. Volcanics, quartz, granite. Good recovery.
HRP-36	190–195	Gravel (≤5% silt/clay, ≤5% sand (vf–vc), 90% gravel (pbl)). Poorly graded, subangular to rounded. Volcanics, basalt, quartz, granite. 10YR7/4. Good recovery.
HRP-37	195–200	Gravel (≤5% silt/clay, ≤5% sand (vf–vc), 90% gravel (pbl)). Poorly graded, angular to rounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Good recovery.
HRP-38	200–205	Gravel with silt (10% silt/clay, 10% sand (vf–vc), 80% gravel (pbl)). Well graded, angular to rounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Good recovery.
HRP-39	205–210	Silty gravel (20% silt/clay, 10% sand (vf–vc), 70% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Good recovery.
HRP-40	210–215	Gravel with silt (10% silt/clay, 10% sand (vf–vc), 80% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-41	215–220	Gravel (≤5% silt/clay, ≤5% sand (vf–vc), 90% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-42	220–225	Gravel with silt (10% silt/clay, 10% sand (vf–vc), 80% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-43	225–230	Gravel (≤5% silt/clay, ≤5% sand (vf–vc), 90% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-44	230–235	Same as above.
HRP-45	235–240	Gravel (≤5% silt/clay, 10% sand (vf–vc), 85% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-46	240–245	Same as above.

Sample No.	Depth (ft)	Description
HRP-47	245–250	Gravel with sand (0% silt/clay, 20% sand (vf–vc), 80% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-48	250–260	Gravel with sand (≤5% silt/clay, 15% sand (vf–vc), 80% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-49	260–265	Same as above.
HRP-50	265–270	Gravel (≤5% silt/clay, 10% sand (vf–vc), 85% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-51	270–275	Gravel with sand (≤5% silt/clay, 15% sand (vf–vc), 85% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-52	275–280	Gravel (≤5% silt/clay, 10% sand (vf–vc), 85% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-53	280–285	Silty gravel with sand (20% silt/clay, 35% sand (vf–vc), 45% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-54	285–290	Silty gravel with sand (20% silt/clay, 35% sand, 45% gravel). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-55	290–295	Silty sand with gravel (15% silt/clay, 45% sand (vf–vc), 40% gravel (pbl)). Well graded, subrounded to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-56	295–300	Silty gravel with sand (15% silt/clay, 35% sand (vf–vc), 50% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-57	300–305	Silty sand and silty gravel (40% silt/clay, 30% sand (vf–vc), 30% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Good recovery.
HRP-58	305–310	Same as above.
HRP-59	310–315	Same as above.
HRP-60	315–320	Same as above.
HRP-61	320–325	Silty sand with gravel (25% silt/clay, 40% sand (vf–vc), 35% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Moderate recovery.
HRP-62	325–330	Sand with gravel (0% silt/clay, 75% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR6/4. Moderate recovery.
HRP-63	330–335	Silty sand with gravel (25% silt/clay, 40% sand (vf–vc), 35% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, quartz. 10YR6/4. Poor recovery.

Sample No.	Depth (ft)	Description
HRP-64	335–340	Silty sand with gravel (25% silt/clay, 50% sand, 25% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. 10YR6/4. Moderate recovery.
HRP-65	340–345	Gravel with sand (0% silt/clay, 40% sand (vf–vc), 60% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. Moderate recovery.
HRP-66	345–350	Silty sand with gravel (20% silt/clay, 55% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Moderate recovery.
HRP-67	350–355	Same as above.
HRP-68	355–360	Silty sand with gravel (20% silt/clay, 55% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, plus some sedimentary clasts. 10YR7/4.
HRP-69	360–365	Sand with gravel (0% silt/clay, 60% sand (m–vc), 40% gravel (pbl). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-70	365–370	Gravel (0% silt/clay, ≤5% sand (m–vc), 95% gravel (pbl)). Poorly graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-71	370–375	Gravel (≤5% silt/clay, ≤5% sand (vf–vc), 90% gravel (pbl)). Poor graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Moderate recovery.
HRP-72	375–380	Same as above. Poor recovery.
HRP-73	380–385	Silty sand with gravel (20% silt/clay, 60% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, red siltstone clasts. 10YR7/4. Good recovery.
HRP-74	385–390	Clay (80% silt/clay. 10% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics. 7.5YR6/4. Good recovery. Clay seems to be highly plastic.
HRP-75	390–395	Clay (85% silt/clay. 10% sand (vf–m), ≤5% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt. 7.5YR6/4. Good recovery.
HRP-76	395–400	Sandy clay (65% silt/clay, 30% sand (vf–m), ≤5 gravel (pbl)). Well graded, subangular to subrounded. Basalt and quartz. 7.5YR6/4. Moderate recovery.
HRP-77	400–405	Clayey sand (30% silt/clay, 65% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to subrounded. Basalt. quartz, granite. 10YR7/4. Good recovery.
HRP-78	405–410	Gravel (≤5% silt/clay, 10% sand (m–vc), 85% gravel (pbl)). Poorly graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, other sedimentary clasts. 10YR7/4.
HRP-79	410–415	Clayey gravel with sand (30% silt/clay, 20% sand (vf–vc), 50% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, other sedimentary clasts. 7.5YR6/4. Moderate recovery.
HRP-80	415–420	Clayey gravel with sand (30% silt/clay, 30% sand (vf–vc), 40% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, other sedimentary clasts. 7.5YR6/4. Moderate recovery.

Sample No.	Depth (ft)	Description
HRP-81	420–425	Sand with silt (10% silt/clay, 80% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, other sedimentary clasts. 7.5YR6/4. Moderate recovery.
HRP-82	425–430	Sand with silt (10% silt/clay, 80% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, other sedimentary clasts. 10YR6/4. Moderate recovery.
HRP-83	430–435	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR6/4. Poor recovery.
HRP-84	435–440	Sand with gravel (≤5% silt/clay, 75% sand (vf–vc), 20% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, other sedimentary clasts. 10YR6/4. Moderate recovery.
HRP-85	440–445	Sand (0% silt/clay, 90% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, other clastic material. Good recovery.
HRP-86	445–450	Same as above.
HRP-87	450–455	Sand (0% silt/clay, 90% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. Moderate recovery.
HRP-88	455–460	Sand with gravel (0% silt/clay, 85% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Moderate recovery.
HRP-89	460–465	Sand with gravel (0% silt/clay, 75% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. Good recovery.
HRP-90	465–470	Gravel with sand (0% silt/clay, 40% sand (m–vc), 60% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. Good recovery.
HRP-91	470–475	Gravel with sand (0% silt/clay, 20% sand (c–vc), 80% gravel (pbl)). Poorly graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. Good recovery.
HRP-92	475–480	Sand with gravel (0% silt/clay, 70% sand (c–vc), 30% gravel (pbl)). Poorly graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. Good recovery.
HRP-93	480–485	Sand with gravel (0% silt/clay, 70% sand (vf–vc), 30% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Moderate recovery.
HRP-94	485–490	Sand with gravel (0% silt/clay, 75% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Moderate recovery.
HRP-95	490–495	Sand (0% silt/clay, 90% sand (c–vc), 10% gravel (pbl)). Poorly graded, subangular to subrounded. Basalt, quartz, granite. Moderate recovery.
HRP-96	495–500	Sand with gravel (0% silt/clay, 80% sand (c–vc), 20% gravel (pbl)). Poorly graded, subangular to rounded. Basalt, quartz, granite. Good recovery.
HRP-97	500–505	Sand with gravel (0% silt/clay, 70% sand (c–vc), 30% gravel (pbl)). Poorly graded, subangular to subrounded. Basalt, quartz, granite. Good recovery.
HRP-98	505–510	Same as above.
HRP-99	510–515	Same as above.

Sample No.	Depth (ft)	Description
HRP-100	515–520	Silty sand with gravel (15% silt/clay, 70% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Poor recovery.
HRP-101	520–525	Sand with gravel (0% silt/clay, 75% sand (c–vc), 25% gravel (pbl)). Poorly graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-102	525–530	Same as above.
HRP-103	530–535	Silty sand with gravel (20% silt/clay, 65% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Good recovery.
HRP-104	535–540	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Poor recovery.
HRP-105	540–545	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Moderate recovery.
HRP-106	545–550	Same as above.
HRP-107	550–555	Same as above. Poor recovery.
HRP-108	555–560	Silty sand (35% silt/clay, 60% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt. 10YR7/4. Poor recovery.
HRP-109	560–565	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Good recovery.
HRP-110	565–570	Sandy clay (60% silt/clay, 30% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Poor recovery.
HRP-111	570–575	Same as above. Good recovery.
HRP-112	575–580	Sandy clay (55% silt/clay, 40% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Good recovery.
HRP-113	580–585	Sandy clay (60% silt/clay, 30% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Good recovery.
HRP-114	585–590	Sand with gravel (≤5% silt/clay, 75% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-115	590–595	Gravel with sand (5% silt/clay, 35% sand (vf–vc), 60% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-116	595–600	Sand with gravel and silt (10% silt/clay, 65% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Moderate recovery.
HRP-117	600–605	Same as above. Good recovery. Large number of green siltstone clasts are present.
HRP-118	605–610	Sand (5% silt/clay, 90% sand (vf–vc), 5% gravel (pbl)). Moderately graded, subangular to subrounded. Red and green siltstone clasts present. 10YR7/4. Moderate recovery.
HRP-119	610–615	Sand (5% silt/clay, 90% sand (vf–vc), 5% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Poor recovery.
HRP-120	615–620	Same as above.
HRP-121	620–625	Same as above.

Sample No.	Depth (ft)	Description
HRP-122	625–630	Sand (5% silt/clay, 90% sand (vf–vc), 5% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt, quartz, granite, and a few brown sedimentary clasts. 10YR7/4. Poor recovery.
HRP-123	630–635	Sand with gravel (≤5% silt/clay, 75% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-124	635–640	Gravel with sand (0% silt/clay, 25% sand (c–vc), 75% gravel). Poorly graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-125	640–645	Sand with gravel (≤5% silt/clay, 55% sand (m–vc), 40% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Good recovery.
HRP-126	645–650	Sand with gravel (0% silt/clay, 75% sand (m–vc), 25% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Moderate recovery.
HRP-127	650–655	Sand with gravel (0% silt/clay, 70% sand (m–vc), 30% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Moderate recovery.
HRP-128	655–660	Sand with gravel (0% silt/clay, 60% sand (m–vc), 40% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Moderate recovery.
HRP-129	660–665	Silty sand with gravel (15% silt/clay, 55% sand (vf–vc), 30% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Poor recovery.
HRP-130	665–670	Sand with silt (10% silt/clay, 85% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 10YR7/4. Extremely poor recovery.
HRP-131	670–675	Silty sand (20% silt clay, 75% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite. 10YR7/4. Poor recovery.
HRP-132	675–680	Sand with gravel and silt (10% silt/clay, 60% sand (vf–vc), 30% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR7/4. Poor recovery.
HRP-133	680–685	Sand with silt (10% silt/clay, 90% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 10YR7/4. Good recovery.
HRP-134	685–690	Sand with gravel (0% silt/clay, 75% sand (m–vc), 25% gravel). Moderately graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. Good recovery.
HRP-135	690–695	Sand with gravel and silt (10% silt/clay, 65% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts, abundant red siltstone/shale clasts. 7.5YR7/4. Moderate recovery.
HRP-136	695–700	Silty sand with gravel (15% silt/clay, 60% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts, abundant red siltstone/shale clasts. 7.5YR7/4. Moderate recovery.

Sample No.	Depth (ft)	Description
HRP-137	700–705	Sand with gravel (0% silt/clay, 80% sand (m–vc), 20% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts, abundant red siltstone/shale clasts. Good recovery.
HRP-138	705–710	Silty sand (35% silt/clay, 55% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Volcanics, sedimentary clasts. 10YR6/4. Moderate recovery.
HRP-139	710–715	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Volcanics, sedimentary clasts. 10YR6/4. Poor recovery.
HRP-140	715–720	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Granite, quartz. 10YR6/4. Almost no recovery.
HRP-141	720–725	Same as above.
HRP-142	725–730	Silty sand (30% silt/clay, 70% sand (vf–vc), 0% gravel (pbl)). Well graded, subangular to subrounded. 10YR7/4. Almost no recovery.
HRP-143	730–735	Silty sand (20% silt/clay, 80% sand (vf–vc), 0% gravel (pbl)). Well graded, subangular to subrounded. Granite, quartz. 10YR7/4. Moderate recovery.
HRP-144	735–740	Sand with gravel (≤5% silt/clay, 80% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Moderate recovery.
HRP-145	740–745	Silty sand with gravel (20% silt/clay, 65% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Good recovery.
HRP-146	745–750	Sand with gravel (≤5% silt/clay, 80% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite. 10YR7/4. Good recovery.
HRP-147	750–755	Sand with gravel (0% silt/clay, 70% sand (m–vc), 30% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-148	755–760	Sand with gravel (≤5% silt/clay, 55% sand (m–vc), 40% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Good recovery.
HRP-149	760–765	Sand with gravel (0% silt/clay, 75% sand (m–vc), 25% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-150	765–770	Sand with gravel (0% silt/clay, 70% sand (m–vc), 30% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-151	770–775	Sand with gravel (0% silt/clay, 80% sand (m–vc), 20% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-152	775–780	Sand with gravel (≤5% silt/clay, 80% sand (f–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR7/6. Moderate recovery.
HRP-153	780–785	Sand with gravel (≤5% silt/clay, 50% sand (f–vc), 45% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Poor recovery.

Sample No.	Depth (ft)	Description
HRP-154	785–790	Gravel (10% silt/clay, 10% sand, 80% gravel). Moderately graded, subangular to subrounded. Quartz, K-feldspar, volcanic, subvolcanic, sedimentary, Pedernal chert. 10YR6/4 to 7.5YR6/4. Good recovery. Silt-clay fraction is probably wall cake and most of sample is reworked from uphole.
HRP-155	790–795	Gravel (20% silt/clay, 5% sand, 75% gravel). Well to moderately graded, subangular to subrounded. Quartz, K-feldspar, volcanics, subvolcanic, sedimentary, Pedernal chert. 10YR–7.5YR6/4. Poor recovery. Silt/clay fraction is wall cake.
HRP-156	795–800	Gravel with sand and silt (10% clayey silt, 15% sand (f–vc), 75% gravel). Moderately graded, subangular to subrounded. Quartz, quartzite, feldspar, miscellaneous igneous and metamorphic, volcanics, chert, obsidian. 7.5YR6/2 and 10YR6/3. Moderate recovery.
HRP-157	800–805	Gravel with sand and silt (10% silt/clay, 25% sand (f–vc), 65% gravel). Well to moderately graded, subangular to subrounded. Quartz, quartzite, feldspar, miscellaneous igneous and metamorphics, volcanics, chert, obsidian. 10YR6/4. Poor recovery.
HRP-158	805–810	Clayey gravel with sand (40% silty clay, 20% sand (vf–vc), 40% gravel (sm pbl)). Well to moderately graded, subangular to subrounded. Quartz, quartzite, pink granite, K-feldspar, volcanics, sedimentary. 5YR6/4. Poor recovery.
HRP-159	810–815	Clayey gravel with sand (15% silty clay, 35% sand (f–vc), 50% gravel (sm pbl)). Moderately to poorly graded, subangular to subrounded. Quartz, quartzite, pink granite, K-feldspar, volcanics and subvolcanics, sedimentary, Pedernal chert. 5YR6/4 to 6/6. Poor recovery.
HRP-160	815–820	Silty gravel with sand (20% clayey silt, 30% sand (f–vc), 50% gravel (sm pbl)). Well to moderately graded, subangular to rounded. Quartz, Pedernal chert, metamorphics, pink granite, K-feldspar, volcanics, sedimentary. 5YR6/3–4 and 7.5YR6/4. Poor recovery.
HRP-161	820–825	Silty clayey sand with gravel (20% silt/clay, 60% sand (f–vc), 20% gravel). Well to moderately graded, subangular to rounded. Quartz, pink granite, K-feldspar, igneous, volcanics and subvolcanics, sedimentary, chert/obsidian(?). 5YR6/3–4 and 7.5YR6/4. Poor recovery.
HRP-162	825–830	Silty clayey sand with gravel (25% silt/clay, 60% sand (vf–vc), 15% gravel). Well to moderately graded, subangular to subrounded. Pink granite, quartz, Pedernal chert, metamorphics, igneous, volcanics(?), sed. 5YR6/3–4 and 7.5YR6/4. Poor recovery.
HRP-163	830–835	Silty clayey sand (20% silt/clay, 70% sand (vf–vc), 10% gravel). Well to moderately graded, subangular to subrounded. Pink granite, black igneous or volcanic clasts, Pedernal chert. 5YR6/3–4 and 7.5YR6/4. Poor recovery.
HRP-164	835–840	Silty clayey sand (25% silt/clay, 65% sand (vf–vc), 10% gravel). Well to moderately graded, subangular to subrounded. Pedernal chert, pink granite, K-feldspar, volcanic or igneous clasts. 7.5YR6/4. Poor recovery.
HRP-165	840–845	Sand with clay (10% silt/clay, 80% sand (vf–vc), 10% gravel). Well graded, subangular to subrounded. Pedernal chert, pink granite, igneous. 10YR6/3–4. Poor recovery.
HRP-166	845–855	Sand with gravel and clayey silt (≤10% clayey silt, 70% sand (vf–vc), 20% gravel). Well to moderately graded, subangular to rounded. Pink granite, K-feldspar, Pedernal chert, brown chert, igneous/volcanics(?) and obsidian. 10YR6/4. Poor recovery. Sampled 10' because of poor recovery.
HRP-167	855–860	Sand with gravel and clayey silt (≤10% silt/clay, 65% sand (vf–vc), 25% gravel). Well graded, subangular to subrounded. Pink granite, K-feldspar, quartz, igneous, volcanics, Pedernal chert. 10YR6/4–6. Poor recovery.

Sample No.	Depth (ft)	Description
HRP-168	860–870	Sand with gravel (5% silt/clay, 65% sand (vf–vc), 30% gravel). Well to moderately graded, subangular to subrounded. Pink granite, K-feldspar, quartz, igneous, volcanics, sediments and metasediments, Pedernal chert. 10YR7/3. Poor recovery. Sampled 10' interval.
HRP-169	870–880	Sand with gravel (<5% silt/clay, 70% sand (vf–vc), 25% gravel). Well graded, subangular to subrounded. Pink granite, K-feldspar, quartz, sediments, Pedernal chert. 10YR5/2 to 6/4 to 6/1. Poor recovery. Sampled 10' where sandy nodules (10YR6/1) react with acid.
HRP-170	880–890	Sand with gravel (5% silt/clay, 80% sand (vf–vc), 15% gravel). Well to moderately graded, subangular to rounded. Pink granite, K-feldspar, quartz, chert, sediments, volcanics(?). 10YR7/4–6/2 and 8/1. Sampled 10' interval.
HRP-171	890–895	Sand with silt (≤10% silt/clay, 80% sand (vf–vc), 10% gravel). Well graded, subangular to subrounded. Sediments and volcanics(?). 10YR6/3 and 7.5YR6/4. Poor recovery.
HRP-172	895–900	Sand with silt (≤10% silt/clay, 80% sand (vf–vc), ≤10% gravel). Well to moderately graded, subangular to subrounded. Volcanics, sediments, quartz. 10YR6/2 to 7.5YR6/4. Poor recovery.
HRP-173	900–905	Sand with silt (10% silt/clay, 80% sand (vf–vc), ≤10% gravel). Well to moderately graded, subangular to subrounded. 10YR6/2.
HRP-174	905–910	Sand with gravel and silt (10% silt/clay, 75% sand (vf–vc), 15% gravel). Well to moderately graded, subangular to subrounded. Pink granite, K-feldspar, volcanics(?), sediments. 10YR6/2 to 7.5YR6/4–6. Poor recovery.
HRP-175	910–915	Sand with silt (10% silt/clay, 80% sand (vf–vc), 10% gravel). Well to moderately graded, subangular to subrounded. Pink granite and sediments. 10YR5/2. Poor recovery.
HRP-176	915–925	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel). Well to moderately graded, subangular to rounded. 10YR5/2. Poor recovery.
HRP-177	925–930	Silty clayey sand (25% silt/clay, 70% sand (vf–vc), ≤5% gravel). Well to moderately graded, subangular to subrounded. 7.5YR6/5 to 10YR6/4. Poor recovery. Interbedded sandy and silty–clayey sand beds.
HRP-178	930–935	Silty clayey sand (20% silt/clay, 80% sand (vf–vc), 0% gravel). Well to moderately graded, subangular to subrounded. 7.5YR6/5 to 10YR6/4. Poor recovery. Interbedded sand and silty clayey sand beds.
HRP-179	935–940	Silty sand (25% silt/clay, 70% sand (vf–vc), 5% gravel). Well to moderately graded, subangular to rounded. 7.5YR6/5 to 8.75YR6/2. Moderate recovery. Interbedded sand and silty–clayey sand beds.
HRP-180	940–945	Silty sand (~35% silt/clay, 60% sand (vf–vc), 5% gravel). Well to moderately graded, angular to subrounded. 8.75YR6/3. Moderate recovery. Interbedded sand and silty–clayey sand beds.
HRP-181	945–950	Silty clayey sand (~40% silt/clay, 55% sand (vf–vc), 5% gravel). Well to moderately graded, subangular to subrounded. 10YR6/4 and 5/2, 7.5YR6/4. Moderate recovery. Interbedded sand and silty clayey sand beds. Minor $CaCO_3$ cemented nodules (10YR8/1).
HRP-182	950–960	Silty clayey sand (20% silt/clay, 80% sand (vf–vc), 0% gravel). Moderately graded, subangular to subrounded. 7.5YR6/4 and 10YR5/3. Poor recovery. Interbedded sand and silty clayey sand beds. 10' interval sampled. Very slight acid reaction.
HRP-183	960–965	Silty clayey sand (20% silt/clay, 78% sand (vf–vc), 2% gravel). Moderately graded, subangular to subrounded. 7.5YR6/4 and 10YR5/3 and 8/1. Poor recovery. Interbedded sand and silty clayey sand beds.

Sample No.	Depth (ft)	Description
HRP-184	965–970	Silty clayey sand (20% silt/clay, 80% sand (vf–m, vc), 0% gravel). Moderately graded, subangular to subrounded. 7.5YR6/4 and 10YR5/3 and 8/1. Poor recovery. Interbedded sand and silty clayey sand beds.
HRP-185	970–975	Silty clayey sand (20% silt/clay, 80% sand (vf–vc), 0% gravel). Well to moderately graded, subangular to subrounded. 7.5YR6/5 and 10YR6/2 and 8/1. Poor recovery. Interbedded sand and silty clayey sand beds.
HRP-186	975–980	Silty clayey sand (15% silt/clay, 83% sand (vf–m, vc), 2% gravel). Well to moderately graded, subangular to subrounded. 7.5YR6/5 and 10YR6/2 and 8/1. Very poor recovery. Interbedded sand and silty clayey sand beds.
HRP-187	980–985	Silty clayey sand (15% silt/clay, 85% sand (vf–vc), 0% gravel). Moderately graded, angular to subrounded. 10YR6/4 and 8/1 to 7.5YR6/4. Very poor recovery.
HRP-188	985–990	Silty clayey sand (23% silt/clay, 75% sand (vf–vc), 2% gravel). Well to moderately graded, angular to subrounded. 10YR6/4 and 8/1 to 7.5YR6/4. Poor recovery. Interbedded sand and silty clayey sand beds.
HRP-189	990–995	Silty clayey sand (23% silt/clay, 75% sand (vf–vc), 2% gravel). Well to moderately graded, angular to subrounded. 10YR6/4 and 10YR8/1. Very poor recovery. 10YR8/1 nodules react in acid.
HRP-190	995–1000	Silty clayey sand (20% silt/clay, 75% sand (vf–vc), ≤5% gravel). Well graded, angular to subrounded. Pink granite, volcanics(?), sediments. 10YR6/2, 7.5YR6/4 and 7.5YR6/6. Poor recovery. 10YR8/1 nodules react with acid. Interbeds of 7.5YR6/6 silty sand.
HRP-191	1000–1005	Silty clayey sand (25% silt/clay, 70% sand (vf–vc), ≤5% gravel). Moderately graded, angular to subrounded. Pink granite, sediments, volcanics(?). 10YR6/2, 7.5YR6/4, 7.5YR6/6. Poor recovery. 10YR8/1 nodules react with acid.
HRP-192	1005–1010	Silty clayey sand (15% silt/clay, 85% sand (vf–vc), 0% gravel). Moderately graded, subangular to rounded. 10YR5/2.5, 10YR7/4. Very poor recovery.
HRP-193	1010–1015	Silty clayey sand (28% silt/clay, 70% sand (vf–m, vc), ~2% gravel). Moderately graded, subangular to subrounded. 10YR5/2.5, 10YR7/4. Poor recovery.
HRP-194	1015–1020	Silty clayey sand (25% silt/clay, 75% sand (vf–m, vc), 0% gravel). Moderately graded, subangular to subrounded. 10YR5/2.5, 10YR7/4. Very poor recovery.
HRP-195	1020–1030	Silty clayey sand (20% silt/clay, 80% sand (vf–m, vc), 0% gravel). Moderately graded, subangular to subrounded. 10YR6/3 and 10YR8/1 nodules. Very poor recovery. Sampled carbonate nodules.
HRP-196	1030–1035	Silty clayey sand (15% silt/clay, 85% sand (vf–vc), 0% gravel). Moderately graded, subangular to subrounded. 10YR6/3, 6/4, 8/1. Poor recovery. Carbonate nodules.
HRP-197	1035–1040	Silty clayey sand (20% silt/clay, 75% sand (vf–vc), ≤5% gravel). Moderately graded, subangular to subrounded. 7.5YR6/3, 10YR8/1. Poor recovery. Carbonate nodules (10YR8/1).
HRP-198	1040–1050	Silty clayey sand (40% silt/clay, 60% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/2 and 6/4, 10YR8/1. Very poor recovery. Minor carbonate nodules (10YR8/1).
HRP-199	1050–1055	Silty clayey sand (38% silt/clay, 60% sand (vf–m, vc), 2% gravel). Well graded, subangular to subrounded. 10YR6/3 and 8/1, 7.5YR6/4.
HRP-200	1055–1060	Silty clayey sand (35% silt/clay, 65% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/5, 10YR8/1. Poor recovery. Carbonate nodules and clayey interbeds.

Sample No.	Depth (ft)	Description
HRP-201	1060–1065	Silty clayey sand (25% silt/clay, 75% sand (vf–m, vc), 0% gravel). Moderately graded, subangular to subrounded. 7.5YR6/5, 10YR8/1. Very poor recovery. Clayey interbeds.
HRP-202	1065–1070	Silty clayey sand (38% silt/clay, 65% sand (vf–m), 2% gravel). Moderately graded, subangular to subrounded. Volcanics and sediments. 7.5YR6/5, 10YR8/1. Poor recovery. Clayey interbeds.
HRP-203	1070–1075	Silty clayey sand (35% silt/clay, 65% sand (f–vc), 0% gravel). Well graded, angular to subrounded. Pink granite, quartz, lithic. 7.5YR6/4 and 10YR8/1. Moderate recovery. Carbonate nodules.
HRP-204	1075–1080	Silty clayey sand (43% silt/clay, 55% sand (vf–vc), 2% gravel). Moderately graded, subangular to subrounded. 10YR6/4 and 6/2. Very poor recovery.
HRP-205	1080–1085	Sandy clay to sandy silt (~60% silt/clay, ~40% sand (vf–m), 2% gravel). Moderately graded. 7.5YR6/4. Very poor recovery.
HRP-206	1085–1090	Sandy silt to sandy clay (70% silt/clay, 30% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 10YR6/4. Moderate recovery.
HRP-207	1090–1095	Same as above.
HRP-208	1095–1100	Same as above. No calcareous cementation is indicated.
HRP-209	1100–1105	Sandy silt to sandy clay with sand (60% silt/clay, 40% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR/6/4 to 10YR6/4. Moderate recovery.
HRP-210	1105–1110	Gravel with sand (≤5% silt/clay, 20% sand (m–vc), 75% gravel (pbl)). Moderately graded, subangular to rounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 10YR6/4. Good recovery. Light green clasts which seem to be volcanic are present in abundance.
HRP-211	1110–1115	Same as above.
HRP-212	1115–1120	Gravel with sand (5 silt/clay, 25% sand (vf–vc), 70% gravel (pbl)). Moderately graded, subangular to rounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR6/4. Good recovery. Light green clasts which seem to be volcanic are present in abundance.
HRP-213	1120–1125	Gravel with sand (5% silt/clay, 30% sand (vf–vc), 65% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR6/4. Good recovery. Light green clasts which seem to be volcanic are present in abundance.
HRP-214	1125–1130	Clayey sand with gravel (15% silt/clay, 45% sand (vf–vc), 40% gravel(pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR7/6. Poor recovery.
HRP-215	1130–1135	Clayey sand with gravel (15% silt/clay, 50% sand (vf–vc), 35% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR6/4. Poor recovery.
HRP-216	1135–1140	Gravel with sand and silt (10% silt/clay, 40% sand (m–vc), 50% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts, chert(?). 7.5YR6/4. Poor recovery. Light green volcanic(?) clasts still abundant.
HRP-217	1140–1145	Silty gravel with sand (15% silt/clay, 40% sand (vf–vc), 45% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts, chert(?). 7.5YR6/4. Moderate recovery. Light green volcanic(?) clasts still abundant.

Sample No.	Depth (ft)	Description
HRP-218	1145–1150	Gravel with sand (5% silt/clay, 25% sand (m–vc), 70% gravel (pbl)). Moderately graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Good recovery. Light green volcanic(?) clasts still abundant.
HRP-219	1150–1155	Gravel with sand (≤5% silt/clay, 25% sand (m–vc), 70% gravel (pbl)). Moderately graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Good recovery. Light green volcanic(?) clasts still abundant. No calcareous cementation indicated.
HRP-220	1155–1160	Gravel with sand (≤5% silt/clay, 25% sand (m–vc), 70% gravel (pbl)). Moderately graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery. Some green volcanic clasts present and no calcareous cement indicated.
HRP-221	1160–1165	Sand with gravel (≤5% silt/clay, 65% sand (m–vc), 30% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery. Some green volcanic clasts present and no calcareous cement indicated.
HRP-222	1165–1170	Gravel (0% silt/clay, 10% sand (m–vc), 90% gravel (pbl)). Poorly graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-223	1170–1175	Gravel with sand (0% silt/clay, 25% sand (c–vc), 75% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery.
HRP-224	1175–1180	Gravel with sand (0% silt/clay, 25% sand (c–vc), 75% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. Good recovery. Green volcanic clasts arte fewer in number. No calcareous cement indicated.
HRP-225	1180–1185	Gravel with sand (5% silt/clay, 45% sand (m–vc), 50% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery.
HRP-226	1185–1190	Gravel with sand (≤5% silt/clay, 45% sand (m–vc), 50% gravel (pbl)). Moderately graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery.
HRP-227	1190–1195	Gravel with sand (≤5% silt/clay, 25% sand (m–vc), 70% gravel (pbl)). Moderately graded, subangular to rounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery.
HRP-228	1195–1200	Same as above.
HRP-229	1200–1205	Sand with gravel (≤5% silt/clay, 60% sand (m–vc), 35% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Poor recovery.
HRP-230	1205–1210	Silty sand with gravel (15% silt/clay, 55% sand (vf–vc), 30% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 10YR7/4. Poor recovery. Some brown chert present.
HRP-231	1210–1215	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Poor recovery.
HRP-232	1215–1220	Silty sand (30 silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Poor recovery.

Sample No.	Depth (ft)	Description
HRP-233	1220–1225	Silty sand (20% silt/clay, 70% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery.
HRP-234	1225–1230	Silty sand (20% silt/clay, 70% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 7.5YR6/4. Poor recovery.
HRP-235	1230–1235	Sand with gravel and silt (10% silt/clay, 70% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to subrounded. Sedimentary clasts, quartz, basalt, granite. 7.5YR6/4. Moderate recovery.
HRP-236	1235–1240	Silty sand with gravel (15% silt/clay, 50% sand (vf–vc), 35% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 10YR7/3. Poor recovery. No calcareous cement indicated.
HRP-237	1240–1245	Sand with silt (10% silt/clay, 90% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6'4. Almost no recovery.
HRP-238	1245–1250	Gravel with sand (5% silt/clay, 45% sand (m–vc), 50% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR6/6. Moderate recovery.
HRP-239	1250–1255	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite. 7.5YR6/6. Moderate recovery.
HRP-240	1255–1260	Clayey sand with gravel (30% silt/clay, 50% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, quartz, granite, chert(?). 7.5YR6/6. Moderate recovery.
HRP-241	1260–1265	Sandy clay (60% silt clay, 30% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite. 7.5YR6/4. Moderate recovery. No indication of calcite cement present.
HRP-242	1265–1270	Silty sand with gravel (25% silt/clay, 60% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics. 7.5YR7/6. Very poor recovery.
HRP-243	1270–1275	Silty sand (30% silt clay, 65% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite, quartz. 7.5YR7/6. Very poor recovery. No calcite cementation indicated.
HRP-244	1275–1280	Sandy silt (60% silt/clay, 35% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics. 10YR6/4. Poor recovery and no calcite cementation indicated.
HRP-245	1280–1285	Silty sand (40% silt clay, 60% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 10YR7.3. Moderate recovery.
HRP-246	1285–1290	Silty sand (30% silt/clay, 65% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to rounded. Basalt, granite, quartz. 7.5YR7/6. Poor recovery. No calcite cementation indicated.
HRP-247	1290–1295	Silty sand (30% silt clay, 65% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite, quartz. 7.5YR7/4. Moderate recovery. No calcite cementation indicated.
HRP-248	1295–1300	Silty sand with gravel (20% silt/clay, 65% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite, quartz, and some sedimentary clasts. 7.5YR7/6. Moderate recovery. No clacite cementation indicated.
HRP-249	1300–1305	Same as above.

Sample No.	Depth (ft)	Description
HRP-250	1305–1310	Silty sand (30% silt/clay, 65% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to rounded. Basalt and granite. 7.5YR7/4. Moderate recovery. No calcite cementation indicated.
HRP-251	1310–1315	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Granite, basalt, and sedimentary clasts. 7.5YR7/4. Moderate recovery. No calcite cementation indicated.
HRP-252	1315–1320	Sand with gravel and silt (10% silt/clay, 70% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 7.5YR7/4. Moderate recovery. No calcite cementation indicated.
HRP-253	1320–1325	Sand with gravel and silt (10% silt/clay, 70% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR7/4. No calcite cementation indicated; light green volcanic(?) clasts present.
HRP-254	1325–1330	Silty sand with gravel (15% silt/clay, 70% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to subrounded. Basalt andn other volcanics, granite, quartz. 7.5YR7/4. Poor recovery.
HRP-255	1330–1335	Silty sand with gravel (20% silt/clay, 60% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to rounded. Basalt and other volcanics, granite, sedimentary clasts. 7.5YR6/4. Poor recovery. No calcite cementation indicated.
HRP-256	1335–1340	Sand with gravel (5% silt/clay, 65% sand (m–vc), 30% gravel (pbl)). Moderately graded, subangular to subrounded. Basalt and other volcanics, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery. No calcite cementation indicated.
HRP-257	1340–1345	Sand with gravel and silt (10% silt/clay, 70% sand (vf–vc), 20% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, sedimentary clasts. 7.5YR6/4. Moderate recovery. No calcite cementation indicated.
HRP-258	1345–1350	Silty sand (40% silt/clay, 60% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR7/6. Very poor recovery.
HRP-259	1350–1355	Clayey sand (40% silt/clay, 50% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt and granite. 7.5YR6/4. Moderate recovery. No calcite cementation indicated.
HRP-260	1355–1360	Clayey sand (45% silt/clay, 50% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to subrounded. Basalt and granite. 7.5YR6/4. Poor recovery. No calcite cementation indicated.
HRP-261	1360–1365	Clayey sand (45% silt/clay, 50% sand (vf–vc), 5% gravel (pbl)). Well graded, subangular to subrounded. Basalt and granite. 7.5YR6/4. Poor recovery. No calcite cementation indicated.
HRP-262	1365–1370	Silty sand (30% silt/clay, 70% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Good recovery. No indication of calcite cementation.
HRP-263	1370–1375	Silty sand with gravel (25% silt/clay, 60% sand (vf–vc), 15% gravel (pbl)). Well graded, subangular to rounded. Basalt, granite, quartz. 10YR7/3. Moderate recovery. No indication of calcite cementation.
HRP-264	1375–1380	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to rounded. Basalt, granite, quartz. 7.5YR6/4. Moderate recovery. No indication of calcite cementation.
HRP-265	1380–1385	Same as above.
HRP-266	1385–1390	Same as above.

Sample No.	Depth (ft)	Description
HRP-267	1390–1395	Sand with gravel and silt (10% silt/clay, 65% sand (vf–vc), 25% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR6/4. Good recovery. No indication of calcite cementation.
HRP-268	1395–1400	Sand with gravel (≤5% silt/clay, 70% sand (m–vc), 25% gravel). Moderately graded, subangular to subrounded. Basalt and other volcanics, granite, quartz, sedimentary clasts. 7.5YR6/4. Good recovery. No indication of calcite cementation.
HRP-269	1400–1405	Silty sand (30% silt/clay, 60% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite, quartz. 7.5YR6/4. Poor recovery. No indication of calcite cementation.
HRP-270	1405–1410	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel). Well graded, subangular to rounded. Basalt, granite. 7.5YR6/4. Moderate recovery. No indication of calcite cementation.
HRP-271	1410–1415	Same as above.
HRP-272	1415–1420	Sand (≤5% silt/clay, 95% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Poor recovery. No indication of calcite cementation present.
HRP-273	1420–1425	Sand (≤5% silt/clay, 85% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite, quartz. 7.5YR7/4. Poor recovery. No indication of calcite cementation present.
HRP-274	1425–1430	Sand (≤5% silt/clay, 95% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. Basalt, granite, quartz. 10YR7/4. Good recovery.
HRP-275	1430–1435	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Volcanics, quartz. 7.5YR6/4. Moderate recovery. No indication of calcite cementation present.
HRP-276	1435–1440	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt, quartz, granite. 7.5YR6/4. Moderate recovery. No indication of calcite cementation present.
HRP-277	1440–1445	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, chert(?). 7.5YR6/4. Moderate recovery. No indication of calcite cementation present.
HRP-278	1445–1450	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite, quartz, other volcanics. 7.5YR6/4. Moderate recovery. No indication of calcite cementation present.
HRP-279	1450–1455	Sand (≤5% silt/clay, 90% sand (vf–vc), ≤5% gravel (pbl)). Well graded, subangular to subrounded. Basalt and other volcanics, granite, quartz. 10YR7/4. Good recovery. No indication of calcite cementation present.
HRP-280	1455–1460	Silty sand (25% silt/clay, 75% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR7/4. Moderate recovery. No indication of calcite cementation present.
HRP-281	1460–1465	Silty sand (20% silt/clay, 70% sand (vf–vc), 10% gravel (pbl)). Well graded, subangular to subrounded. Basalt, granite, chert, quartz, other volcanics. 10YR7/4. Poor recovery. No indication of calcite cementation present.
HRP-282	1465–1470	Silty sand (25% silt/clay, 75% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Moderate recovery. No indication of calcite cement present.
HRP-283	1470–1475	Sand with silt (10% silt/clay, 90% sand (vf–vc), 0% gravel (pbl)). Well graded, subangular to subrounded. 7.5YR6/4. Moderate recovery. No indication of calcite cement present.

Sample No.	Depth (ft)	Description
HRP-284	1475–1480	Sand with silt (10% silt/clay, 90% sand (vf-vc), 0% gravel). Well graded, subangular to subrounded. 10YR7/3. Poor recovery. No indication of calcite cement present.
HRP-285	1480–1485	Clayey sand (20% silt/clay, 80% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 10YR7/3. Very poor recovery. No indication of calcite cement present.
HRP-286	1485–1490	Clayey sand (35% silt/clay, 60% sand (vf–m), ≤5% gravel). Well graded, subangular to subrounded. Basalt. 10YR7/4. Poor recovery. No indication of calcite cementation.
HRP-287	1490–1495	Silty sand (35% silt/clay, 65% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR7/6. Moderate recovery. No indication of calcite cementation.
HRP-288	1495–1500	Silty sand (20% silt/clay, 80% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR7/6. Moderate recovery. No indication of calcite cementation.
HRP-289	1500–1505	Same as above.
HRP-290	1505–1510	Sandy silt to sandy clay (60% silt/clay, 40% sand (f–m), 0% gravel). Moderately graded, subangular to subrounded. 7.5YR5/6. Poor recovery.
HRP-291	1510–1515	Sandy silt to sandy clay (60% silt/clay, 40% sand (f), 0% gravel). Moderately graded, subangular to subrounded. 7.5YR5/3 with 5YR5/5 and N8/0. Poor recovery.
HRP-292	1515–1520	Sandy silt to sandy clay (70% silt/clay, 30% sand (f), 0% gravel). Moderately to poorly graded, subangular to subrounded. 7.5YR5/3 with 5YR5/5. Poor recovery.

West Bluff Park

New Mexico Bureau of Mines & Mineral Resources
Socorro, NM 87801

A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Information: 505/835-5420
Publications: 505/835-5410
FAX: 505/835-6333

August 6, 1996

Mr. Norman Gaume
Water Resources Program
Public Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Field Boring Log for West Bluff Park Piezometers

Dear Norm:

I am pleased to submit the New Mexico Bureau of Mines' final report and field boring log for the West Bluff Park deep piezometer nest located near I-40 and the Rio Grande. The report includes a summary stratigraphic column for the boring, as well as a lithologic summary and hydrogeologic interpretation. Attachments include detailed field descriptions for five-foot intervals and the geophysical logs produced by the U.S. Geological Survey's geophysics team.

This is one of two piezometer installations to be completed at the West Bluff site. The second piezometer nest, West Bluff 2, will be a triple completion in the shallow aquifer. We anticipate that drilling at the Mesa del Sol site will commence sometime the middle of August, and NMBMMR geologists will be on site to continue collection of geologic data. If you have any questions or comments, or if I can be of further assistance, please feel free to call.

Sincerely,

Charles E. Chapin
Director and State Geologist

/al

Enclosures

xc: Peggy Johnson

Field Boring Log for West Bluff Park
City of Albuquerque Piezometer Nest
FY 1996

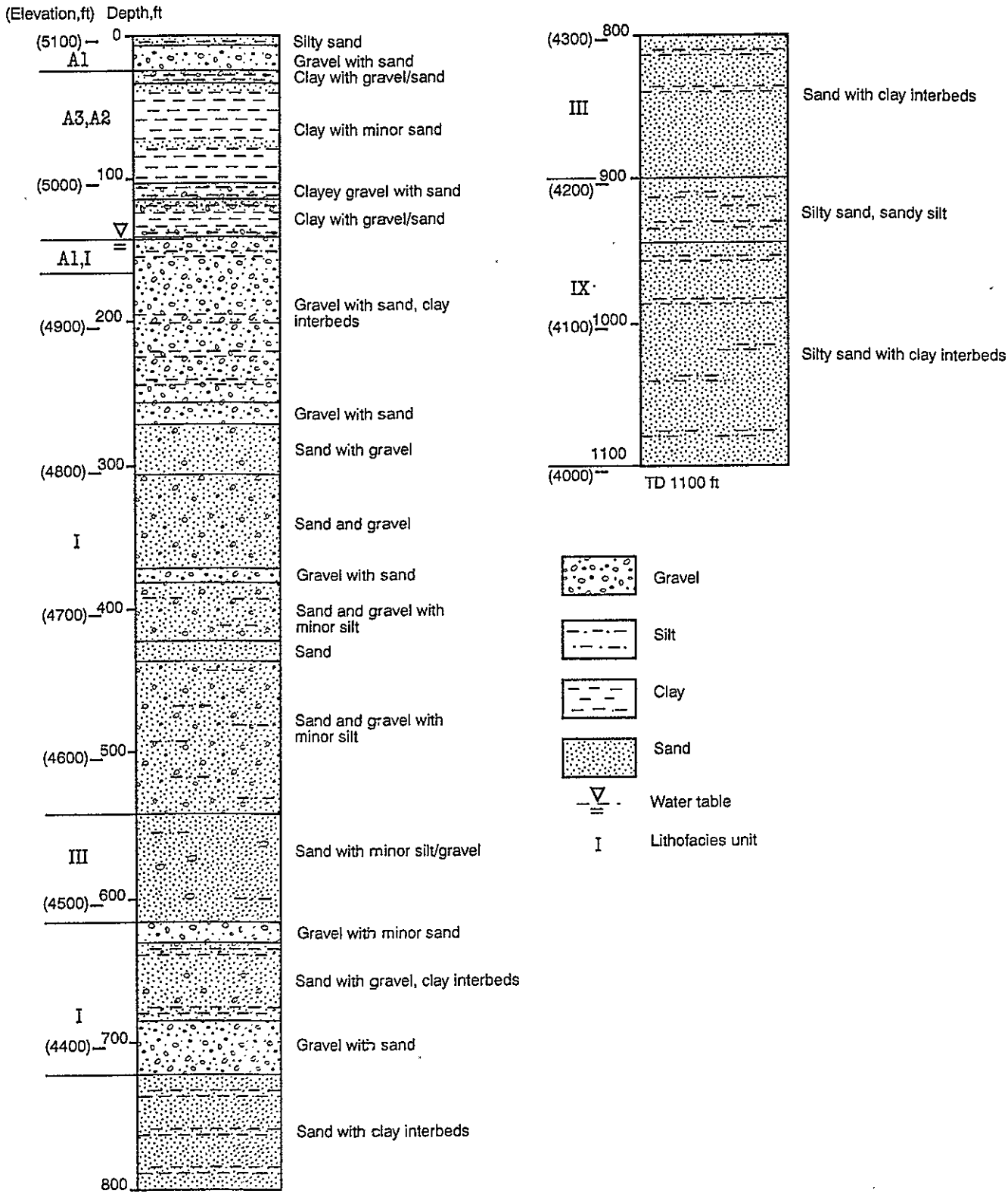
The following borehole logs were completed for the deep piezometer nest located at West Bluff Park, Albuquerque, New Mexico, and installed by the U.S. Geological Survey for the City of Albuquerque in June–July 1996. This log (West Bluff Park 1) is submitted in fulfillment of reporting requirements under the Intergovernmental Services Agreement between New Mexico Bureau of Mines and Mineral Resources and the City of Albuquerque, for collection and interpretation of monitor well drill cuttings. A second, shallow piezometer nest called West Bluff Park 2 was also installed at this location, but is not described in this report. The log describes sample intervals, lithologic characteristics and interpretations, supplemental drilling information, borehole geophysical logging information and interpretation, and hydrogeologic interpretations. The lithologic descriptions were made in accordance with ASTM Standard Practice D2488-90 for Description and Identification of Soils (Visual-Manual Procedure), Figure 1a (Flow chart for Identifying Inorganic Fine-Grained Soil (50% or more fines)) and Figure 2 (Flow Chart for Identifying Coarse-Grained Soils (less than 50% fines)), except that the gravel-sand division was defined at a particle size of 2 mm. Additionally, drilling fluids prevented a complete evaluation of the fine fraction according to ASTM criteria. The field lithologic descriptions include the following information:

1. Major textural class
2. Grain size distribution by major textural classes: silt/clay (<0.075 mm), sand (0.075–2 mm), gravel (>2 mm)
3. Grading and range of grain and clast size
4. Angularity and particle shape
5. Clast composition, in descending order of abundance
6. Color (Munsell Soil Color Chart) for fine matrix (<2 mm) unless otherwise noted
7. Other characteristics and driller's comments

Hydrogeologic interpretations classify the materials according to the descriptive system of unit nomenclature developed by Hawley and Haase (NMBMMR Open-File Report 387, 1992) and recently revised by Hawley (NMBMMR Open-File Report 402-D, 1996). The nomenclature describes the hydrostratigraphic units (RA, TA, VA, PA, USF, MSF, LSF), together with the major basin-fill lithofacies classes (I to X), and the valley-fill lithofacies classes (A, including A1, A2 and A3, and B). It is important to note that the lithologic summary (page 3) provides descriptions based solely on grain size characteristics, and the lithofacies and hydrogeologic interpretations (page 5) are based on several integrated criteria including grain size, clast composition and geographic location within the basin. Both lithologic descriptions and lithofacies interpretations are illustrated in the stratigraphic column in Figure 1. A detailed log of the full lithologic field description by 5-foot sample interval is provided as Attachment A. The borehole geophysical logs are included as Attachment B.

Location:	T10N, R2E, Section 11.244 (projected). Approximately 25 ft south and 40 ft west of the northwest corner of West Bluff Park, Albuquerque. Albuquerque West 7.5' quadrangle.
Elevation:	5105 ft (land surface estimate from topographic base map)
Drilling Method:	Mud Rotary
Drillers:	Dan Sweeney (U.S.G.S.)
Date Started:	June 25, 1996
Date Completed:	July 11, 1996
Sample Interval:	5 feet
Screened Intervals:	422–427 ft, 679–684 ft, and 1085–1090 ft (below land surface)
Total Depth:	1100 ft (below land surface)
Geological Logging:	Bruce Allen, Peggy Johnson, Barry Allred (NMBMMR)

Figure 1. Stratigraphic Column
West Bluff Park



Lithologic Summary and Borehole Geophysical Interpretations
West Bluff Park 1
Lithologic Description

Depth (ft)	
0-7	Silty sand. Moderately graded, subangular to rounded. Light brownish gray. Quartz, basalt, K-feldspar. Surface casing set to 8 ft.
7-25	Gravel (60-80%) with sand and varying amounts of silt. Well graded, angular to rounded. Quartz, basalt, volcanics, granite, K-feldspar and sandstone.
25-35	Fat clay (50-60%) with varying amounts of gravel and sand. Moderately graded, angular to subrounded. Reddish brown to brown. Quartz, basalt, volcanics, granite, sandstone.
35-105	Fat clay (75-100%) with occasional minor sand. Sand component is moderately graded, angular to subrounded. Reddish brown to brown. Quartz, basalt, volcanics, granite, sandstone; local limestone, and K-feldspar.
105-115	Clayey gravel with sand. Moderately graded, angular to rounded. Brown. Quartz, basalt, sandstone, granite, volcanics.
115-140	Fat clay (60-95%) with minor sand and gravel. Coarse component is poorly to moderately graded, angular to subrounded. Light brown to brown. Quartz, basalt, volcanics, granite, K-feldspar, sandstone, and quartzite.
140-215	Gravel (55-90%) with varying amounts of sand, and thin seams and interbeds of clay, sandy clay, and clayey sand that are often calcareous. Poorly graded, angular to rounded. Light brown to brown and strong brown, light yellowish brown, and reddish brown. Volcanics, basalt, quartz, sandstone, granite, metasediments, metamorphics; local Pedernal chert, limestone, and quartzite. Water table at approximately 145 ft based on geophysics.
215-255	Variably mixed gravel, sand and clay occurring as sandy clay and clayey sand thinly to moderately interbedded with sand/gravel. Poorly graded, angular to subrounded. Clay interbeds are light yellowish brown to brown, and light brown to reddish yellow. Volcanics, basalt, quartz, sandstone, granite, metasediments, metamorphics.
255-270	Gravel with sand. Moderately graded, angular to subrounded. Dark brown and yellowish brown. Silicic metamorphic, pink granite, red-brown tuff, miscellaneous volcanics, chert.
270-305	Sand (65-100%) with varying amounts of gravel. Well to moderately graded, subangular to rounded. Dark brown and yellowish brown. Miscellaneous volcanics, silicic metamorphic, sandstone, basalt, pink granite, K-feldspar, chert, Bandelier tuff (?).
305-370	Variably mixed sand (25-60%) and gravel (30-70%). Well to moderately graded, subangular to rounded. Dark brown to brown. Sandstone, miscellaneous volcanics, pink granite, basalt, silicic metamorphic, tan/red tuff, brown mudstone.
370-380	Gravel (80-85%) with minor sand. Moderately graded, subangular to subrounded. Brown. Pink granite, K-feldspar, red tuff, sandstone, basalt, miscellaneous volcanics, chert.
380-420	Variably mixed sand (40-70%) and gravel (20-50%) with minor silt; thin interbedded clay seams from 400-415 ft. Well graded, subangular to subrounded. Brown to yellowish brown. Miscellaneous volcanics, sandstone, pink granite, basalt, silicic metamorphic, brown mudstone, red tuff.
420-435	Sand (80-85%) with minor silt and gravel. Well graded, subangular to subrounded. Brown to yellowish brown. Miscellaneous volcanics, sandstone, red tuff.
435-540	Variably mixed sand and gravel with occasional minor silt; thin interbedded clay seams from 505-515 ft.

Silt/clay intervals at 484-496 ft and 522-534 ft based on geophysics. Variably graded, angular to rounded. Brown to yellowish brown. Miscellaneous volcanics, pink granite, silicic metamorphics, red tuff, brown mudstone.

540-615 Sand (80-100%) with occasional minor silt or gravel; thin interbedded clay seams from 610-615 ft. Mostly well graded, subangular to subrounded. Yellowish brown. Miscellaneous volcanics, pink granite, silicic metamorphics.

615-630 Gravel (80-90%) with minor sand. Variably graded, angular to subrounded. Yellowish brown. Miscellaneous volcanics, pink granite, silicic metamorphics, brown mudstone.

630-685 Sand (50-80%) with varying amounts of gravel and minor silt; thin interbedded clay seams from 630-635 and 670-685 ft. Silt/clay interval at 658-668 ft based on geophysics. Well to moderately graded, angular to subrounded. Yellowish brown and reddish yellow. Miscellaneous volcanics, pink granite, silicic metamorphics, brown mudstone.

685-725 Gravel (60-95%) with sand. Silt/clay interval at 706-714 ft based on geophysics. Poorly to moderately graded, subangular to rounded. Yellowish brown. Miscellaneous volcanics, pink granite, silicic metamorphics.

725-900 Sand (60-95%) with thin interbeds of clay and silt from 725-840 ft. Silt/clay intervals at 744-798 ft, 822-834 ft, 880-886 ft, and 896-905 ft based on geophysics. Moderately graded, angular to subrounded. Light brown, brown and yellowish brown. Miscellaneous volcanics, pink granite, silicic metamorphics, silicic volcanics, basalt.

900-945 Sandy silt and silty sand (30-60% sand). Silt/clay interval at 910-924 ft based on geophysics. Well graded, subangular to subrounded. Pink, light brown, reddish yellow. Basalt, miscellaneous volcanics, brown chert, quartz, granite, sedimentary clasts.

945-1100 Silty sand (60-80% sand); sandy clay interbed at 985-995 ft. Silt/clay intervals at 950-994 ft and 1004-1100 ft based on geophysics. Well graded, angular to rounded. Pink to white, light brown, strong brown, reddish yellow. Basalt, granite, quartz, sedimentary clasts.

Depth (ft)	Hydrostratigraphic Unit	Lithofacies
0-25	River valley fluvial deposits; gravel with sand and silt (TA)	A1
25-140	River channel and flood plain deposits; clay with occasional interbedded sand and gravel (TA)	A3, A2
140–165	Undifferentiated river channel alluvium; pebble/cobble gravel associated with deposits of uncertain stratigraphihc position (TA or USF-2)	A1, I
165-540	Ancestral river valley alluvium; gravel and sand dominated (≥80%) with minor silt/clay (USF-2)	I
540-615	Ancestral river valley and basin floor deposits; clean sand (80%) with minor interbedded silt/clay and pebbly sand (USF-2)	III
615-725	Ancestral river valley alluvium; gravel and sand dominated (≥80%) with minor silt/clay (USF-2)	I
725-900	Ancestral river valley and basin floor deposits; sand, silty sand, and sandy clay (USF-2)	III
900-1100	Ancestral basin-floor and alluvial flat deposits; silt, clay, and silty sand (USF-2 to MSF-2 transition?)	IX

Note: The identification of lithofacies units is interpretative based on several criteria including texture, composition (provenance), and geographic location of the described sample within the basin. The interpretation of lithofacies is tentative, and preliminary due to limitations of the data and the fact that correlation to adjacent wells has not yet been undertaken; accordingly these lithofacies interpretations are subject to revision.

Attachment A
Field Lithologic Descriptions
West Bluff Park Piezometer Nest 1

Sample No.	Depth (ft)	Description
	0–7	Silty sand (~15% silt/clay, 80% sand (vf–c), ≤5% gravel). Moderately graded, subangular to rounded. Quartz, basalt, K-feldspar. 10YR6/2. No sample 0–7 ft; description based on surface material at 0–2 ft and driller's log. Surface casing set at 8 ft.
WB1-1	7–10	Gravel with sand and silt (<10% silt/clay, ~35% sand (vf–vc), 60% gravel). Well graded, with clasts to 10 mm, angular to subrounded. Quartz, basalt, K-feldspar, volcanics, subvolcanics, granite, sandstone. 10YR6/3–5/3. Moderate recovery.
WB1-2	10–15	Gravel with sand (0% silt/clay, 20% sand (f–vc), 80% gravel). Well graded with clasts to 15 mm, subangular to rounded. Basalt, volcanics, quartz, subvolcanics, granite, K-feldspar, sandstone. Good recovery.
WB1-3	15–20	Gravel with sand (0% silt/clay, 40% sand (vf–vc), 60% gravel). Well graded with clasts to 12 mm, subangular to rounded. Quartz, basalt, volcanics, granite, K-feldspar, sandstone. 10YR6/3. Moderate recovery.
WB1-4	20–25	Clayey, silty gravel with sand (20% silt/clay, 20% sand (vf–c), 60% gravel). Well graded with clasts to 12 mm, angular to subrounded. Quartz, basalt, granite, volcanics, sandstone. 5YR5/4. Good recovery.
WB1-5	25–30	Sandy fat clay with gravel (50% clay, 30% sand (vf–c), 20% gravel). Moderately graded with clasts to 10 mm, angular to subrounded. Quartz, basalt, granite, volcanics, sandstone. 7.5YR5/4–5YR5/4. Good recovery.
WB1-6	30–35	Gravelly fat clay (60% clay, 15% sand (vf–c), 25% gravel). Moderately graded, angular to rounded. Quartz, basalt, volcanics, granite, sandstone. 5YR5/3–7.5YR5/4. Good recovery.
WB1-7	35–40	Fat clay with sand (80% clay, 10% sand (vf–m), 10% gravel). Moderately graded, angular to rounded. Quartz, basalt, granite. 5YR5/4–7.5YR5/4. Good recovery.
WB1-8	40–45	Fat clay (100% clay, 0% sand, 0% gravel). 7.5YR5/4–4/4. Good recovery. Fat plastic organic clay—no silt or sand component.
WB1-9	45–50	Same as above.
WB1-10	50–55	Same as above.
WB1-11	55–60	Same as above.
WB1-12	60–65	Same as above.
WB1-13	65–70	Fat clay (90% clay, 10% sand (vf, vc), 0% gravel). 7.5YR5/4–4/4. Moderate recovery. Fat, plastic, organic clay.
WB1-14	70–75	Same as above. Poor recovery.
WB1-15	75–80	Fat clay with sand (80% clay, 15% sand (vf–vc), 5% gravel). Angular to subrounded. Quartz, basalt, volcanics, granite, sandstone. 7.5YR5/4–4/4. Poor recovery.
WB1-16	80–85	Fat clay with sand (75% clay, 15% sand (vf–vc), 10% gravel). Angular to subrounded. Quartz, basalt, granite, volcanics (caliche-coated), limestone, K-feldspar. 7.5YR5/4–4/4. Poor recovery.
WB1-17	85–90	Fat clay (90% clay, 5% sand (vf–vc), 5% gravel). Subangular to subrounded. Quartz, granite, basalt. 7.5YR5/4–4/4. Moderate recovery.
WB1-18	90–95	Fat clay (95% clay, 5% sand (vf–c), 0% gravel). 7.5YR5/4–4/4. Good recovery.

Sample No.	Depth (ft)	Description
WB1-19	95–100	Same as above.
WB1-20	100–105	Fat clay (90% clay, ≤5% sand (vf–vc), <5% gravel). Quartz, basalt, sandstone. 7.5YR5/4–4/4. Good recovery.
WB1-21	105–110	Clayey gravel with sand (40% clay, 20% sand (vf–vc), 40% gravel (pbl)). Moderately graded with clasts to 15 mm, angular to subrounded. Quartz, basalt, sandstone, granite, volcanics. 7.5YR5/4. Moderate recovery.
WB1-22	110–115	Clayey gravel with sand (15% clay, 20% sand (vf–vc), 65% gravel). Moderately graded with clasts to 15 mm, angular to rounded. Quartz, basalt, sandstone, granite, volcanics. 7.5YR5/4. Moderate recovery.
WB1-23	115–120	Fat clay with sand (80% clay, 15% sand (vf–vc), ≤5% gravel). Poorly graded, angular to subrounded. Quartz, basalt, granite. 7.5YR6/4–5/4. Moderate recovery.
WB1-24	120–125	Fat clay with gravel (60% clay, 20% sand (vf–vc), 20% gravel). Moderately graded with clasts to 20 mm, subangular to rounded. Quartz, basalt, volcanics, K-feldspar, sandstone. 7.5YR6/4–5/4. Poor recovery.
WB1-25	125–130	Fat clay (90% clay, ≤5% sand (c–vc), ≤5% gravel). Poorly graded. Quartz, basalt, sandstone. 7.5YR5/4. Good recovery.
WB1-26	130–135	Fat clay (95% clay, ≤5% sand (c–vc), 0% gravel). Poorly graded. 7.5YR5/4. Good recovery.
WB1-27	135–140	Sandy fat clay with gravel (60% clay, 20% sand (c–vc), 20% gravel. Moderately graded with clasts to 8 mm, angular to subrounded. Quartz, basalt, volcanics, granite, K-feldspar, sandstone, quartzite. 7.5YR5/4. Good recovery.
WB1-28	140–145	Gravel with sand (5% clay, 15% sand (m–vc), 80% gravel). Poorly graded, angular to subrounded. Basalt, volcanics, granite, quartz, sandstone, metasedimentary, Pedernal chert, quartzite. Good recovery.
WB1-29	145–150	Clayey gravel with sand (25% clay, 15% sand (m–vc), 60% gravel). Poorly graded with clasts to 15 mm, angular to subrounded. Volcanics, basalt, sandstone, granite, quartz, Pedernal chert, limestone, metasedimentary. 7.5YR6/4–5/4. Moderate recovery. Clay fraction produces weak acid reaction; clay in discrete seams within gravel per driller.
WB1-30	150–155	Gravel with sand (5% clay, 15% sand (m–vc), 80% gravel). Poorly graded with clasts to 10 mm, subangular to rounded. Volcanics, basalt, sandstone, granite, quartz, metasedimentary, metamorphic. Good recovery. Minor clay seams in fairly uniform pebble gravel.
WB1-31	155–160	Gravel (<5% clay, <10% sand (m–vc), 85% gravel). Poorly graded, subangular to rounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 7.5YR6/4–5/4. Good recovery. Driller pulled back to increase mudflow at higher viscosity; about 5 ft of sluff in hole so material after 155 ft has large component of overlying sediment; angular clasts are freshly broken by bit; very minor clay seam.
WB1-32	160–165	Gravel (0% silt/clay, ≤10% sand (c–vc), 90% gravel). Poorly graded with clasts to 15 mm, angular to rounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. Good recovery. Many angular clasts are freshly broken by bit.
WB1-33	165–170	Gravel (≤5% clay, ≤5% sand (c–vc), 90% gravel). Poorly graded with clasts to 25 mm, angular to rounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 7.5YR5/4–5/6. Good recovery. Very minor clay seams; most angular clasts are broken by bit; a lot of sluff.

Sample No.	Depth (ft)	Description
WB1-34	170–175	Same as above.
WB1-35	175–180	Gravel (~5% clay, 5% sand (f–vc), 90% gravel). Poorly graded with clasts to 25 mm, angular to rounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 7.5YR5/4–5/6. Good recovery. Very minor sandy clay seams; angular clasts broken by bit.
WB1-36	180–185	Gravel with clay (10% clay, 10% sand (vf–vc), 80% gravel). Poorly graded with clasts to 20 mm, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 7.5YR6/4–5/6. Good recovery. Very minor sandy clay seams; angular clasts broken by bit.
WB1-37	185–190	Same as above.
WB1-38	190–195	Clayey gravel with sand (20% clay, 20% sand (vf–vc), 60% gravel). Poorly graded with clasts to 20 mm, angular to rounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 7.5YR6/4–5/6. Very poor recovery. Very minor sandy clay seams; angular clasts broken by bit.
WB1-39	195–200	Clayey gravel with sand (15% clay, 15% sand (vf–vc), 70% gravel). Poorly graded with clasts to 20 mm, angular to rounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 7.5YR6/4–5/6. Poor recovery. Vf–m sandy clay seams; weak acid reaction.
WB1-40	200–205	Clayey gravel with sand (15% clay, 30% sand (vf–m), 55% gravel). Poorly graded with clasts to 15 mm, angular to rounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 10YR5/3–6/4. Poor recovery. Clayey, vf–m sand interbeds; clayey sand produces weak acid reaction.
WB1-41	205–210	Gravel with sand and clay (10% clay, 20% sand (vf–m), 70% gravel). Poorly graded with clasts to 15 mm, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 10YR5/3, 5YR5/4, 7.5YR6/4. Poor recovery. Calcareous clayey sand interbeds.
WB1-42	210–215	Gravel with sand and clay (10% clay, 20% sand (vf–vc), 70% gravel). Poorly graded with clasts to 15 mm, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 10YR5/3, 7.5YR5/4–5/6. Poor recovery. 10YR clayey sand with f–vc sand; 7.5YR sandy clay with f–m sand; both calcareous interbeds.
WB1-43	215–220	Clayey gravel with sand (20% clay, 30% sand (vf–vc), 50% gravel). Poorly graded, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 7.5YR5/4 and 10YR6/4. Poor recovery. 10YR sandy clay and 7.5YR clayey sand (crumbly), calcareous interbeds.
WB1-44	220–225	Clayey gravel with sand (35% clay, 25% sand (vf–vc), 40% gravel). Poorly graded with clasts to 15 mm, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 10YR6/4 and 7.5YR6/4–6/6. Moderate recovery. Sandy clay, calcareous, with interbedded vf–m sand and gravel sand.
WB1-45	225–230	Clayey sand with gravel (30% clay, 40% sand (vf–vc), 30% gravel). Poorly graded with clasts to 12 mm, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 10YR6/4 and 7.5YR6/4–6/6. Moderate recovery. Crumbly clayey sand and sand/gravel interbeds.
WB1-46	230–235	Same as above. Good recovery.

Sample No.	Depth (ft)	Description
WB1-47	235–240	Clayey sand with gravel (35% clay, 45% sand (vf–vc), 20% gravel). Poorly graded with clasts to 10 mm, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 10YR6/4, 7.5YR6/4, 5YR6/6. Good recovery. Crumbly, clayey sand and sand/gravel interbeds.
WB1-48	240–245	Same as above.
WB1-49	245–250	Clayey sand with gravel (30% clay, 40% sand (vf–vc), 30% gravel). Poorly graded with clasts to 12 mm, angular to subrounded. Volcanics, basalt, quartz, sandstone, granite, metasedimentary, metamorphic. 10YR6/4 and 7.5YR6/4–6/6. Good recovery. Crumbly, clayey sand and sand/gravel interbeds.
WB1-50	250–255	Clayey sand (15% clay, 75% sand (vf–vc), 10% gravel). Moderately graded with clasts to 5 mm, angular to subrounded. Basalt, quartz. 10YR6/4. Good recovery.
WB1-100	255–260	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Moderately graded, subangular to subrounded. Silicic metamorphic, pink granite, red-brown tuff, miscellaneous volcanic, chert. 7.5YR4/4. Moderate recovery. First sample after hole sat for several days.
WB1-101	260–265	Gravel with sand (0% silt/clay, 40% sand, 60% gravel). Well to moderately graded, angular to subangular. Pink granite, red-brown tuff, silicic metamorphic, sedimentary (sandstone). 7.5YR4/4. Moderate recovery.
WB1-102	265–270	Gravel with sand (2% silt/clay, 33% sand, 65% gravel). Moderately graded, angular to subangular. Silicic metamorphic, miscellaneous volcanics, pink granite, basalt, chert. 10YR5/4. Moderate recovery.
WB1-103	270–275	Sand with gravel (0% silt/clay, 70% sand, 30% gravel). Moderately graded, subangular to subrounded. Miscellaneous volcanics, silicic metamorphic, chert. 10YR5/4. Moderately graded.
WB1-104	275–280	Sand with gravel (0% silt/clay, 75% sand, 25% gravel). Moderately graded, subangular to subrounded. Miscellaneous volcanics, basalt, sandstone. 10YR5/4. Good recovery.
WB1-105	280–285	Sand with gravel (0% silt/clay, 65% sand, 35% gravel). Well graded, subangular to subrounded. Sandstone (cemented Santa Fe), miscellaneous volcanics, basalt. 10YR5/4. Good recovery. Gravel-sized clasts of cemented Santa Fe (sandstone).
WB1-106	285–290	Sand with gravel (0% silt/clay, 65% sand, 35% gravel). Well graded, subangular to subrounded. Pink granite and feldspars, sandstone (cemented Santa Fe Group), miscellaneous volcanics, pumice (Bandelier Tuff?). 10YR4/3. Good recovery. Gravel-sized clasts of Santa Fe (sandstone) not included as >2 mm fraction.
WB1-107	290–295	Sand (0% silt/clay, 95% sand, 5% gravel). Moderately graded, subrounded. Sandstone (cemented Santa Fe), miscellaneous volcanics. 10YR4/3. Good recovery. Gravel-sized clasts of Santa Fe (sandstone) not included as >2 mm fraction.
WB1-108	295–300	Sand (0% silt/clay, 99% sand, 1% gravel). Moderately graded, subrounded to rounded. Sandstone (cemented Santa Fe)), miscellaneous volcanics. 10YR4/3. Good recovery. Gravel-sized clasts of Santa Fe not included as >2 mm fraction.
WB1-109	300–305	Same as above + 1 basalt clast.
	305–318	Cored 13-ft interval with 4.5 ft of recovery (313.5–318 ft).
WB1-110	305–310	Gravel with sand (5% silt/clay, 25% sand, 70% gravel). Moderately graded, subrounded to rounded. Miscellaneous volcanics, pink granite, basalt. 10YR4/3. Good recovery. Interval 305–323.5 ft probably appears to be well-graded gravels due to coring first.

Sample No.	Depth (ft)	Description
WB1-111	310–315	Sand with gravel (0% silt/clay, 60% sand, 30% gravel). Moderately graded, subrounded to rounded. Sandstone (cemented Santa Fe), pink granite, miscellaneous volcanics, basalt. 10YR4/3. Good recovery. Interval 305–323.5 ft probably appears to be well-graded gravels due to coring first.
WB1-112	315–320	Gravel with sand (0% silt/clay, 40% sand, 60% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics, pink granite, sandstone (cemented Santa Fe Group). 7.5YR5/3. Good recovery. Interval 305–323.5 ft probably appears to be well-graded gravels due to coring first.
	318–323.5	Cored 5.5-ft interval with 3 ft of recovery (320.5–323.5 ft).
WB1-113	320–325	Sand with gravel (0% silt/clay, 60% sand, 40% gravel). Well to moderately graded, subrounded to rounded. Pink granite, miscellaneous volcanics, sandstone, silicic metamorphic, basalt, sandstone (cemented Santa Fe Group). 7.5YR4/3. Good recovery.
WB1-114	325–330	Gravel with sand (0% silt/clay, 30% sand, 70% gravel). Well graded, subangular to subrounded. Sandstone (cemented Santa Fe Group), tuff, sandstone, miscellaneous volcanics, basalt. 7.5YR5/3. Good recovery.
WB1-115	330–335	Gravel with sand (5% silt/clay, 40% sand, 55% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, sandstone, sandstone (cemented Santa Fe Group), pink granite, basalt. 7.5YR4/3. Good recovery.
WB1-116	335–340	Gravel with sand (2% silt/clay, 38% sand, 60% gravel). Well graded, subangular to subrounded. Sandstone, sandstone (cemented Santa Fe Group), miscellaneous volcanics, basalt. 7.5YR4/3. Good recovery.
WB1-117	340–345	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Well graded, subangular to subrounded. Brown mudstone (Santa Fe Group?), miscellaneous volcanics, sandstone. 7.5YR5/4. Good recovery.
WB1-118	345–350	Sand with gravel (5% silt/clay, 50% sand, 45% gravel). Well graded, subangular to subrounded. Tan/red tuff, miscellaneous volcanics, pink granite, brown mudstone (Santa Fe Group?). 7.5YR4/4. Good recovery.
WB1-119	350–355	Sand with gravel (5% silt/clay, 50% sand, 45% gravel). Well graded, subangular to subrounded. Sandstone, red tuff, brown mudstone (Santa Fe Group?). 7.5YR4/4. Good recovery.
WB1-120	355–360	Sand with gravel and silt (10% silt/clay, 60% sand, 30% gravel). Well graded, subangular to subrounded. Sandstone (cemented Santa Fe Group), red tuff, brown mudstone (Santa Fe Group?). 7.5YR4/4. Good recovery.
WB1-121	360–365	Sand (5% silt/clay, 85% sand, 10% gravel). Well graded, subangular to subrounded. Sandstone, miscellaneous volcanics, sandstone (cemented Santa Fe Group), brown mudstone (Santa Fe Group?). 7.5YR4/3. Good recovery.
WB1-122	365–370	Gravel with sand (5% silt/clay, 30% sand, 65% gravel). Moderately graded, subangular to subrounded. Red tuff, sandstone, miscellaneous volcanics, pink feldspars. 10YR5/3. Moderate recovery.
WB1-123	370–375	Gravel (2% silt/clay, 13% sand, 85% gravel). Moderately graded, subangular to subrounded. Miscellaneous volcanics, red tuff, pink granite and feldspar, basalt, sandstone. 10YR5/3. Good recovery.

Sample No.	Depth (ft)	Description
WB1-124	375–380	Gravel with sand (2% silt/clay, 18% sand, 80% gravel). Moderately graded, subangular to subrounded. Pink feldspars and granite, sandstone, red tuff, chert, basalt. 10YR5/3. Good recovery.
WB1-125	380–385	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, sandstone, pink granite, basalt. 10YR5/4. Moderate recovery.
WB1-126	385–390	Gravel with sand (7% silt/clay, 43% sand, 50% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, red tuff, pink granite, sandstone. 10YR5/4. Good recovery.
WB1-127	390–395	Sand with gravel (3% silt/clay, 55% sand, 42% gravel). Well graded, subangular to subrounded. Pink granite, miscellaneous volcanics. 10YR5/3. Moderate recovery.
WB1-128	395–400	Sand with gravel (1% silt/clay, 60% sand, 39% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, sandstone. 10YR5/3. Moderate recovery.
WB1-129	400–405	Silty sand with gravel (15% silt/clay, 65% sand, 20% gravel). Well graded, subangular. Miscellaneous volcanics, basalt. 7.5YR5/3. Moderate recovery. Clay seams.
WB1-130	405–410	Sand with gravel (5% silt/clay, 50% sand, 45% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, sandstone (cemented Santa Fe Group), pink granite. 10YR5/4. Moderate recovery. Clay seams.
WB1-131	410–415	Silty sand with gravel (15% silt/clay, 70% sand, 15% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, silicic metamorphic, brown mudstone. 10YR5/4. Moderate to poor recovery. Clay seams.
WB1-132	415–420	Sand with gravel (7% silt/clay, 58% sand, 35% gravel). Well graded, subangular to subrounded. Brown mudstone, miscellaneous volcanics. 10YR5/4. Moderate recovery.
WB1-133	420–425	Sand with silt (10% silt/clay, 85% sand, 5% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics. 10YR5/3. Moderate recovery.
WB1-134	425–430	Sand with silt (10% silt/clay, 80% sand, 10% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, sandstone. 10YR5/4. Moderate to poor recovery.
WB1-135	430–435	Sand (5% silt/clay. 85% sand, 10% gravel). Moderately graded, subangular to subrounded. Miscellaneous volcanics, red tuff. 10YR5/4. Moderate recovery.
WB1-136	435–440	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Moderately to poorly graded, subrounded to rounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 7.5YR5/3. Moderate recovery.
WB1-137	440–445	Sand with gravel and silt (10% silt/clay, 50% sand, 40% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics, brown mudstone, pink granite/silicic metamorphics. 10YR5/3. Moderate recovery.
WB1-138	445–450	Sand with gravel and silt (10% silt/clay, 65% sand, 25% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate to poor recovery.
WB1-139	450–455	Same as above.
WB1-140	455–460	Sand with gravel and silt (10% silt/clay, 75% sand, 15% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics. 7.5YR5/3. Moderate to poor recovery.

Sample No.	Depth (ft)	Description
WB1-141	460–465	Gravel with sand (0% silt/clay, 25% sand, 75% gravel). Moderately to poorly graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 7.5YR5/4. Moderate recovery.
WB1-142	465–470	Gravel (2% silt/clay, 8% sand, 90% gravel). Poorly graded, subrounded to rounded. Silicic volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate recovery.
WB1-143	470–475	Sand (8% silt/clay, 80% sand, 12% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics. 10YR5/4. Moderate recovery.
WB1-144	475–480	Sand with gravel and silt (10% silt/clay, 50% sand, 40% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics, sandstone. 10YR5/4. Moderate recovery.
WB1-145	480–485	Same as above.
WB1-146	485–490	Gravel with sand (5% silt/clay, 20% sand, 75% gravel). Poorly graded, subangular to subrounded. Miscellaneous volcanics, red tuff, pink granite/metamorphics. 10YR5/4. Moderate recovery.
WB1-147	490–495	Gravel with sand (0% silt/clay, 20%% sand, 80% gravel). Poorly graded, subrounded to rounded. Miscellaneous volcanics, red tuff, pink granite/metamorphics. 10YR5/4. Moderate recovery.
WB1-148	495–500	Same as above.
WB1-149	500–505	Gravel with sand and silt (10% silt/clay, 30% sand, 60% gravel). Well to moderately graded, angular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics, brown mudstone. 10YR5/4. Moderate recovery.
WB1-150	505–510	Sand with gravel and silt (10% silt/clay, 50% sand, 40% gravel). Well graded, subangular to subrounded. Silicic volcanics and metamorphics. 10YR5/4. Moderate recovery. Clay seams.
WB1-151	510–515	Sand with gravel and silt (10% silt/clay, 60% sand, 30% gravel). Moderately graded, subangular to subrounded. Miscellaneous volcanics, brown mudstone, pink granite/metamorphics. 10YR5/4. Good recovery. Clay seams.
WB1-152	515–520	Gravel with sand (1% silt/clay, 15% sand, 84% gravel). Poorly graded, subangular to subrounded. Pink granite/metamorphics, miscellaneous volcanics. 10YR5/4. Good recovery.
WB1-153	520–525	Gravel (0% silt/clay, 10% sand, 90% gravel). Poorly graded, subangular to rounded. Pink granite/metamorphics, miscellaneous volcanics. 10YR5/4. Good to moderate recovery.
WB1-154	525–530	Gravel with sand (2% silt/clay, 15% sand, 83% gravel). Moderately graded, subangular to subrounded. Pink granite/metamorphics, miscellaneous volcanics. 10YR5/4.
WB1-155	530–535	Sand with gravel (5% silt/clay, 65% sand, 30% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/metamorphics. 10YR5/4. Moderate to poor recovery.
WB1-156	535–540	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/metamorphics. 10YR5/4. Poor recovery.
WB1-157	540–545	Silty sand (15% silt/clay, 80% sand, 5% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite, metamorphics. 10YR5/4. Moderate recovery. Clay seams.
WB1-158	545–550	Sand (5% silt/clay, 94% sand, 1% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/metamorphics. 10YR5/4. Moderate recovery.

Sample No.	Depth (ft)	Description
WB1-159	550–555	Sand (2% silt/clay, 96% sand, 2% gravel). Well to moderately graded, subangular to rounded. Miscellaneous volcanics, pink granite/metamorphics. 10YR5/4. Moderate recovery.
WB1-160	555–560	Sand (2% silt/clay, 93% sand, 5% gravel). Well to moderately graded, subangular to rounded. Miscellaneous volcanics, pink granite/metamorphics. 10YR5/4. Moderate recovery.
WB1-161	560–565	Same as above.
WB1-162	565–570	Sand (2% silt/clay, 96% sand, 2% gravel). Well graded, subangular to subrounded. 10YR5/4. Moderate to poor recovery.
WB1-163	570–575	Same as above.
WB1-164	575–580	Same as above.
WB1-165	580–585	Sand with gravel (5% silt/clay, 80% sand, 15% gravel). Poorly graded, subrounded to rounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4.
WB1-166	585–590	Sand with gravel (2% silt/clay, 55% sand, 43% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics. 10YR5/4.
WB1-167	590–595	Sand (5% silt/clay, 90% sand, 5% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics. 10YR5/4. Moderate to poor recovery.
WB1-168	595–600	Same as above with moderate recovery.
WB1-169	600–605	Gravel with sand (5% silt/clay, 45% sand, 50% gravel). Well to moderately graded, angular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Good to moderate recovery.
WB1-170	605–610	Sand with gravel (5% silt/clay, 80% sand, 15% gravel). Moderately to poorly graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Good to moderate recovery.
WB1-171	610–615	Same as above with moderate recovery. Clay seams.
WB1-172	615–620	Gravel (0% silt/clay, 10% sand, 90% gravel). Poorly graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Good recovery.
WB1-173	620–625	Gravel with sand (2% silt/clay, 18% sand, 80% gravel). Moderately to poorly graded, angular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Good to moderate recovery.
WB1-174	625–630	Sand with gravel and silt (10% silt/clay, 50% sand, 40% gravel). Well to moderately graded, subangular to subrounded. Miscellaneous volcanics, brown mudstone. 10YR5/4. Moderate recovery.
WB1-175	630–635	Silty sand with gravel (15% silt/clay, 70% sand, 15% gravel). Moderately graded, subangular to subrounded. Miscellaneous volcanics. 10YR5/4. Moderate to poor recovery. Clay seams.
WB1-176	635–640	Sand with gravel (5% silt/clay, 80% sand, 15% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate to poor recovery.
WB1-177	640–645	Silty sand with gravel (15% silt/clay, 50% sand, 35% gravel). Well to moderately graded, subangular to subrounded, Miscellaneous volcanics, pink granite/silicic metamorphics. Moderate to poor recovery.

Sample No.	Depth (ft)	Description
WB1-178	645–650	Sand with gravel and silt (10% silt/clay, 50% sand, 40% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate to poor recovery.
WB1-179	650–655	Silty sand with gravel (15% silt/clay, 65% sand, 20% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Poor recovery.
WB1-180	655–660	Silty sand (15% silt/clay, 75% sand, 10% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate recovery.
WB1-181	660–665	Silty sand with gravel (15% silt/clay, 45% sand, 40% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate recovery.
WB1-182	665–670	Silty sand (20% silt/clay, 77% sand, 3% gravel). Well graded, angular to subrounded. Brown mudstone. 10YR5/4 and 7.5YR6/6. Poor recovery.
WB1-183	670–675	Same as above. Clay seams.
WB1-184	675–680	Silty sand (25% silt/clay, 73% sand, 2% gravel). Moderately graded, angular to subrounded. Brown mudstone. 10YR5/4 and 7.5YR6/6. Moderate to poor recovery. Clay seams.
WB1-185	680–685	Silty sand (20% silt/clay, 76% sand, 4% gravel). Moderately to poorly graded, angular to subrounded. Miscellaneous volcanics. 10YR6/4. Moderate recovery. Clay seams.
WB1-186	685–690	Gravel with sand (2% silt/clay, 20% sand, 78% gravel). Poorly graded, subrounded to rounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate recovery.
WB1-187	690–695	Gravel with sand (2% silt/clay, 30% sand, 68% gravel). Moderately graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Poor recovery.
WB1-188	695–700	Gravel with sand (5% silt/clay, 35% sand, 60% gravel). Poorly graded, subrounded to rounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate to poor recovery.
WB1-189	700–705	Gravel with sand (3% silt/clay, 35% sand, 62% gravel). Poorly graded, subrounded to rounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate recovery.
WB1-190	705–710	Gravel (0% silt/clay, 3% sand, 97% gravel). Poorly graded, subrounded to rounded. Miscellaneous volcanics, pink granite/silicic metamorphics.
WB1-191	710–715	Gravel (1% silt/clay, 10% sand, 89% gravel). Poorly graded, subangular to rounded. Miscellaneous volcanics, pink granite/silicic metamorphics. 10YR5/4.
WB1-192	715–720	Gravel with sand (5% silt/clay, 15% sand, 80% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics, brown mudstone. 10YR5/4. Moderate recovery.
WB1-193	720–725	Sand with gravel (5% silt/clay, 60% sand, 35% gravel). Well graded, subangular to subrounded. Miscellaneous volcanics, pink granite/silicic metamorphics, brown mudstone, sedimentary rocks. 10YR5/4. Moderate recovery.
WB1-194	725–730	Silty, clayey sand (20% silt/clay, 75% sand, 5% gravel). Moderately graded, angular to subrounded. Silicic volcanics. 7.5YR5/4. Poor recovery. Clay seams.

Sample No.	Depth (ft)	Description
WB1-195	730–735	Clayey sand (25% silt/clay, 72% sand, 3% gravel). Moderately graded, angular to subrounded. Silicic volcanics. 7.5YR5/4. Poor recovery. Clay seams.
WB1-196	735–740	Clayey sand (20% silt/clay, 78% sand, 2% gravel). Moderately graded, angular to subrounded. Miscellaneous volcanics. 7.5YR5/4. Moderate to poor recovery. Clay seams.
WB1-197	740–745	Silty clayey sand (25% silt/clay, 70% sand, 5% gravel). Moderately graded, angular to subrounded. Silicic volcanics. 7.5YR5/4. Moderate to poor recovery. Clay seams.
WB1-198	745–750	Silty clayey sand (15% silt/clay, 83% sand, 2% gravel). Moderately graded, subangular to subrounded. 7.5YR5/4. Moderate recovery. Clay seams.
WB1-199	750–755	Clayey sand (25% silt/clay, 75% sand, 0% gravel). Moderately graded, subangular to subrounded. 7.5YR5/4. Moderate to poor recovery. Clay seams.
WB1-200	755–760	Clayey sand (40% silt/clay, 58% sand, 2% gravel). Moderately graded, subangular to subrounded. 7.5YR4/4. Moderate to poor recovery. Clay seams.
WB1-201	760–765	Clayey sand (40% silt/clay, 60% sand, 0% gravel). Moderately graded, subangular to subrounded. 7.5YR5/4. Moderate to poor recovery. Clay seams.
WB1-202	765–770	Silty clayey sand (30% silt/clay, 68% sand, 2% gravel). Moderately graded, angular to subrounded. 10YR5/4. Poor recovery. Clay seams.
WB1-203	770–775	Clayey sand (27% silt/clay, 73% sand, 0% gravel). Moderately graded, subangular to subrounded. 10YR5/4. Poor recovery. Clay seams.
WB1-204	775–780	Clayey sand (35% silt/clay, 64% sand, 1% gravel). Moderately graded, subangular to subrounded. 10YR5/4 plus pink feldspar. Moderate to poor recovery. Clay seams.
WB1-205	780–785	Sand (8% silt/clay, 87% sand, 5% gravel). Well to moderately graded, subangular to subrounded. Silicic volcanics, basalt. 10YR5/4.
WB1-206	785–790	Silty clayey sand (35% silt/clay, 64% sand, 1% gravel). Well to moderately graded, subangular to subrounded. 7.5YR5/4. Poor recovery. Clay seams.
WB1-207	790–795	Silty clayey sand (30% silt/clay, 69% sand, 1% gravel). Well to moderately graded, subangular to rounded. 7.5YR5/4. Poor recovery. Clay seams.
WB1-208	795–800	Silty clayey sand (25% silt/clay, 74% sand, 1% gravel). Well to moderately graded, subangular to subrounded. 7.5YR5/4. Moderate to poor recovery. Clay seams.
WB1-209	800–805	Silty sand (20% silt/clay, 77% sand, 3% gravel). Well to moderately graded, subangular to subrounded. Silicic volcanics, pink granite/silicic metamorphics. 7.5YR5/4. Moderate recovery. Clay seams.
WB1-210	805–810	Clayey sand (20% silt/clay, 79% sand, 1% gravel). Moderately graded, angular to subrounded. 7.5YR5/4. Poor recovery. Clay seams.
WB1-211	810–815	Silty clayey sand (25% silt/clay, 75% sand, 0% gravel). Moderately graded, angular to subrounded. 7.5YR5/4. Poor recovery. Clay seams.
WB1-212	815–820	Silty clayey sand (25% silt/clay, 75% sand, 0% gravel). Moderately graded, angular to subrounded. 7.5YR5/4. Moderate to poor recovery. Clay seams.
WB1-213	820–825	Silty sand (15% silt/clay, 75% sand, 10% gravel). Well graded, subangular to subrounded. Silicic volcanics, pink granite/silicic metamorphics. 7.5YR5/4. Moderate recovery.

Sample No.	Depth (ft)	Description
WB1-214	825–830	Silty clayey sand (30% silt/clay, 67% sand, 3% gravel). Moderately graded, angular to subangular. Silicic volcanics, pink granite/silicic metamorphics. 7.5YR6/4. Moderate to poor recovery. Clay seams.
WB1-215	830–835	Silty clayey sand (25% silt/clay, 73% sand, 2% gravel). Moderately graded, angular to subangular. 7.5YR6/4. Moderate to poor recovery. Clay seams.
WB1-216	835–840	Silty sand (15% silt/clay, 83% sand, 2% gravel). Moderately graded, angular to subangular. 7.5YR6/4. Poor recovery. Clay seams.
WB1-217	840–845	Same as above. Moderate recovery.
WB1-218	845–850	Sand (7% silt/clay, 93% sand, 0% gravel). Moderately graded, subangular to subrounded. 7.5YR6/4. Poor recovery.
WB1-219	850–855	Sand (9% silt/clay, 90% sand, 1% gravel). Moderately graded, subangular to subrounded. 7.5YR6/4. Poor recovery.
WB1-220	855–860	Sand (7% silt/clay, 92% sand, 1% gravel). Moderately graded, subangular to subrounded. 10YR5/4. Moderate recovery.
WB1-221	860–865	Sand with silt (12% silt/clay, 88% sand, 0% gravel). Well to moderately graded, subangular to subrounded. 10YR5/4. Moderate to poor recovery.
WB1-222	865–870	Sand with silt (10% silt/clay, 90% sand, 0% gravel). Moderately graded, subangular to rounded. 10YR5/4. Poor recovery.
WB1-223	870–875	Same as above. 7.5YR6/4.
WB1-224	875–880	Sand (7% silt/clay, 88% sand, 5% gravel). Well to moderately graded, subangular to subrounded. Silicic volcanics, pink granite/silicic metamorphics. 10YR5/4. Moderate to poor recovery.
WB1-225	880–885	Silty sand (15% silt/clay, 83% sand, 2% gravel). Moderately graded, subangular to subrounded. 10YR5/4. Poor recovery.
WB1-226	885–890	Silty clayey sand (35% silt/clay, 63% sand, 2% gravel). Moderately graded, subangular to subrounded. 7.5YR6/4. Poor recovery.
WB1-227	890–895	Sand (5% silt/clay, 92% sand, 3% gravel). Moderately graded, subangular to rounded. 10YR6/4. Poor recovery.
WB1-228	895–900	Sand (5% silt/clay, 94% sand, 1% gravel). Moderately graded, subangular to subrounded. 10YR5/4. Trip out to core.
WB1-229	900–905	Sandy silt (55% silt/clay, 30% sand (vf–vc), 15% gravel). Well graded, angular to subrounded. Basalt, brown chert. 7.5YR7/4. Poor recovery. Weak reaction with acid.
WB1-230	905–910	Sandy silt (55% silt/clay, 40% sand (vf–vc), ≤5% gravel). Well graded, subangular to subrounded. Basalt, brown chert. 7.5YR7/4. Poor recovery. No reaction with acid.
WB1-231	910–915	Same as above. Almost no recovery.
WB1-232	915–920	Silty sand (40% silt/clay, 55% sand (vf–vc), ≤5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics. 7.5YR7/4. Poor recovery.
WB1-233	920–925	Silty sand (35% silt/clay, 60% sand, ≤5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, quartz. 7.5YR6/4. Moderate recovery.

Sample No.	Depth (ft)	Description
WB1-234	925–930	Silty sand (35% silt/clay, 60% sand, ≤5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, chert, granite. 7.5YR7/6. Moderate recovery. Weak reaction with acid.
WB1-235	930–935	Silty sand (40% silt/clay, 55% sand, ≤5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics, sedimentary clasts. 7.5YR7/4. Moderate recovery. No reaction with acid.
WB1-236	935–940	Sandy silt (55% silt/clay, 40% sand (vf–vc), ≤5% gravel). Well graded, subangular to subrounded. Basalt and other volcanics. 7.5YR7/4. Moderate recovery.
WB1-237	940–945	Silty sand (40% silt/clay, 55% sand (vf–m), ≤5% gravel). Well graded, subangular to subrounded. Basalt, quartz, granite, sedimentary clasts. 7.5YR7/4. Moderate recovery.
WB1-238	945–950	Silty sand (30% silt/clay, 60% sand, 10% gravel). Well graded, subangular to subrounded. Basalt, granite, sedimentary clasts. 7.5YR7/4. Moderate recovery.
WB1-239	950–955	Silty sand (30% silt/clay, 65% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Basalt, granite, quartz. 10YR8/1 to 7.5YR7/4. Poor recovery.
WB1-240	955–960	Silty sand (35% silt/clay, 60% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Basalt, granite, quartz. 10YR8/1 to 7.5YR7/4. Poor recovery.
WB1-241	960–965	Silty sand (35% silt/clay, 60% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Basalt, granite, quartz, sedimentary clasts. 10YR8/1 to 7.5YR7/4. Poor recovery.
WB1-242	965–970	Silty sand (40% silt/clay, 60% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Poor recovery.
WB1-243	970–975	Same as above.
WB1-244	975–980	Silty sand (25% silt/clay, 70% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Basalt. 7.5YR6/4. Poor recovery.
WB1-245	980–985	Silty sand (30% silt/clay, 70% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Poor recovery.
WB1-246	985–990	Sandy clay (60% silt/clay, 40% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR5/6. Moderate recovery.
WB1-247	990–995	Sandy silt (60% silt/clay, 40% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/6. Poor recovery.
WB1-248	995–1000	Silty sand (40% silt/clay, 60% sand (vf–m), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/6. Moderate recovery.
WB1-249	1000–1005	Same as above.
WB1-250	1005–1010	Silty sand (30% silt/clay, 70% sand (vf–c), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Poor recovery.
WB1-251	1010–1015	Same as above. 10YR8/1 to 7.5YR7/6.
WB1-252	1015–1020	Same as above.
WB1-253	1020–1025	Silty sand (40% silt/clay, 60% sand (vf–c), 0% gravel). Well graded, subangular to subrounded. 10YR8/1 to 7.5YR7/6. Moderate recovery.

Sample No.	Depth (ft)	Description
WB1-254	1025–1030	Silty sand (35% silt/clay, 65% sand (vf–c), 0% gravel). Well graded, subangular to rounded. 10YR8/1 to 7.5YR6/4. Poor recovery.
WB1-255	1030–1035	Silty sand (30% silt/clay, 70% sand (vf–m), 0% gravel). Well graded, subangular to rounded. 10YR8/1 to 7.5YR6/6. Moderate recovery.
WB1-256	1035–1040	Silty sand (35% silt/clay, 65% sand (vf–m), 0% gravel). Well graded, subangular to rounded. 7.5YR7/4. Poor recovery.
WB1-257	1040–1045	Silty sand (40% silt/clay, 60% sand (vf–m), 0% gravel). Well graded, subangular to rounded. 7.5YR6/4. Poor recovery.
WB1-258	1045–1050	Same as above.
WB1-259	1050–1055	Silty sand (30% silt/clay, 70% sand (vf–m), 0% gravel). Well graded, angular to subrounded. 7.5YR6/4. Poor recovery.
WB1-260	1055–1060	Same as above.
WB1-261	1060–1065	Silty sand (25% silt/clay, 75% sand (vf–m), 0% gravel). Well graded, angular to subrounded. 7.5YR6/4. Poor recovery.
WB1-262	1065–1070	Same as above. 10YR8/1 to 7.5YR6/6.
WB1-263	1070–1075	Silty sand (30% silt/clay, 70% sand (vf–m), 0% gravel). Well graded, angular to subrounded. 10YR8/1 to 7.5YR6/6. Poor recovery.
WB1-264	1075–1080	Same as above.
WB1-265	1080–1085	Silty sand (25% silt/clay, 75% sand (vf–m), 0% gravel). Well graded, angular to subrounded. 7.5YR6/4. Poor recovery.
WB1-266	1085–1090	Silty sand (20% silt/clay, 80% sand (vf–m), 0% gravel). Well graded, angular to subrounded. 10YR8/1 to 7.5YR6/4. Poor recovery.
WB1-267	1090–1095	Same as above.
WB1-268	1095–1100	Same as above. Weak reaction with HCl.

Garfield Park

New Mexico Bureau of Mines & Mineral Resources
Socorro, NM 87801

A DIVISION OF
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY

Information: 505/835-5420
Publications: 505/835-5410
FAX: 505/835-6333

October 22, 1996

COPY

Mr. Norman Gaume
Water Resources Program
Public Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

Re: Field Boring Log for Garfield Park Piezometers

Dear Norm:

I am pleased to submit the New Mexico Bureau of Mines' final report and field boring log for the Garfield Park piezometer nest located north of the Alameda drain near 4th and Candelaria. The report includes a summary stratigraphic column for the boring, as well as a lithologic summary and hydrogeologic interpretation. Attachments include detailed field descriptions for five-foot intervals and the geophysical logs produced by the U.S. Geological Survey's geophysics team.

This is the second piezometer installation completed for the State Engineer's Office. If you have any questions or comments, or if I can be of further assistance, please feel free to call.

Sincerely,

Charles E. Chapin
Director and State Geologist

/al

Enclosures

Field Boring Log for Garfield Park
City of Albuquerque Piezometer Nest
FY 1996

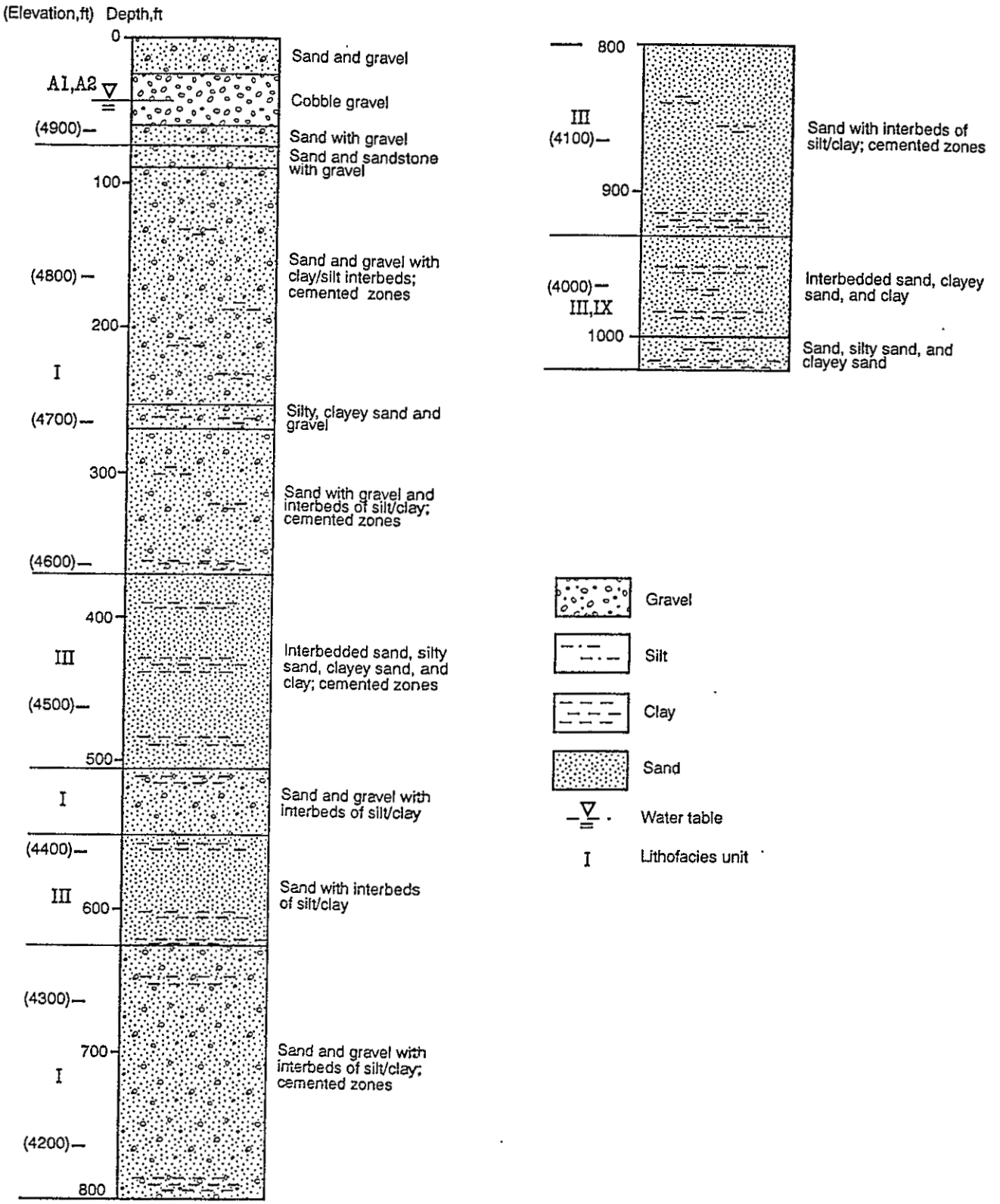
The following borehole logs were completed for the piezometer nest located at Garfield Park, Albuquerque, New Mexico, and installed by the U.S. Geological Survey for the City of Albuquerque in August-September 1996. The log describes sample intervals, lithologic characteristics and interpretations, supplemental drilling information, borehole geophysical logging information and interpretation, and hydrogeologic interpretations. The lithologic descriptions were made in accordance with ASTM Standard Practice D2488-90 for Description and Identification of Soils (Visual-Manual Procedure), Figure 1a (Flow chart for Identifying Inorganic Fine-Grained Soil (50% or more fines)) and Figure 2 (Flow Chart for Identifying Coarse-Grained Soils (less than 50% fines)), except that the gravel-sand division was defined at a particle size of 2 mm. Additionally, drilling fluids prevented a complete evaluation of the fine fraction according to ASTM criteria. The field lithologic descriptions include the following information:

1. Major textural class
2. Grain size distribution by major textural classes: silt/clay (<0.075 mm), sand (0.075–2 mm), gravel (>2 mm)
3. Grading and range of grain and clast size
4. Angularity and particle shape
5. Clast composition, in descending order of abundance
6. Color (Munsell Soil Color Chart) for fine matrix (<2 mm) unless otherwise noted
7. Other characteristics and driller's comments

Hydrogeologic interpretations classify the materials according to the descriptive system of unit nomenclature developed by Hawley and Haase (NMBMMR Open-File Report 387, 1992) and recently revised by Hawley (NMBMMR Open-File Report 402-D, 1996). The nomenclature describes the hydrostratigraphic units (RA, TA, VA, PA, USF, MSF, LSF), together with the major basin-fill lithofacies classes (I to X), and the valley-fill lithofacies classes (A, including A1, A2 and A3, and B). It is important to note that the lithologic summary (page 3) provides descriptions based on grain size characteristics and supplemental information from driller's logs, whereas the lithofacies and hydrogeologic interpretations (page 5) are based on several integrated criteria including grain size, clast composition and geographic location within the basin. Both lithologic descriptions and lithofacies interpretations are illustrated in the stratigraphic column in Figure 1. A detailed log of the full lithologic field description by 5-foot sample interval is provided as Attachment A. The borehole geophysical logs are included as Attachment B.

Location:	T10N, R3E, Section 5.341 (projected); latitude 35°07'06", longitude 106°39'03". At the southeast corner of Garfield Park, Albuquerque. Albuquerque West 7.5' quadrangle.
Elevation:	4965 ft (land surface estimate from topographic base map)
Drilling Method:	Mud Rotary
Drillers:	Dan Sweeney (U.S.G.S.)
Date Started:	August 20, 1996
Date Completed:	September 3, 1996
Sample Interval:	5 feet
Screened Intervals:	43–83 ft, 552–572 ft, and 995–1010 ft (below land surface)
Cored Intervals:	60–86.6 ft, 382–391.5 ft, 466–470.1 ft, 557–562 ft, 1025–1033 ft (below land surface)
Total Depth:	1025 ft (below land surface)
Geological Logging:	Bruce Allen and Barry Allred (NMBMMR)

Figure 1. Stratigraphic Column
Garfield Park



Lithologic Summary and Borehole Geophysical Interpretations
Garfield Park
Lithologic Description

Depth (ft)	
4-25	Coarse sand and gravel with small cobbles. Well graded, subrounded to rounded. Brown to yellowish brown and dark yellowish brown. Silicic metamorphic, silicic volcanic, basalt, igneous intrusive, quartzite, K-feldspar, pink granite, dark brown tuff, schist.
25-60	Coarse cobble gravel. Moderately to poorly graded, subrounded to rounded. Silicic metamorphic, basalt, silicic volcanic, pink granite, igneous intrusive. Water table at approximately 43.7 ft.
60-75	Sand with thin interbeds of gravel. Well graded, subrounded to rounded. Brown to dark brown. Silicic metamorphic, igneous intrusive, chert.
75-90	Sand and weakly cemented sandstone with thin interbeds of gravel. Well graded, subrounded to rounded. Brown to dark brown. Pink feldspar, granite, basalt, miscellaneous volcanic, chert.
90-255	Variably mixed coarse sand and gravel with thin interbeds of clay, sandy clay, and clayey or silty sand (0-15% silt/clay); some cementation. Well graded, subangular to rounded. Brown to dark brown sand, and light yellowish brown clay. Pink feldspar, granite, basalt, miscellaneous silicic volcanic, chert, quartzite, silicic metamorphic, sandstone.
255-270	Silty, clayey sand and gravel (30-40% silt/clay). Well graded, subrounded to rounded. Brown sand and light yellowish brown clay. Pink feldspar, granite, silicic volcanic, basalt.
270-370	Sand (50-90%) with gravel ($\leq$25%), and thin interbeds of silt, silty clay, and clay (10-50% silt/clay); some cementation of coarse beds. Silt/clay interval at 362–366 ft based on geophysics and driller's log. Well graded, subrounded to rounded, with scattered subangular. Brown to dark brown sand, and light brown to light yellowish brown clay. Pink feldspar, granite, basalt, chert, miscellaneous volcanic.
370-505	Interbedded sand (30-80%), silty sand, clayey sand, sandy clay, and clay (30-70% silt-clay) with scattered thin interbeds of pebble gravel (<15%); some cementation. Silt/clay intervals at 390–393 ft, 428–442 ft, and 466–472 ft based on geophysics and driller's log. Variably graded, often moderately to poorly graded, subangular to rounded. Brown to dark brown sand, and light brown to light yellowish brown clay and scattered reddish yellow clay. Quartzite, miscellaneous volcanic, basalt, pink feldspar, granite, igneous intrusive, chert.
505-550	Variably mixed sand (30-60%) and gravel (30-65%) with thin interbeds of silt, clay, silty sand, clayey sand, sandy clay, and sandy silt ($\leq$15% silt/clay). Silt/clay interval at 512–520 ft based on geophysics and driller's log. Well graded, subrounded to rounded. Brown sand, and light yellowish brown clay. Quartzite, silicic volcanic, basalt, pink feldspar, granite, igneous intrusive.
550-630	Sand (60-80%) with thin interbeds of silty clay, silty sand, sandy clay, and clay (15-40% silt/clay). Silt/clay intervals at 556–563 ft, 602–614 ft, and 623–632 ft based on geophysics and driller's log. Well graded, subangular to rounded. Light brown to pink and reddish yellow. Quartz, quartzite, volcanic, granite.
630-800	Variably mixed sand (30-70%) and gravel (20-60%) with thin interbeds of silty or clayey sand, sandy clay, and clay ($\leq$15% silt/clay); some cementation of coarse beds. Silt/clay

intervals at 652–656 ft and 791–802 ft based on geophysics and driller's log. Well graded, subangular to rounded. Light brown to pink and reddish yellow sand and clay. Volcanic, granite, quartz, miscellaneous sedimentary clasts.

800-930 Sand (50-85%) with thin interbeds of silty clay, silty sand, clayey sand, sandy clay, and clay (15-40% silty/clay); some cementation of coarse beds. Silt/clay interval at 918–930 ft based on geophysics and driller's log. Well graded, subangular to subrounded with scattered angular and rounded. Brown sand, light brown to light yellowish brown clay, scattered pink clayey sand. Miscellaneous silicic volcanic, granite, basalt, quartzite, pink feldspar, igneous intrusive, red granite, sedimentary clasts.

930-1000 Interbedded sand (40-60%), clayey sand, sandy clay and clay (40-60% silt/clay). Silt/clay intervals at 956–972 ft, and 982–997 ft based on geophysics and driller's log. Well graded, subangular to subrounded. Brown sand, light brown to light yellowish brown clay. Basalt, pink feldspar, red granite, silicic volcanic, quartzite.

1000-1025 Sand, silty sand, and clayey sand. Moderately to poorly graded, subangular to rounded. Brown sand and light brown clay. Santa Fe Group mudstone.

Depth (ft)	Hydrostratigraphic Unit	Lithofacies
0–25	Modern river-valley fluvial deposits; sand and pebbly sand with scattered cobbles.	A2
25–60	Holocene river-channel fluvial deposits; pebble to cobble gravel and sand (RA)	A1
60–75	Holocene river-valley fluvial deposits; sand with thin interbedded gravel (RA)	A2
75–370	Ancestral river valley alluvium; gravel and sand dominated (≥80%) with minor silt/clay (USF-2)	I
370–505	Ancestral river valley and basin floor deposits; interbedded sand, silty sand, and silty clay with lenses of pebble gravel (USF-2)	III
505–550	Ancestral river valley alluvium; gravel and sand dominated (≥80%) with minor silt/clay (USF-2)	I
550–630	Ancestral river valley and basin floor deposits; sand (60-80%) with thin interbeds of silt and silty clay (USF-2)	III
630–800	Ancestral river valley alluvium; gravel and sand dominated (≥80%) with minor silt/clay (USF-2)	I
800–930	Ancestral river valley and basin floor deposits; sand (50-80%) with thin interbeds of silt and silty clay (USF-2)	III
930–1025	Ancestral basin floor deposits; interbedded sand, clayey sand, sandy clay, and clay (USF-2 to MSF-2 transition)	III, IX

Note: The identification of lithofacies units is interpretative based on several criteria including texture, composition (provenance), and geographic location of the described sample within the basin. The interpretation of lithofacies is tentative, and preliminary due to limitations of the data and the fact that correlation to adjacent wells has not yet been undertaken; accordingly these lithofacies interpretations are subject to revision.

Attachment A
Field Lithologic Descriptions
Garfield Park Piezometer Nest 1

Sample No.	Depth (ft)	Description
GP-1	4–10	Gravel (0% silt/clay, 10% sand (f–m), 90% gravel). Well to moderately graded, subrounded to rounded. Silicic metamorphic, igneous porphyry, dark brown tuff. 10YR4/4. Good recovery. Driller's Log: sand with gravel and small cobbles.
GP-2	10–15	Gravel with sand (0% silt/clay, 20% sand (f–c), 80% gravel). Well graded, subrounded to rounded. Silicic metamorphic, miscellaneous volcanic, pink granite. 10YR5/3. Good recovery. Driller's Log: coarse sand and gravel with pebbles.
GP-3	15–20	Gravel with sand (0% silt/clay, 45% sand (f–c), 55% gravel). Well graded, subrounded to rounded. Miscellaneous volcanic, quartzite, pink feldspars and granite. 10YR5/3. Good recovery. Driller's Log: silty coarse sand and gravel.
GP-4	20–25	Gravel with sand (0% silt/clay, 45% sand (f–c), 55% gravel). Well graded, subrounded to rounded. Silicic volcanic, basalt, pink granite, schist. 10YR5/4. Good recovery. Driller's Log: coarse sand and gravel with small cobbles.
GP-5	25–30	Gravel (0% silt/clay, 2% sand (f–c), 98% gravel). Moderately to poorly graded, subrounded to rounded. Basalt, pink granite and silicic metamorphic. Good recovery. Driller's Log: coarse sand with small cobbles; large gravel and small cobbles.
GP-6	30–35	Gravel (0% silt/clay, 2% sand (f–c), 98% gravel). Moderately graded, subrounded to rounded. Basalt, silicic metamorphic, pink granite. Good recovery. Driller's Log: coarse gravel and small cobbles.
GP-7	35–40	Same as above.
GP-8	40–45	Gravel (0% silt/clay, 2% sand (f–c), 98% gravel). Moderately to poorly graded, subrounded to rounded. Silicic metamorphic, basalt, silicic volcanic, granite. Good recovery. Driller's Log: coarse gravel and small cobbles.
GP-9	45–50	Same as above.
GP-10	50–55	Same as above.
GP-11	55–59	Gravel (0% silt/clay, 2% sand (f–c), 98% gravel). Moderately to poorly graded, subrounded to rounded. Silicic volcanic, silicic metamorphic, igneous intrusive, basalt. Driller's Log: coarse sand and gravel with some small cobbles.
GP-12	60–65	Gravel with sand (2% silt/clay, 38% sand (f–c), 60% gravel). Well graded, subrounded to rounded. Silicic metamorphic, igneous intrusive, chert. 10YR4/3. Moderate to poor recovery. Driller's Log: sand.
	60–64	Cored 4-ft interval with 1.1 ft of recovery (60 to 61.25 ft). Driller's Log: sand.
GP-13	65–70	Gravel with sand (2% silt/clay, 28% sand (f–c), 70% gravel). Well graded, subrounded to rounded. Silicic metamorphic, igneous intrusive, chert. 10YR4/3. Moderate recovery. Driller's Log: sand.
	64–69	Cored 5-ft interval with 3.8 ft of recovery (64 to 67.8 ft). Driller's Log: sand.
GP-14	70–75	Sand (3% silt/clay, 95% sand (f–c), 2% gravel). Well graded, subangular to rounded. Silicic metamorphic, igneous intrusive, chert. 10YR4/3. Moderate to poor recovery. Driller's Log: sand with some gravel.
	69–73.8	Cored 4.8-ft interval with 3.7 ft of recovery (70.1 to 73.8 ft). Driller's Log: sand.

Sample No.	Depth (ft)	Description
GP-15	75–80	Gravel with sand (2% silt/clay, 40% sand (f–c), 58% gravel). Contains weakly cemented sandstone and mudstone (Santa Fe Group ("SFG")). Well graded, subrounded to rounded. Pink feldspar, granites, basalt, miscellaneous volcanic, chert. 10YR4/3. Moderate to poor recovery. Driller's Log: sand and sandstone.
	73.8–82.6	Cored 8.8-ft interval with 0.5 ft of recovery (73.8 to 74.8 ft). Driller's Log: very friable sandstone.
GP-16	80–85	Gravel with sand (2% silt/clay, 20% sand (f–c), 78% gravel). Contains weakly cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Pink feldspar, granites, basalt, miscellaneous volcanic, chert. 10YR4/3. Good to moderate recovery. Driller's Log: soft sandstone, coarse sand.
	82.6–86.6	Cored 4-ft interval with 0.4 ft of recovery (82.6 to 83.1 ft). Driller's Log: friable sandstone.
GP-17	85–90	Same as above. Driller's Log: coarse sand with pebbles.
GP-18	90–95	Gravel with sand (2% silt/clay, 15% sand (f–c), 83% gravel). Contains weakly cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Pink feldspar, granites, basalt, miscellaneous volcanic, chert. 10YR4/3. Good recovery. Driller's Log: coarse sand, clay, and clayey coarse sand.
GP-19	95–100	Gravel with sand (2% silt/clay, 25% sand (f–c), 73% gravel). Contains weakly cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Pink feldspar, granites, basalt, miscellaneous volcanic, chert. 10YR4/3. Moderate recovery. Driller's Log: coarse sand with some clay.
GP-20	100–105	Gravel with sand (2% silt/clay, 20% sand (f–c), 78% gravel). Contains weakly cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Basalt, pink feldspar and granite. 10YR4/3. Good to moderate recovery. Driller's Log: Clayey coarse sand.
GP-21	105–110	Gravel with sand (1% silt/clay, 25% sand (f–c), 74% gravel). Contains weakly cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Basalt, pink feldspar and granite. 10YR4/3. Good to moderate recovery. Driller's Log: coarse sand and gravel.
GP-22	110–115	Sand with gravel (5% silt/clay, 80% sand (f–c), 15% gravel). Well graded, subrounded to rounded. Pink granite and feldspar, weakly cemented sandstone (SFG), basalt. 10YR4/3. Good to moderate recovery. Driller's Log: coarse sand and gravel with some clayey coarse sand.
GP-23	115–120	Gravel (1% silt/clay, 6% sand (f–c), 93% gravel). Contains weakly cemented sandstone (SFG). Well graded, subrounded to rounded. Silicic metamorphic, pink feldspars and granite, basalt, chert, silicic volcanic. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel, some clay.
GP-24	120–125	Gravel with sand (2% silt/clay, 18% sand (f–c), 80% gravel). Contains weakly cemented sandstone and streaks of soft, silty clay (SFG). Well graded, subrounded to rounded. Silicic metamorphic, pink feldspars and granite, basalt, chert, silicic volcanic. 10YR4/3. Good recovery. Driller's Log: sandy clay with some large gravel and coarse sand.
GP-25	125–130	Gravel with sand (3% silt/clay, 20% sand (f–c), 77% gravel. Contains weakly cemented sandstone and streaks of soft, silty clay (SFG). Well graded, subrounded to rounded. Silicic metamorphic, pink feldspars and granite, basalt, chert, silicic volcanic. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel with some large gravel.

Sample No.	Depth (ft)	Description
GP-26	130–135	Gravel (1% silt/clay, 9% sand (f–c), 90% gravel). Contains weakly cemented sandstone and streaks of soft, silty clay (SFG). Well graded, subrounded to rounded. Silicic metamorphic, pink feldspars and granite, basalt, chert, silicic volcanic. 10YR4/3. Good recovery. Driller's Log: silty coarse sand and gravel.
GP-27	135–140	Gravel with sand (2% silt/clay, 15% sand (f–c) 83% gravel). Contains weakly cemented sandstone and streaks of soft, silty clay (SFG). Well graded, subrounded to rounded. Silicic metamorphic, pink feldspars and granite, basalt, chert, silicic volcanic. 10YR4/3. Good recovery. Driller's Log: cemented coarse sand, silty coarse sand, clayey coarse sand.
GP-28	140–145	Gravel with sand, silt and clay (10% silt/clay, 30% sand (f–c), 60% gravel). Contains soft, silty clay. Well graded, subrounded to rounded. Pink feldspars and granite, miscellaneous volcanic. 10YR4/3. Good recovery. Driller's Log: clayey coarse sand, clay, some clayey gravel.
GP-29	145–150	Silty gravel with sand (15% silt/clay, 35% sand (f–c), 50% gravel). Contains soft, silty clay. Well graded, subrounded to rounded. Pink feldspars and granite, miscellaneous volcanic, chert. 10YR4/3. Good to moderate recovery. Driller's Log: coarse sand and gravel with large gravel, cemented coarse sand, silty sand.
GP-30	150–155	Clayey sand (15% silt/clay, 75% sand (f–c), 10% gravel). Contains soft, silty clay. Well graded, subangular to rounded. Pink feldspars and granite, miscellaneous volcanic, chert. 10YR4/3. Good to moderate recovery. Driller's Log: coarse sand and gravel.
GP-31	155–160	Sand with gravel and clay (10% silt/clay, 60% sand (f–c), 30% gravel). Contains soft, silty clay and weakly cemented sandstone (SFG). Well graded, subangular to rounded. Pink feldspars and granite, sandstone. 10YR4/3. Good to moderate recovery. Driller's Log: silty coarse sand and gravel.
GP-32	160–165	Gravel with sand and silty clay (10% silty/clay, 30% sand (f–c), 60% gravel). Contains soft, silty clay and weakly cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars and granite, sandstone, miscellaneous volcanic, igneous intrusive. 10YR4/3. Good recovery. Driller's Log: silty coarse sand and gravel.
GP-33	165–170	Sand with gravel and silty clay (10% silt/clay, 70% sand (f–c), 20% gravel). Contains soft, silty clay and weakly cemented sandstone (SFG). Well graded subangular to rounded. Pink feldspars and granite, sandstone, miscellaneous volcanic, igneous intrusive. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel.
GP-34	170-175	Silty clayey sand with gravel (15% silt/clay, 55% sand (f–c), 30% gravel). Contains soft, silty clay and weakly cemented sandstone (SFG). Well graded, subangular to rounded. Pink feldspars and granite, sandstone, miscellaneous, volcanic, igneous intrusive. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel.
GP-35	175–180	Silty clayey sand with gravel (15% silt/clay, 45% sand (f–c), 40% gravel). Contains soft, silty clay and weakly cemented sandstone (SFG). Well graded, subangular to rounded. Pink feldspars and granite, sandstone, miscellaneous volcanic, Santa Fe Group. 10YR4/3. Driller's Log: coarse sand and gravel.
GP-36	180–185	Gravel with sand and silty clay (10% silt/clay, 35% sand (f–c), 55% gravel). Contains soft, silty clay and weakly cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars and granite, sandstone, miscellaneous volcanic, igneous intrusive. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel with some clay.

Sample No.	Depth (ft)	Description
GP-37	185–190	Gravel with sand (5% silt/clay, 35% sand (f–c), 60% gravel). Contains weakly cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars and granite, silicic volcanic. 10YR4/3. Driller's Log: silty coarse sand and gravel, cemented gravel, coarse sand and gravel.
GP-38	190–195	Sand with gravel and silty clay (10% silt/clay, 60% sand (f–c), 30% gravel). Contains weakly cemented sandstone (SFG). Well graded, subangular to rounded. Pink feldspars and granite, igneous intrusive, miscellaneous volcanic. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel.
GP-39	195–200	Sand with gravel and silty clay (10% silt/clay, 65% sand (f–c), 25% gravel). Contains weakly cemented sandstone and soft, silty clay (SFG). Well graded subangular to rounded. Pink feldspars and granite, igneous intrusive, miscellaneous volcanic. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel, some silty coarse sand.
GP-40	200–205	Silty clayey sand with gravel (15% silt/clay, 45% sand (f–c), 40% gravel). Contains weakly cemented sandstone and soft, silty clay (SFG). Well graded, subangular to rounded. Pink feldspars and granite, igneous intrusive, miscellaneous volcanic. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel with some silty coarse sand.
GP-41	205–210	Gravel with sand (5% silt/clay, 15% sand (f–c), 80% gravel). Well graded, subrounded to rounded. Quartzite, basalt, silicic volcanic, chert. 10YR4/3. Good recovery. Driller's Log: coarse sand and gravel, some silty.
GP-42	210–215	Gravel with sand and silt (8% silt/clay, 17% sand (f–c), 75% gravel). Well graded, subrounded to rounded. Quartzite, basalt, silicic volcanic, chert, igneous intrusive. 10YR5/3. Good recovery. Driller's Log: coarse sand and gravel, some coarse gravel, silty clay.
GP-43	215–220	Gravel; small interbeds of soft, silty clay (5 silt/clay, 5% sand (f–c), 90% gravel). Well graded, subrounded to rounded. Quartzite, basalt, silicic volcanic, chert, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty clay, silty coarse sand, and sandy clay.
GP-44	220–225	Gravel; small interbeds of soft, silty clay and weakly cemented sandstone (8% silt/clay, 7% sand (f–c), 85% gravel). Well graded, subrounded to rounded. Quartzite, basalt, silicic volcanic, chert, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty, clayey coarse sand, some gravel.
GP-45	225–230	Gravel; small interbeds of mudstone (5% silt/clay, 10% sand (f–c), 85% gravel). Well graded, subangular to rounded. Miscellaneous volcanic, pink feldspars. 10YR5/3. Good to moderate recovery. Driller's Log: silty coarse sand, some clayey sand.
GP-46	230–235	Sand with silty clay (10% silt/clay, 80% sand (f–c), 10% gravel). Well to moderately graded, subrounded to rounded. Miscellaneous volcanic, pink feldspars. 10YR5/3 (sand), 10YR6/4 (clay). Moderate recovery. Driller's Log: silty, clayey coarse sand, and coarse sand.
GP-47	235–240	Sand with silty clay (10% silt/clay, 85% sand (f–c), 5% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well to moderately graded, subrounded to rounded. Pink granite. 10YR5/3 (sand). 10YR6/4 (clay). Good to moderate recovery. Driller's Log: coarse sand and gravel, clayey coarse sand.
GP-48	240–245	Sand with silty clay (10% silt/clay, 83% sand (f–c), 7% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Pink granite. 10YR5/3 (sand), 10YR6/4 (clay). Good to moderate recovery. Driller's Log: coarse sand and gravel, with coarse gravel.

Sample No.	Depth (ft)	Description
GP-49	245–250	Clayey gravel with sand (20% silt/clay, 20% sand (f–c), 60% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspar and granite, basalt. 10YR5/3 (sand), 10YR6/4 (clay). Good to moderate recovery. Driller's Log: silty clayey coarse sand and coarse sand.
GP-50	250–255	Clayey gravel with sand (15% silt/clay, 20% sand (f–c), 65% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars, silicic volcanic. 10YR5/3 (sand), 10YR6/4 (clay). Good to moderate recovery. Driller's Log: coarse sand, silty coarse sand, coarse sand and gravel.
GP-51	255–260	Silty, clayey gravel with sand (40% silt/clay, 20% sand (f–c), 40% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Cemented Santa Fe Group (sandstone), pink feldspars and granite. 10YR5/3 (sand), 10YR6/4 (clay). Good to moderate recovery. Driller's Log: coarse sand, sandy clay.
GP-52	260–265	Silty, clayey sand (33% silt/clay, 60% sand (f–c), 7% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Cemented Santa Fe Group (sandstone), pink feldspars and granite. 10YR5/3 (sand), 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand and gravel.
GP-53	265–270	Silty clayey gravel with sand (30% silt/clay, 30% sand (f–c), 40% gravel). Contains soft, silty clay (SFG). Well graded, subrounded to rounded. Pink feldspars and granite, silicic volcanic, basalt. 10YR5/3 (sand), 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand and gravel, some silty.
GP-54	270–275	Silty clayey sand (15% silt/clay, 80% sand (f–c), 5% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Basalt. 10YR5/3 (sand), 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand and gravel, some silty.
GP-55	275–280	Same as above.
GP-56	280–285	Silty clayey sand with gravel (25% silt/clay, 60% sand (f–c), 15% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Basalt and pink feldspar. 10YR5/3 (sand), 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand and gravel, some silty, some cemented gravel.
GP-57	285–290	Silty clayey sand with gravel (15% silt/clay, 60% sand (f–c), 25% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Chert and basalt. 10YR5/3 (sand), 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand, some silty, some gravel.
GP-58	290–295	Sand with silty clay (10% silt/clay, 80% sand (f–c), 10% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Miscellaneous volcanic. 10YR5/3 (sand), 10YR6/4 (clay). Good to moderate recovery. Driller's Log: silty coarse sand, coarse sand and gravel.
GP-59	295–300	Sand with gravel (5% silt/clay, 70% sand (f–c), 15% gravel). Contains cemented sandstone (SFG). Well graded, subrounded to rounded. Silicic volcanic. 10YR5/3. Good to moderate recovery. Driller's Log: silty coarse sand and gravel.
GP-60	300–305	Sand with gravel and silty clay (7% silt/clay, 60% sand (f–c), 23% gravel). Contains cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Pink feldspars. 10YR5/3. Good recovery. Driller's Log: silty clayey coarse sand and gravel with large gravel.

Sample No.	Depth (ft)	Description
GP-61	305–310	Silty clayey sand with gravel (15% silt/clay, 70% sand (f–c), 15% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars, granite, miscellaneous volcanic. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand and gravel, some cemented.
GP-62	310–315	Silty clayey sand (25% silt/clay, 73% sand (f–c), 2% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars, granite, miscellaneous volcanic. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand and gravel, some silty clayey coarse sand.
GP-63	315–320	Silty clayey sand (20% silt/clay, 70% sand (f–c), 10% gravel). Contains soft, silty clay and cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Pink feldspars, granite, miscellaneous volcanic. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: clay, and silty coarse sand and gravel.
GP-64	320–325	Silty clayey sand (45% silt/clay, 53% sand (f–c), 2% gravel). Contains soft, silty clay and cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. Pink feldspars, granite, miscellaneous volcanic. 10YR5/3 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: coarse sand and gravel.
GP-65	325–330	Sand with silty clay (10% silt/clay, 87% sand (f–c), 3% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars, granite, miscellaneous volcanic. 10YR5/3 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand and gravel.
GP-66	330–335	Sand (5% silt/clay, 90% sand (f–c), 5% gravel). Well graded, subangular to rounded. Chert. 10YR5/3 (sand) and 7.5YR6/4 (clay). Good to moderate recovery. Driller's Log: coarse sand and gravel, some clay.
GP-67	335–340	Silty clayey sand (20% silt/clay, 79% sand (f–c), 1% gravel). Contains soft, silty clay (SFG). Well graded, subangular to rounded. 10YR5/3 (sand) and 7.5YR6/4 (clay). Moderate recovery. Driller's Log: sandy clay, clayey coarse sand, silty coarse sand, cemented coarse sand.
GP-68	340–345	Sandy clay (50% silt/clay, 48% sand (f–c), 2% gravel). Contains soft, silty clay (SFG). Well graded, subangular to rounded. Chert. 10YR5/3 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand.
GP-69	345–350	Silty clayey sand (30% silt/clay, 69% sand (f–c), 1% gravel). Contains soft silty clay, cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. 10YR4/3 (sand), 10YR6/4 (clay). Good to moderate recovery. Driller's Log: silty coarse sand, coarse sand and gravel.
GP-70	350–355	Silty clayey sand (20% silt/clay, 79% sand (f–c), 1% gravel). Contains soft silty clay, cemented sandstone and mudstone (SFG). Well graded, subrounded to rounded. 10YR4/3 (sand) and (10YR6/4 (clay). Driller's Log: coarse sand and gravel.
GP-71	355–360	Silty clayey sand (40% silt/clay, 58% sand (f–c), 2% gravel). Contains soft silty clay. Well graded, subrounded to rounded. Pink feldspars. 10YR4/3 (sand) and (10YR6/4 (clay). Driller's Log: coarse sand and gravel.
GP-72	360–365	Silty clayey sand (15% silt/clay, 84% sand (f–c), 1% gravel). Contains cemented sandstone (SFG). Well graded, subrounded to rounded. Pink feldspars. 10YR4/3 (sand) and (10YR6/4 (clay). Driller's Log: silty coarse sand and gravel, clay.

Sample No.	Depth (ft)	Description
GP-73	365–370	Silty clayey sand with gravel (20% silt/clay, 45% sand (f–c), 35% gravel). Contains cemented sandstone, soft, silty clay, and mudstone (SFG). Well graded, subangular to rounded. Silicic volcanic, basalt, pink feldspars/granite. 10YR5/3 (sand) and 7.5YR6/6 (clay). Good to moderate recovery. Driller's Log: silty coarse sand and gravel with some coarse gravel, coarse sand.
GP-74	370–375	Sandy silty clay ((50% silt/clay, 45% sand (f–c), 5% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well to moderately graded, subrounded to rounded. Quartzite, chert. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand, silty coarse sand and gravel.
GP-75	375–380	Silty clayey sand (40% silt/clay, 53% sand (f–c), 7% gravel). Contains soft, silty clay and cemented sandstone (SFG). Well to moderately graded, subrounded to rounded. Quartzite, silicic volcanic, basalt. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand and gravel with some cemented gravel.
GP-76	380–382	Silty clayey sand with gravel (20% silt/clay, 55% sand (f–c), 25% gravel). Contains soft, silty clay, cemented sandstone and sandy marl (SFG). Well graded, subangular to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite. 10YR5/3 (sand), 10YR6/4 (clay) and 10YR8/2 (sandy marl). Good recovery. Driller's Log: clayey coarse sand.
	382–391.5	Cored 9.5-ft interval with 2.5 ft of recovery (389 to 391.5 ft). Driller's Log: clay with small sand seam.
GP-77	382–390	Silty clayey sand and gravel (40% silt/clay, 30% sand (f–c), 30% gravel). Contains cemented sandstone and soft, silty clay (SFG). Well graded, subangular to rounded. Pink feldspars/granite, silicic volcanic, basalt. 10YR5/3 (sand) and 10YR6/4 (clay). Poor recovery. Driller's Log: cemented sand, coarse sand, clay.
GP-78	390–395	Sandy silty clay (70% silt/clay, 25% sand (f–c), 5% gravel). Contains soft, silty clay (SFG). Moderately graded, subangular to rounded. Quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Poor recovery. Driller's Log: clay, cemented coarse sand, silty coarse sand.
GP-79	395–400	Silty clayey sand (15% silt/clay, 80% sand (f–m), 5% gravel). Contains soft, silty clay. Moderately to poorly graded, subangular to rounded. Igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Moderate recovery. Driller's Log: silty coarse sand, silty sand, cemented gravel, sandy clay.
GP-80	400–405	Silty clayey sand (45% silt/clay, 50% sand (f–m), 5% gravel). Contains soft, silty clay. Moderately to poorly graded, subangular to rounded. Basalt, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Moderate recovery. Driller's Log: sandy clay, silty coarse sand.
GP-81	405–410	Silty clayey sand (42% silt/clay, 50% sand (f–m), 8% gravel). Contains soft, silty clay and cemented sandstone (SFG). Moderately to poorly graded, subangular to subrounded. Silicic volcanic, quartzite, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good to moderate recovery. Driller's Log: silty sand, sandy clay, silty sand.
GP-82	410–415	Silty clayey sand (30% silt/clay, 65% sand (f–m), 5% gravel). Contains soft, silty clay. Moderately to poorly graded, subangular to subrounded. Quartzite, pink granite, miscellaneous volcanic. 10YR5/3 (sand), 10YR6/4 and 7.5YR6/6 (clay), 10YR8/2 (sandy marl). Good to moderate recovery. Driller's Log: sandy clay, cemented sand, sandy clay.
GP-83	415–420	Silty clayey sand (48% silt/clay, 50% sand (f–m), 2% gravel). Moderately to poorly graded, subangular to rounded. Basalt, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty sand with coarse sand, clay.

Sample No.	Depth (ft)	Description
GP-84	420–425	Same as above. Contains cemented sandstone (SFG). Driller's Log: silty sand with pebbles, cemented coarse sand, silty clay, sandy clay, silty sand.
GP-85	425–430	Silty clayey sand (47% silt/clay, 50% sand (f–m), 3% gravel). Moderately to poorly graded, subangular to rounded. Basalt, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty sand, coarse sand, sandy clay, some cemented sand.
GP-86	430–435	Silty clayey sand (48% silt/clay, 50% sand (f–m), 2% gravel). Moderately to poorly graded, subangular to rounded. Basalt, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: sandy clay, clay, cemented sand.
GP-87	435–440	Same as above. Driller's Log: silty clay, sandy clay, silty sand, silty coarse sand, some gravel.
GP-88	440–445	Silty clayey sand (49% silt/clay, 50% sand (f–m), 1% gravel). Moderately to poorly graded, subangular to rounded. Basalt, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand with some gravel, silty sand with pebbles.
GP-89	445–450	Silty clayey sand (48% silt/clay, 50% sand (f–m), 2% gravel). Moderately to poorly graded, subangular to rounded. Basalt, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty sand, silty sand with coarse sand.
GP-90	450–455	Silty clayey sand (40% silt/clay, 55% sand (f–c), 5% gravel). Well to moderately graded, subangular to rounded. Basalt, quartzite, pink feldspars. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Coarser grains. Driller's Log: silty sand.
GP-91	455–460	Silty clayey sand (30% silt/clay, 60% sand (f–c), 10% gravel). Well to moderately graded, subangular to rounded. Basalt, quartzite, pink feldspars. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Coarser grains. Driller's Log: sand, coarse sand and gravel, sand.
GP-92	460–465	Silty clayey sand with gravel (30% silt/clay, 55% sand (f–c), 15% gravel). Well graded, subangular to rounded. Basalt, quartzite, pink feldspars. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Coarser grains. Driller's Log: sand, silty sand, some cemented sand.
GP-93	465–466	Sandy clay (65% silt/clay, 30% sand (f–c), 5% gravel). Contains cemented sandstone and mudstone (SFG). Well graded, subangular to rounded. Pink feldspars, granite. 10YR5/3 (sand) and 7.5YR6/6 (clay). Good recovery. Driller's Log: silty sand, clay.
	466–470.1	Cored 4.1 ft interval with 2.8 ft of recovery (466 to 468.8 ft). Fine silty sand and silty clay. Driller's Log: clay with interbedded cemented sand.
		NOTE: Hole caved in overnight. Previously cored interval (466–470 was full of pebbles (probably from gravelly interval in RA) so no cutting sample was taken for interval 466–470.
GP-94	470–475	Clay and silt with sand (75% silt/clay, 20% sand (f–c), 5%(?) gravel). Poor grading, subangular to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Cuttings contain a lot of gravel due to caving—not representative of actual material being drilled. Driller's Log: cemented sand, silty sand.
GP-95	475–480	Sandy clay and sandy silt (65% silt/clay, 30% sand (f–c), 5%(?) gravel). Moderately to poorly graded, subangular to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Cuttings contain a lot of gravel due to caving—not representative of actual material being drilled. Driller's Log: silty sand, cemented sand, sandy clay.

Sample No.	Depth (ft)	Description
GP-96	480–485	Sandy clay and sandy silt (70% silt/clay, 25% sand (f–c), 5%(?) gravel). Moderately to poorly graded, subangular to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Cuttings contain a lot of gravel due to caving—not representative of actual material being drilled. Driller's Log: sandy clay, some clayey coarse sand.
GP-97	485–490	Silty clay with sand (75% silt/clay, 20% sand (f–c), 5%(?) gravel). Moderately to poorly graded, subangular to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Cuttings contain a lot of gravel due to caving—not representative of actual material being drilled. Driller's Log: cemented coarse sand, sandy clay, silty sand.
GP-98	490–495	Sandy clay and sandy silt (55% silt/clay, 40% sand (f–c), 5%(?) gravel). Moderately to poorly graded, subangular to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Cuttings contain a lot of gravel due to caving—not representative of actual material being drilled. Driller's Log: sandy clay, silty sand, cemented sand, sandy clay.
GP-99	495–500	Silty clayey sand (45% silt/clay, 55% sand (f–c), 5%(?) gravel). Moderately graded, subangular to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Cuttings contain a lot of gravel due to caving—not representative of actual material being drilled. Driller's Log: sandy clay, cemented sand, sandy clay.
GP-100	500–505	Silty clayey sand (25% silt/clay, 70% sand (f–c), 5%(?) gravel). Well to moderately graded, subrounded to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite, pink feldspars. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Cuttings contain a lot of gravel due to caving—not representative of actual material being drilled. Driller's Log: sandy clay, clayey coarse sand.
GP-101	505–510	Clayey sand with gravel (15% silt/clay, 55% sand (f–c), 30% gravel). Well graded, subrounded to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite, pink feldspars. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand, coarse sand, cemented coarse sand.
GP-102	510–515	Clayey sand with gravel (15% silt/clay, 45% sand (f–c), 40% gravel). Well graded, subrounded to rounded. Silicic volcanic, basalt, igneous intrusive, quartzite, pink feldspars. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand, clay, sandy clay.
GP-103	515–520	Silty sand with gravel and clay (30% silt/clay, 40% sand (f–c), 30% gravel). Contains soft sandy marl. Well graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: clay, silty coarse sand, clayey coarse sand.
GP-104	520–525	Sand with gravel and clay (10% silt/clay, 60% sand (f–c), 30% gravel). Contains soft sandy marl. Well graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand), 10YR6/4 (clay) and 10YR8/1 (marl). Good recovery. Driller's Log: silty sand, sandy clay, clay, silty coarse sand.
GP-105	525–530	Sand with gravel and clay (10% silt/clay, 50% sand (f–c), 40% gravel). Well graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand, coarse sand.

Sample No.	Depth (ft)	Description
GP-106	530–535	Sand with gravel (10% silt/clay, 55% sand (f–c), 35% gravel). Well graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand, some cemented.
GP-107	535–540	Clayey sand with gravel (15% silt/clay, 45% sand (f–c), 40% gravel). Well graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand, cemented coarse sand, clayey coarse sand, clay.
GP-108	540–545	Gravel with sand and clay (7% silt/clay, 40% sand (f–c), 53% gravel). Well graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: sandy clay, silty sand, clayey coarse sand.
GP-109	545–550	Gravel with sand (5% silt/clay, 30% sand (f–c), 65% gravel). Moderately graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Driller's Log: clayey coarse sand, coarse sand, cemented coarse sand, coarse sand.
GP-110	550–557	Clayey sand (22% silt/clay, 65% sand (f–c), 13% gravel). Contains cemented sandstone (SFG). Well graded, subrounded to rounded. Quartzite, silicic volcanic, basalt, pink feldspars/granite, igneous intrusive. 10YR5/3 (sand) and (10YR6/4 (clay). Good recovery. Driller's Log: coarse sand, silty sand, sandy clay.
	557–562	Cored 5 ft interval with 4.25 ft of recovery (557 ft to 561.25 ft). Driller's Log: cemented sand with small clay interbeds.
		NOTE: Skip in sample number. There is no GP-111 or GP-112.
GP-113	557–565	Clayey sand (40% silt/clay, 60% sand, 0% gravel). Well graded, subangular to rounded. 7.5YR6/4. Good recovery. Gravel is present in sample but is not representative of cored interval. Driller's Log: sand, cemented coarse sand, clay, cemented coarse sand.
GP-114	565–570	Clayey sand (30% silt/clay, 70% sand, 0% gravel). Well graded, subangular to rounded. 7.5YR6/6. Good recovery. Gravel present is not representative. No reaction with acid. Driller's Log: clay, silty coarse sand, cemented coarse sand.
GP-115	570–575	Same as above. Driller's Log: silty sand, some sandy clay.
GP-116	575–580	Clayey sand (20% silt/clay, 80% sand, 0% gravel). Well graded. 7.5YR6/6. Poor recovery. Most recovery contained non-representative gravel. No reaction with acid. Driller's Log: silty sand, cemented sand, sandy clay.
GP-117	580–585	Clayey sand (25% silt/clay, 75% sand, 0% gravel). Well graded, subangular to subrounded. 7.5YR6/6. Good recovery. Most recovery contained non-representative gravel. No reaction with acid. Driller's Log: sandy clay, cemented sand, silty coarse sand.
GP-118	585–590	Silty sand (25% silt/clay, 75% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Good recovery. Much recovery is non-representative gravel. No reaction with acid. Driller's Log: silty coarse sand, sand, silty clay, cemented coarse sand, silty sand.
GP-119	590–595	Clayey sand (25% silt/clay, 75% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Good recovery. Much recovery is non-representative gravel. No reaction with acid. Driller's Log: cemented coarse sand, silty sand.

Sample No.	Depth (ft)	Description
GP-120	595–600	Clayey sand (30% silt/clay, 70% sand (vf–vc), 0% gravel). Well graded, subangular to subrounded. 7.5YR6/4. Moderate recovery. Most recovery is non-representative gravel. No reaction with acid. Driller's Log: cemented coarse sand, sand, cemented gravel, silty sand.
GP-121	600–605	Same as above. Driller's Log: cemented coarse sand, silty sand, dense clay.
GP-122	605–610	Clayey sand (20% silt/clay, 75% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Quartz, volcanic, granite. 7.5YR7/4. Good recovery. Much recovery is non-representative gravel. No reaction with acid. Driller's Log: dense clay, silty sand.
GP-123	610–615	Same as above. Moderate recovery. Driller's Log: silty sand, coarse sand, cemented gravel, silty clay, silty sand.
GP-124	615–620	Clayey sand with gravel (15% silt/clay, 70% sand (vf–vc), 15% gravel). Well graded, subangular to subrounded. Volcanic, quartz, granite. 7.5YR6/4. Moderate recovery. Gravel fraction appears to be representative. No reaction with acid. Driller's Log: cemented coarse sand and gravel, sand with cemented layers.
GP-125	620–625	Same as above. Poor recovery. Driller's Log: coarse sand, cemented coarse sand, dense clay.
GP-126	625–630	Gravel with sand and clay (10% silt/clay, 30% sand (vf–vc), 60% gravel). Well graded, subangular to rounded. Volcanic, quartz, granite, chert, sedimentary clasts. 7.5YR7/4. Good recovery. No acid reaction. Driller's Log: dense clay, dense clay with coarse sand, dense clay with gravel, silty sand.
GP-127	630–635	Clayey sand with gravel (15% silt/clay, 55% sand (vf–vc), 30% gravel). Well graded, subangular to rounded. Volcanic, quartz, granite, chert, sedimentary clasts. 7.5YR7/4. Good recovery. No acid reaction. Driller's Log: silty coarse sand, sand, coarse sand, sandy clay.
GP-128	635–640	Clayey sand with gravel (25% silt/clay, 50% sand (vf–vc), 25% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR7/4. Poor recovery. No acid reaction. Driller's Log: cemented coarse sand, silty sand, coarse sand.
GP-129	640–645	Same as above. Driller's Log: coarse sand with some gravel, silty sandy clay, silty coarse sand and gravel.
GP-130	645–650	Sand with gravel and clay (10% silt/clay, 50% sand (vf–vc), 40% gravel). Well graded, subrounded to rounded. Volcanic, granite, quartz, sedimentary clasts, chert. 7.5YR6/4. Good recovery. No acid reaction. Driller's Log: silty sand, silty coarse sand, cemented coarse sand, silty coarse sand.
GP-131	650–655	Clayey sand with gravel (20% silt/clay, 40% sand (vf–vc), 40% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts, chert. 7.5YR6/4. Good recovery. No acid reaction. Driller's Log: coarse sand and gravel, clay, clayey coarse sand with some cemented layers.
GP-132	655–660	Clayey sand with gravel (15% silt/clay, 55% sand, 30% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts, chert. 7.5YR6/4. Poor recovery. No acid reaction. Driller's Log: clayey coarse sand, silty sand with some coarse sand.
GP-133	660–665	Sand with clay and gravel (10% silt/clay, 60% sand, 30% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, green sedimentary clasts. 7.5YR6/4. Poor recovery. No acid reaction. Driller's Log: silty coarse sand, coarse sand, silty sand, clayey coarse sand.

Sample No.	Depth (ft)	Description
GP-134	665–670	Gravel with sand and silt (10% silt/clay, 40% sand (vf–vc), 50% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, green sedimentary clasts. 7.5YR6/6. Good recovery. No reaction with acid. Driller's Log: silty coarse sand, clayey coarse sand and gravel.
GP-135	670–675	Gravel with sand and silt (10% silt/clay, 30% sand (vf–vc), 60% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, green sedimentary clasts. 7.5YR6/4. Moderate recovery. No reaction with acid. Driller's Log: silty, clayey coarse sand.
GP-136	675–680	Clayey sand with gravel (15% silt/clay, 50% sand (vf–vc), 35% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, green sedimentary clasts, chert. 7.5YR6/4. Poor recovery. No acid reaction. Driller's Log: silty coarse sand, some clay.
GP-137	680–685	Sand with gravel and clay (10% silt/clay, 50% sand (vf–vc), 40% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/4. Moderate recovery. No acid reaction. Driller's Log: clayey coarse sand, silty coarse sand.
GP-138	685–690	Gravel with sand (5% silt/clay, 25% sand (vf–vc), 70% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/4. Good recovery. No acid reaction. Driller's Log: silty coarse sand and gravel, coarse sand and gravel.
GP-139	690–695	Same as above. Driller's Log: clayey coarse sand and gravel.
GP-140	695–700	Same as above. Driller's Log: clayey coarse sand and gravel, cemented coarse sand, coarse sand.
GP-141	700–705	Gravel with sand and clay (10% silt/clay, 30% sand (vf–vc), 60% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/6. Poor recovery. No acid reaction. Driller's Log: coarse sand, silty coarse sand and gravel.
GP-142	705–710	Gravel with sand (5% silt/clay, 30% sand (vf–vc), 65% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/6. Good recovery. No acid reaction. Driller's Log: silty coarse sand, coarse sand, silty, clayey coarse sand.
GP-143	710–715	Same as above. Driller's Log: silty, clayey coarse sand, coarse sand and gravel, cemented gravel.
GP-144	715–720	Sand with gravel and silt (10% silt/clay, 50% sand (vf–vc), 40% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR7/4. Moderate recovery. No reaction with acid. Driller's Log: cemented gravel, silty coarse sand and gravel.
GP-145	720–725	Same as above. Poor recovery. Driller's Log: silty sand, some silty coarse sand.
GP-146	725–730	Sand with gravel (5% silt/clay, 55% sand (vf–vc), 40% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/6. Good recovery. No acid reaction. Driller's Log: silty coarse sand, coarse sand.
GP-147	730–735	Same as above. Poor recovery. Driller's Log: silty coarse sand.
GP-148	735–740	Sand with gravel (0% silt/clay, 60% sand (m–vc), 40% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. Moderate recovery. No acid reaction. Driller's Log: silty sand, some silty coarse sand.
GP-149	740–745	Same as above. Driller's Log; silty coarse sand, silty sand, coarse sand.
GP-150	745–750	Gravel with sand (5% silt/clay, 35% sand (m–vc), 60% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/4. Moderate recovery. No acid reaction. Driller's Log: coarse sand, some silty coarse sand.

Sample No.	Depth (ft)	Description
GP-151	750–755	Sand with gravel (0% silt/clay, 60% sand (m–vc), 40% gravel). Well graded, subangular to rounded. Volcanic, granite, quartz, sedimentary clasts. Poor recovery. No acid reaction. Driller's Log: coarse sand.
GP-152	755–760	Same as above. Moderate recovery. Driller's Log: same, cemented coarse sand, silty coarse sand, coarse sand.
GP-153	760–765	Same as above. Poor recovery. Driller's Log: silty coarse sand, coarse sand.
GP-154	765–770	Sand with gravel (0% silt/clay, 60% sand (m–vc), 40% gravel). Well graded, subangular to subrounded. Volcanic, granite, quartz, sedimentary clasts. Good recovery. No reaction with acid. Driller's Log: coarse sand, silty sand.
GP-155	770–775	Sand with gravel (0% silt/clay, 75% sand (m–vc), 25% gravel). Well graded, subangular to subrounded. Volcanic, granite, quartz, sedimentary clasts. Poor recovery. No acid reaction. Driller's Log: cemented coarse sand, silty coarse sand.
GP-156	775–780	Same as above. Driller's Log: silty coarse sand, coarse sand.
GP-157	780–785	Same as above. Driller's Log: coarse sand, clayey coarse sand.
GP-158	785–790	Sand with gravel (5% silt/clay, 65% sand (vf–vc), 30% gravel). Well graded, subangular to subrounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/4. Good recovery. No acid reaction. Driller's Log: silty coarse sand, clayey coarse sand, some cemented sand.
GP-159	790–795	Same as above. Driller's Log: silty coarse sand, cemented coarse sand, cemented sand, clayey coarse sand.
GP-160	795–800	Sand with gravel and silt (10% silt/clay, 70% sand (vf–vc), 20% gravel). Well graded, subangular to subrounded. Volcanic, granite, quartz, sedimentary clasts. 7.5YR6/6. Moderate recovery. No acid reaction. Driller's Log: clay or siltstone(?), silty coarse sand.
GP-161	800–805	Clayey sand (30% silt/clay, 65% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Volcanic. 7.5YR7/4. Poor recovery. No acid reaction. Driller's Log: cemented coarse sand, silty coarse sand, clayey coarse sand.
GP-162	805–810	Clayey sand (30% silt/clay, 65% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Volcanic and granite. 7.5YR7/4. Poor recovery. No acid reaction. Driller's Log: clayey coarse sand, silty coarse sand, coarse sand.
GP-163	810–815	Clayey sand (20% silt/clay, 70% sand (vf–vc), 10% gravel). Well graded, subangular to subrounded. Volcanic, granite. 7.5YR6/4. Poor recovery. No acid reaction. Driller's Log: clayey coarse sand, silty sand.
GP-164	815–820	Clayey sand (15% silt/clay, 80% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Sedimentary clasts. 7.5YR7/4. Poor recovery. No reaction with acid. Driller's Log: silty sandy clay.
GP-165	820–825	Clayey sand (20% silt/clay, 70% sand (vf–vc), 10% gravel). Well graded, subangular to subrounded. Sedimentary clasts. 7.5YR7/4. Poor recovery. No acid reaction. Driller's Log: silty sandy clay.
GP-166	825–830	Same as above. Driller's Log: silty coarse sand, coarse sand.
GP-167	830–835	Same as above. Driller's Log: coarse sand, silty coarse sand, coarse sand.
GP-168	835–840	Same as above. Driller's Log: coarse sand, silty coarse sand, cemented coarse sand.

Sample No.	Depth (ft)	Description
GP-169	840–845	Clayey sand (25% silt/clay, 70% sand (vf–vc), 5% gravel). Well graded, subangular to subrounded. Volcanic, sedimentary clasts. 7.5YR6/4. Poor recovery. No acid reaction. Driller's Log: cemented coarse sand, silty clayey coarse sand.
GP-170	845–850	Silty clayey sand (20% silt/clay, 75% sand, 5%(?) gravel). Well graded, subangular to rounded. Basalt, igneous intrusive, silicic volcanic, quartzite, pink feldspars/granite. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand and coarse sand. Driller's Log: silty sandy clay, cemented coarse sand, silty coarse sand.
GP-171	850–855	Silty clayey sand (30% silt/clay, 65% sand (f–c), 5%(?) gravel). Well graded, subangular to subrounded. Basalt, igneous intrusive, silicic volcanic, quartzite, pink feldspars/granite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand and coarse sand. Driller's Log: clayey coarse sand, silty coarse sand.
GP-172	855–860	Silty clayey sand (45% silt/clay, 50% sand (f–c), 5%(?) gravel). Well graded, subangular to subrounded. Basalt, igneous intrusive, silicic volcanic, quartzite, pink feldspars/granite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand and coarse sand. Driller's Log: silty clayey coarse sand.
GP-173	860–865	Silty clayey sand (40% silt/clay, 55% sand (f–c), 5%(?) gravel). Well graded, angular to subrounded. Basalt, igneous intrusive, silicic volcanic, quartzite, pink feldspars/granite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand and coarse sand. Driller's Log: silty, clayey coarse sand, some silty sand.
GP-174	865–870	Silty sand (20% silt/clay, 75% sand (f–c), 5%(?) gravel). Well graded, subangular to rounded. Basalt, igneous intrusive, silicic volcanic, quartzite, pink feldspars/granite. 10YR5/3 (sand) and 10YR6/4 (clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand and coarse sand. Driller's Log: silty coarse sand, coarse sand.
GP-175	870–875	Sand with silt (10% silt/clay, 85% sand (f–c), 5%(?) gravel). Well graded, subangular to subrounded. Igneous intrusive, quartzite, basalt, silicic volcanic. 10YR5/3 (no clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand. Driller's Log: cemented coarse sand, silty sandy clayey coarse sand, cemented gravel.
GP-176	875–880	Clayey sand and sandy marl (20% silt/clay, 75% sand (f–c), 5%(?) gravel). Well graded, subangular to subrounded. Igneous intrusive, quartzite, basalt, silicic volcanic. 10YR5/3 (sand), 7.5YR8/2 (sandy marl). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand. Driller's Log: silty coarse sand, coarse sand and gravel, clayey coarse sand.
GP-177	880–885	Clayey sand (45% silt/clay, 50% sand (f–c), 5%(?) gravel). Well graded, subangular to subrounded. Silicic volcanic, quartzite, red granite, basalt. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand (no marl). Driller's Log: clayey coarse sand, silty clay, silty clayey coarse sand.

Sample No.	Depth (ft)	Description
GP-178	885–890	Clayey sand (25% silt/clay, 70% sand (f–c), 5%(?) gravel). Well graded, angular to subrounded. Silicic volcanic, quartzite, red granite, basalt. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand. Driller's Log: silty sandy clay, silty coarse sand, clayey coarse sand.
GP-179	890–895	Clayey sand (15% silt/clay, 80% sand (f–c), 5%(?) gravel). Well graded, angular to subrounded. Quartzite, igneous intrusive, basalt. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Hole caved overnight. Cuttings recovered are predominantly gravel, not representative. Interval is really clayey, silty sand. Driller's Log: silty coarse sand, clayey coarse sand.
GP-180	895–900	Clayey sand (20% silt/clay, 75% sand (f–c), 5%(?) gravel). Well graded, subangular to rounded. Red granite, silicic volcanic, basalt, pink feldspar/granite. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clayey coarse sand.
GP-181	900–905	Clayey sand (27% silt/clay, 68% sand (f–c), 5%(?) gravel). Well graded, subangular to rounded. Basalt, pink feldspar/granite. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clayey coarse sand.
GP-182	905–910	Sand and clayey sand (15% silt/clay, 80% sand (f–c), 5%(?) gravel). Contains cemented sandstone (SFG). Well graded, angular to subrounded. Basalt, pink feldspars/granite, igneous intrusive, silicic volcanic, quartzite. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clayey coarse sand, silty coarse sand.
GP-183	910–915	Same as above. Driller's Log: clayey coarse sand.
GP-184	915–920	Sand and clayey sand (15% silt/clay, 82% sand (f–c), 3% gravel). Well graded, angular to subrounded. Quartzite, limestone. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clayey coarse sand, cemented coarse sand, sandy clay.
GP-185	920–925	Sand and clayey sand (15% silt/clay, 75% sand (f–c), 10% gravel). Well graded, angular to subrounded. Pink feldspars, quartzite, igneous intrusive. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: sandy clay, clay, clayey coarse sand.
GP-186	925–930	Clayey sand (33% silt/clay, 65% sand (f–c), 2% gravel). Well graded, subangular to subrounded. Quartzite, pink feldspars. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Driller's Log: silty coarse sand, clayey coarse sand, cemented gravel.
GP-187	930–935	Clayey sand (42% silt/clay, 55% sand (f–c), 3% gravel). Well graded, subangular to subrounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clayey coarse sand, some cemented gravel.
GP-188	935–940	Sandy clay (52% silt/clay, 45% sand (f–c), 3% gravel). Well graded, subangular to subrounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clayey coarse sand, silty coarse sand.
GP-189	940–945	Sandy clay (57% silt/clay, 40% sand (f–c), 3% gravel). Well graded, subangular to rounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: silty sandy clay, silty coarse sand.
GP-190	945–950	Clayey sand (40% silt/clay, 55% sand (f–c), 5% gravel). Contains mudstone 7.5YR5/4 (SFG). Well to moderately graded, subangular to subrounded. Pink feldspars, basalt. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: silty sand, silty coarse sand, cemented coarse sand.

Sample No.	Depth (ft)	Description
GP-191	950–955	Clayey sand (40% silt/clay, 57% sand (f–c), 3% gravel). Contains mudstone 7.5YR5/4 (SFG). Well to moderately graded, subangular to subrounded. Pink feldspars, basalt. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clay, clayey coarse sand, clay.
GP-192	955–960	Clayey sand and sand (30% silt/clay, 68% sand (f–c), 2% gravel). Contains mudstone 7.5YR5/4 (SFG). Well graded, subangular to subrounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clay.
GP-193	960–965	Clayey sand (40% silt/clay, 57% sand (f–c), 3% gravel). Contains mudstone 7.5YR5/4 (SFG). Well graded, subangular to subrounded. Silicic volcanic, basalt. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clay.
GP-194	965–970	Clayey sand (45% silt/clay, 53% sand (f–c), 2% gravel). Contains mudstone 7.5YR5/4 (SFG). Well graded, subangular to subrounded. Basalt. 7.5YR5/4 (sand), 7.5YR6/4 and 10YR6/4 (clay). Good recovery. Driller's Log: clay, silty coarse sand.
GP-195	970–975	Sandy clay (55% silt/clay, 44% sand (f–c), 1% gravel). Contains mudstone 7.5YR5/4 (SFG). Well graded, subangular to subrounded. 7.5YR5/4 (sand), 7.5YR6/4 and 10YR6/4 (clay). Good recovery. Driller's Log: silty coarse sand, cemented gravel.
GP-196	975–980	Sandy clay (60% silt/clay, 40% sand (f–m), 0% gravel). Contains mudstone 7.5YR5/4 (SFG). Well graded, subangular to subrounded. 7.5YR5/4 (sand), 7.5YR6/4 and 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand, silty coarse sand, coarse sand.
GP-197	980–985	Sandy clay (54% silt/clay, 45% sand (f–m), 1% gravel). Contains mudstone 7.5YR5/4 (SFG). Well graded, subangular to subrounded. 7.5YR5/4 (sand), 7.5YR6/4 and 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand, clayey coarse sand, clay, clayey coarse sand.
GP-198	985–990	Clayey sand (46% silt/clay, 50% sand (f–m), 4% gravel). Contains mudstone 7.5YR5/4 (SFG). Well graded, subangular to subrounded. Red granite, basalt. 7.5YR5/4 (sand), 7.5YR6/4 and 10YR6/4 (clay). Good recovery. Driller's Log: coarse sand, sandy clay, clay, cemented gravel.
GP-199	990–995	Fat clay (90% silt/clay, 10% sand (f), 0% gravel). Contains mudstone 7.5YR5/4 (SFG). 7.5YR6/4. Good recovery. Driller's Log: clayey coarse sand.
GP-200	995–1000	Fat clay (95% silt/clay, 5% sand (f), 0% gravel). Contains mudstone 7.5YR5/4 (SFG).7.5YR6/4. Good recovery. Driller's Log: silty coarse sand, coarse sand, cemented coarse sand.
GP-201	1000–1005	Fat clay with sand (85% silt/clay, 15% sand (f), 0% gravel). Contains mudstone 7.5YR5/4 (SFG). Moderately graded, Subangular to rounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: cemented gravel, silty sandy clay, cemented coarse sand, clayey coarse sand.
GP-202	1005–1010	Sandy clay (70% silt/clay, 30% sand (f), 0% gravel). Contains mudstone 7.5YR5/4 (SFG). Moderately to poorly graded, subangular to rounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: coarse sand.
GP-203	1010–1015	Sandy clay (60% silt/clay, 40% sand (f), 0% gravel). Contains mudstone 7.5YR5/4 (SFG). Moderately to poorly graded, subangular to rounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: coarse sand, sand, silty sandy clay, clay.
GP-204	1015–1020	Clayey sand (40% silt/clay, 60% sand (f), 0% gravel). Contains mudstone 7.5YR5/4 (SFG).Moderately to poorly graded, subangular to rounded. 7.5YR5/4 (sand) and 7.5YR6/4 (clay). Good recovery. Driller's Log: clay or siltstone(?), silty sand, cemented coarse sand.

Sample No.	Depth (ft)	Description
GP-205	1020–1025	Clayey sand (45% silt/clay, 55% sand (f-c), 0% gravel). Contains mudstone 7.5YR5/4 (SFG) and sandy marl. Well to moderately graded, subangular to rounded. 7.5YR5/4 (sand), 7.5YR6/4 (clay) and 7.5YR8/2 (marl). Good recovery. Driller's Log: clay.

03R-426A 03R-426A

U.S. GEOLOGICAL SURVEY

COMPANY CITY OF ALBUQUERQUE

WELL SISTER CITIES PARK

FIELD

COUNTY BERNALILLO STATE NEW MEXICO COUNTRY U.S.A.

LOCATION

SECTION TOWNSHIP RANGE API NUM

Permanent Datum ; Elevation Elev.: K.B.

Log Measured From G.L. Above Perm. Datum D.F.

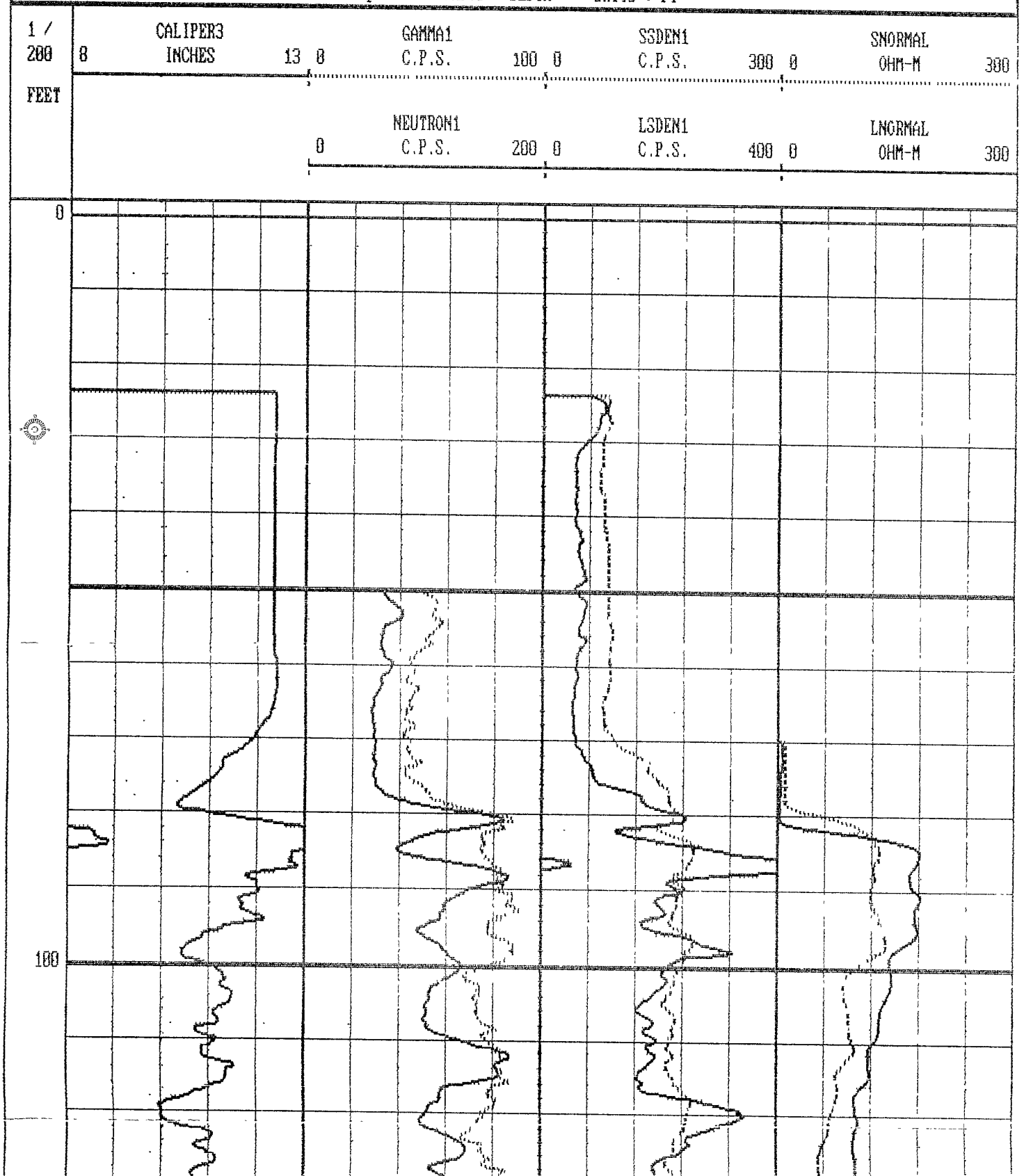
Drilling Meas From G.L.

	1	2	3
Date	03/20/1996		
Depth - Driller	1325		
Depth - Logger	1325		
Btm Log Interval	1325		
Top Log Interval	0		
Casing - Driller			
Casing - Logger			
Bitsize			
Type Fluid in Hole	MUD		
Dens. / Visc.	/	/	/
pH / Fluid Loss	/	/	/
Source of Sample	DEWEES/GEBHARDT		
Rm @ Meas. Temp	@	@	@
Rmf @ Meas. Temp	@	@	@
Rmc @ Meas. Temp	@	@	@
Source: Rmf / Rmc	/	/	/
Rm @ BHT	@	@	@
Max. Rec. Temp.			

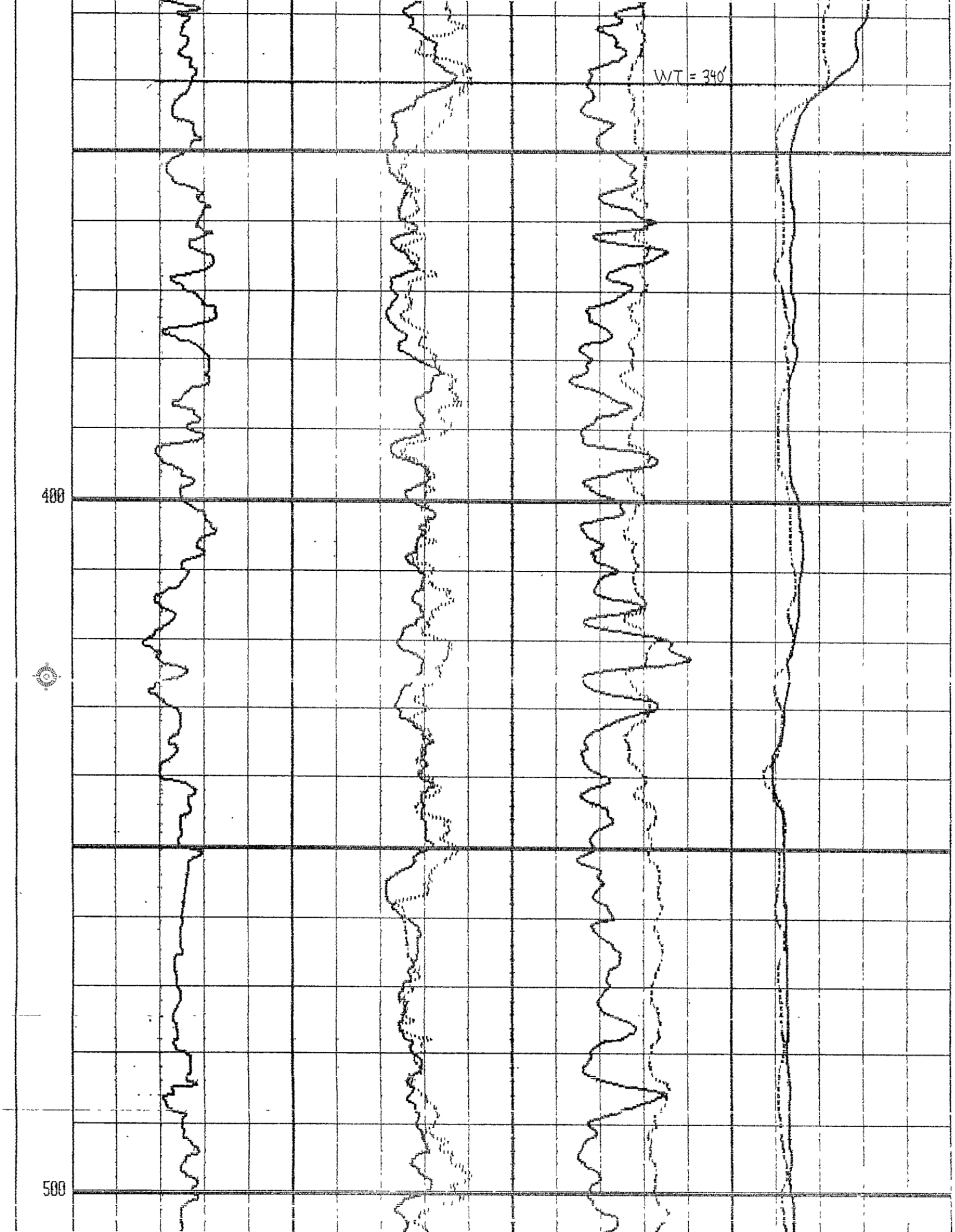
OUTPUT CURVE DEFINITIONS

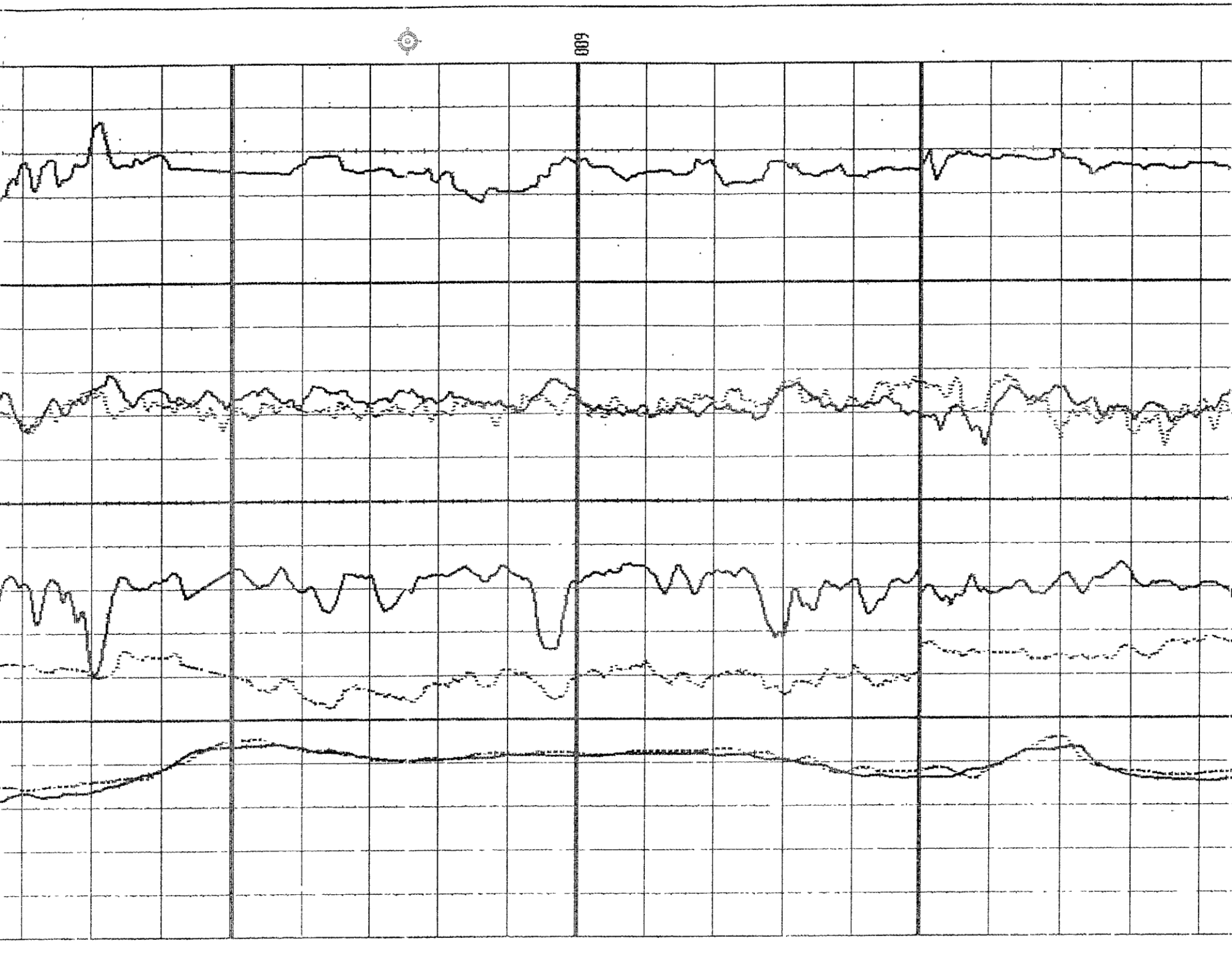
CALIPER3 : INCHES
GAMMA1 : C.P.S. RADIATION INCREASES RIGHT
NEUTRON1 : C.P.S. POROSITY INCREASES LEFT
SSDEN1 : C.P.S. DENSITY INCREASES LEFT
LSDEN1 : C.P.S. DENSITY INCREASES LEFT
SNORMAL : OHM-M
LNORMAL : OHM-M

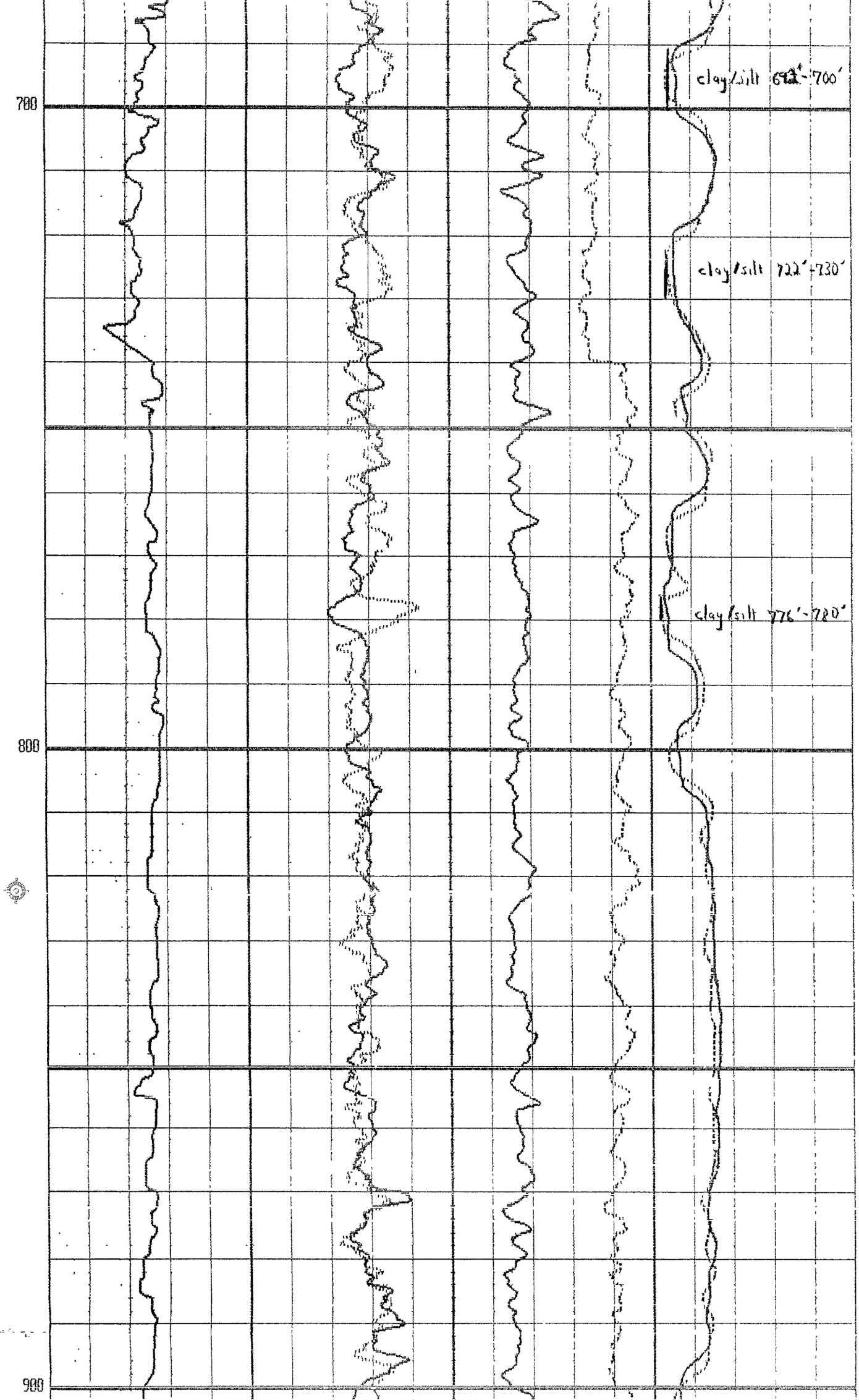
SISTER CITIES PARK
26-MAR-96 @ 11:37:48
Depth Axes Curve ' DEPTH Units : FT

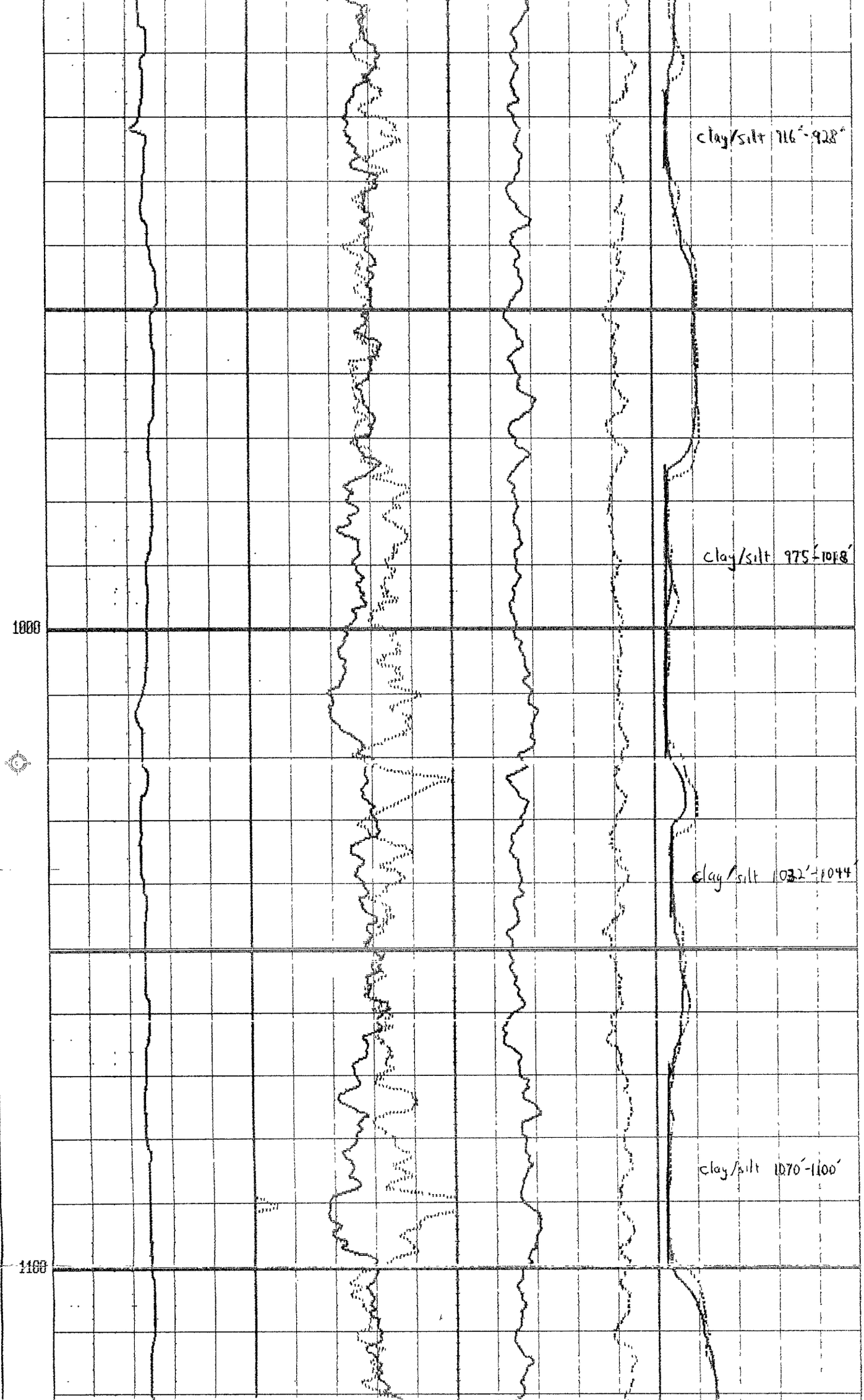


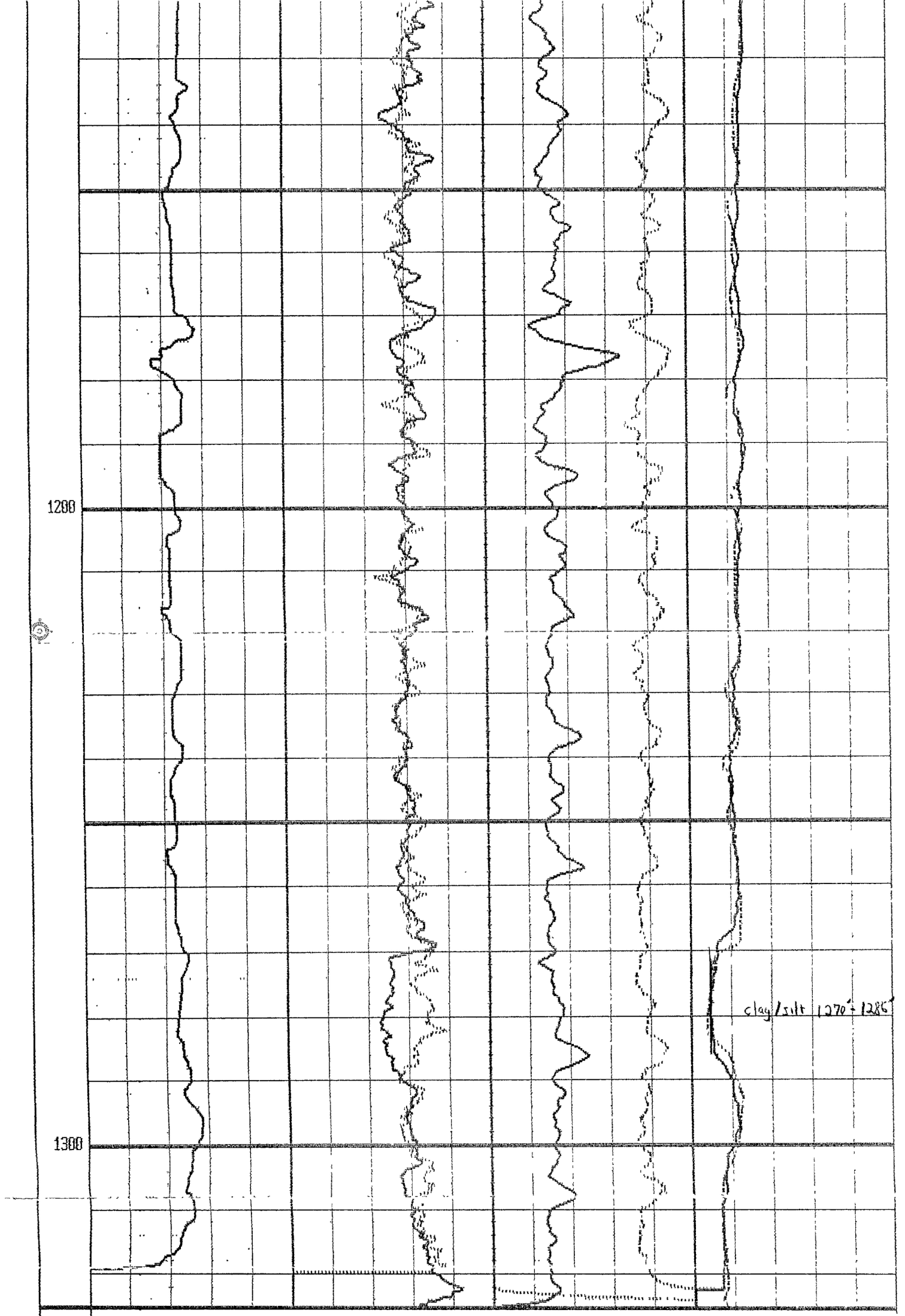
200
300
clay/silt 250-270


W/T = 340'
400
500


600


clay/silt 692'-700'
clay/silt 722'-730'
clay/silt 776'-780'
700
800
900

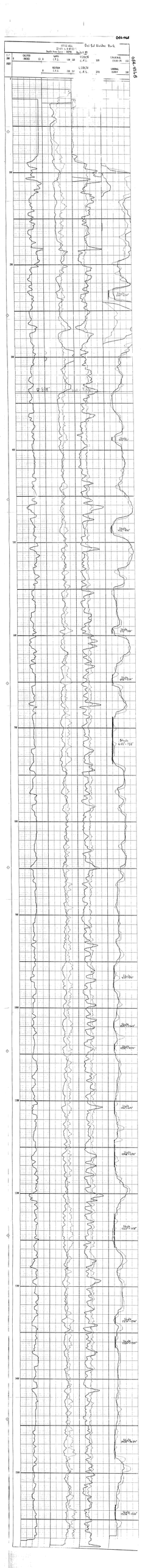

clay/silt 916'-928'
clay/silt 975'-1018'
1000
clay/silt 1032'-1044'
clay/silt 1070'-1100'
1100


1200
1300
clay/silt 1270'-1286'

1 /		CALIPER3			GAMMA1			SSDEN1			SNORMAL	
200	8	INCHES	13	0	C.P.S.	100	0	C.P.S.	300	0	OHM-M	300
FEET					NEUTRON1			LSDEN1			LNORMAL	
				0	C.P.S.	200	0	C.P.S.	400	0	OHM-M	300

OJR-426A

Old Sol Divider Rock



OJR 426 C

OJR-426 C

U.S. GEOLOGICAL SURVEY

COMPANY CITY OF ALBUQUERQUE

WELL ~~7-BAR SOUTH~~ Hunter Ridge Site

FIELD

COUNTY BERNALILLO STATE NEW MEXICO COUNTRY U S A

LOCATION CORNER OF 7-BAR LOOP AND CHANDLER

SECTION ____ TOWNSHIP ____ RANGE ____ API NUM ____

Permanent Datum ____ ; Elevation ____ Elev.: K B. ____

Log Measured From G L ____ , ____ Above Perm. Datum D F ____

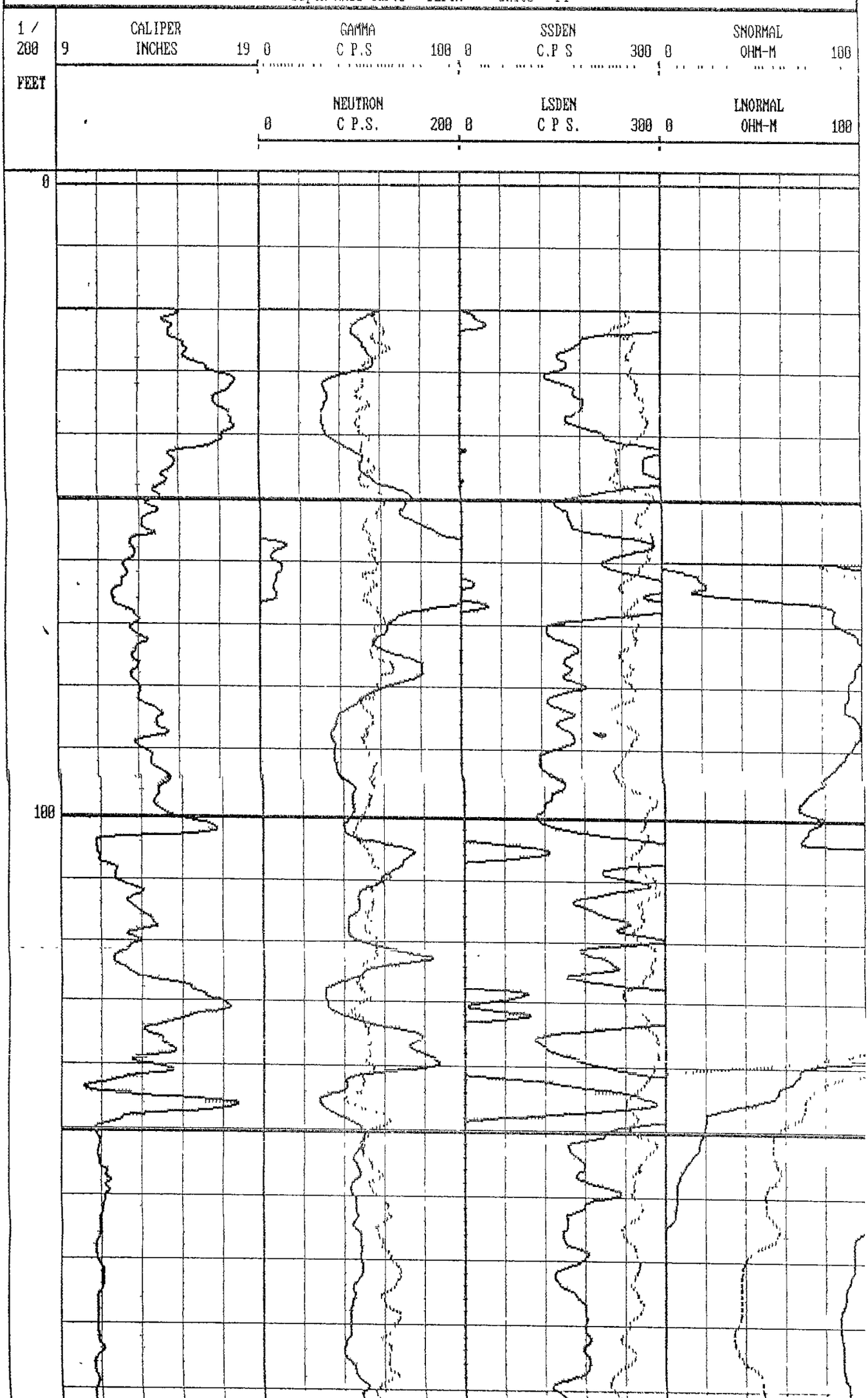
Drilling Meas From ____ G L

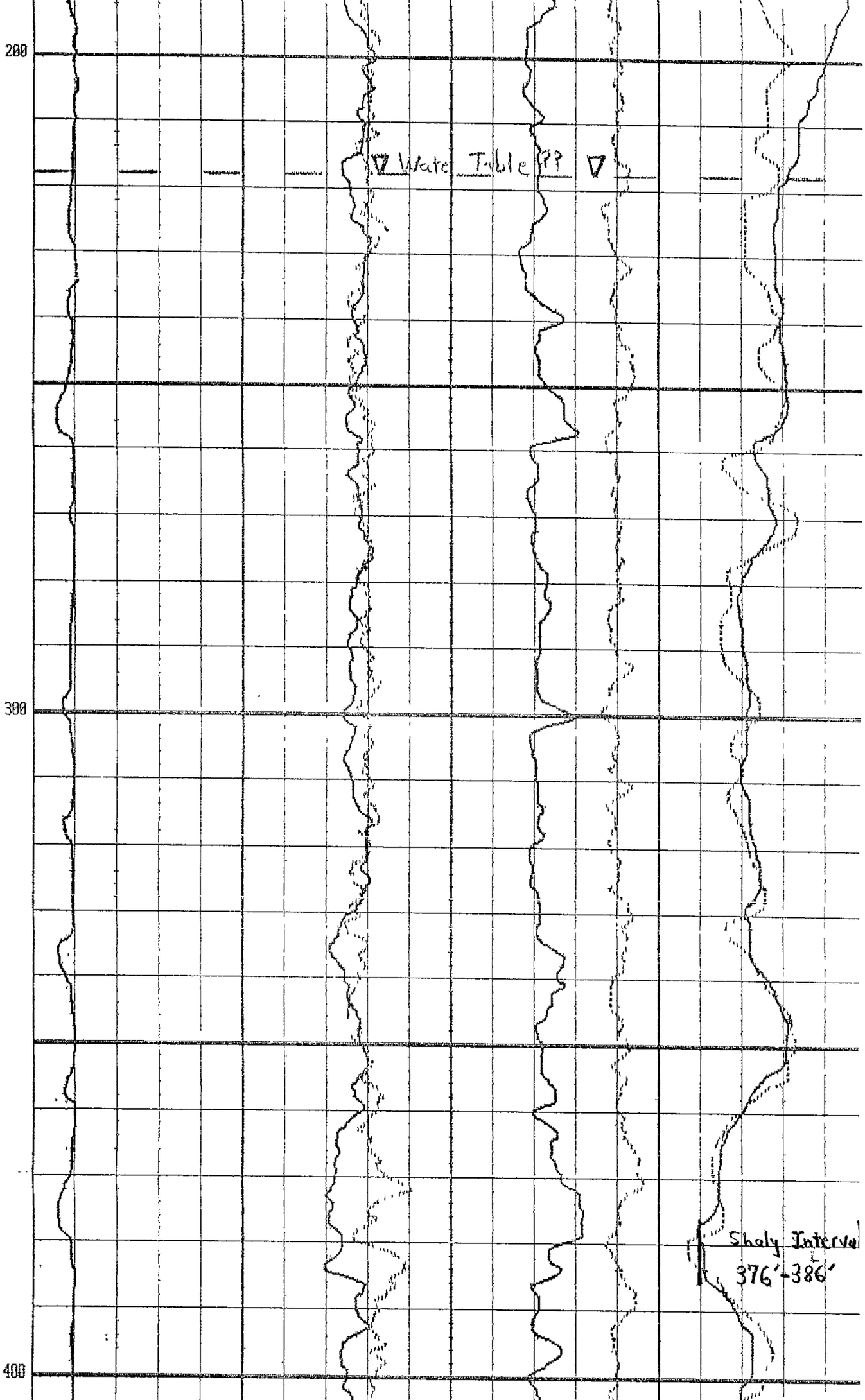
	1	2	3
Date	05/28/96		
Depth - Driller	1520		
Depth - Logger	1527		
Btm Log Interval	1527		
Top Log Interval	0		
Casing - Driller			
Casing - Logger			
Bitsize	11"		
Type Fluid in Hole	MUD		
Dens. / Visc	/	/	/
pH / Fluid Loss	/	/	/
Source of Sample	DEWEES/CRUZ		
Rm @ Meas. Temp	@	@	@
Rmf @ Meas Temp	@	@	@
Rmc @ Meas. Temp	@	@	@
Source: Rmf / Rmc	/	/	/
Rm @ BHT	@	@	@
Max Rec Temp			

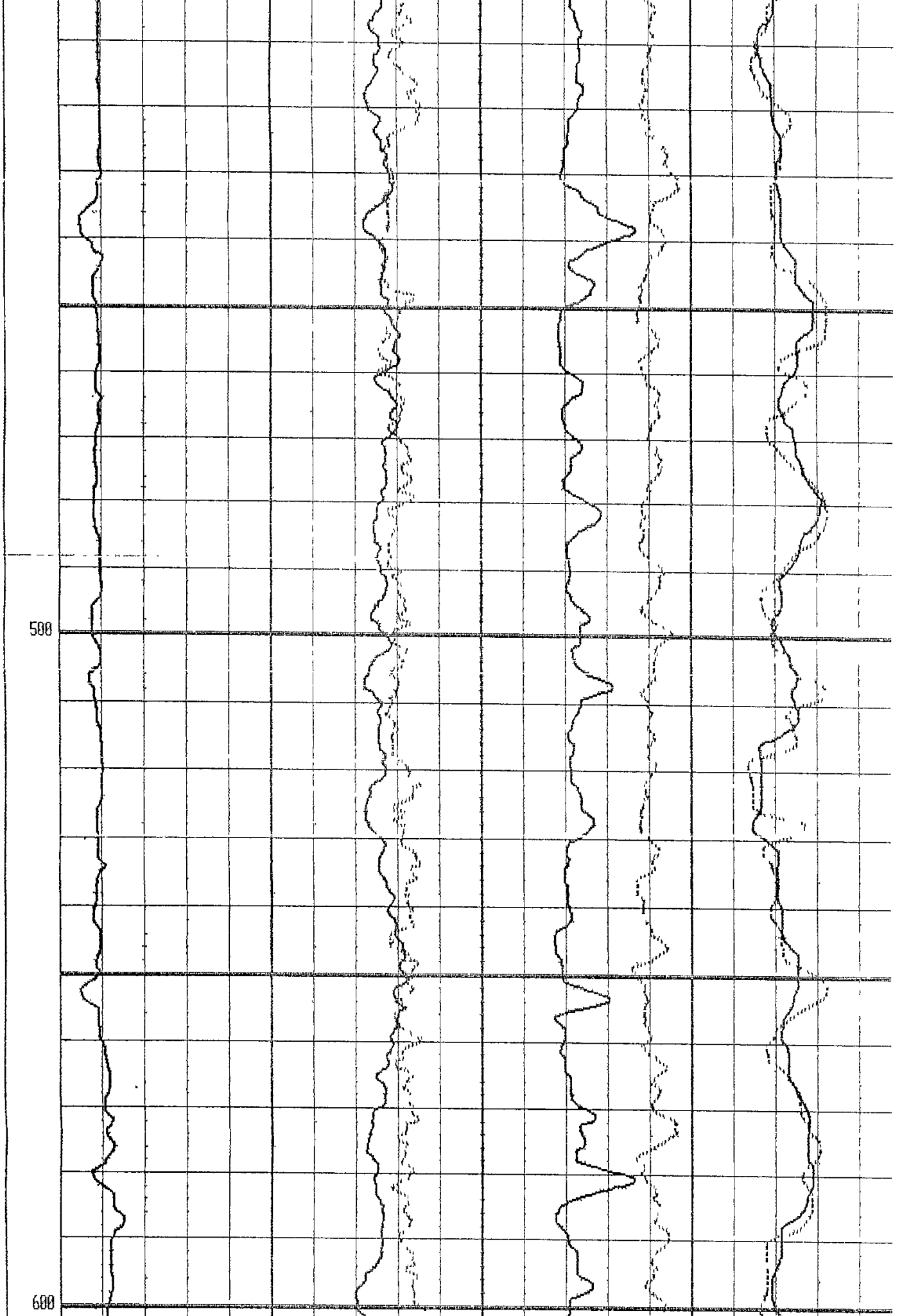
OUTPUT CURVE DEFINITIONS

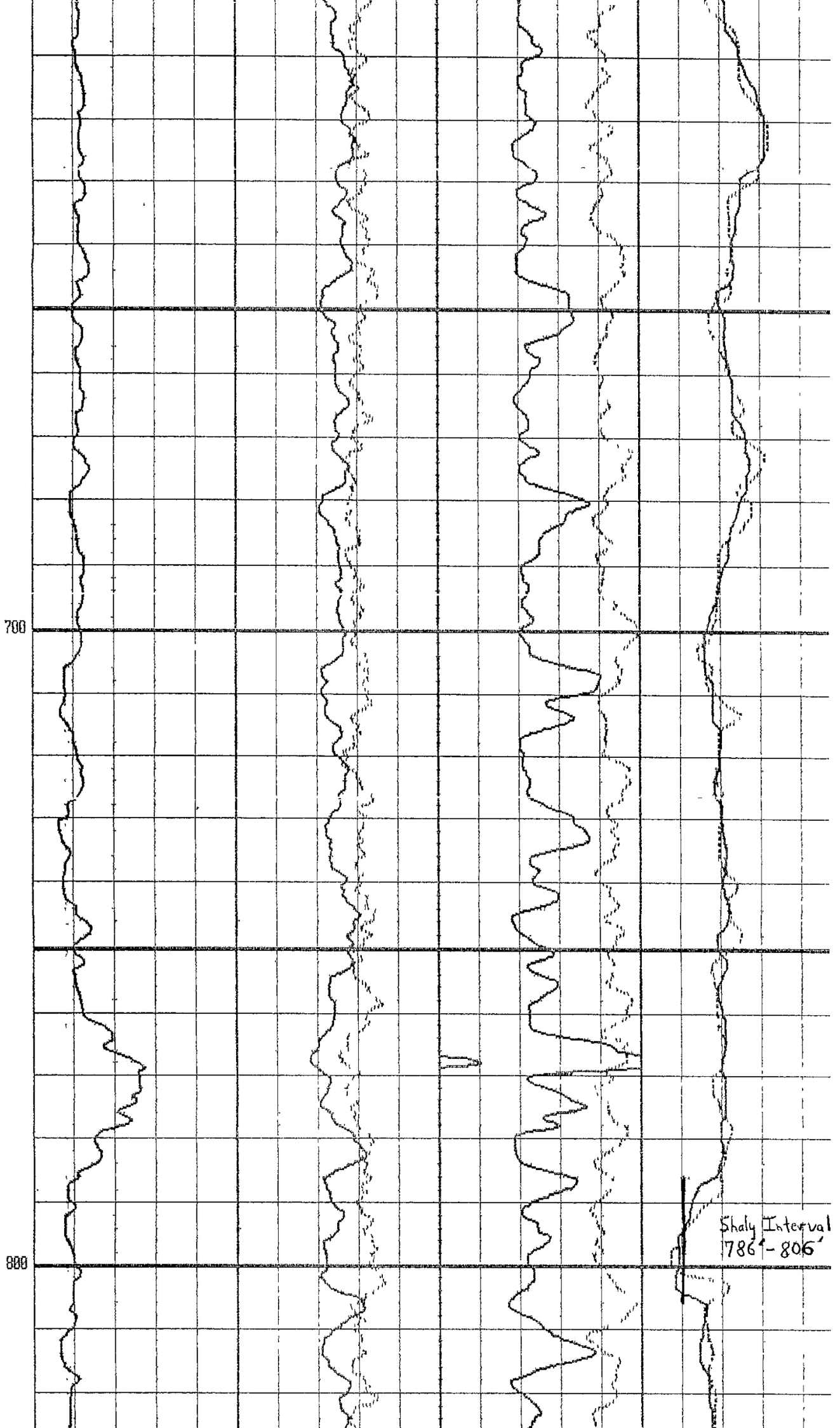
CALIPER : INCHES
GAMMA : RADIATION INCREASES RIGHT
NEUTRON : POROSITY INCREASES LEFT
SSDEN SHORT SPACED DENSITY
LSDEN : LONG SPACED DENSITY
SNORMAL : OHM-M
LNORMAL : OHM-M

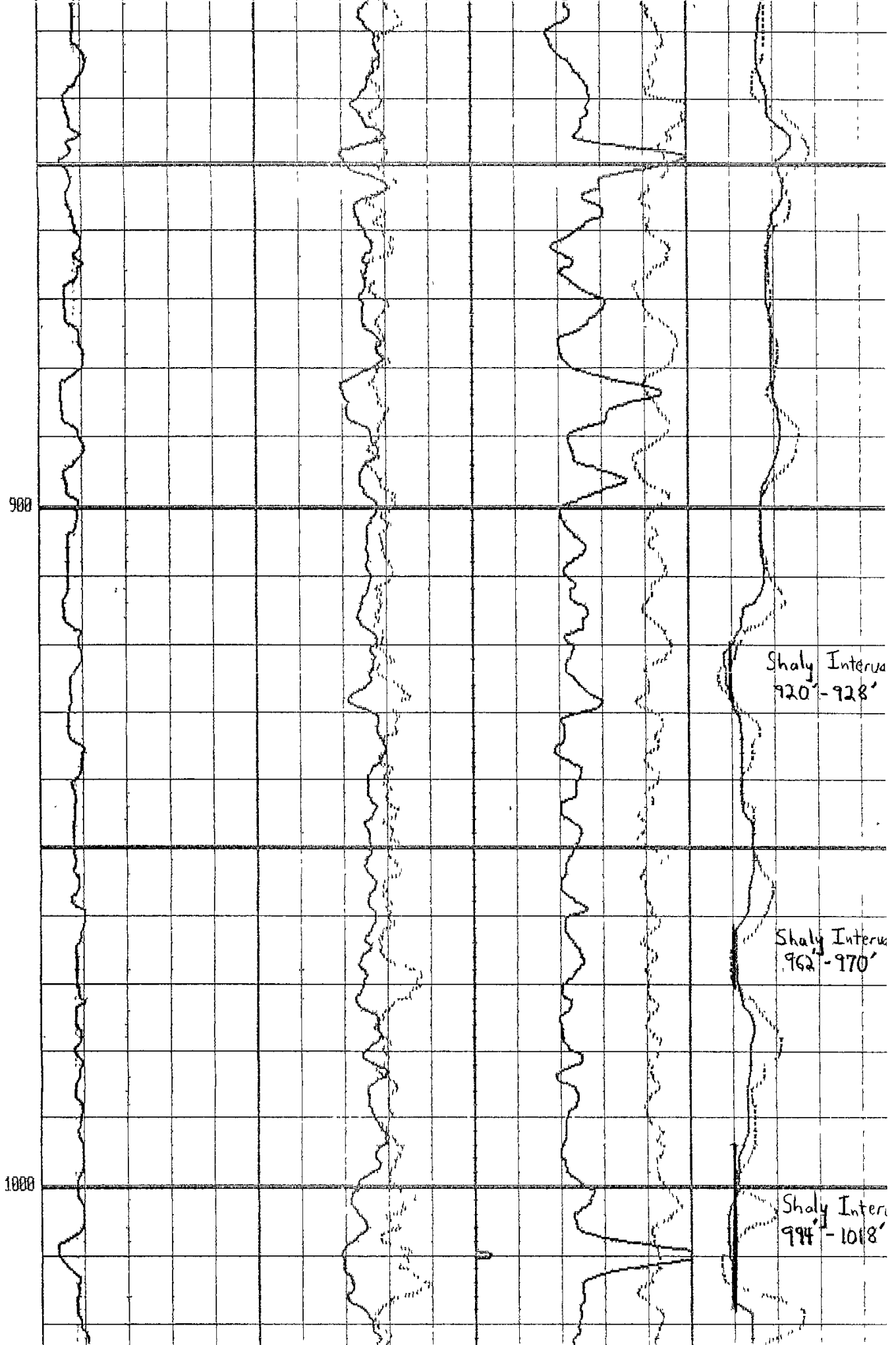
7-BAR SOUTH
29-MAY-96 @ 10 03.05
Depth Axes Curve ' DEPTH Units ' FT

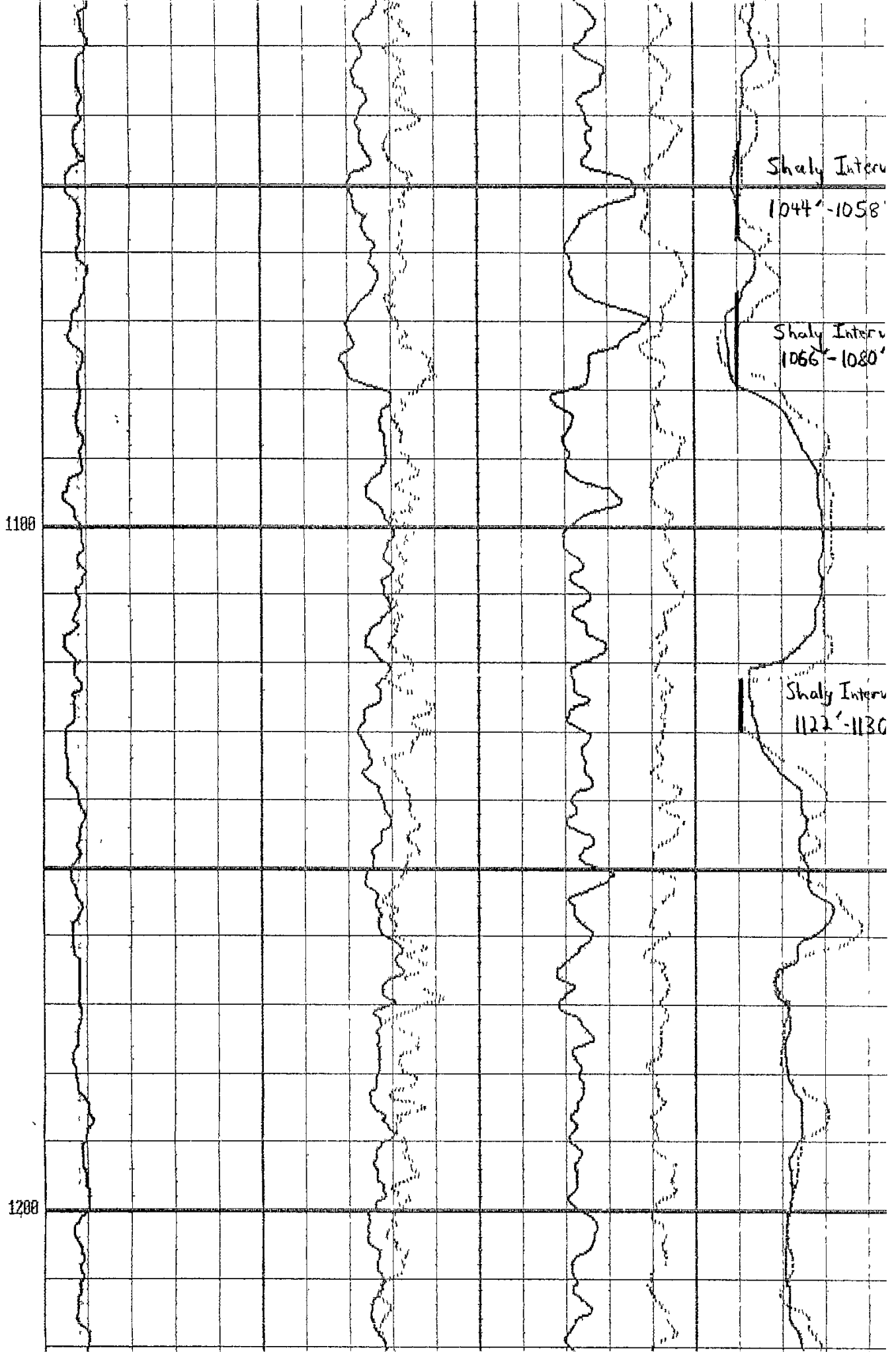


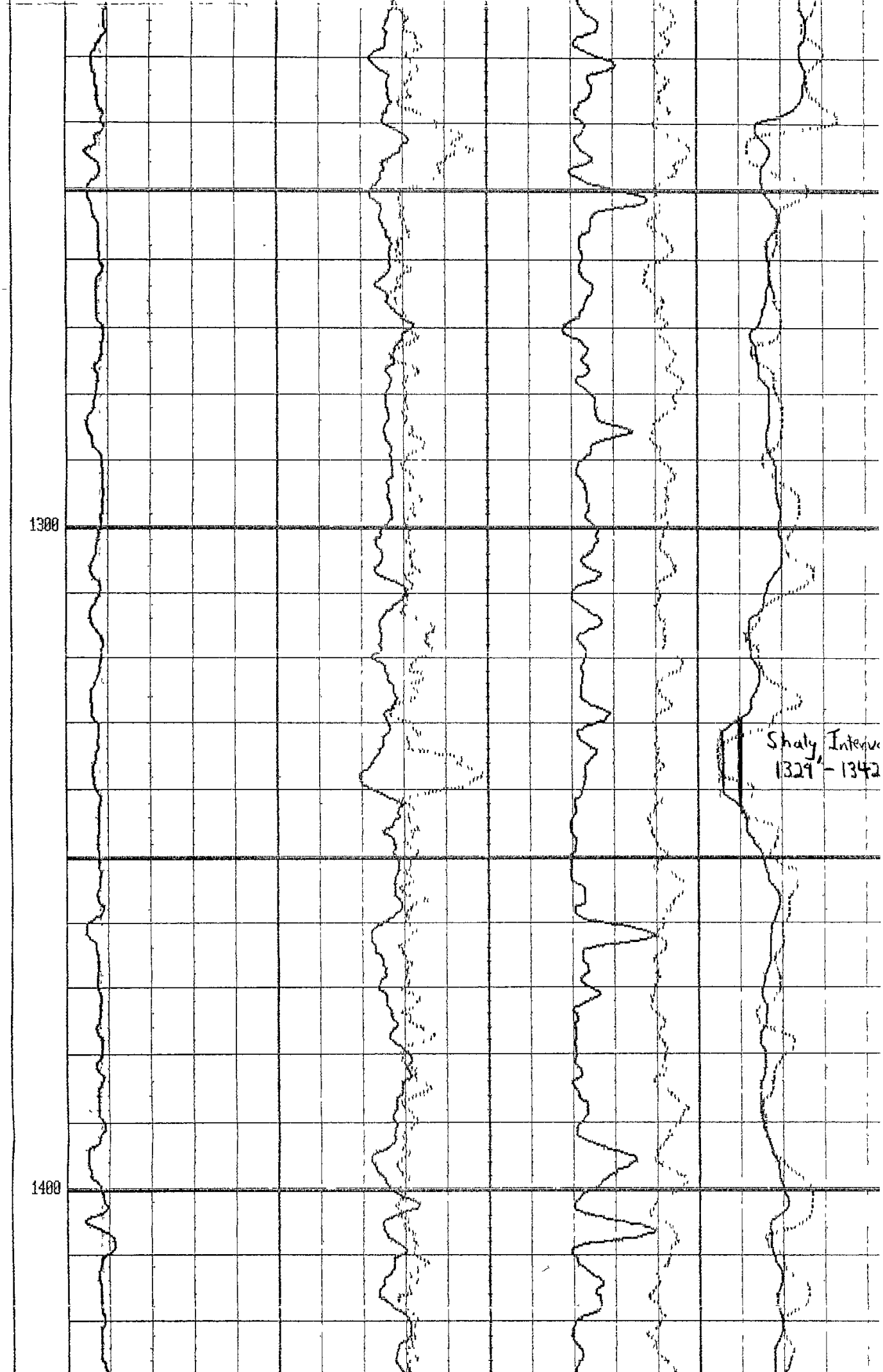

200
300
400
Water Table ??
Shaly Interval
376'-386'

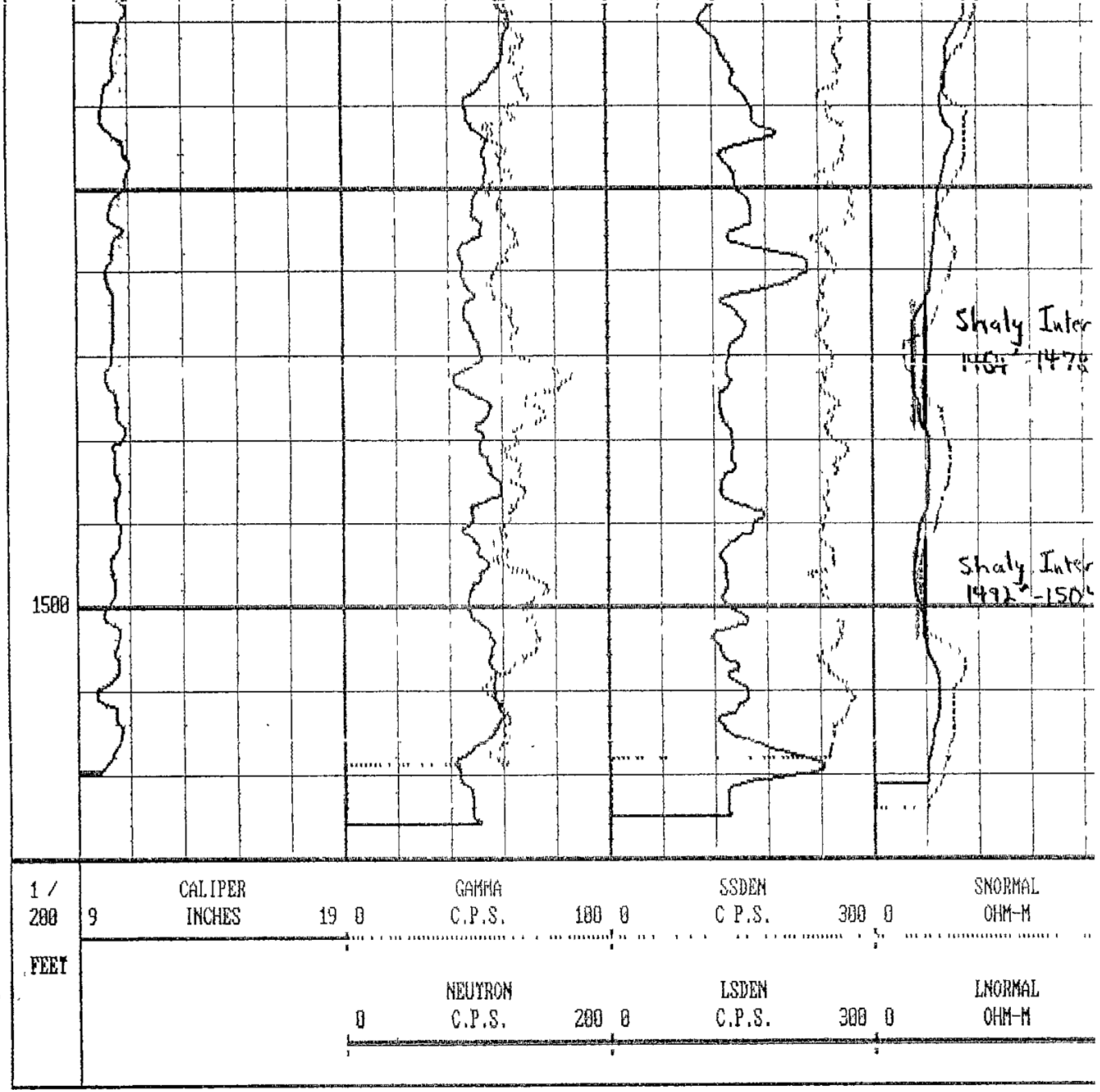

500
600


700
800
Shaly Interval
786' - 806'


900
1000
Shaly Interva
920'-928'
Shaly Interva
962'-970'
Shaly Inter
994'-1018'


Shaly Interv
1044'-1058'
Shaly Interv
1066'-1080'
1100
Shaly Interv
1122'-1130
1200


1300
1400
Shaly Interva
1329' - 1342


Shaly Inter
1464'-1475
Shaly Inter
1492'-150
1500
1 /
200
FEET
9
CALIPER
INCHES
19
0
GAMMA
C.P.S.
100
0
SSDEN
C P.S.
300
0
SNORMAL
OHM-M
0
NEUTRON
C.P.S.
200
0
LSDEN
C.P.S.
300
0
LNORMAL
OHM-M

OJR-426C

07R426D

07R426D

U.S. GEOLOGICAL SURVEY

COMPANY CITY OF ALBUQUERQUE

WELL WEST BLUFF PARK

FIELD

COUNTY BERNALILLO STATE NEW MEXICO COUNTRY U.S.A.

LOCATION

SECTION ____ TOWNSHIP ____ RANGE ____ API NUM ____

Permanent Datum ____ ; Elevation ____ Elev.: K.B. ____

Log Measured From G.L. ____ , ____ Above Perm. Datum D.F. ____

Drilling Meas From ____ G.L. ____

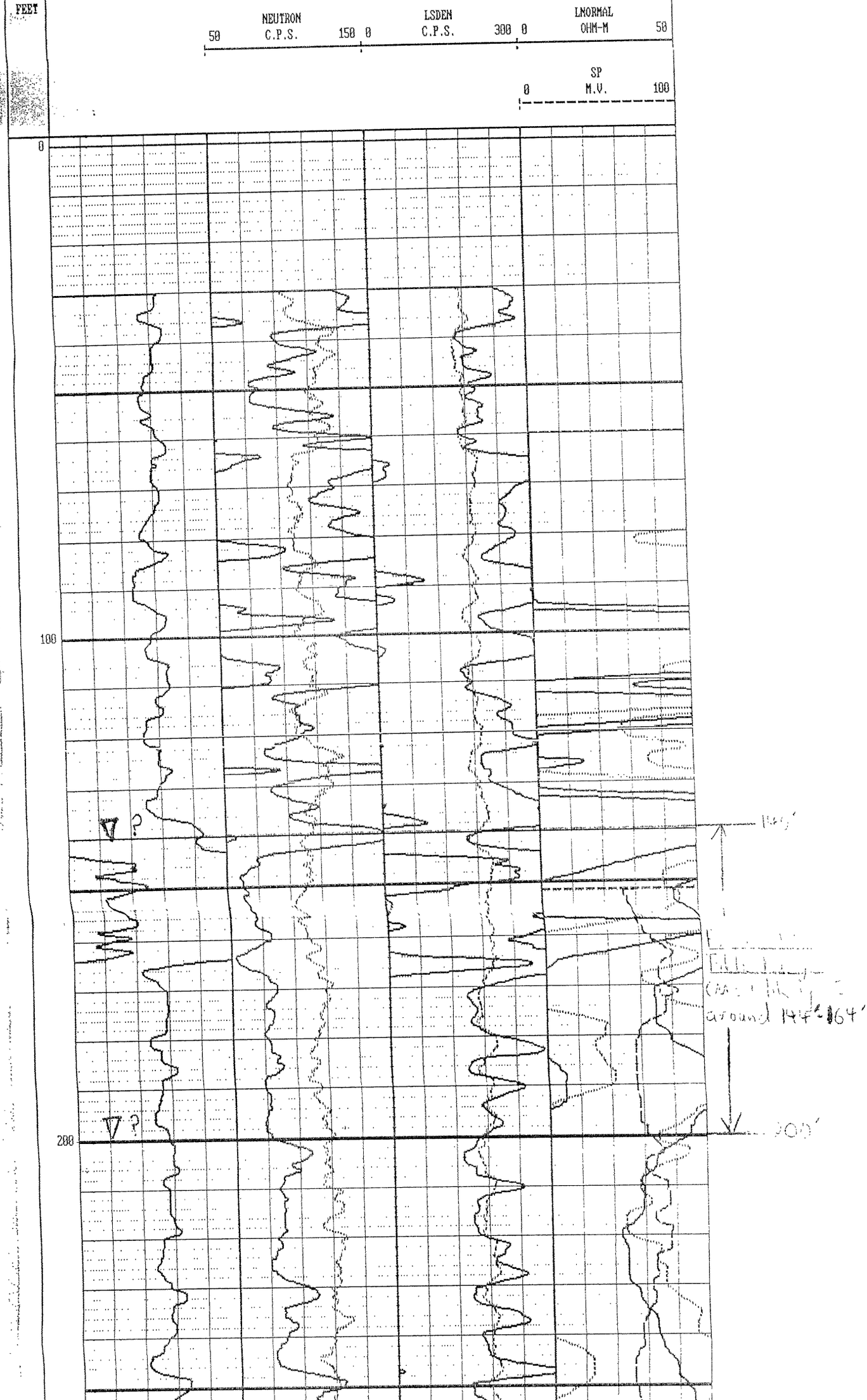
	1	2	3
Date	07/11/1996		
Depth - Driller	1105		
Depth - Logger	1104		
Btm Log Interval	1104		
Top Log Interval	30		
Casing - Driller			
Casing - Logger			
Bitsize	11" 0-900 10 5/8"		
Type Fluid in Hole	MUD		
Dens. / Visc.	/ 38-40	/	/
pH / Fluid Loss	/	/	/
Source of Sample			
Rm @ Meas. Temp	@	@	@
Rmf @ Meas. Temp	@	@	@
Rmc @ Meas. Temp	@	@	@
Source: Rmf / Rmc	/	/	/
Rm @ BHT	@	@	@
Max. Rec. Temp.			

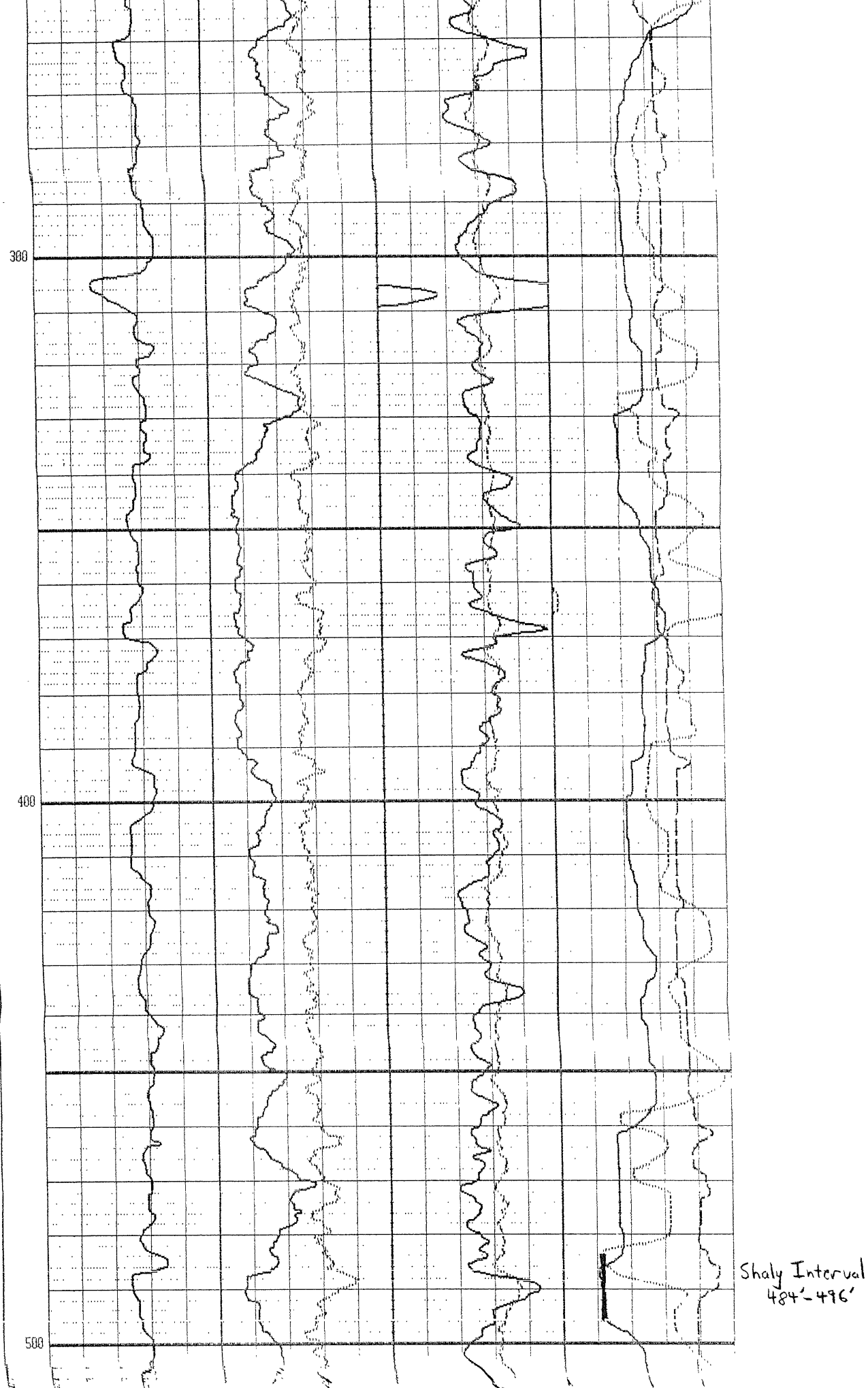
OUTPUT CURVE DEFINITIONS

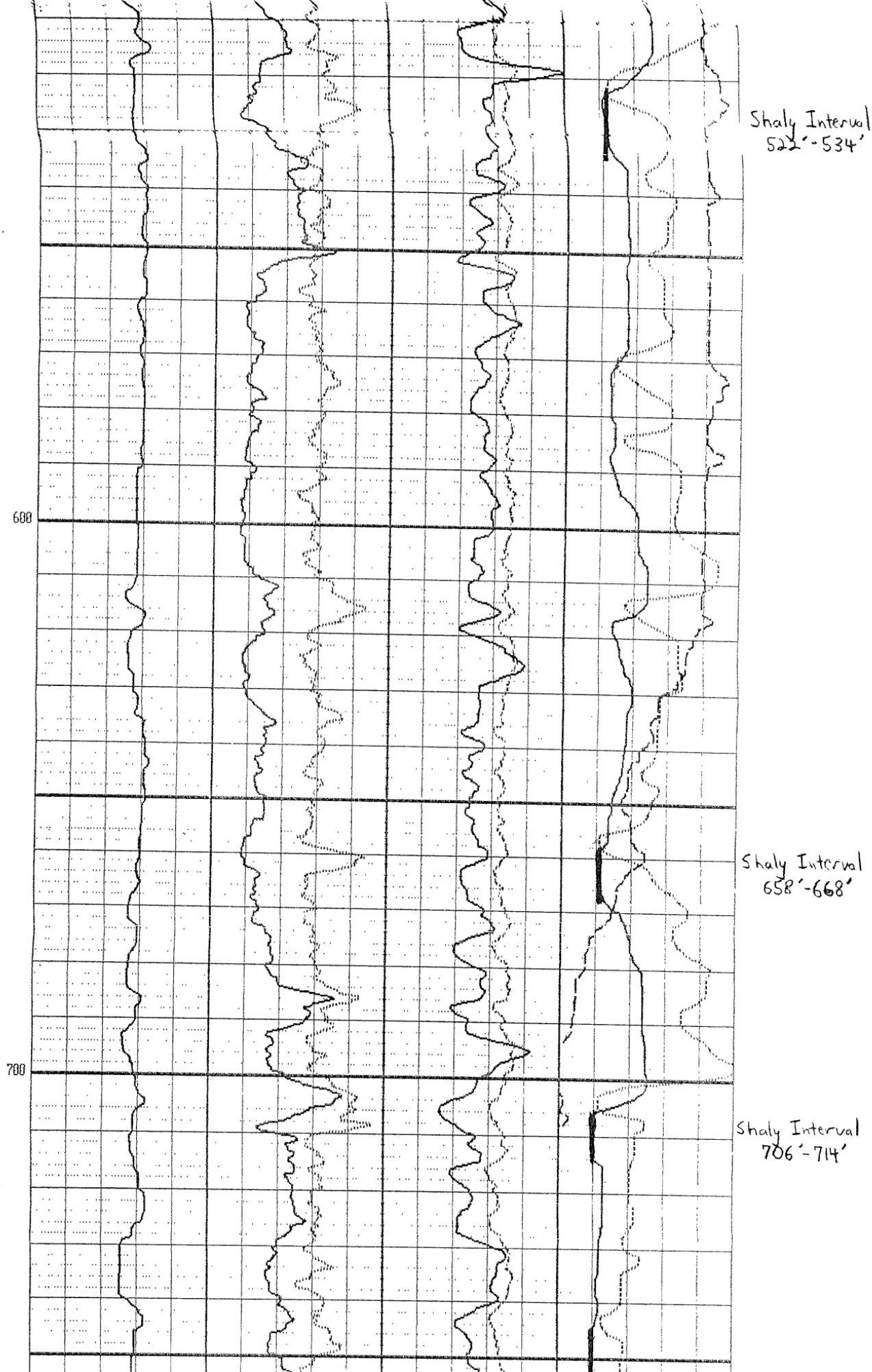
CALIPER : INCHES
GAMMA : RADIATION INCREASES RIGHT
NEUTRON : POROSITY INCREASES LEFT
SSDEN : SHORT SPACED DENSITY
LSDEN : LONG SPACED DENSITY
SNORMAL : OHM-M
LNORMAL : OHM-M
SP :

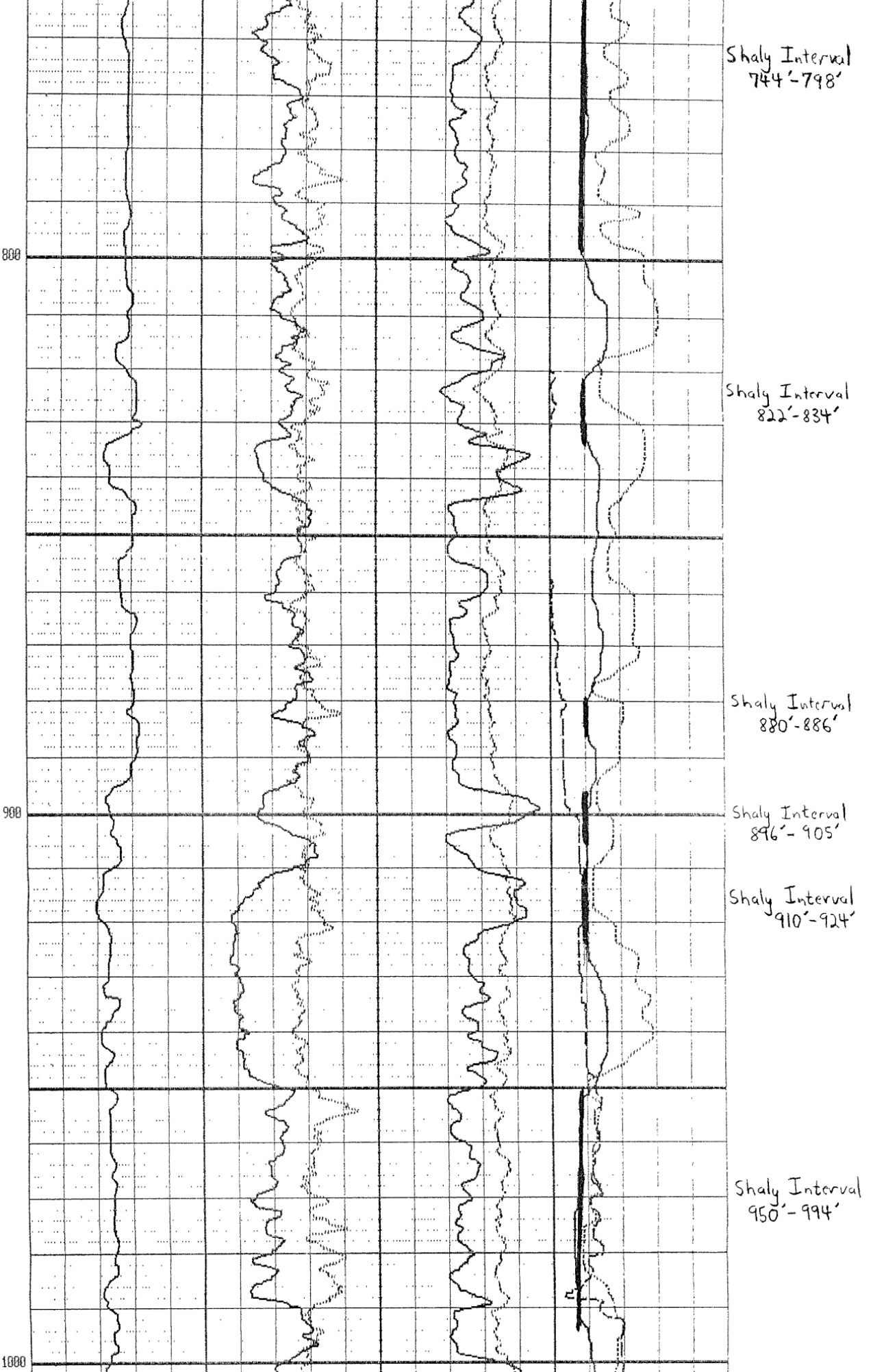
WEST BLUFF PARK
11-JUL-96 @ 13:58:04
Depth Axes Curve : DEPTH Units : FT

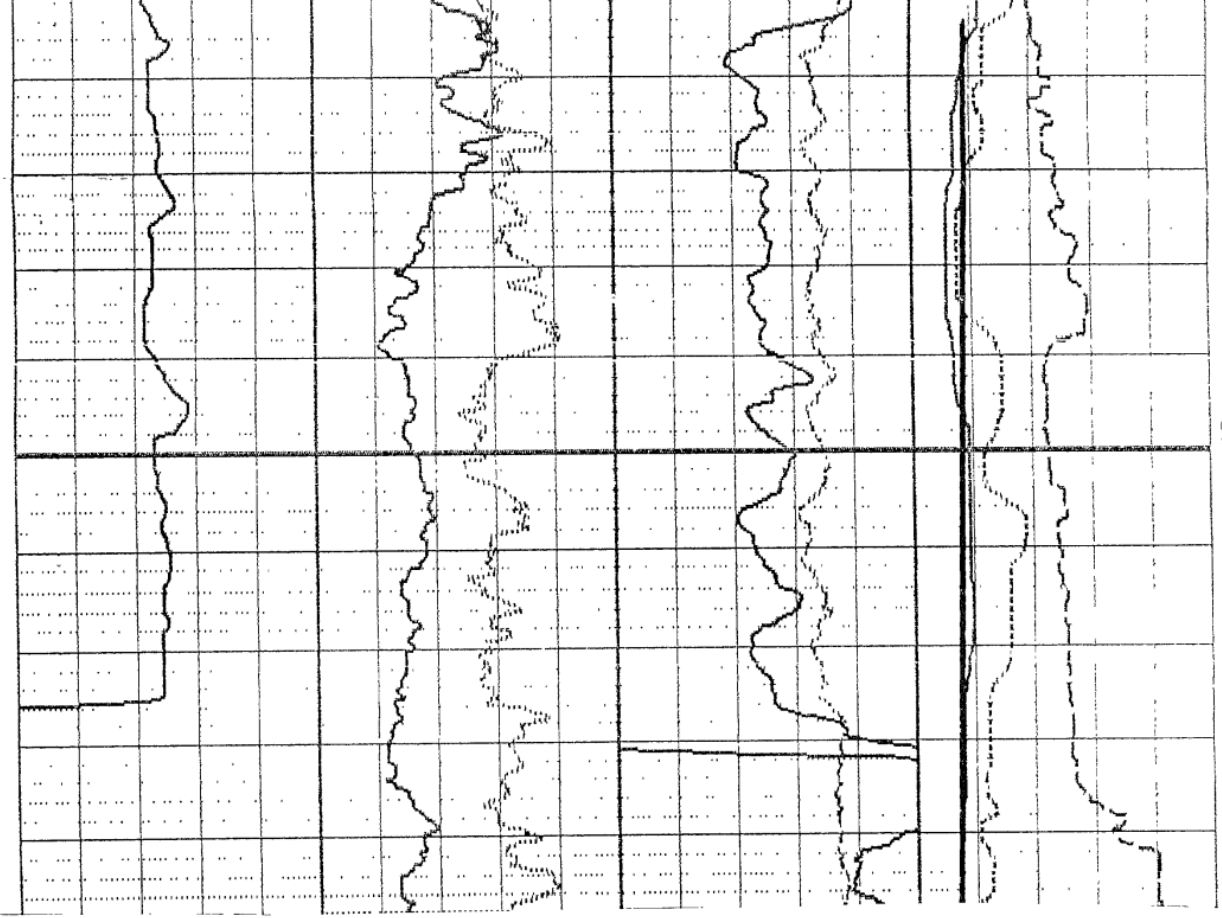
1 / 200	8	CALIPER INCHES	13 0	GAMMA C.P.S.	100 0	SSDEN C.P.S.	300 0	SNORMAL OHM-M	50


FEET
NEUTRON
C.P.S.
50
150
LSDEN
C.P.S.
0
300
LNORMAL
OHM-M
0
50
SP
M.V.
0
100
0
100
200
?
?
around 147'-164'


300
400
500
Shaly Interval
484'-496'


Shaly Interval
522'-534'
600
Shaly Interval
658'-668'
700
Shaly Interval
706'-714'


Shaly Interval
744'-798'
800
Shaly Interval
822'-834'
Shaly Interval
880'-886'
900
Shaly Interval
896'-905'
Shaly Interval
910'-924'
Shaly Interval
950'-994'
1000



OJR-426D

OJR426D

OJR 426E

OJR-426E

U.S. GEOLOGICAL SURVEY

COMPANY CITY OF ALBUQUERQUE

WELL GARFIELD SITE

FIELD

COUNTY STATE COUNTRY

LOCATION

SECTION TOWNSHIP RANGE API NUM

Permanent Datum , Elevation Elev.: K.B.

Log Measured From G.L. , Above Perm. Datum D.F.

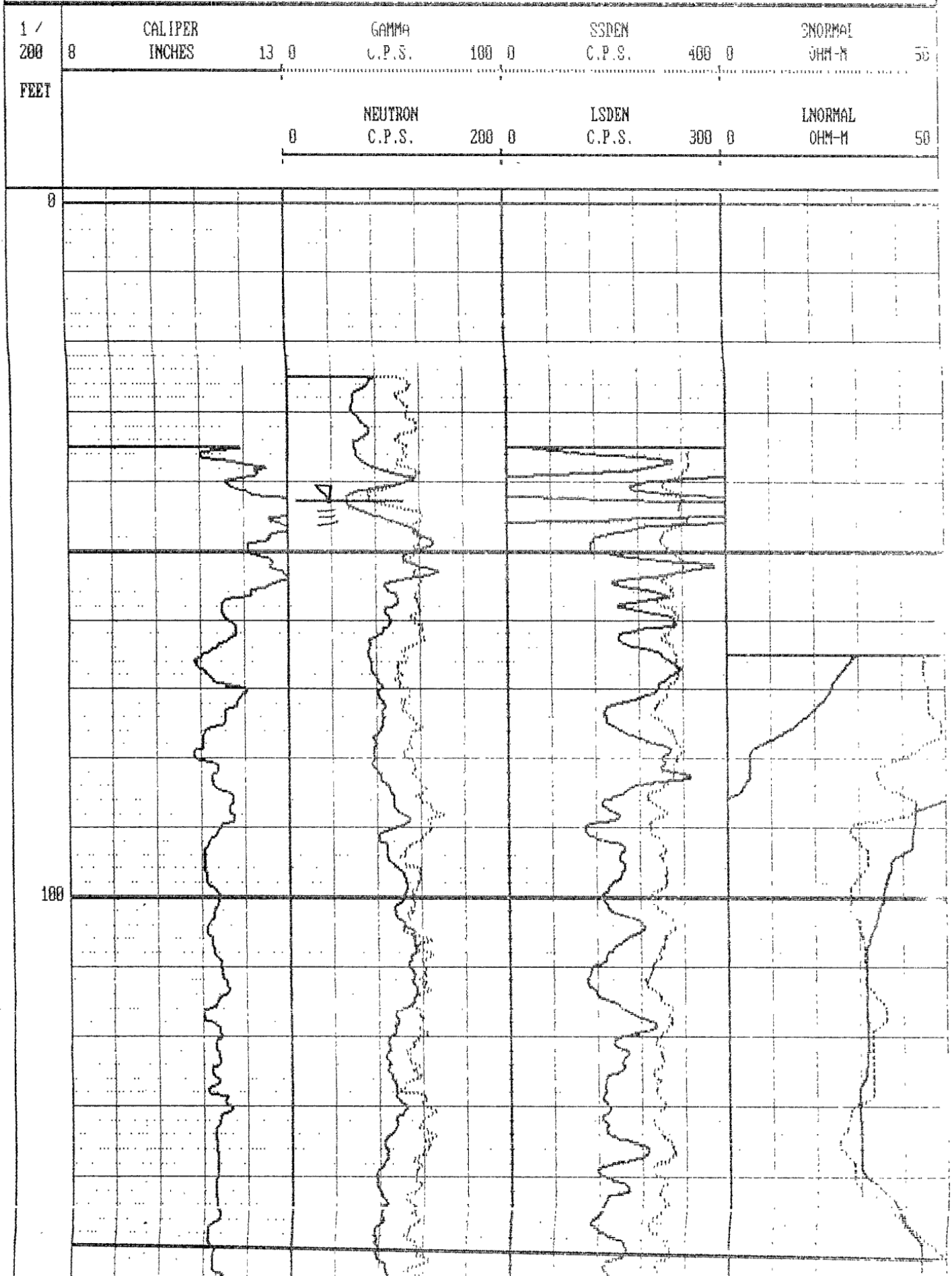
Drilling Meas From G.L.

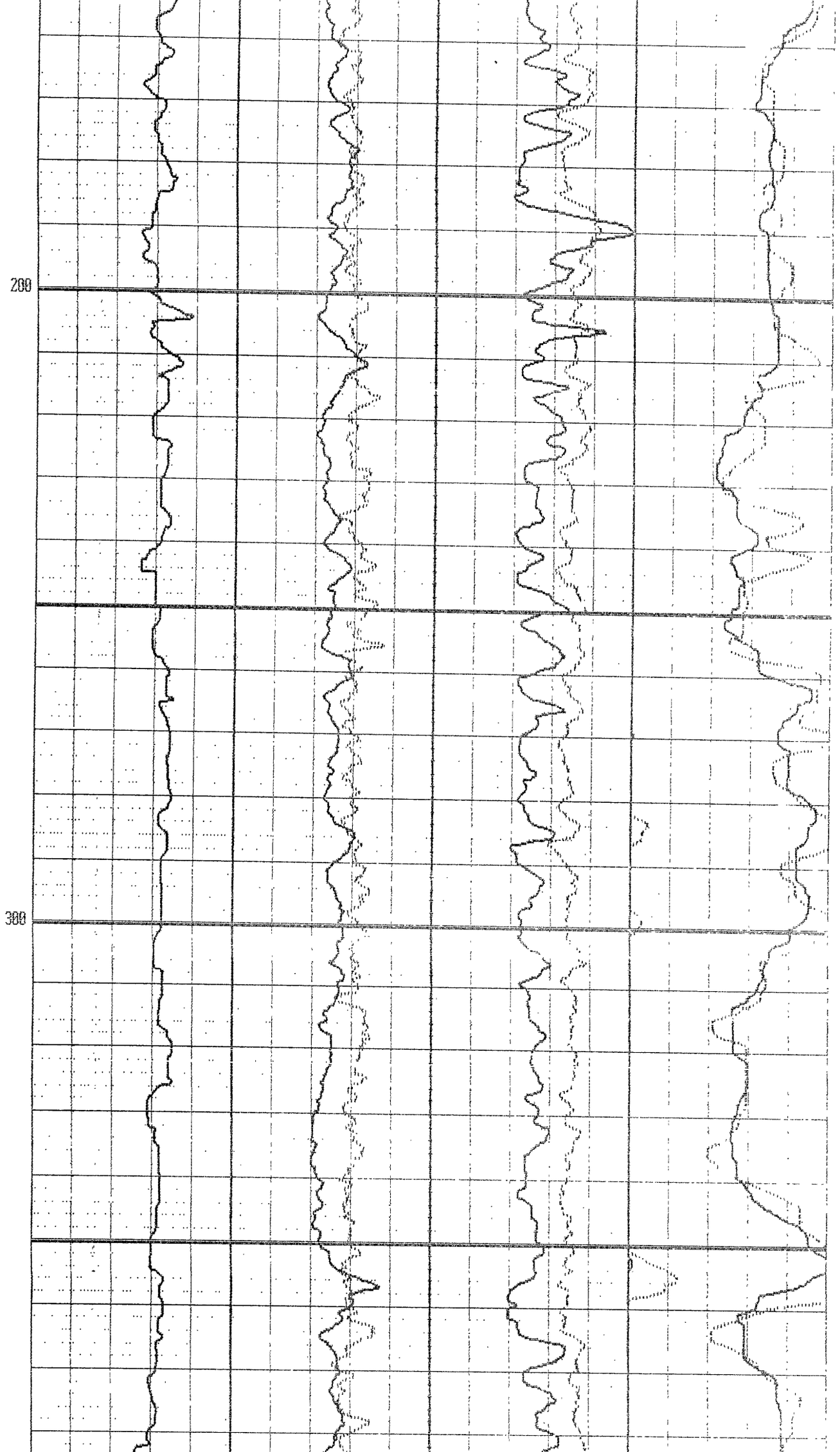
	1	2	3
Date	09/03/96		
Depth - Driller	1033		
Depth - Logger			
Btm Log Interval			
Top Log Interval			
Casing - Driller			
Casing - Logger			
Bitsize	11" 0-1025		
Type Fluid in Hole	MUD		
Dens. / Visc.	/	/	/
pH / Fluid Loss	/	/	/
Source of Sample	DEWEES/CRUZ		
Rm @ Meas. Temp	@	@	@
Rmf @ Meas. Temp	@	@	@
Rmc @ Meas. Temp	@	@	@
Source: Rmf / Rmc	/	/	/
Rm @ BHT	@	@	@
Max. Rec. Temp.			

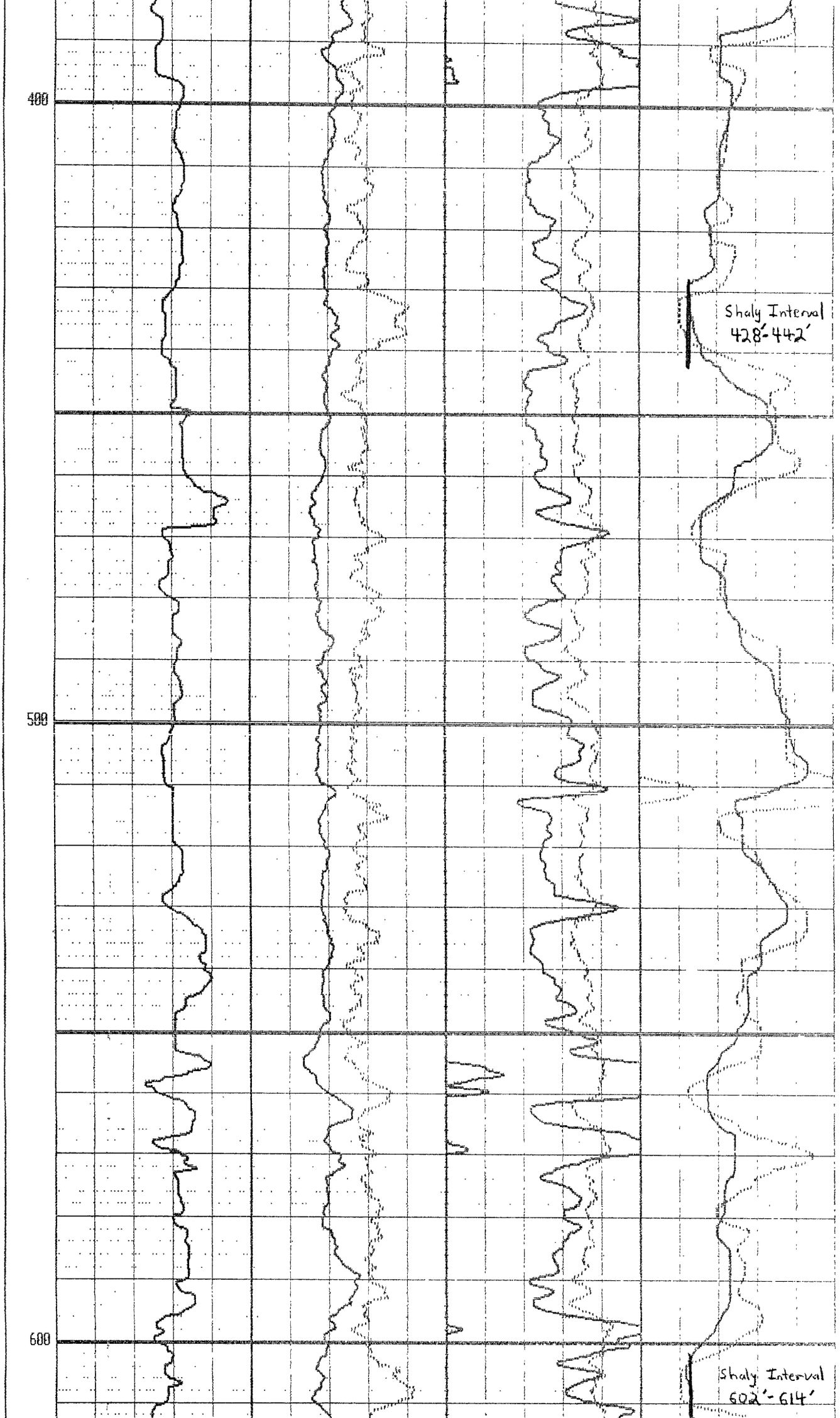
OUTPUT CURVE DEFINITIONS

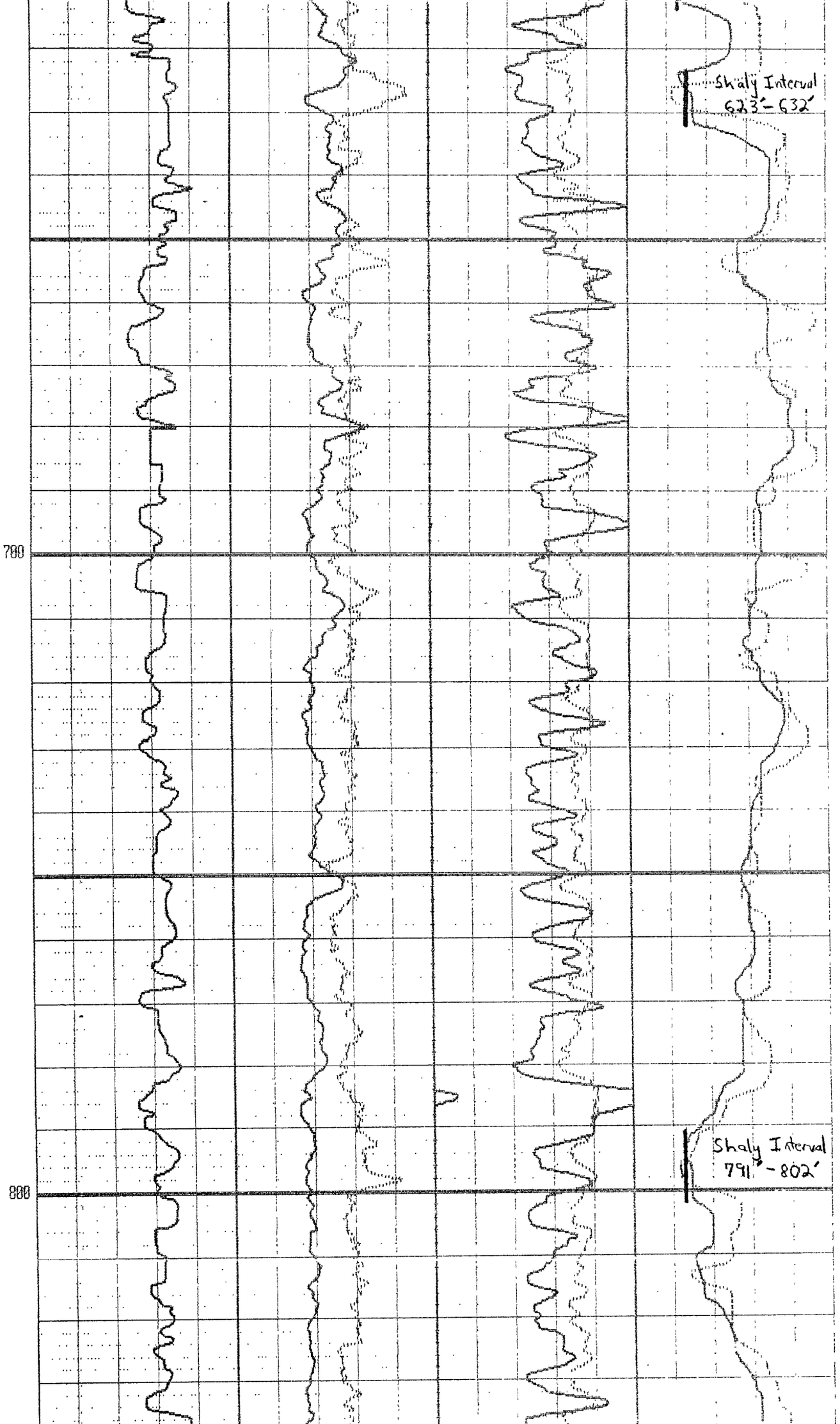
CALIPER : INCHES
GAMMA : RADIATION INCREASES RIGHT
NEUTRON : POROSITY INCREASES LEFT
SSDEN : SHORT SPACED DENSITY
LSDEN : LONG SPACED DENSITY
SNORMAL : OHM-M
LNORMAL : OHM-M

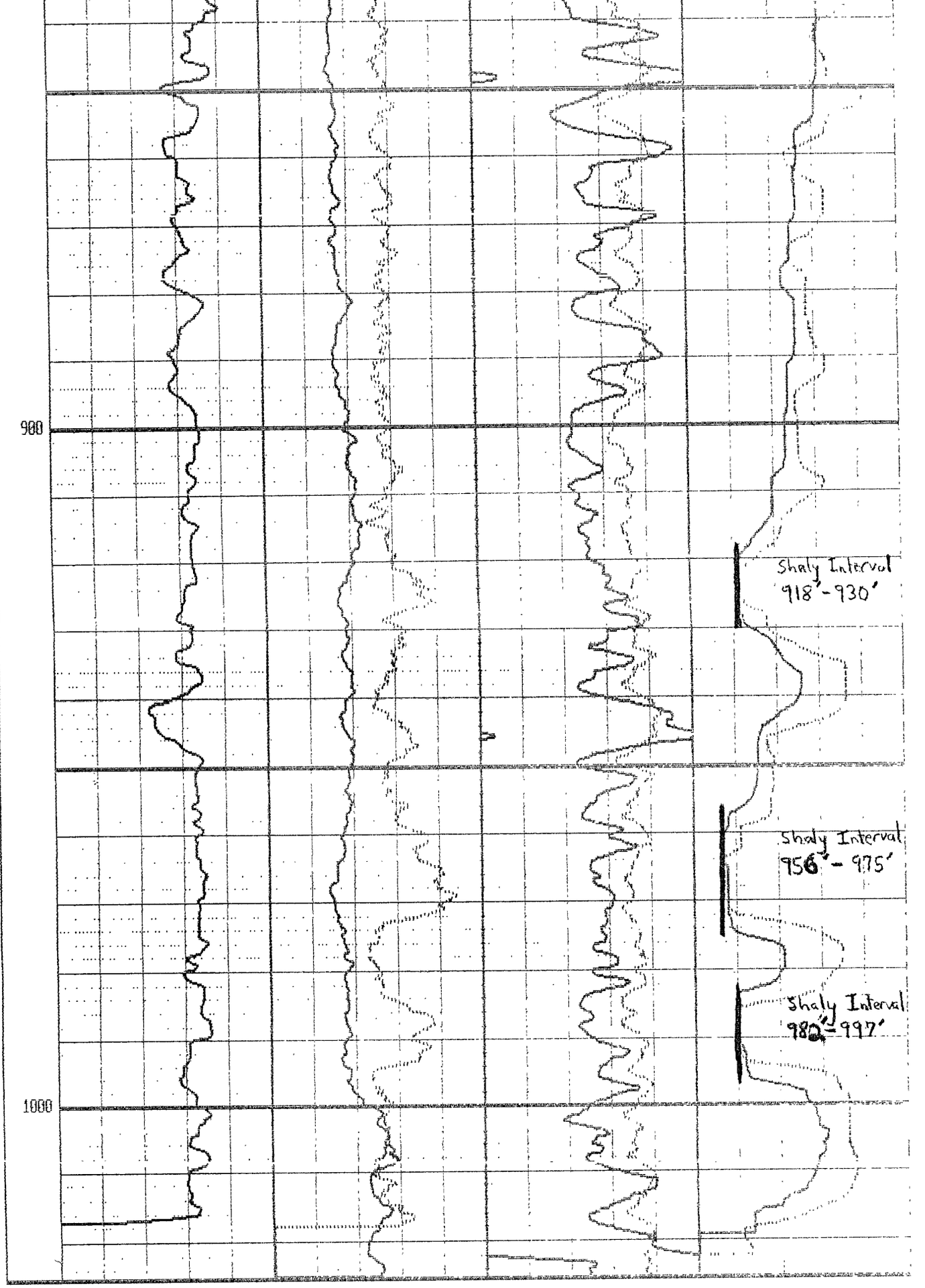
GARFIELD SITE
27-SEP-96 @ 13:56:43
Depth Axes Curve : DEPTH Units : FT




200
300


400
500
600
Shaly Interval
428'-442'
Shaly Interval
602'-614'


Shaly Interval
623'-632'
700
Shaly Interval
791'-802'
800


900
1000
Shaly Interval
918'-930'
Shaly Interval
956'-975'
Shaly Interval
982'-997'

OJR-426E