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ARH-C-00016

DRILLERS' LOGS OF WELLS IN THE HANFORD RESERVATION

(Two Volumes)

VOLUME I

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January 1977

DEC 1993
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This report is based on work sponsored by Atlantic Richfield Hanford Company under United States Energy Research and Development Administration Contract EY-76-C-06-2130.

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INTRODUCTION

More than 3000 wells and test holes have been drilled within the Hanford Reservation. Information on these wells range from complete sample suites complemented by bore hole geophysical studies to no record at all. Often the driller's log is the only record available for a well. Drillers' logs for many wells are in Atlantic Richfield Hanford Company's files.

PURPOSE AND SCOPE

This report is a product of the continuing project aimed at quantifying the hydraulic parameters of the synthetic flow system of the Hanford Reservation (Summers and Deju, 1974). The subsurface geology of the Hanford Reservation must be understood before the hydrologic parameters of the rocks can be estimated with any accuracy. To refine the state of our knowledge of the hydrologic regime all available data concerning the reservation geology must be considered and evaluated.

This report presents 417 drillers' logs. It is a compilation of the drillers' daily reports onto a standard format.

This compilation includes every original driller's report we could obtain for the 600, 1100, and 3000 areas of the Hanford Reservation, but only a few logs from each of the 100, 200, and 300 areas where holes are very close together. Driller's logs of several other wells have been reported previously and will undoubtedly be used in future studies. Tables 1 and 2 list the wells for which we could not find the driller's log.

FORMAT

The standard format consists of two parts: a heading that gives the general information for the well, and the description of the material penetrated.

Heading. -- The heading gives the well number, as reported in Hanford Wells (Kipp et al, 1973), if the well was included in that publication. It also gives the plant or Richland coordinates and land-surface altitude at the well. We obtained this information from Hanford Wells, the drillers' original logs, or personal communication with others working on the Hanford Reservation. Notes below these data lines give other information that seemed relevant including the source of data, whether the altitude is calculated or estimated, whether the well was drilled with cable or rotary tools, and other numbers or names that have been used to describe the well.

Table 1. -- Wells for which Newcomb et al, 1972, published summary logs but for which we did not have drillers' logs.

699-S12-3
699-2-3
699-8-17
699-20-82
699-53-100
699-61-26A
699-71-80

Table 2. -- Wells for which drillers' logs were not found although they were included in an earlier unpublished compilation.

699-S8-E15	699-54-45
699-S6-E15A	699-55-65A
699-8-19	699-55-65B
699-11-45	699-56-44
699-11-45A	699-64-27
699-18-E2	699-66-39 (may be same well as partial log we have that is labelled 699-66-40)
699-45-20	
699-54-34	
699-54-37	699-66-103
699-54-42	699-HAN-6
	699-HAN-19

In many cases we estimated the land surface altitude from the casing altitude given in Hanford Wells by subtracting two feet (the average height of casing above ground level) from the casing altitude. Where we have a record of the actual height of casing left above ground we subtract that height from the casing altitude to obtain the land-surface altitude. For a few wells the locations are uncertain because they have not been surveyed. All altitudes and location coordinates are rounded to the nearest foot.

Descriptions. -- We followed the driller's original descriptions as closely as possible. We have avoided making interpretations as much as possible. We used the driller's original daily log of work activity in preference to any summary or formation record. We did not include formation names unless other useful description was lacking. We used condensed and interpreted logs as a last resort, and only when they were all that were available. Similarly, "redrill" logs for wells that were not deepened were not used unless they were the only logs available. If the log of an abandoned hole was informative, we included it in this compilation even if another well was completed very close to it. This sometimes results in two wells having the same number, because such logs were labeled with plant coordinates or well numbers like those used in Hanford Wells and these abandoned holes were not necessarily listed in Hanford Wells. Many of these holes were abandoned during drilling, after which another hole was drilled nearby and given the same number as the unsuccessful hole. The completed well was listed in Hanford Wells. When the completed well and the abandoned hole had the same well number, confusion resulted. We placed the logs of these abandoned holes after the logs of completed wells.

The format contains depths from and to, and a lithologic description or comment for each depth range. Transcription was done by workers with experience in geology and knowledge of the Hanford Reservation. These workers read the entire driller's log and incorporated all pertinent comments into the description. This practice sometimes led to repetitious entries if the driller's log was not as definitive as we wished. We expressed doubts about entries by use of a question mark or modifiers such as "record unclear," "probably...," or "possibly..." Occasionally a driller used a question mark or a modifier to express doubt, and we may then have added quotation marks to distinguish the driller's comments from those of the transcriber.

We presumed that the original logs represent the driller's observations during drilling and that each entry was his description of a sample taken or trouble encountered on the day and at the time written in the log and from the depth specified. A driller's description may refer either to:

(1) one sample in a series of separate samples taken at single specified depths, or

(2) a composite sample which represents the rock in an interval between the depth of last sampling and the depth at which the driller paused to collect the described sample.

The description cannot refer to a sample from an interval below the depth written. In common drilling practice the driller pauses every five or ten feet and collects a composite sample for the depth interval just drilled, so we have transcribed the logs in light of this practice.

Where the driller has noted a lithologic change at a specific depth that falls between samples, we have incorporated his notes into the transcribed format either by amending the depth interval to fit with this additional information, or by including the comment in the description of the pertinent interval. Some drillers have written their logs with clearly marked depth intervals rather than a sequence of single depths, in which case we have transcribed information verbatim.

Sometimes a driller logged sample descriptions at single depths rather than depth intervals and entered his first description at zero feet. Since zero feet must be land surface, a description entered for zero feet can refer only to the surface or to the interval between the surface and the next depth logged. We transcribed such logs only after reading the entire log to determine what was meant. The sample description opposite zero feet almost always referred to the first sample taken in the well rather than referring to only the surface deposit.

Periods during which the driller neglected to record a description were described in our format as "no record." If the log indicates that a sample was taken and we have no description, we entered "no record but sampled." When we felt that the driller's other comments indicated what he meant to log, we added that description to the entry, as in "no record, possibly sand and silt."

Other drillers' notes such as "caving," "sand runs back up pipe 6 feet every time I drive casing," or "added dirt to help drill this loose sand" were included in the description when we felt they helped define the character of the strata being drilled, or might affect the nature or quality of samples taken.

Because we already knew that the water level has not been static over the reservation through time, we did not include such transient descriptors as "dry," "wet," "damp," or "water." Occasionally we included these words to describe another characteristic, as in "good water sand." We have also included some descriptors which are not words found in any dictionary we have, but seem to be quite clear to the driller, such as "gastreous."

We tried to use standard American spelling for all words, and have taken the literary liberty of correcting spelling when transcribing or typing if the meaning was clear. Likewise, we have added punctuation where needed for clarity. In this respect we have used a semicolon to separate parts of the description taken from different columns, lines or sections of the original log. Some descriptions defy clarification so we left them as originally written.

We used abbreviations only where their true meaning was unclear. Abbreviations such as "s," which may mean "small," "sand," "silt," "sandy," or "silty," cause some confusion, as does indiscriminate use of the slash to separate parts of an abbreviated description such as "vf/f/m" followed in the next entry by "v/f/m/c."

Here, then, are the transcribed drillers' logs, in the same order as presented in Hanford Wells, 1973.

REFERENCES CITED

Kipp, K.L., McGhan, V.L., and Damschen, D.W., 1973, Hanford Wells: US - AEC Report BNWL - 1739, UC - 70, Battelle, Pacific Northwest Laboratories, 111 p.

Newcomb, R.C., Strand, J.R., and Frank, F.J., 1972, Geology and ground-water characteristics of the Hanford Reservation of the U.S. Atomic Energy Commission, Washington: USGS Prof. Paper 717, 78 p.

Summers, W.K., and Deju, R.A., 1974, A preliminary review of the regional hydrology of the Hanford Reservation: CA-168-RAD-4, Raul A. Deju and Associates, Richland, Washington, 54 p.

Driller's log of 199-B3-2[1] (N071752, W078818) Hanford Wells, 1973

Land surface altitude[2] 441 feet msl

1. Also labeled 107-B-2
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	backfill and boulders
5	15	boulders, little silt
15	25	boulders, gravel and silt
25	43	coarse gravel
43	55	coarse gravel, little silt
55	58	gravel, little sand
58	60	coarse gravel
60	65	coarse gravel, little silt
65	72	small and coarse gravel
72	75	75% gravel, 25% sand
75	80	fine and coarse sand
80	83	pea gravel
83	85	coarse gravel
85	95	sand, and gravel; 90' fine gray sand comes in with water, gravel runs from pea gravel up to 4"
95	100	75% sand, 25% coarse gravel
100	105	fine and coarse sand, little pea gravel
105	110	coarse gravel and sand
110	130	coarse gravel, little sand
130	137	50% gravel, 50% sand
137	140	small and coarse gravel, little sand
140	143	small and coarse gravel
143	147	coarse gravel up to 5', little sand and clay
147	153	70% sand, 30% small gravel
153	170	sand and silt
170	180	sand, silt and clay
180	188	fine sand
188	197	50% coarse gravel, 50% fine sand
197	215	sand and silt
215	230	sand, silt and caliche
230	240	sand and silt
240	250	sand, silt and caliche
250	255	sand, little silt
255	264	fine sand; sand runs in
264	267	50% sand, 50% small and coarse gravel; sand runs in, 267' gravel runs up to 5"
267	275	small and coarse gravel, fine sand
275	277	coarse gravel
277	280	fine and coarse sand
280	290	sand and gravel
290	295	75% small and coarse gravel, 25% sand
295	300	fine gray sand and gravel, sand comes in
300	305	clay, gravel and sand
305	317	layer of sand, silt and clay
317	320	small and coarse gravel, 25% sand; small gravel and sand at 317'

Driller's log of 199-B3-2 cont

Depth (ft) From	To	Description
320	328	coarse gravel and sand
328	330	small and coarse gravel, and sand
330	333	small and coarse gravel
333	334	gravel and boulders
334	335	sand, small and coarse gravel, and some rindstone
335	340	sand, small and coarse gravel
340	350	coarse gravel, little sand
350	359	fine sand, a little coarse gravel; sand comes in faster than we can bail it out
359	360	50% sand, fine, 50% gravel
360	365	sand, coarse gravel and boulders
365	370	fine and coarse sand, coarse gravel
370	375	coarse gravel, boulders and fine sand
375	378	clay, sand and gravel
378	380	sand and clay
380	388	sand, silt and clay
388	415	clay
415	425	gray clay
425	435	sandstone
435	445	clay, caliche and little sand
445	450	sand and clay
450	460	clay
460	465	clay, small gravel in clay
465	480	clay and sandstone
480	495	clay
495	510	blue clay
510	530	gray clay
530	550	clay
550	555	blue clay
555	575	blue shale; overnight the sides came in enough so bit couldn't go through
575	585	blue shale, little caliche
585	590	blue clay
590	595	clay, sand and gravel; at 594' blue shale, black clay, little sand, 35% gravel, pea gravel up to 2"
595	600	sand and gravel; sand comes in
600	605	sand, gravel and clay
605	611	75% sand, 25% gravel and clay
611	615	gray clay
615	620	clay, sand and gravel
620	625	sand and clay
625	630	sand, gravel and clay; sand comes in
630	632	sand
632	638	sand and gravel
638	648	sand and clay
648	656	gray clay
656	737	basalt
737	745	gray basalt; drilled up very fine
745	750	black basalt; didn't drill up so fine
750	763	basalt
763	765	basalt with a few small vesicle filling

Driller's log of 199-B3-2 cont

Depth (ft) From	To	Description
765	769	gray basalt
769	773	blue and white clay
773	778	gray crumbly ash, breaks into 1/8" pieces
778	787	fine white sand; sand comes in
787	790	red sandstone; water temperature was 130°

Driller's log of 199-B5-1 (N069930, W082000) Hanford Wells, 1973

Land surface altitude[1] 453 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	1	6" minus gravel
1	5	dug out 2' boulder from 2', and one 12"; cobbles and gravel with silty sand
5	10	cobbles and gravel with a little sand and trace of silt
10	15	cobbles and gravel with trace of silt
15	20	gravel and some cobble with trace of silt
20	25	2" minus gravel with some silt and sand; material coming from 75° in temperature (est.) from 22'-28'
25	35	15" minus gravel with some sand and little silt
35	45	2½" minus gravel with some sand and little silt, light brown; material has been getting hotter, so hot now you cannot hang on to it
45	50	3" minus gravel with light brown and trace of silt
50	60	3" minus gravel and sand with trace of silt; heaves a little
60	65	2' minus gravel with fine brown sand and trace of silt
65	70	6" minus gravel with some brown sand and trace of silt
70	75	fine and coarse sand with 2" minus gravel and trace of silt; heaved in 7' while driving 72' to 75'
75	80	brown sand with 3" minus gravel and coarse sand
80	85	3" minus gravel with brown and coarse sand
85	90	3" minus gravel with coarse sand and silt tightly packed
90	95	3" minus gravel, coarse sand and silt
95	100	2" minus gravel to sand, tightly packed silt
100	110	2" minus gravel sand, tightly packed with silt; still hot
110	115	3" minus gravel with sand and some silt
115	120	2" minus gravel with sand and some silt very tightly packed
120	125	2" minus gravel with sand and some silt
125	130	2" minus gravel with sand and some blue clay; hole is caving in
130	135	3" minus gravel with sand and silt very tightly packed
135	140	5" minus gravel with coarse and fine sand and traces of silt
140	145	2" minus gravel with coarse sand and silt tightly packed
145	150	tightly packed 1" minus gravel and sand with silt
150	151	no record, probably sand as 145' to 150'

Summary of driller's log of 199-D2-5 (N090783, W052638) Hanford Wells, 1973

Land surface altitude[1] 458 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	15	12" cobble and silty sand
15	25	3" gravel and sand
25	30	gravel and sand
30	35	small gravel and sand
35	45	sand-slight trace of silt
45	50	3" minus gravel, silty
50	80	3" minus gravel and sand
80	85	sand and 2" minus gravel, silty
85	90	2" minus gravel, silty sand
90	95	yellow clay, slight amount of sand; at 95', yellow clay, small pieces of basalt

Driller's log of 199-D8-2[2] (N094725, W053018) Hanford Wells, 1973

Land surface altitude[1] 443 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Also labeled 107-D-1
3. Cable tool rig

Depth (ft) From	To	Description
0	10	backfill
10	15	black sand
15	20	gravel and black sand
20	23	gravel
23	25	pure gravel; caves
25	30	pure gravel and sand
30	35	gravel, sand and some silt as binder
35	40	gravel, some sand, less silt
40	45	gravel, some sand
45	50	gravel
50	57	gravel, some sand; very loose gravel, caves about 6" under pipe
57	73	gravel, sand; comes back up pipe 2'
73	76	gravel, sand

Driller's log of 199-F5-6 (N080537, W029402) Hanford Wells, 1973

Land surface altitude[1] 411 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig, used ½ sack bentonite to start

Depth (ft) From	To	Description
0	10	gravel, boulders and sand
10	20	loose gravel and sand, some boulders
20	24	loose gravel and sand, some gravel
24	30	loose gravel and sand, some boulders
30	65	large gravel and fine brown sand
65	70	brown sandy silt
70	95	sandy clay
95	105	clay and gravel
105	160	sandy clay
160	185	clay
185	192	sticky shale

Driller's log of 199-F7-1 (N077199, W033394) Hanford Wells, 1973

Land surface altitude[1] 388 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig, added clay and bentonite first 19'

Depth (ft) From	To	Description
0	19	large gravel and cobblestones
19	20	smaller gravel
20	25	start of a clay mixture
25	30	clay
30	35	blue clay
35	45	brownish clay, mixture of sand
45	55	some silt mixed in
55	65	mostly all clay
65	70	yellowish clay
70	75	fine sand mixture
75	80	brownish clay and some silt
80	90	decomposed sand and clay
90	95	brownish silt
95	100	blue clay and some gravel
100	105	clay and some sandstone
105	110	brown silt
110	118	mixture clay, silt and small gravel
118	125	light brown cemented sand and clay
125	130	decomposed sand and clay
130	135	some gravel
135	145	less gravel and brownish sandstone
145	150	sticky brownish clay

Driller's log of 199-H4-2[1] (N095200, W038565) Hanford Wells, 1973

Land surface altitude[2] 416 feet msl

1. Also labeled 107-H-2
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	10	gravel, sand and silt
10	31	gravel and sand; caves
31	35	sand and gravel; caves
35	37	gravel and sand
37	50	sand and some gravel; caves and runs
50	53	sand and gravel
53	55	sand and some gravel
55	59	sand and gravel
59	65	heavy silt, reddish brown
65	70	silty clay and rotten sandstone
70	75	clay, silt, sandstone, caliche and sand
75	85	clay, rotten sandstone and sand
85	90	sand and silt like sandstone
90	95	sand, silt, and caliche
95	100	sandy clay and silt
100	110	sandy clay, silt and chips of basalt
110	125	sandy clay, silt and caliche
125	135	sandy clay, silt and chips of basalt
135	145	heavy sandy clay and silt
145	150	heavy sandy clay, silt, some basalt gravel and chips
150	165	layers of heavy clay, silt, then heavy layer of black and white sand
165	170	sandy clay, silt and basalt chips
170	175	reddish brown clay, yellow sandy clay and silt
175	185	yellow sandy clay and silt
185	190	yellow sandy clay and silt with basalt gravel; this sand and silty clay formation bridges the hole over
190	192	gravel the size of golf balls, lot of gray sand; caves and runs up hole
192	200	1' gray sand, brown sandy silt; sand comes in
200	205	whitish sandy ash and some rock chips
205	210	brown sand, silt and mud
210	230	gray muck and very fine sand; 215'-230' gray caliche mud; sand comes in
230	235	no record; muck and sand come in hole
235	245	sand, some silt, and basalt chips; sand running in
245	250	4' sand and 1' clay
250	270	slick clay, gray ash, shale and sandstone; at 265' more gray ash
270	272	blue clay with gravel embedded in it
272	274	sandy white mud; sand will pump back up the pipe
274	275	blue clay with gravel
275	277	blue shale, fine gravel and layer sand
277	280	green clay and fine gravel
280	290	black stiff mud; volcanic mud
290	295	black mud
295	300	black mud and shale; hard shale formation about 1' thick at 300'

Driller's log of 199-H4-2 cont

Depth (ft) From	To	Description
300	325	black mud
325	330	black mud like shale; get pieces of hard gray shale when dry, black when wet
330	331	acts like basalt
331	334	shale; tough as hell
334	335	hard black shale
335	340	black shale, green clay; this looks like rotten basalt
340	355	green, black and white shale or clay
355	365	basalt, rotten or weathered
365	370	basalt
370	380	ash, sand, silt, blue clay, shale, gravel and sandstone; sand came in
380	381	top of second layer of basalt
381	385	basalt
385	386	basalt and blue mud

Driller's log of 199-K-11[1] (N076030, W068733) Hanford Wells, 1973

Land surface altitude[2] 466 feet msl

1. Also labeled RDA-DC6#11
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	4	boulders
4	10	drilling between boulders
10	15	boulders and gravel
15	28	coarse gravel
28	30	75% gravel with 25% sand and silt; hit sand and silt at 28'
30	40	sand and silt
40	42	sand, silt and gravel
42	48	sand, silt and coarse gravel
48	50	50% gravel, 50% sand and silt
50	60	cement gravel
60	78	coarse gravel
78	82	gravel and sand, hit a little sand at 78'
82	97	gravel, sand, and a little silt
97	100	pure sand and coarse gravel
100	105	gravel and a little sand
105	110	coarse gravel
110	115	gravel and sand
115	118	pebbles and a little sand
118	127	pebbles, gravel and sand; hit a boulder at 118'
127	135	gravel and sand
135	140	sand and coarse gravel
140	160	coarse gravel and sand
160	163	sand and silt with a little gravel
163	164	coarse gravel
164	165	sand and silt
165	170	clay

Driller's log of 199-N-2 (N086577, W060306) Hanford Wells, 1973

Land surface altitude[1] 458 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	8	sand, gravel and boulders; backfill for 3', boulders up to 14"
8	15	sand and gravel
15	17	boulder; pulled casing and redrilled
17	60	sand and gravel; one lone boulder at 57'
60	100	sand and gravel, loose; one lone boulder at 64' moved, fills in when driving casing
100	105	gravel, sand, clay
105	125	clay

Driller's log of 299-E13-4[1] (N035809, W053550) Hanford Wells, 1973

Land surface altitude[2] 741 feet msl

1. Also labeled 241-BC-4
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	8	gravel, sand and silt
8	15	sand, silt, gravel; casing out of gravel at 15'
15	36	sand, silt
36	42	no record, probably sand, silt
42	154	sand, silt
154	166	pea gravel, sand, silt
166	222	sand, silt
222	230	gravel, sand, silt
230	243	sand, silt and gravel; gravel at 235'
243	250	no record, probably sand, silt, and gravel
250	266	gravel
266	269	no record, probably gravel
269	280	cobbles, gravel
280.	290	gravel
290	299	hole caves in, gravel
299	369	gravel

Driller's log of 299-E17-5[1] (N038700,W048560) Hanford Wells, 1973

1. Labeled well 2, project 244-JAJ
2. Cable tool rig with corebarrel
3. ? used where entry hard to read

Depth (ft) From	To	Description
0	20	sand, gravel (intermittent)
20	35	sand, coarse
35	50	sand, medium fine
50	55	sand, fine
55	75	sand, coarse
75	80	sand, fine to medium coarse
80	85	coarse sand
85	90	coarse-medium fine sand
90	100	fine sand, heavy concentration of clay
100	105	? sand, medium fine, small trace of clay
105	110	sand, fine to medium fine, trace of clay
110	120	? sand, fine to medium fine, trace of clay
120	140	sand, fine to coarse, some clay
140	150	? sand, fine to coarse, some clay
150	160	? mostly fine sand
160	170	sand, fine to medium coarse with clay particles
170	175	fine sand
175	180	sand, fine to medium coarse
180	190	sand, fine, with trace of clay
190	200	sand, ? fine with traces of clay
200	225	sand, fine to medium coarse, ? fine clay mixture
225	230	more coarse sand than fine, some traces of clay
230	235	coarse sand, small pieces of basalt gravel, very little clay
235	240	very coarse sand mixed with ¼" to 3/4 " gravels
240	250	coarse sand, chipped basalt gravel
250	260	coarse sand, 1/4"-3/4" basalt-black gravels
260	270	? basalt gravel 1/4"-3/4" black, some pea gravel
270	280	gravels 1/4"-3/4" mixed with ? gray clay
280	290	light sandstone mixed with some gravel
290	300	light sandstone, very little gravel
300	310	? sandstone mixed with colored gravels
310	320	gravels, ? sandy loam
320	335	gravel 1/4"-3/4" subangular ? mixed with lime
335	336	"hard basalt??"
336	337	hard basalt, some sand coming around casing shoe
337	338	hard gray basalt
338	339	very hard basalt

Driller's log of 299-E19-1 (N038085, W056023) Hanford Wells, 1973

Land surface altitude[1] 734 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand, silt and gravel
5	15	sand, gravel
15	20	sand, silt, and gravel
20	50	coarse sand and silt
50	55	coarse sand, silt and gravel
55	65	sand, coarse, and silt
65	70	sand, fine, and silt
70	85	coarse sand and silt
85	125	coarse sand and more silt
125	155	coarse sand and silt
155	160	no record, but sampled
160	210	sand, silt
210	220	coarse sand, gravel and silt
220	225	coarse sand, silt, gravel
225	230	fine sand, silt
230	235	fine sand, silt, almost clay
235	240	coarse sand and silt, cleaner
240	250	coarse sand, gravel
250	260	coarse sand, gravel with silt
260	275	sand, gravel, silt
275	280	pea gravel, clean
280	295	gravel, sand, silt
295	300	gravel, sand, very little silt
300	350	gravel, sand, and silt
350	352	boulders and cobbles
352	355	cobbles, gravel, silt
355	360	sand, silt, cobbles, boulders
360	365	boulders, gravel, sand
365	368	boulders, cobbles and brown sand

Driller's log of 299-E23-1[1] (N041131, W052000) Hanford Wells, 1973

Land surface altitude[2] 708 feet msl

1. Labeled 361-B-8
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	7	sandy loam
7	10	gravel
10	15	sand and gravel
15	19	coarse sand and fine gravel
19	55	coarse gray sand
55	70	gray sand with a little clay; the deeper we go the finer the sand is and more yellow clay with it
70	95	gray sand and clay
95	105	gray sand and clay; sand is heavier and finer
105	110	sand and clay; sand is heavier and finer
110	120	sand and clay
120	125	more clay and finer sand
125	140	some very coarse sand with the clay
140	210	sand and clay
210	217	coarse sand; at 217' coarse gray sand, caves in
217	221	gravel and boulders
221	222	boulders and gravel; caves easy
222	225	fine gravel and coarse sand; caves easy
225	230	sand, fine and coarse
230	235	coarse sand and a little clay
235	255	sand and clay
255	265	sand, gravel and clay
265	270	sand, gravel and boulders; hit a large boulder at 270'
270	275	boulders and gravel
275	280	gravel and boulders
280	282	coarse gray sand and gravel; caves
282	285	coarse gray sand with gravel getting coarser; still caves easily
285	287	sand and gravel; caved
287	294	gray sand; caves easily
294	300	dark yellow clay
300	302	very fine gray sand; caves easily
302	305	fine gray sand
305	307	no record except "water leaving the hole"
307	310	gray sand; caves
310	312	sand and gravel; caves
312	314	gravel and boulders
314	317	gray sand
317	320	gray sand, gravel and boulders
320	322	boulders
322	326	gravel and boulders
326	335	sand, gravel and boulders
335	337	gray sand
337	343	dark gray sand
343	345	gray sand
345	348	fine gray sand

Driller's log of 299-E24-5[1] (N041275, W048734) Hanford Wells, 1973

Land surface altitude[2] 695 feet msl

1. Also labeled 216-A-9-3, and A-9-3
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	7	brown sand
7	50	coarse sand, some gravel
50	55	large gravel, coarse sand
55	70	coarse sand, some gravel
70	130	coarse sand
130	135	medium coarse sand
135	150	brown sand, some silt
150	160	medium coarse sand
160	170	coarse sand
170	175	medium coarse sand
175	210	coarse sand
210	215	brown sand, some silt
215	240	coarse sand
240	245	medium coarse sand, some silt
245	260	brown sand, some silt
260	265	coarse sand and gravel
265	280	boulders, gravel, and sand
280	310	gravel and sand, some large gravel
310	329	gravel, boulders and sand

Driller's log of 299-E24-7 (N039628, W050813) Hanford Wells, 1973

Land surface altitude[1] 717 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand, little gravel
10	25	fine and coarse sand
25	35	coarse sand
35	60	sand, little silt
60	105	coarse sand, little silt
105	115	sand, little silt
115	120	fine sand, coarse sand
120	180	sand, little silt
180	185	coarse sand
185	195	coarse sand, little silt
195	205	sand, little silt
205	210	coarse sand
210	217	coarse sand, coarse gray and black sand and gravel
217	220	small and coarse gravel, some sand
220	225	coarse gravel
225	230	coarse sand, little gravel
230	245	fine and coarse sand
245	255	sand, little silt
255	260	sand, gravel, little silt
260	271	sand, little silt
271	276	coarse gravel up to 5"
276	290	cobbles and gravel
290	298	boulders
298	325	cobbles, gravel
325	335	small and coarse gravel up to 3", coarse sand
335	350	sand, silt and gravel; sand came in
350	358	50% gravel, cobbles, 50% fine and coarse sand
358	360	cobbles, gravel, sand, basalt
360	365	sand, silt, gravel
365	368	sand and gravel
368	370	cobbles, gravel, little sand
370	374	basalt, cobbles, gravel, fine sand; at 370' fine sand came up 6' in pipe
374	380	sand, gravel and basalt, cobbles
380	390	small and coarse gravel, sand, little silt
390	395	sand, gravel and cobbles
395	415	sand, silt and gravel
415	420	sand, gravel and cobbles
420	425	small gravel, sand and clay
425	435	sand, silt, little clay
435	440	sand, silt and gravel
440	445	cobbles, gravel and sand
445	448	basalt, cobbles and sand
448	450	basalt

Driller's log of 299-E24-8B (N041962, W050346) Hanford Wells, 1973

Land surface altitude[1] 687 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand, silt, gravel up to 6"
10	25	fine and coarse sand
25	50	coarse sand
50	70	coarse sand, little silt
70	90	coarse sand
90	160	coarse sand, little silt
160	180	sand, little silt
180	195	coarse sand
195	240	sand, little silt
240	255	gravel and sand
255	270	coarse sand and gravel
270	275	gravel, very little sand
275	282	cobbles, gravel and sand
282	292	cobbles, gravel
292	297	cement gravel
297	302	fine sand, and gravel
302	317	small and coarse gravel, fine sand
317	326	cobbles, coarse gravel and sand
326	330	sand, silt and small gravel
330	352	coarse gravel, sand
352	360	sand, gravel, clay and silt
360	365	red sand, gravel and clay
365	370	red sand, gravel and basalt
370	373	fine sand
373	382	basalt

Driller's log of 299-E25-2[1] (N041270, W047190) Hanford Wells, 1973

Land surface altitude[2] 674 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil and snow blow sand
5	10	sandy silt
10	15	sandy silt, caves
15	25	sandy silt
25	33	black sand and fine gravel
33	45	sandy silt
45	55	sand, less silt
55	80	sandy silt
80	95	sandy, less silt
95	110	coarse sand and silt
110	117	fine gravel
117	130	sandy silt
130	160	coarse sand and silt, caves
160	175	fine sand and silt, caves
175	195	fine sand and silt
195	200	no record
200	205	gravel
205	245	gravel, sand
245	255	gravel and coarse sand
255	265	heavy silt, fine sand
265	270	gravel and silt
270	288	gravel
288	305	gravel and sand
305	315	coarse gravel and coarse sand
315	320	fine sand
320	330	gravel and fine sand
330	334	gravel and sand
334	339	coarse gravel, coarse and fine sand
339	355	gravel, sand, silt
355	360	gravel, sand, black mud
360	375	basalt; top of basalt

Driller's log of 299-E26-1[1] (N044774, W048025) Hanford Wells, 1973

Land surface altitude[2] 615 feet msl

1. Also labeled 361-B-11
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	2	sandy loam
2	11	sand and gravel
11	36	sand, gravel and boulders; added topsoil between 30' and 35'
36	40	gray sand
40	55	sand, gravel and boulders
55	63	sand and gravel
63	75	sand, gravel and boulders
75	81	coarse sand and gravel
81	90	sand, gravel and boulders
90	125	sand and clay
125	130	coarse sand and clay
130	135	coarse sand and fine gravel
135	138	hard fine sand
138	142	sand, gravel and boulders
142	150	gray sand
150	160	sand and gravel
160	172	sand, gravel and boulders
172	177	sand and gravel
177	184	gravel and boulders
184	185	fine black sand; caves
185	190	black sand and gravel; caves
190	200	sand, gravel and boulders; boulders move and pinch bit
200	201	sand and gravel
201	205	gray sand
205	209	sand, gravel and boulders
209	213	gray sand; caves
213	216	coarse sand
216	223	coarse sand and fine gravel
223	228	reddish brown volcanic ash
228	240	dark bedrock; added boulders at 239', bit was hanging up
240	241	black sand and fine ground rock
241	248	basalt

Driller's log of 299-E26-2

Land surface altitude[1] 629 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	15	sand and gravel
15	20	sand
20	35	sand and gravel
35	45	gravel
45	50	sand and gravel
50	55	gravel
55	65	sand and gravel
65	70	no record, probably sand and gravel
70	80	sand and gravel
80	105	gravel
105	110	sand and gravel
110	120	gravel
120	125	clay and gravel
125	140	coarse sand and gravel
140	145	clay and sand
145	150	basalt rock and gravel
150	165	blue cemented gravel
165	175	sand and clay, gravel; put in 25 pounds of bentonite at 166'
175	180	sand
180	185	no record
185	200	gravel
200	235	cemented gravel
235	240	sand and gravel
240	245	sand
245	261	sand and gravel
261	264	yellow clay
264	267	blue clay

Driller's log of 299-E27-3[1] (N042000, W048500) Hanford Wells, 1973

Land surface altitude[2] 681 feet msl

1. Labeled 299-E27-3(11)
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand and silt
5	35	sand and gravel
35	65	coarse sand and silt
65	70	coarse sand and small gravel
70	160	sand and gravel
160	165	coarse sand and silt
165	185	small gravel
185	190	coarse sand and fine gravel
190	215	sand and silt
215	235	coarse sand and silt; bentonite added to fish bit at 234'
235	250	sand and gravel
250	275	sand and gravel; large percentage of gravel and large cobbles
275	285	gravel and cobbles
285	290	coarse gravel
290	300	coarse gravel and sand; more sand in the 295 and 300' sample
300	317	coarse clean sand
317	320	sand and gravel
320	327	very fine sand
327	330	quicksand; sand is black and heavy, will come up 3' in pipe while drilling
330	339	gravel, clean
339	347	sand and gravel; gravel is clean
347	349	sand and gravel
349	351	basalt; fine sand with the basalt sample, not over 6" of sand on top of rock
351	360	basalt

Summary of driller's log of 299-E27-52[1] (N043096, W048322) Hanford Wells, 1973

Land surface altitude[2] 645 feet msl

1. Labeled 241-C-134
2. Altitude from summary of driller's log, Hanford Files

Depth (ft) From	To	Description
0	21	fine sand
21	50	sand and gravel
50	63	fine sand
63	88	sand
88	99	sand and gravel
99	119	sand
119	131	coarse basalt gravel
131	150	sand

Driller's log of 299-E28-2[1] (N043913, W053105) Hanford Wells, 1973

Land surface altitude[2] 679 feet msl

1. Also labeled 361-B-2
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	15	gravel
15	20	sand and gravel
20	100	coarse sand
100	105	sand and clay
105	125	fine sand and clay
125	135	clay and sand
135	210	sand and clay
210	215	black and white gravel
215	220	black and white gravel and fine sand
220	225	black and white coarse sand and little clay
225	230	black and white coarse gravel; hole caves
230	235	coarse agatized gravel
235	239	black and white sand
239	240	coarse gravel
240	245	black and white sand
245	250	sand and gravel with little clay; added clay 245' and 250'
250	255	coarse sand and gravel and little clay
255	259	gravel and sand; added clay at 251', 259'
259	266	very coarse gravel with a little sand; added clay at 265'
266	274	gravel; added clay at 268', 273'
274	275	coarse gravel
275	276	gravel
276	277	very fine brown sand
277	280	very fine gray sand
280	287	clay, sand, gravel
287	291	sand and gravel with little clay
291	294	gravel and sand
294	295	very fine gray sand
295	296	rocks
296	298	sand and little gravel
298	299	sand and gravel
299	300	fine gray sand
300	303	sand and gravel
303	310	fine gray sand
310	319	black and white sand, lots of basalt sand
319	322	fine sand

Driller's log of 299-E28-4 (N042773, W052143) Hanford Wells, 1973

Land surface altitude[1] 690 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	4	topsoil
4	16	sand and gravel
16	27	basalt rock and gravel
27	39	coarse sand
39	65	fine black and white sand
65	85	fine black and white sand and little clay
85	132	clay and fine sand
132	150	clay and sand
150	162	sand and gravel
162	165	fine black and white sand and clay
165	179	fine black and white sand; caves
179	205	fine sand; caves
205	220	fine sand
220	235	coarse black and white sand
235	238	rocks, and coarse black and white sand
238	260	coarse sand and basalt rock; caves
260	267	little clay and rocks
267	273	fine black sand
273	278	gravel and rocks
278	286	fine black sand
286	294	fine sand and rocks
294	295	fine black sand and rocks
295	297	rocks
297	301	sand and rocks
301	302	rocks
302	304	rocks and black sand
304	310	black sand
310	315	sand and water gravel
315	318	coarse sand
318	321	fine black sand; caves

Driller's log of 299-E28-5[1] (N043980, W051989) Hanford Wells, 1973

Land surface altitude[2] 672 feet msl

1. Also labeled 361-B-5
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil and sand
5	14	gravel
14	25	gravel, basalt
25	35	no record
35	70	black and white sand, clay, very little small pea gravel; little less clay at 65'
70	115	black and white sand and clay
115	135	sandy clay
135	170	sandy clay, black and white sand; very small amount of pea gravel, black basalt
170	195	black and white sand and clay, more black sand
195	218	black and white sand and clay; caves
218	227	heavy coarse black and white sand
227	230	basalt pea gravel and gravy coarse sand
230	232	hard gravel
232	238	pea gravel to coarse gravel with some sand and clay
238	240	black and white sand
240	242	fine black and white sand
242	247	black and white sand, pea gravel and more clay
247	250	black and white sand and less clay
250	255	black and white sand
255	257	black and white sand and pea gravel
257	260	coarse sand, gravel and clay
260	262	fine gray sand
262	270	very fine white and black sand; (color also described as gray)
270	290	very fine gray sand
290	295	fine gray (or white) sand
295	306	very fine light gray (or white) sand
306	314	black sand; fine basalt with clay binder
314	315	black basalt sand, green color; sample at 315' may have some foreign formation in it
315	320	fine black basalt rock
320	322	fine basalt rock
322	327	very fine gray black basalt, with a dirt silk-like binder, yellowish green color; when dry it is common dirt color and feels like dirt

Driller's log of 299-E28-16 (N042927, W054975) Hanford Wells, 1973

1. Cable tool rig
2. ? used where entry is hard to read

Depth (ft) From	To	Description
0	5	sand and silt
5	10	sand
10	15	sand, ? gravel and silt
15	20	? sand and silt
20	45	sand and silt
45	47	silt
47	50	sand and silt
50	75	sand
75	80	silt
80	100	sand
100	105	sand and silt
105	125	sand
125	145	? sand
145	170	sand
170	180	sand and silt
180	190	sand, some pea gravel
190	200	sand
200	210	sand, some pea gravel
210	225	sand
225	235	sand, small gravel
235	280	sand and gravel
280	290	sand, gravel and cobbles; added bentonite
290	295	sand and gravel
295	300	some gravel, heaving sand
300	305	sand, some gravel
305	310	sand, gravel, cobbles
310	315	sand and gravel
315	320	sand and clay
320	325	sand

Driller's log of 299-E32-1 (N046488, W056684) Hanford Wells, 1973

Land surface altitude[1] 665 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	boulders, gravel, sand
5	10	boulders, gravel
10	20	sand, boulders, gravel
20	30	coarse gravel, sand
30	40	cobbles, gravel, silt
40	45	coarse gravel and sand
45	55	fine and coarse sand
55	60	coarse sand
60	70	coarse gravel and sand
70	80	coarse sand and gravel
80	90	coarse sand
90	95	coarse sand and gravel
95	105	coarse sand
105	135	sand, silt
135	170	sand and little silt
170	198	fine sand, little silt
198	200	small gravel, coarse sand
200	205	coarse gravel and sand, gravel up to 3"
205	215	small coarse gravel
215	220	gravel 1" to 4"
220	245	gravel
245	247	clay
247	265	gravel
265	272	sand, gravel
272	283	basalt; pipe stopped at 271'8"-basalt

Driller's log of 299-E33-10[3] (N045216, W054566) Hanford Wells, 1973

Land surface altitude[1] 669 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig
3. Also labeled 241-BY-14

Depth (ft) From	To	Description
0	18	sand, silt, gravel, boulders
18	20	gravel, cobbles and sand
20	25	gravel, cobbles and sand (black)
25	28	gravel, cobbles
28	40	coarse gravel, fine gray sand
40	58	sand and coarse gravel
58	65	coarse sand
65	100	fine sand, little silt
100	165	sand and silt
165	180	coarse and fine sand
180	190	coarse sand
190	205	fine sand and silt
205	225	sand, silt, small gravel
225	235	sand, silt and coarse gravel
235	240	small and coarse gravel
240	255	coarse gravel
255	260	coarse gravel and sand
260	270	coarse gravel
270	275	coarse gravel and sand
275	280	coarse sand and gravel
280	285	fine and coarse sand, little gravel
285	290	basalt

Driller's log of 299-E33-12[1] (N046436, W052850) Hanford Wells, 1973

Land surface altitude[2] 622 feet msl

1. Also labeled 241-B-15; new hole-redrill
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig
4. Driller's log indicates "no samples taken"

Depth (ft) From	To	Description
0	15	gravel
15	40	gravel and sand
40	105	sand and silt
105	115	fine gravel and sand, silt
115	140	coarse sand, very little silt
140	155	no record, probably coarse sand, very little silt
155	175	sand, silt and gravel
175	185	sand and gravel, silt
185	204	gravel, sand, no silt
204	224	gravel, no silt
224	230	gravel
230	232	fine to coarse sand and up to 3" gravel
232	245	basalt
245	250	no record, probably basalt
250	257	basalt, blacker
257	260	basalt
260	262	very hard and dense basalt
262	269	basalt
269	273	hard basalt
273	278	solid basalt-very black
278	283	very hard basalt
283	293	basalt
293	298	basalt, hard
298	304	basalt
304	309	basalt, softer, more chips
309	310	basalt, shale, fine gravel
310	320	shale, fine gravel-sand-clay-lava mud, black
320	325	sandy shale, silt, clay, particles of fine bright red iron sand
325	330	shale, ash, clay, white and gray
330	345	gray buff bed-sandstone, ashy clay (red sandstone)
345	350	gray buff bed-sandstone, ashy clay (red sandstone), (more sandstone)
350	355	sandstone, red and white, tan and white ashy clay; found what looks like some bone and one tooth
355	370	white and tan ashy clay; sandstone in this sample comes from 350' to 355' and is bright red, gray, deep brown and tan color
370	374	showing fine gravel, basalt chips
374	380	basalt, black; 377' to 379' was hard drilling
380	385	basalt chips, ashy clay, gravel, all colors; sandstone from 350' to 355' caves in, all sand in future samples is foreign, comes from above; also some ashy clay is mixed with these samples, it is foreign, somes in with the sandstone samples 375' and 380'
385	389	record unclear; 386.5 to 387.5 hard like basalt, soft to 389'

Driller's log of 299-E33-12 cont

Depth (ft) From	To	Description
389	391	very hard black basalt
391	402	porous gastrous (or gaseous) basalt
402	412	porous basalt; basalt is so loose that good size pieces fall in, picked up 2 chunks as big as tennis balls, it is embedded with a white substance that makes the mud gray, also in this basalt is dark blood color
412	415	porous basalt; finished in a good black basalt

Driller's log of 299-E33-12[1]

1. Also labeled 241-B-15 original well
2. Cable tool rig

Depth (ft) From	To	Description
0	9	sand, silt, to gravel and boulders
9	10	sand and silt
10	20	rocks
20	22	gravel
22	25	sand and silt
25	30	coarse sand
30	70	sand and silt
70	75	sand
75	105	silt and gray sand
105	115	coarse sand and fine gravel
115	140	sand, silt
140	145	85% sand, 15% silt; caves some
145	155	75% sand, 25% silt; caves some
155	170	85% sand, 15% silt, small gravel; caves some
170	185	90% sand, 10% silt; caves badly
185	195	gravel, sand
195	209	fine gravel
209	215	gravel
215	230	gravel and sand
230	231	no record

Driller's log of 299-E34-1 (N045133, W050023) Hanford Wells, 1973

Land surface altitude[1] 628 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	20	sand and gravel; rocks at 15'
20	30	sand and gravel, gray, 4" minus
30	36	sand, gray brown, some 1" rock; sand seems to be packed hard in layers with loose sand between
36	40	sand, brown and gray, pea gravel, gray, rocks 2½" minus
40	45	fine sand and gravel, gray 4" minus
45	50	fine sand, pea gravel and rocks 2" minus
50	55	sand and rock 2½" minus, gray
55	65	powdery sand and rocks 6" minus, gray; cobbles
65	66	gray sand and 1½" minus rock
66	70	cobbles and ashes
70	73	gray sand and few 2" rocks
73	75	silt, sand and fine gravel; gray
75	80	silt, sand and gravel 1¼" minus
80	85	silt, coarse sand and 1" gravel, gray
85	93	sand, and some silt and rocks 1" minus gray
93	95	sand and some silt, gray
95	100	some silt, sand, a little gravel ½" minus gray
100	105	silt, coarse gray sand and 1" minus rock
105	110	gray silt, coarse sand and 3/4" minus rocks
110	117	gray silt, coarse sand and pea gravel; looks like the same material, except it isn't packed as tight, no rocks either
117	120	gray silt, sand and rocks 2" minus
120	125	gray silt, sand and rocks 3" minus
125	130	sand, silt and gravel 2"
130	139	sand, silt and cobbles 4"
139	140	silt with some sand or small rocks, gray
140	150	silt, sand, gray
150	155	silt, sand, rock 1"
155	160	sand with some pea gravel and a little silt; gray
160	175	sand, silt, pea gravel; gray
175	180	coarse sand; gray
180	185	sand, silt, pea gravel; gray
185	190	silt, sand; gray
190	195	silt, sand, some gravel 1"; gray
195	200	compressed silt, sand, some pea gravel; gray
200	205	compressed silt, sand and pea gravel; gray
205	210	silt, sand, gravel and cobbles 6"; gray
210	215	silt, sand and cobbles; gray
215	220	silt, sand, gravel, cobbles; gray
220	225	silt and gravel, gray
225	233	cobbles and silt, gravel; gray
233	235	basalt, gray
235	240	basalt, some innerbed; gray
240	245	basalt, gray

Driller's log of 299-W6-1 (N046090, W074396) Hanford Wells, 1973

Land surface altitude[1] 702 feet msl

1. Altitude given on driller's log, Hanford Files
2. Cable tool rig

Depth (ft) From	To	Description
0	2	topsoil
2	5	gravel
5	10	gravel, mild cement gravel
10	15	gravel, sand; caves
15	20	black sand; caves
20	25	basalt granules, sand; caves
25	31	pure basalt granules, sand; caves, is very loose, no silt
31	35	granules, sand, gravel; silt added to drill
35	43	gravel, sand; silt added to drill
43	45	gravel, sand, silt
45	50	fine gravel, silt, sand
50	60	fine gravel, caliche, silt, sand
60	65	sand and some silt
65	75	sand, silt
75	95	sand, less silt; caves
95	100	gravel, sand, very little silt; caves
100	120	gravel, sand; caves, used silt binder to drill this formation
120	125	fine gravel, some sand, boulders; caves
125	135	fine gravel, sand, lots of boulders; caves, used silt as binder to drill
135	142	boulders, gravel; caves, silt added to this formation
142	159	cement gravel
159	177	gravel and boulders; silt added to this formation
177	180	boulders, gravel, sand; silt added to make mud
180	200	boulders, gravel, sand some silt
200	205	boulders, gravel, sand, more silt
205	214	sand, gravel, more silt
214	235	sand, gravel, some silt
235	255	coarse gravel, sand, silt
255	265	gravel, sand, silt
265	273	boulders, gravel, sand, very little silt
273	275	gravel, sand, some silt
275	282	sand, gravel; heaves back up pipe
282	285	boulders, gravel, some silt
285	298	boulders, gravel, sand, some silt
298	300	boulders, gravel, sand, silt
300	318	sand, gravel, silt; caves
318	336	sand, gravel, silt; this conglomeration looks and drills like the lower Ringold formation
336	353	gravel, sand, silt; makes lots of muck
353	370	sand, gravel, silt; makes lots of muck
370	387	sand, gravel, more silt
387	412	sand, gravel, silt; plenty of silt to act as binder
412	425	more silt, sand, some gravel
425	428	basalt mud, gravel, sand, silt
428	435	heavy muck with sand and gravel, some basalt mud with it; 430' to 435' grayish blue

Driller's log of 299-W6-1 cont

Depth (ft) From	To	Description
435	438	record unclear, probably heavy muck with sand and gravel, some basalt mud
438	440	record unclear, probably basalt, boulders and gravel
440	450	heavy grayish-blue muck with about 25% sand and 25% fine gravel; this formation has a layer of good gravel about 6' apart
450	455	heavy grayish-blue muck with about 25% sand and 25% fine gravel
455	457	no record, probably heavy grayish-blue muck with about 25% sand and 25% fine gravel
457	465	no record except "pipe stopped at 457'2", hit basalt at 457'"
465	470	looks like top of basalt, same as in 200 East Area
470	476	got into harder basalt, very black

Driller's log of 299-W11-2[1] (N043335, W073772) Hanford Wells, 1973

Land surface altitude[2] 713 feet msl

1. Also labeled 361-T-14
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil and gravel
5	15	boulders and sand
15	17	boulders and sand; caves
17	34	gravel, sand, some silt; caves
34	58	gravel, coarse sand, some silt; caves
58	110	coarse sand, silt, very little gravel, small basalt chips; caves
110	118	clay, fine sandy clay
118	143	white dry silt, very fine sand, small gravel and caliche
143	148	coarser sand, more gravel, less silt
148	175	20% gravel, 40% coarse sand, 40% fine sand and silt
175	184	pure gravel, very little sand and silt; caves
184	191	record unclear, probably heavy black sand, fine and coarse, with fine gravel
191	196	gravel, sand and silt
196	206	75% gravel, 20% sand, 5% silt
206	220	boulders and coarse gravel 50%, sand and silt 50%
220	240	50% gravel and coarse sand, 50% fine sand and silt
240	247	50% gravel, 50% fine sand and silt
247	265	50% gravel and coarse sand, 50% fine sand and silt
265	272	more gravel than above; caves
272	290	40% gravel and coarse sand, 60% fine sand and silt
290	295	gravel, sand, silt; held together by silt and clay, gravel and sand dominant
295	302	gravel; caves
302	310	gravel, sand, silt; lots of silt and clay in this formation
310	323	gravel, sand, lots of silt; formation looks like cement
323	327	gravel, sand, silt
327	332	less gravel, and sand, silt
332	335	gravel, sand, 60% silt and fine sand
335	365	60% gravel and coarse sand, 40% fine sand and silt
365	371	record unclear, possibly 60% gravel and coarse sand, 30% fine sand, 10% silt
371	382	75% gravel and coarse sand, 20% fine sand, 5% silt; caves, fine white sand comes back up pipe
382	402	60% gravel and coarse sand, 40% fine sand and silt
402	415	50% fine gravel and chit gravel, 10% sharp coarse sand, 40% fine gray sand and silt
415	420	65% fine sharp gravel, 20% coarse sharp sand, 10% fine white sharp sand, 5% silt; caves
420	430	10% fine gravel, 10% coarse sand, 70% fine sand, 10% silt
430	438	5% fine gravel, 5% coarse sand, 65% fine sand, 25% silt, some rotten sandstone in this interval
438	445	50% fine gravel and coarse sand, 50% fine sand and silt; caves
445	451	40% gravel and coarse sand; 60% fine sand and silt; hole is caving badly, lots of fine reddish gray sand

Driller's log of 299-W11-2 cont

Depth (ft) From	To	Description
451	458	50% gravel, 10% coarse sand, 20% fine sand, 20% silt; caves
458	460	50% gravel and coarse sand, 30% fine sand, 20% silt
460	465	15% gravel, 5% coarse sand, 55% fine sand, 25% silt; caves
465	477	30% gravel, 10% coarse sand, 40% fine sand, 20% silt
477	485	40% gravel and coarse sand, 40% fine sand, 20% silt; cement color
485	492	40% gravel and coarse sand, 60% fine sand and silt; formation change to a dirty blue, lots of pieces of basalt, might be near bedrock
492	503	20% gravel up to boulder size, 20% coarse sand, 30% fine sand, 30% blue-gray silt
503	505	20% gravel, 40% coarse sand, 25% fine sand, 15% silt; caves, hit some wood from 500' to 505'
505	509	10% gravel, 50% coarse sand, 40% fine sand and volcanic mud; smells like hell, washes out of sand and gravel slowly
509	525	basalt bedrock; pipe stopped at 509', basalt is very porous, not hard and solid
525	527	basalt, hard
527	530	solid basalt
		This well was measured as 545' deep in 1956.

Driller's log of 299-W11-3[1] (N043310, W073001) Hanford Wells, 1973

Land surface altitude[2] 717 feet msl

1. Also labeled 361-T-15
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	2	brown sand
2	7	gravel and boulders
7	10	gravel, boulders and sand; caved
10	19	gravel, boulders; added topsoil to make it drill
19	26	boulders, gravel, black sand, very little silt
26	35	black sand, gravel, no silt
35	37	record unclear, possibly black sand and gravel
37	43	sand, gravel, very little silt; caves
43	45	coarse black sand and gravel; caves
45	52	gray sand, silt; caves
52	70	coarse gray sand and tan silt, very little gravel; caves
70	80	coarse sand, some silt, little fine gravel; will cave
80	85	coarse sand, very little silt
85	105	nearly pure coarse sand, very little silt; caves
105	110	fine sand, more silt, caliche
110	115	silt, nearly clay, caliche; mud will worm
115	120	fine gray sand, silt, caliche
120	125	sandy silt, caliche
125	130	more sand, less silt, small, ¼" gravel, caliche
130	145	sandy silt, some small, ¼" gravel caliche
145	150	50% gravel up to 2", 25% coarse sand, 25% fine sand and silt
150	152	gravel, sand, less silt
152	160	75% gravel and coarse sand, 25% fine sand and silt
160	165	cement gravel and sand
165	168	gravel and sand; caves
168	170	75% coarse sand, 20% fine sand, silt
170	185	65% coarse sand, 15% gravel, 20% fine sand and silt; caves 177-185'
185	198	no record
198	207	80% small gravel and coarse sand, 20% fine sand, nil silt
207	210	65% gravel and coarse sand, 35% fine sand and silt; about 5 to 10% silt
210	215	80% gravel and coarse sand, 20% fine sand and silt; about 5 to 10% silt
215	222	60% gravel and coarse sand, 40% fine sand and silt; about 5 to 10% silt
222	223	gravel, sand, very little silt
223	225	75% gravel and coarse sand, 15 to 20% fine sand, 5 to 10% silt
225	232	50% gravel and coarse sand, 30% fine sand, 20% silt
232	280	50% gravel and coarse sand, 35% fine sand, 15% silt
280	295	40% gravel and coarse sand, 40% fine sand, 20% silt
295	310	75% gravel and sand, 10% fine sand, 15% silt
310	320	60% gravel and coarse sand, 20% fine sand, 20% silt; layers of gravel, coarse sand and fine sand, silt also
320	321	no record, possibly gravel, sand and silt
		Well deepened to 330' in 1956 while cleaning out: 303' to 330', sand and gravel

Driller's log of 299-W15-2[1] (N042251, W078082) Hanford Wells, 1973

Land surface altitude[2] 689 feet msl

1. Also labeled 241-T-21
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil and blow sand
5	10	gravel, sand, silt
10	65	sand, gravel, silt
65	66	gravel
66	70	gravel, sand
70	73	gravel
73	105	brown sandy silt
105	115	sandy silt
115	125	heavy silt and sand
125	127	silt
127	132	gravel
132	140	gravel and sand
140	150	cement gravel
150	155	pure gravel and sand
155	175	gravel and sand
175	215	gravel and sand; caving, used bentonite for binder, washed bentonite out of sample
215	220	boulders, gravel, sand; bentonite used as binder, formation so porous I lost all my bentonite
220	229	gravel, boulders, sand
229	230	gravel and sand
230	250	gravel, sand, silt; caves, found only one good layer of gravel at 245'
250	260	sand, gravel, silt; caves

Driller's log of 299-W15-5 (N039537, W075984) Hanford Wells, 1973

Land surface altitude[1] 669 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sandy topsoil
5	25	sandy silt
25	30	gravel and sand
30	50	sand, small gravel; caves
50	54	gravel; caves
54	55	gravel, sand; caves
55	110	sandy silt
110	120	heavy silt and sand
120	130	caliche and fine gravel, silt, sand
130	135	caliche and fine gravel, sand
135	150	gravel, less silt
150	155	sand, small gravel; comes back up pipe, caves
155	168	sand, gravel; comes back up pipe, caves
168	209	gravel, sand, some silt; caves 170' to 187'
209	210	sand, and gravel
210	225	very fine sand and gravel; sand up heaves, came back up hole 7 and 8'
225	231	fine sand, gravel, some silt; sand comes back up pipe 6 to 8'
231	261	sand, gravel, some silt; caves
261	277	sand, muck; comes back up pipe
277	280	sand, fine gravel; muck runs back up pipe
280	285	gravel, sand less silt
285	290	sand, gravel, muck
290	291	sand; muck comes back up pipe 10'
291	295	sand, gravel, muck
295	305	gravel, sand, less silt; sand comes back up hole 300' to 305'
305	317	gravel, sand, muck; back up hole 4' at 315'-317'
317	355	sand, gravel, muck; muck still coming back up pipe after each piece of pipe put on from 6 to 12'
355	375	sand-gravel-muck-conglomeration; comes back up pipe
375	390	sand-gravel-conglomeration; comes back up pipe
390	395	gravel-sand-conglomeration
395	400	gravel, sand, streak of white-gray heavy silt; in the 400' sample are some side wall cuttings showing this heavy white-gray silt with the gravel imbedded in silt, this is a layer of conglomeration about 5' thick, very heavy with silt
400	408	gravel, sand, less silt
408	410	gravel-sand conglomeration
410	425	sand-gravel-conglomeration
425	440	heavy silt, white-gray; this acts and looks lide the Ringold formation, has small gravel embedded in it, at 440' was more white
440	445	shale with volcanic ash, small gravel embedded in it
445	450	with rotten sandstone, large gravel; very fine sand, silt, small gravel; while welding 439 to 446'1" pipe at start of weld-had slight explosion from inside of pipe, this happened after I hit the rotten sandstone

Driller's log of 299-W15-5 cont

Depth (ft) From	To	Description
450	455	mixture of white, gray, green and black mud, shale
455	465	white-gray shale and clay, shale is very hard with fine gravel embedded in shale
465	470	shale, clay, white ash, small gravel - a conglomeration
470	475	blue silt, shale, basalt mud, gravel, sand
475	480	shale, blue silt, gravel, sand, basalt mud; more gravel at 479'
480	483	gravel, sand, basalt mud, chips of basalt
483	485	sand, gravel, some silt
485	490	sand, gravel, green silt, black lava mud; sand and gravel came back up pipe 5'
490	495	sand, gravel, sandstone, basalt ash; sand and gravel came back up pipe 5'
495	507	sand, gravel, green and black silt
507	510	sand, gravel, gray silt to black
510	520	sand, more gravel, gray silt to green
520	525	sand, gravel, black mud
525	528	basalt
528	530	honeycombed rotten basalt
530	538	basalt, more dense
538	544	basalt, harder, more dense
544	554	basalt, softer
554	555	basalt, denser
555	560	basalt, not too hard
560	573	basalt, layers of soft and dense
573	575	basalt, looks like fine gray sand mixed in with basalt, also small gravel, pea size gray, black mud
575	578	sand, small gravel; could be started in interbed, hit this at 573'; black thick mud, looks like volcanic mud
578	581	sand, gravel (pea), volcanic mud; innerbed
581	582	layer of sandstone
582	584	sand, pea gravel, volcanic mud; must be layers of basalt and gravel
584	585	layers of basalt or some other hard material and sand, gravel
585	588	gravel layer
588	590.5	layer of hard or solid material
590.5	596.5	rotten basalt, very few gravel, some sand
596.5	598	basalt harder
598	599	no record, possibly hard basalt

Formation summary of driller's log of 299-W15-51[1] (N040804, W076535) Hanford Wells, 1973

Land surface altitude[2] 670 feet msl

1. Also labeled 231-W-150
2. Altitude given in formation summary

Depth (ft) From	To	Description
0	25	sand and gravel
25	40	gravel
40	51	sand and scattered boulders
51	101	sand
101	126	gravel and sand
126	136	sand
136	142	boulders
142	148	basalt boulders
148	150	coarse gravel and boulders

Driller's log of 299-W18-5 (N039350, W077250) Hanford Wells, 1973

Land surface altitude[1] 682 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig, using core barrels till 235'

Depth (ft) From	To	Description
0	1	light gray, (med) sand and gravel
1	9	light brown (med) sand and silt
9	12	gray, (med) coarse sand, some gravel
12	16	gray, medium-coarse sand, some gravel
16	18	light gray, medium sand, as few cobbles
18	26	light gray, medium sand
26	34	light gray, medium sand, some silt
34	41	gray, hard sand and gravel
41	44	dark gray, hard coarse sand, large gravel and cobbles, 4"
44	92	light gray, medium sand and silt; lenses of sand and silt throughout this section 3 to 6" thick, at 86' approximately 1' of clay
92	112	light gray, medium sand and silt, a few lenses of clay
112	116	dark gray, hard sand, gravel and cobbles
116	121	sand, gravel, and cobbles, 4" plus
121	127	dark gray, hard sand, gravel and cobbles
127	130	light brown, medium, sand and silt
130	135	brown, medium, clay
135	136	brown and white, medium, clay and sandstone
136	138	clay and sandstone
138	140	sand, gravel and large cobbles
140	146	gravel and boulders; boulders at 140'6"
146	157	boulders and gravel
157	161	gravel and sand
161	168	sand, some gravel, a trace of clay at 165'
168	173	gravel, cobbles and sand
173	174	cobbles, sand and gravel
174	183	large gravel, cobbles and sand
183	185	sand, cobbles, gravel
185	192	no record, probably sand, cobbles, gravel
192	195	gray, medium sand, gravel
195	200	light gray sand
200	205	gray sand, gravel
205	210	sand and gravel
210	215	cobblestone, little sand
215	220	cobblestone, little sand, all different colors; very hard
220	225	hard cobblestone and sand
225	230	hard cobble and gravel
230	232	sand and cobblestone, hard
232	235	sand and pea gravel, soft
235	240	sand and gravel, hard
240	250	sand, silt, gravel, medium
250	255	sand, gravel
255	260	hard sand gravel
260	265	sand, cobblestone
265	275	clay and gravel
275	280	sand and gravel

Driller's log of 299-W19-3 (N037819, W074098) Hanford Wells, 1973

Land surface altitude[1] 693 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	silt, gravel, cobbles
10	15	sand, silt, gravel 2"
15	40	sand, silt, gravel 1"
40	55	sand, silt, gravel ½"
55	90	sand, silt, coarse gravel, 2"
90	95	gravel, sand, silt
95	100	fine gravel, silt
100	115	silt with very little gravel
115	130	sand, silt, gravel particles
130	135	cement sand
135	140	yellow clay and gravel particles
140	177	sandy clay
177	190	sand, gravel
190	220	sand and cemented gravel
220	240	cemented sand and gravel
240	250	cemented sand, clay
250	265	loose sand, gravel
265	270	soft sandy clay
270	275	gray sand and gravel 4"
275	290	gray sand and gravel 4", loose
290	295	loose sand and gravel
295	300	dark brown cemented sand and gravel

Driller's log of 299-W19-7

1. Cable tool rig

Depth (ft) From	To	Description
0	12	gravel to 4", sand and silt
12	15	gravel to 3"
15	20	small gravel, sand and silt
20	30	coarse gray sand and silt
30	35	coarse gray sand and silt with gravels
35	40	sand and silt
40	50	sand and silt, gravel to 4"
50	60	3" gravel and sand
60	75	sand and gravel to 3"
75	80	gravel, sand and silt
80	130	sand and silt
130	140	no record, probably sand and silt
140	150	cemented sand and silt
150	155	gravel, cemented sand and silt and clay
155	160	gray sand, some small gravel
160	175	loose gray sand
175	185	large gravel, sand and silt
185	205	gravel, sand and silt
205	215	clean gravel
215	220	sand and silt and gravel
220	225	no record, probably sand, silt and gravel
225	230	sand and silt, gravel
230	235	sand and silt

Driller's log of 299-W21-1 (N035868, W071382) Hanford Wells, 1973

Land surface altitude[1] 697 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand, silt
5	15	coarse sand and gravel
15	20	coarse sand
20	65	coarse sand and silt
65	70	coarse sand and silt, ½" gravel
70	100	coarse sand and silt
100	170	fine sand and silt; used some bentonite
170	185	sand, silt
185	196	sand, silt, clay
196	197	gravel
197	220	sand, silt and gravel ½"
220	235	yellow clay and gravel 1½"
235	250	yellow clay and gravel, real hard
250	260	gray sand and gravel 1"
260	265	gravel 1½"
265	270	gravel 4"
270	275	gravel 3"
275	280	small gravel and sand
280	285	sand, gravel 3"
285	292	clean gravel
292	295	cemented gravel
295	300	sand and gravel lenses
300	310	cemented sand
310	315	cemented sand and gravel 1½"
315	325	cemented sand and gravel
325	330	gravel
330	335	hard and soft streak of sand and gravel
335	340	gravel
340	350	sand, gravel

Driller's log of 299-W22-2[1] (N035429, W075221) Hanford Wells, 1973

Land surface altitude[2] 669 feet msl

1. Also labeled 241-S-10 (207-S)
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	27	backfill
27	34	gravel pack around crib
34	35	sand and silt
35	45	gravel, coarse sand, very little silt
45	75	sand and silt; well caves
75	105	sand and silt
105	130	sandy silt
130	150	heavy silt and sand
150	152	no record-begin deepening well
152	154	gravel, sand
154	157	gravel
157	168	sand, some silt
168	170	no record
170	180	sand, some fine gravel, and silt
180	186	sand, gravel, very little silt
186	196	gravel, sand, little silt
196	206	sand, gravel
206	218	gravel, sand, very little silt
218	223	no record, possibly gravel, very little silt, sand
223	230	gravel, fine sand; caves
230	232	sand, gravel; caves badly
232	248	sand, gravel; caves, comes back up pipe 8 to 10 feet
248	258	sand, some gravel; runs back up pipe
258	260	record unclear, probably sand, gravel, very little silt
260	262	record unclear, probably sand, gravel, some dark brown silt
262	268	record unclear, probably sand, gravel, very little silt
268	276	sand, gravel
276	286	sand; runs up pipe
286	300	fine to coarse sand, gravel; runs up pipe as much as 12 feet
300	304	sand, gravel, some dark silt
304	307	no record, probably sand, gravel, some dark silt

Driller's log of 299-W22-14[1] (N035120, W074513) Hanford Wells, 1973

Land surface altitude[2] 674 feet msl

1. Also labeled 216-S-7-3
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	21	sand, gravel
21	46	sand, silt
46	53	sand, gravel; caves
53	60	gravel, sand, silt; coarse sand and silt at 54'
60	160	sand, silt
160	165	no record, probably sand and silt
165	173	sand, silt
173	178	sand, silt, gravel
178	233	sand, gravel
233	244	sand, silt, gravel; sand and silt coming in
244	255	sand, silt, gravel
255	309	sand, silt, gravel; sand coming in; cobbles at 293'
309	342	sand, silt, gravel

Driller's log of 299-W22-24 (N035917, W072997) Hanford Wells, 1973

Land surface altitude[1] 690 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	brown sand and some large cobbles
5	30	brown sand
30	35	no record, probably brown sand
35	40	fine brown sand, some 2" gravels
40	43	fine brown sand, gravels up to 3" maximum inconsistently scattered throughout; lens of clean sand with mica
43	45	fine brown sand
45	50	fine brown sand and more silt
50	138	fine brown sand and silt
138	140	sand and silt, sandy brown clay at 138'
140	142	hard brown clay
142	160	fine brown sand and silt; sand will heave
160	170	sandy brown clay
170	175	sandy brown clay; harder now, not so sandy
175	190	sandy brown clay
190	196	sandy brown clay and gravels, hard; caliche? very small gravels
196	200	soft brown clay, some sand
200	205	brown clay, more gravel now
205	215	brown clay with some gravel
215	235	soft brown sandy clay
235	240	small gravel, ¼" to 1½"
240	247	sand and gravel
247	260	sand and gravels, ¼" to 1"
260	270	sand and gravel up to 2"
270	273	sand and gravel
273	280	sand and gravel, sandier now
280	305	sand and gravel, 2" maximum
305	325	sand and gravel, finer material
325	340	sand and small gravels
340	361	fine sand and gravels
361	390	sand and some fine gravels
390	395	sand and some fine gravels but mostly sand
395	405	coarse gray sand and silt
405	410	sand and gravel, maximum 3", soft
410	424	sand and silt, soft; sand heaves
424	425	fine sand with silt
425	442	fine brown sand with some fine gravels
442	445	very clean coarse sand; caving
445	450	clean coarse sand
450	455	record unclear, probably clean coarse sand
455	457	coarse sand and some silt
457	460	no record, but sampled
460	475	tan clay with small gravel
475	495	sandy tan clay with small gravels, ½" maximum
495	498	sandy tan clay with small gravels, ½" maximum; not so sandy now
498	500	very clean fine blue (or black) sand
500	505	very clean fine blue (or black) sand; coarser now

Driller's log of 299-W22-24 cont

Depth (ft) From	To	Description
505	510	fine blue sand, seems to have more clay
510	512	blue sand and small gravel
512	525	blue sandy clay and small gravels
525	536	fine blue sand and silt; hard
536	542	fine blue sand and silt with small gravels
542	545	fine blue sand and silt with small gravels; not too many gravels
545	548	this is a fine sand or ash, could not get a good sample but drills easily
548	555	fine blue sand and silt; caves
555	559	blue sand and silt, some gravel
559	567	fine blue sand and silt
567	570	weathered basalt (?) (or ash)
570	575	no record, but sampled; casing would only drive to 563', decided that we must be sitting on basalt

Driller's log of 299-W22-27 (N036203, W074627) Hanford Wells, 1973

Land surface altitude[1] 679 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand and gravel
10	15	coarse sand and fine gravel
15	40	coarse sand
40	45	coarse sand and gravel
45	46	gravel and cobbles
46	48	sand and gravel, mostly gravel
48	50	gravel
50	60	sand and gravel
60	75	coarse sand and gravel
75	78	sand
78	90	sand and silt
90	95	coarse sand and clay
95	109	sand and clay
109	135	fine sand and clay
135	148	clay
148	153	sand and gravel
153	155	sand, gravel, silt
155	175	sand and silt
175	180	sand and clay
180	190	sand and silt
190	200	gravel and sand
200	204	sand and gravel
204	213	sand and gravel to 3"
213	225	sand, gravel, cobbles
225	230	sand, gravel, cobbles, could be some large boulders as it cut the sides of the bit
230	243	sand, gravel
243	245	sand, very few gravels
245	255	sand, few gravel up to 2"
255	270	sand, pea gravel; some sand comes in
270	277	coarse sand and brown clay
277	280	no record, but sampled, probably coarse sand and brown clay
280	284	no record
284	294	sand, gravel to 3"
294	302	sand and gravel
302	310	sand, very little gravel
310	315	sand and gravel
315	345	cemented sand and gravel
345	355	cemented sand; hole fills in when driving, or left to stand
355	392	sand and gravel; heaves in hole
392	395	no record, but sampled, probably sand and gravel that heaves
395	405	sand and gravel; sand heaves in hole when driving casing
405	413	brown sand and gravel; sand heaves in hole when driving casing
413	415	sand and clay; some sand comes in when driving casing
415	420	sand and clay and gravel; some sand comes in when driving casing
420	435	sand and gravel; some sand comes in when driving casing
435	447	sand and gravel; takes as long to drive and clean out casing as to drill the hole

Driller's log of 299-W22-27 cont

Depth (ft) From	To	Description
447	452	sand, gravel, clay
452	480	clay, gray and very sticky; 455' and 460' samples were scraped off bit
480	500	clay, changing from light to a green color
500	505	clay and sand
505	511	blue sand
511	540	blue sand and gravel; casing fills in 10' or more every drive
540	550	gray clay, sand and gravel
550	555	dark gray clay (shale?)
555	559	no record
559	572	basalt

Driller's log of 299-W22-28

1. Cable tool rig

Depth (ft) From	To	Description
0	5	gravel and sand
5	25	gravel and coarse sand
25	30	fine gravel and sand
30	35	coarse sand
35	40	gravel, sand
40	50	small gravel to sand
50	55	gravel to fine sand
55	65	small gravel to fine sand
65	73	coarse sand
73	85	fine brown sand
85	95	silt and sand
95	100	silt, fine sand
100	105	fine silt
105	120	fine silt, sand
120	135	silt, fine sand
135	140	silt, fine sand, some clay
140	145	yellow clay
145	150	fine brown sand and clay; clay at 148'
150	165	clay with a little sand
165	217	yellow clay
217	220	clay and fine sand; hard brown sand with clay at 217'
220	230	very fine brown sand
230	240	brown sand and small gravel
240	245	fine gravel and sand
245	250	fine gray sand and small gravel
250	255	fine sand and gravel
255	260	gravel, fine sand
260	270	gravel to fine sand
270	275	gravel and fine sand
275	300	gravel to fine sand; heaves

Driller's log of 399-1-2[1] (N055772, E015134) Hanford Wells, 1973

Land surface altitude[2] 383 feet msl

1. Also labeled 303#4
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	7	brown blow sand
7	13	boulders, gravel, sand and silt
13	28	coarse black sand and fine gravel, no silt
28	30	mostly gravel; added top blow sand soil to drill
30	38	gravel, sand and no silt
38	40	gravel, clay and sand
40	50	gravel; caves, no silt or clay
50	55	coarse black sand, gravel
55	60	gravel, black sand
60	75	gravel, sand and some silt
75	80	gravel, sand, volcanic mud
80	85	black sand, gravel; caves
85	92	fine sand, some fine gravel, some volcanic mud; caves
92	93	fine sand, gravel; caves
93	95	fine sand, some fine gravel, some volcanic mud; caves
95	99	finer sand, some gravel; caves
99	101	sand, gravel, lava mud

Driller's log of 399-3-3[1] (N054042, E015000) Hanford Wells, 1973

Land surface altitude[2] 404 feet msl

1. Also labeled 300-4
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	128	no record
128	138	slag formation
138	140	dark sand and gravel
140	143	blue clay
143	155	dark sand and gravel
155	162	blue-green clay
162	175	clay and loam; clay blue-green in color and turning slate gray

Driller's log of 399-5-2[1] (N053137, E011393) Hanford Wells, 1973

Land surface altitude[2] 389 feet msl

1. Also labeled 303-13
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	3	topsoil, small boulders, sand and gravel
3	14	boulders, sand, gravel and silt
14	15	sand, gravel and silt
15	18	sand, gravel and little silt
18	25	sand, gravel and very little silt
25	32	gravel and sand
32	36	gravel, sand and a little silt
36	45	gravel, sand and very little silt
45	48	white sand and a little gravel
48	52	white sand and a lot more gravel
52	59	white sand and mixture of gravel
59	60	white sand and gravel
60	65	white sand and mixture of clay and gravel
65	67	white sand, small gravel, more clay
67	69	clay, gravel and coarse sand; at 69' clay, mixture of blue shale and coarse sand
69	75	blue clay, very sticky
75	86	blue, brown and yellow clay
86	89	little clay, gravel and coarse sand
89	90	sandy clay, very little gravel
90	95	clay, sand, and more gravel; 89' to 93' seems to have small layers of clay, gravel, and sand
95	97	black sand, little clay and gravel
97	100	black sand and little gravel
100	105	black sand and gravel
105	108	black sand and gravel; large percentage of basalt gravel
108	118	sand and gravel, mainly basalt
118	120	sand and gravel, mainly basalt, and a little wood
120	122	sand, gravel and clay
122	127	sandy clay
127	132	sandy clay and a little gravel
132	136	sand, clay and gravel
136	137	sand, gravel and clay; 137' hit rock at an angle or bent drive shoe, put boulders in hole trying to get solid sticking surface
137	152	sand, gravel and boulders; caves
152	156	sand, basalt rock and clay
156	165	sand, basalt gravel and clay
165	176	sand, gravel and a little clay
176	189	clay
189	192	clay and a little coarse sand
192	194	clay, black sand and basalt; at 192' hit basalt and sand
194	195	black sand and basalt
195	202	basalt, sand and a little clay; 202' very hard basalt
202	207	basalt and sand; brown chert grains, fine sand with small less than .1 mm quartz grains, basalt microcrystalline, micro-scoriaceous

Driller's log of 399-5-2 cont

Depth (ft) From	To	Description
207	208	basalt; 208' very hard basalt
208	212	basalt; micro scoria, tachlyte, black, dense, micro vesicles not filled, very glassy, some tuff and palagonite
212	218	pure black basalt; breccia palagonite, secondary quartz and chalcedony, brown chert; hole is being deepened after 3 years
218	220	basalt, black; micro breccia, palagonite, chert, some scoria, dark red brown basalt
220	225	porous, basalt; less breccia and chert, more scoria, tachylite
225	231	porous basalt with some volcanic mud; breccia and palagonite common
231	234	porous basalt, some pebbles and small gravel at 232', also volcanic mud and ash; glassy basalt, palagonite
234	236	hard basalt
236	239	layer of hard basalt, then layer of porous basalt with a few basalt gravel and some volcanic mud and ash
239	241	basalt, very hard; glassy, palagonite and breccia
241	245	hard basalt; basalt glass and palagonite, sample very dirty and mudded up
245	249	hard basalt
249	253	hard basalt; dense black, very glassy, sample mudded up
253	256	very hard basalt; tachylite, breccia and palagonite, sample heavily mudded
256	258	very hard basalt
258	260	basalt is super hard; tachylite glass, palagonite, some breccia, sample heavily mudded up; "3/11/64 much of what is here called hard basalt is evidently a basalt breccia or pillow basalt; microscopic studies show considerable palagonite; R&B"
260	264	basalt, very hard
264	266	hard basalt; palagonite, some breccia, basalt is dense and not as glassy
266	270	hard basalt; 270' dense vesicular micropalagonite
270	275	hard basalt-broke through basalt at 275'; 275' black, glassy vesicular, secondary chert in vesiclas, micropalagonite
275	278	greenish blue silt-basalt chip-sand formation; top of break is a greenish blue silt, sand and small gravel, also some lava mud
278	280	bluish-green silt (shale), sand, small gravel
280	295	bluish green shale and silt, very little sand, few granules of basalt gravel; looks like a rotten shale
295	300	green silt, lava mud, basalt granules
300	305	lava mud, basalt grindings; this is a later of basalt, starts at 300'
305	310	basalt, porous, with lava mud; this is a layer of basalt
310	315	basalt, semi-hard
315	318	shale, basalt mud, basalt gravel
318	330	rotten basalt, also a bluish-green shale and dark green quartz
330	340	basalt with some green shale
340	341	no record, probably softer basalt
341	345	basalt, very little blue shale; 341' to 347' basalt got harder
345	350	very hard basalt
350	355	basalt, hard; broke rien off drilling jars, recovered 10 big pieces, drilling up rest

Driller's log of 399-5-2 cont

Depth (ft) From	To	Description
355	366	porous basalt
366	371	basalt, harder
371	375	very hard basalt
375	380	hard basalt, gray
380	384	gray basalt, very hard
384	386	hard gray basalt
386	389	drilling up some steel somebody dropped into my well over the weekend
389	395	basalt
395	405	basalt, black, not too hard; basalt is softer and more porous
405	407	harder basalt
407	416	basalt
416	420	basalt, harder
420	424	solid basalt

Driller's log of 399-8-1[1] (N055800, E013657) Hanford Wells, 1973

Land surface altitude[2] 394 feet msl

1. Also labeled 303-5
2. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	topsoil and blow sand
5	10	blow sand, very little gravel and silt
10	12	sand, gravel; caves
12	22	gravel, sand and some silt
22	30	coarse black sand and gravel, very little silt
30	31	gravel
31	35	gravel, coarse black sand
35	48	gravel, coarse black sand, very little silt
48	62	sand and gravel, very little silt
62	67	gravel and sand, very clean
67	70	gravel and sand
70	74	gravel, sand, silt
74	80	gravel, sand, lots of silt; formation lays in layer of silt and sand, a layer of gravel; at 80' bailed lots of good clean gravel, also fine white sand
80	83	gravel, sand, less silt
83	85	gravel, sand
85	92	layers of gravel, sand, volcanic mud; lots of fine white sand that runs back up pipe
92	102	gravel, sand and volcanic mud

Driller's log of 699-S51-2[1] (S050876, W002488) Hanford Wells, 1973

Land surface altitude[2] 385 feet msl

1. Well 9/28-5C1 City of West Richland
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	8	sand and top soil
8	58	sand, gravel, and boulders
58	75	clay, blue
75	82	sand, gravel and boulders
82	90	sand and clay
90	94	sand, blue
94	103	gravel and boulders
103	121	clay, brown
121	125	sand and gravel
125	171	clay
171	173	sand, loose
173	181	basalt, porous, black
181	184	basalt, hard, dark
184	188	basalt, porous
188	191	basalt, hard, dark
191	197	lava rock, "burned"
197	200	hard, gray, basalt
200	205	basalt, porous
205	281	basalt, hard, gray
281	340	clay, gray-green
340	490	basalt, hard, gray
490	525	clay, gray-green
525	530	basalt, medium-hard, gray
530	540	clay, gray-green
540	572	basalt, gray

Driller's log of 699-S31-1 (S030600, W000725) Hanford Wells, 1973

Land surface altitude[1] 458 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	16	sand, fine to coarse
16	21	sand, pods of clay
21	73	sand with gravel
73	85	quartz and exotic sand
85	128	sand with gravel
128	132	gravel with sand
132	148	sand, with some gravel
148	185	sand with gravel
185	221	silt, clayey
221	228	Columbia River basalt: Wenas basalt

Driller's log of 699-S30-E15A[1] (S030257, E014838) Hanford Wells, 1973

Land surface altitude[2] 398 feet msl

1. Well 3099-49-17A
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	9	sand and gravel ¼"-to boulders
9	20	sand and ¼" gravel to cobbles
20	35	coarse to fine black sand and 1½-gravel
35	40	coarse black sand to fine sand, and 1"-gravel
40	50	coarse black sand to fine sand with coarse gravel
50	54	coarse black sand with coarse gravel
54	55	coarse black sand and gravel and boulders
55	60	black sand
60	65	black sand coarse to fine with 1½" gravel
65	68	fine brown sand with coarse black sand and silt with 2"-gravel
68	75	fine brown sand with silt and some 4"-gravel
75	80	fine brown sand

Driller's log of 699-S29-E12[1] (S029395, E012065) Hanford Wells, 1973

Land surface altitude[2] 386 feet msl

1. Well 3099-50-15
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	3	sand and cobbles
3	9	brown and black sand with boulders and gravel
9	17	black sand coarse, and gravel and cobbles
17	20	coarse black sand and gravel and boulders
20	30	black sand and gravel and cobbles
30	45	black coarse sand and gravel
45	50	brown sand fine to 1½-gravel
50	63	fine brown sand and 1½-gravel with some silt; sand comes up pipe
63	65	fine brown sand with very little gravel; sand comes up pipe
65	75	brown sand and some silt and ½-gravel; sand comes up hole
75	80	brown sand with some 1½-gravel and traces of silt; sand comes up hole

Driller's log of 699-S27-E14 (Hanford Wells, 1973)

Land surface altitude[1] 372 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Well GE 3000-7
3. Cable tool rig

Depth (ft) From	To	Description
0	5	top soil (sandy loam), brown blow sand
5	11	gravel and sand, boulders up to 10"
11	15	boulders and sand
15	25	coarse black basalt sand, gravel; caves
25	30	black basalt sand, coarse
30	33	? no record
33	35	black basalt fine sand
35	38	? no record
38	45	black sand and basalt
45	55	black basalt sand, coarse to fine, some small gravel
55	65	70% marble size gravel, 30% sand and shale
65	71	fine gray quicksand
71	78	60% gravel, all colors, fine to marble size, 40% coarse to fine gray sand. Lots of black basalt gravel and sand.
78	81	fine to coarse gray sand
81	92	clay, sand, gravel
92	103	shale, gravel; gravel is large marble size, binder is more like volcanic mud than shale
103	106	shale on volcanic mud, sand, gravel the size of hen's egg
106	112	shale on volcanic mud, more sand, less gravel, marble size
112	118	shale, sand, gravel
118	120	green shale
120	121	gravel, sand
121	121½	blue shale
121½	123	gravel, sand
123	123½	blue shale
123½	125½	gravel, sand
125½	127½	blue shale
127½	129	gravel, sand; very fine gray sand filled up hole
129	130	blue shale, sand
130	135	very fine sand, pea gravel, blue shale
135	140	shale, sand and gravel
140	145	gray sand, gravel, shale; runs back up pipe
145	152	fine gray sand, gravel, shale; runs back up pipe
152	158	fine to coarse sand, gravel, shale; run back up pipe
158	163	fine sand and gravel, clay
163	165	green clay

Driller's log of 699-S24-19 (S023965, W018974) Hanford Wells, 1973

Land surface altitude[1] 420 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Rotary rig
3. Well at Yakima Horn Rapids dam

Depth (ft) From	To	Description
0	1	top soil
1	4	gravel, sand and silt; caves
5	18	gravel, black sand and very little silt; very loose 15' to 18'
18	24	gravel, sand and silt (4'), loose
24	25	clay
25	27	sand, silt and showing of clay
27	34	fine white sand, some basalt chips and silt
34	35	gravel
35	43	fine sand, silt, and gravel
43	44	blue shale
44	46	coarse sand, basalt
46	62	solid basalt
62	65	black and white sand; caves
65	66	solid basalt
66	67½	sand and gravel
67½	81	solid basalt; very hard
81	83	basalt, lode stone; magnetic force pulls bailer to side
83	89	solid basalt; this basalt shows a lot of iron ore at 86', tools hang up all the time

Driller's log of 699-S23-26 (S022875, W026349) Hanford Wells, 1973

Land surface altitude[1] 423 feet msl

1. Altitude given on driller's log in Hanford files
2. Cable tool rig?

Depth (ft) From	To	Description
0	10	salt (?) and silt
10	16	gravel and sand
16	26	basalt boulders
26	29	coarse gravel, sand, quartz and basalt
29	33	quartz, basalt, silt and sand
33	38	silt, sand, yellow clay and green shale

Driller's log of 699-S19-E13[1] (S019434, E012780) Hanford Wells, 1973

Land surface altitude[2] 392 feet msl

1. Formerly 4-N-300A
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	75% fine brown sand, 25% silt
5	15	brown fine sand, some silt
15	25	25% sand, 50% medium gravel, 25% small cobbles (hit gravel to 2" at 16')
25	45	30% sand, 40% gravel, 30% cobbles
45	65	20% sand, 70% gravel, 10% cobbles
65	70	40% sand, 60% gravel
70	75	30% sand, 70% gravel
75	80	10% silt, 40% sand, 50% gravel, hole filled in five feet after perforating

Driller's log of 699-S19-11 (S018738, W011013) Hanford Wells, 1973

Land surface altitude[1] 482 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	40	sand
40	70	sand and silt
70	90	sand and gravel
90	95	gravel and cobbles
95	120	sand and gravel

Driller's log of 699-S18-E2 (S018500 E002000) Hanford Wells, 1973

Land surface altitude[1] 433 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig ?

Depth (ft) From	To	Description
0	10	brown sand
10	15	coarse gray sand
15	20	coarse sand with some gravel
20	25	sand and gravel 1" and 2"
25	30	gray and brown sand
30	35	brown sand and some gravel
35	40	brown silty sand
40	45	brown silty sand, gravel 1"
45	50	silt and sand, clay streaks, gravel and cobbles
50	60	sand, gravel, cobble -6"
60	70	sand and gravel, few cobbles
70	75	firm sand and gravel, cobble
75	85	sand and gravel
85	90	sand, gravel, few large cobble mixed in
90	100	sand and gravel
100	110	loose sand and gravel
110	115	sand, gravel, few cobbles
115	155	cemented gravel; pretty loose stuff 146' to 148', stuffed bad 148' to 150' pretty hard
155	160	cemented gray sand and gravel
160	175	gray cemented gravel
175	180	light gray cemented gravel
180	200	gray cemented gravel
200	205	cemented gravel
205	225	gray sandy silt
225	244	gray silty sandy clay with a little pea gravel
244	245	basalt; not too hard
245	248	gray clay interbed
248	250	black basalt
250	255	basalt
255	260	gray basalt

Driller's log of 699-S14-20[1] (S014491, W019739) Hanford Wells, 1973

Land surface altitude[2] 491 feet msl

1. Labelled as 699-S15-20
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	20	sand
20	25	no record
25	100	sand
100	115	sand and gravel
115	120	sand (sand at 120' is tan)
120	130	sand and gravel, blue
130	135	few large cobbles at 135', probably with sand and gravel, blue
135	145	? no record, probably sand and gravel, blue
145	150	sand and gravel, blue, turning gray as go deeper
150	155	coarse white sand; comes up pipe
155	160	sand and gravel
160	165	basalt
165	172	gray basalt, hard; getting grayer and harder as it goes deeper, some fine sand in samples as casing will not seal off tight

Driller's log of 699-S12-29[1] (S011694, W029467) Hanford Wells, 1973

Land surface altitude[2] 486 feet msl

1. Labeled 699-S12-30
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	50	medium and fine sand, trace of silt, light gray with tan film
50	55	medium with fine sand, trace of silt, gray
55	62	medium with fine sand, 1" gravel, trace of silt, gray
62	75	hard cemented gravel with trace of silt, gray; a basalt gravel
75	85	basalt gravel with silt, dark gray
85	90	rotten basalt gravel with silt, dark gray
90	105	basalt gravel with silt, dark gray; material changed at 95' got lots easier
105	110	fine cuttings of basalt and fine sand
110	120	fine cuttings of basalt with trace of fine sand
120	124	sand; heavy 10' with 3' drive hole went dry
124	125	light blue clay with trace of shale
125	130	light blue clay with fine sand
130	135	blue shale clay, trace of sand and caliche; water back in at 132', contains sulphur gas
135	140	sand with blue shale clay and caliche material, gray in color
140	145	very tightly packed sand with caliche and bit of basalt gravel blue gray
145	155	very tightly packed sand with bit of basalt gravel and clay or caliche
155	160	shale clay and caliche, light blue in color
160	165	light blue clay with trace of shale and caliche
165	170	blue clay and clay with trace of shale and caliche
170	175	changed to a brown and blue shale and caliche, trace of basalt
175	190	basalt with trace of shale, hit hard basalt at 178'

Driller's log of 699-S11-E12A[1] (S011000, E012000) Hanford Wells, 1973

Land surface altitude[2] of 364 feet msl

1. Labeled 699-S11-E12
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	small gravel, sand, and silt
5	10	gravel to 4", cleaner
10	15	gravel to 3", sand and silt
15	20	? no record but sampled
20	25	gravel at 6"
25	30	gravel with silt
30	35	clean gravel to 3"
35	40	gravel 3" and black sand
40	45	? no record but sampled; straightened hole and had to redrill 15' lost
45	51	basalt gravel
51	55	clean black sand
55	60	blue sand, some small gravel
60	80	sand and gravel to ½", blue
80	85	sand and gravel to 3"
85	100	sandy gravel to 3"
100	105	gravel
105	110	? no record but sampled
110	140	clay and silt
140	145	blue clay silt and gravel
145	165	blue clay, sand and silt and gravel
165	170	black gravel and blue sand and silt
170	185	blue clay, sand and silt
185	195	brown clay, sand, and silt
195	200	brown clay, silt and sand with gravel
200	205	blue clay, sand and silt
205	210	black gravel, blue clay
210	225	? no record but sampled
225	235	basalt gravel, blue clay
235	240	basalt (hit solid basalt at 236', out of it at 240')
240	255	green clay, sand and silt
255	260	clean green and black sand
260	265	basalt gravel and sand
265	270	weathered basalt
270	280	basalt
280	282	basalt; stopped at 282' 10" into true basalt, bailed until green sand started to cave in

Driller's log of 699-S11-E12B[1] (S010965, E012035) Hanford Wells, 1973

Land surface altitude of 363[2]

1. Labeled 699-S11-E12A
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Drilling with mud

Depth (ft) From	To	Description
0	20	gravel and boulders-large boulders and loose
20	35	gravel and boulders-large boulders
35	45	cemented gravel with boulders
45	50	soft sandstone
50	65	sand and fine gravel, wood
65	68	sand, clay, gravel
68	72	clay, blue
72	80	boulders and gravel
80	95	large boulders and gravel and sand
95	110	cement gravel with small boulders
110	125	cemented gravel, boulders 8" diameter
125	142	silk clay
142	155	gravel and boulders
155	170	gravel and boulders with a little clay; wash out hole cave in, over night
170	182	large boulders with cement gravel
182	215	silk clay, basalt at 215'

Driller's log of 699-S9-63[1] (S008850, W063170) Hanford Wells, 1973

Land surface altitude[2] 1418 feet msl

1. Labeled 11/26-29B1
2. Estimated from altitude of top of casing given Hanford Wells, 1973

Depth (ft) From	To	Description
0	40	no record
40	85	rock, broken, cavey
85	95	hard pan (?)
95	133	rock, broken
133	139	"strange formation, very hot"
139	221	basalt, broken uppermost 73 ft
221	249	clay, soft, shaly
249	252	rock, broken, cavey
252	697	basalt, gray, black, blue
697	702	sandstone and shale
702	775	shale
775	800	basalt, porous, gas at 781 ft
800	880	basalt, black and gray
880	896	basalt, broken and porous
896	2443	basalt, gray, black, blue
2443	2482	sandstone
2482	2955	basalt, gray, black
2955	2965	shale
2965	3660	basalt, black and gray

Driller's log of 699-S8-19 (S008336, W018720) Hanford Wells, 1973

Land surface altitude[1] 502 feet msl

1. Estimated from altitude of top of casing given on drillers log

Depth (ft) From	To	Description
0	19	sand
19	24	sand with clayey silt
24	27	sand with gravel
27	32	sand, fine to coarse
32	40	sand with gravel
40	67	sand
67	76	sand with gravel
76	83	gravel with sand
83	92	sand
92	100	gravel with sand
100	107	sand with gravel
107	112	sand, medium to coarse
112	139	sand and gravel
139	143	sand, fine to medium
143	148	sand with gravel

Driller's log of 699-S7-34 (S006528, W034449) Hanford Wells, 1973

Land surface altitude[1] 525 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	silt and sand
4	93	sand, 90% coarse
93	124	sand, silty
124	128	silt and sand
128	136	sand and gravel
136	144	sand, gravely
144	169	basalt, gray, hard
169	192	sand, tuffaceous
192	261	tuff, weathered into much silt and clay
261	321	basalt, hard, black

Driller's log of 699-S6-E15[1] (Hanford Wells, 1973)

Land surface altitude[2] 361 feet msl

1. Apparently 699-S6-E15B of Hanford Wells
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	25	fluviatile gravel
25	58	Ringold conglomerate
58	61	silty, sandy gravel-probably Ringold conglomerate
61	72.6	micaceous, clean quartz sand (bluish in color)
72.6	75	gravelly sand
75	76.7	sand and gravel
76.7	90	gravelly sand
90	90.6	plastic, gray silt and fine sand
90.6	91.9	gray micaceous sand
91.9	94	hardy gray clay
94	97.2	alternating silt, sands, clays in thin beds
		"Corps of engineers originally drilled well to 196'. See Corps log, also summary in card file for remainder of hole."

Driller's log of 699-S6-E14A (S006435, E014211) Hanford Wells, 1973

Land surface altitude[1] 376 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	25	fluviatile gravels
25	58	Ringold conglomerate
58	61	silty sandy gravel, probably Ringold conglomerate
61	72.6	micaceous, clean quartz sand, bluish in color
72.6	75	gravelly sand
75	76.7	sand and gravel
76.7	90	gravelly sand
90	90.6	plastic, gray silt and fine sand
90.6	91.9	gray micaceous sand
91.9	94	hardy gray clay-cored well with mud bit
94	97.2	alternating silts, sands, clays in thin beds
97.2	160	conglomerate, sandy gravel with cobbles, dark gray, very compact
160	176	conglomerate, sandy gravel with cobbles, dark gray, poorly compacted
176	188	alternating beds of gravel and fine micaceous sand, blue gray clay
188	197	clay, blue gray, thin-bedded and compact
197	212	basalt
		202-212 deepened 8-9-62. Some sand in sample coming from uncased area.

Driller's log of 699-S6-E14B[1] (S006435, E014230) Hanford Wells, 1973

Land surface altitude[2] 376 feet msl

1. Labeled 699-S6-E14A on driller's report
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig, with mud

Depth (ft) From	To	Description
0	4	sand
4	20	boulders, big boulders 4" to 8" diameter
20	35	gravel, large and small boulders
35	50	small gravel with cement and boulders
50	65	gravel and small boulders
65	80	gravel, small boulders, some large ones
80	125	gravel, boulders embedded in cemented sand
125	140	cemented boulders embedded in cemented sand with gravel
140	152	cemented boulders
152	155	sandy clay
155	182	sandy clay and boulders, small boulders
182	194	sandy clay
194	205	basalt

Driller's log of 699-S6-E4A (S006102, E003503) Hanford Wells, 1973

Land surface altitude[1] 443 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	gray sand
10	25	black sand-20' to 25' loose
25	32	basalt sand-25' to 50' added topsoil so could bail it out
32	40	gravel pea size, all colors sand
40	50	gravel, black and white sand
50	54	basalt
54	55	? black and white sand
55	77	sand and gravel (clay, small amount); can't drill below pipe; not much binder; used some top soil
77	87	pea to baseball size gravel, coarse sand (all colors-hard)
87	100	gravel, sand (all colors-hard)
100	103	marble size gravel, sand
103	105	fine white sand-ran back up hole
105	108	pea to marble gravel, sand
108	110	brown and white sand-brown sugar sand comes back up pipe
110	115	good gravel fine to golfball size and good sand coarse to fine
115	117	good gravel, white sand

Driller's log of 699-S6-E4B (S006098, E003782) Hanford Wells, 1973

Land surface altitude[1] 420 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	blow sand and top soil
5	10	blow sand and top soil, gravel
10	15	gravel, sand, and silt
15	30	gravel, sand, no silt
30	35	gravel, sand, some silt
35	40	gravel, sand, more silt
40	45	coarse gravel with silt
45	50	75% gravel, 25% sand
50	60	gravel and silt
60	65	sand, very little gravel
65	67	coarse gravel
67	72	sand, silt and gravel
72	75	cemented gravel and sand
75	78	cemented gravel
78	80	fine white sand, runs back up hole
80	87	90% white sand, very little gravel, silt. Caves badly
87	100	90% brownish red sand, very little gravel, silt. Caves badly. This brown sand runs back up pipe.

Driller's log of 699-S6-E4C (S006100, E003781) Hanford Wells, 1973

Land surface altitude[1] 431 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	15	no record (sand?)
15	20	coarse sand, brown and white, gravel
20	25	gravel and sand
25	35	fine brown and white sand, gravel
35	55	fine gravel and sand
55	65	gravel, sand. Caves
65	80	sand, gravel. 65'-70' caves
80	85	sand, gravel, and silt
85	91	heavy silt sand, some gravel
91	98	sand, gravel, heavy silt
98	117	heavy silt, sand, and gravel
117	120	dark grayish-blue silt with sand and gravel
120	140	grayish-blue silt,sand, fine to coarse gravel. This formation lays in layers of silt and sand, then a layer of gravel
140	163	bluish-gray silt, sand, gravel. This formation has lots of bluish-gray silt with lots of gravel-up to 4". This mud smells like rotten eggs.
163	180	bluish-gray silt, gravel, sand
180	185	bluish-gray silt, less gravel
185	197	sand, gravel, silt, bluish-gray
197	200	green silt with fine sand
200	225	green silt with fine sand, fine gravel
225	233	green silt, small bits of shale, sand, small gravel
233	237	gravel, and sand
237	255	heavy mud with lots of basalt gravels and some sand
255	275	sandy bluish-green silt, very little gravel. Some layers of gravel up to 2½" diameter
275	281	fine sand, more gravel, some blue-green silt
281	285	slimy black mud, basalt chips and some 4" basalt gravel and sand
285	295	hard cemented gravel and sand. The gravel is coated with a greenish sandy cement formation with small gravel clinging to gravel held by this cement formation. Lots of gravel has rinds 1/16" thick.
295	300	dark silt
300	305	slimy black-gray mud, some wood
305	307	gravel, sand
307	322	black-gray slimy mud, few small gravel, very fine sand, some pieces like shale
322	325	blue silt, gravel, sand
325	330	blue silt, gravel, sand, showing basalt formation
330	334	hit basalt at 330'. This layer of basalt is about 5' thick.
334	335	mud and gravel. Went into a break 334'-337'
335	337	green sandy mud, gravel, and chips of basalt

Driller's log of 699-S6-E4C cont

Depth (ft) From	To	Description
337	357	greenish blue silty sand with small gravel imbedded in this formation. This silty sand is more like clay.
357	367	greenish-blue silty sand, with some 4" gravel
367	370	black ash and green sandy silt
370	375	ash-basalt grindings*
375	385	basalt grindings-black mud*
		* 370' to 385' acts like small layer of basalt, then ash and gravel...It is an ash and silt formation almost hard enough to be shale, with gravel imbedded all through it.
385	393	ash, silty sand, gravel-gravel caves in
393	415	layers of gravel and green sandy silt-gravel to 395' caves in-hard to mix with water. Lots of these rocks in the samples cave in from about 375'
415	420	black mud, gravel, sand. 415' to 425' mud is very black with ground-up basalt. I would say basalt started at 414'. Gravel, sand and silt is foreign, coming from 385' to 395'.
420	430	reddish brown mud, gravel, sand. Cuttings like top of gastreous (?) basalt or honeycomb.
430	440	soft reddish brown basalt. Cuttings like top of gastreous (?) basalt or honeycomb.
440	455	basalt-honeycombed
455	461	basalt-honeycomb. Heavy. More dense. (harder)

Driller's log of 699-S6-E4D[1] (S005734, E003767) Hanford Wells, 1973

Land surface altitude[2] 429 feet msl

1. Previously 321-4 on drillers log
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	top soil and sand
5	12	sand and silt
12	15	sandy silt-caves
15	20	4' sandy silt-1' gravel
20	60	gravel and sand
60	75	cement gravel
75	80	cement gravel and pure gravel-got some gravel 3½" to pea size at 80'. Lost 5' of hole by cave in at 80'.
80	86	cement gravel and pure gravel. This formation from 75' to 86' is a layer of cement gravel then a layer of pure gravel
86	88	fine white sand-had fine sand from 86' to 98'.
88	89	fine sand
89	95	reddish-brown silt, sand and gravel
95	102	yellow-brown silt, sand-caves
102	104	layer of gravel
104	112	yellow-brown silt, sand-caves
112	115	gravel-sand-mud. Gravel bed starts at 112'-115'.
115	120	gravel-sand-blue mud
120	128	bluish gray mud-sand and gravel
128	136	sand-gravel-mud-slime
136	142	gravel-sand-mud

Driller's log of 699-S6-E4E[1] (S006446, E003727) Hanford Wells, 1973

Land surface altitude[2] 424 feet msl

1. Previously 321-5 on driller's report
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	10	blow sand and top soil
10	15	3 ft. sand-2 ft. gravel
15	20	gravel
20	25	3' gravel-2' sand and gravel
25	30	gravel and sand
30	35	4' gravel-1' sand
35	40	3' sand-2' gravel
40	45	3' sand-2' gravel--13' to 45' mostly gravel with 2' and 3' layers of sand in between-bails hard
45	60	gravel and sand, in layers 2' to 3' thick, mostly gravel-caves-bails hard
60	65	2' gravel, 2' sand, 1' gravel and cement gravel
65	70	1' gravel, 4' sand and cement, gravel
70	75	cement, gravel
75	79	gravel and sand
79	80	white sand
80	86	cement, gravel, and sand-bails good
86	91	sand and gravel with light brown silt
91	98	sand and gravel with gray silt, 86' to 98' this sand in this formation will come back up the pipe.
98	120	gravel and sand, dark silt, mud-smells. Bails good-caves in.

Driller's log of 699-S6-E4F (S006595, E003950) Hanford Wells, 1973

Land surface altitude[1] 417 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	top soil and sand
5	15	boulders up tp 10" diameter
15	50	gravel and sand
50	60	cement, gravel and sand
60	67	fine white sand, some white silt
67	75	white sand, gravel, white silt
75	85	white sand, gravel, white silt-very muddy
85	87	white sand, gravel, white silt
87	102	gravel, sand, tan silt, muddy. This formation has layers of gravel and layers of sand with gravel, sand and tan silt imbedded in it. No loose white sand in this well--all sand has some silt

Driller's log of 699-S6-E4G (S006761, E004204) Hanford Wells, 1973

Land surface altitude[1] 422 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	blow sand
5	10	sand and top soil
10	30	gravel
30	35	gravel, sand, 1½ foot layer of heavy silt at 33 feet, then pure gravel
35	45	gravel and sand
45	60	gravel and sand, white silt
60	68	fine white sand, some silt
68	70	gravel
70	85	gravel, sand and grayish white silt
85	102	brown sandy silt and gravel

Driller's log of 699-S6-E4H[1]

Land surface altitude[2] 419 feet msl

1. Labeled 321-8
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	3	blow sand
3	5	coarse gravel up to 2" and sand
5	10	small and coarse gravel
10	15	cobbles and coarse gravel
15	20	cobbles, gravel, and gray sand
20	25	coarse gravel
25	50	coarse gravel, little sand
50	55	coarse gravel up to 3"
55	60	cobbles, coarse gravel
60	65	coarse gravel, little sand
65	67	gravel, sand and silt
67	69	gravel, sand, and silt
69	70	coarse gravel
70	80	coarse gravel, fine gray sand
80	85	cobbles, gravel, little sand
85	90	cobbles, gravel, 50% sand

Driller's log of 699-S6-E4J[1]

Land surface altitude[2] 418 feet msl

1. Labeled 321-9
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	15	coarse sand and gravel-gravel at 8'
15	25	coarse sand
25	32	coarse gravel
32	35	coarse gravel and coarse sand
35	50	small and coarse gravel, little sand
50	70	fine and coarse sand, coarse gravel
70	75	fine sand
75	85	fine sand, silt and coarse gravel
85	90	coarse gravel and fine sand
90	95	coarse gravel, fine and coarse sand
95	100	fine sand and gravel

Driller's log of 699-S4-E16 (Hanford Wells, 1973)

Land surface altitude[1] 343 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	25	gravel-sandy with occasional cobbles
25	28	cemented conglomerate
28	73	poorly cemented conglomerate with fine blue-green micaceous friable sandstone
73	78	clay-shale, soft
78	88	sandstone, fine, soft
88	101	clay-shale, soft, green-gray
101	107	sandstone
107	114	conglomerate, poorly cemented
114	120	sandstone and conglomerate interbedded
120	150	conglomerate poorly cemented
150	156	sandstone, fine, soft to very soft
156	183	shale and basalt, boulder, cobbles, and gravel
183	189	basalt medium hard dark gray
189	190	clay
190	194	basalt-vesicular, hard

Driller's log of 699-S3-E12 (S003000, E012000) Hanford Wells, 1973

Land surface altitude[1] 396 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	fine brown sand
10	17	fine brown sand and silt
17	22	4" max. sand and large gravels
22	40	sand and finer gravels (2"max)
40	42	heavy gravels and cobbles
42	44	heavy gravels and sand
44	45	heavy gravels and sand, cemented fine
45	55	brown sand and silt with small gravels
55	62	cemented sand and gravel
62	70	cemented sand and fine gravels
70	77	cemented sand and fine gravels, more silt
77	80	soft sandy clay and gravel
80	110	cemented sand and gravel
110	115	cemented sand and gravel, harder now
115	130	cemented sand and gravel
130	135	cemented sand and gravel-formation a little softer
135	138	cemented sand and gravel-more silt, less gravel
138	145	cemented sand and gravels
145	160	sandy blue clay with some fine gravels
160	165	sandy blue clay with some fine gravels-sandier now and harder
165	170	cemented sand and gravel
170	175	cemented sand and gravel-very hard
175	176	could be a layer of basalt?
176	180	cemented sand and gravel-softer
180	185	cemented sand-hard but no gravel
185	204	cemented sand and gravel
204	212	fine blue (or green sand with some small gravels)
212	215	sandy green clay with some fine gravels
215	228	blue sandy clay and small gravel
228	230	sandy clay, no gravels
230	245	blue sandy clay
245	250	basalt
250	260	very hard basalt

Driller's log of 699-1-18 (N001420, W017593) Hanford Wells, 1973

Land surface altitude[1] 536 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand-silt
5	12	coarse sand
12	30	coarse sand-silt
30	45	coarse sand-silt (coarser)
45	53	fine sand and silt
53	65	sand-silt
65	85	coarse sand-silt
85	90	coarse sand-silt (some gravel)
90	93	gravel and cobbles
93	105	gravel---tools stuck about 95 feet.
105	110	clean gravel
110	125	gravel
125	155	cemented sand and gravel
155	160	gravel
160	170	sand-gravel
170	171	clean gravel
171	175	gravel---lost mud and hole 171 feet to 173 feet
175	180	cemented sand and gravel
180	185	clean gravel
185	190	cobbles and gravel
190	195	clean gravel
195	200	sand and gravel (softer)
200	250	cemented sand and gravel
250	255	sand-silt and small gravel
255	275	basalt and mixed gravel
275	295	sand and gravel basalt
295	305	basalt-gravel and green-brown sand
305	315	basalt and mixed gravel
315	320	basalt-gravel and sand
320	350	green clay and basalt particles

Driller's log of 699-2-33 (N001813, W032823) Hanford Wells, 1973

Land surface altitude[1] 534 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	35	sand
35	40	heavy sand
40	70	sand and small gravel
70	75	sand
75	85	sand and small gravel
85	115	sand
115	120	sand and gravel
120	135	gravel
		(skip 2 weeks in daily log and pick up with 115'-125' gravel and little sandy clay; 125'-135' gravel and sand, little clay)
135	140	cemented gravel
140	145	cemented gravel and clay
145	155	cemented gravel and little clay
155	165	cemented sand, gravel and little clay
165	180	gravel and sand, little clay
180	191	small gravel, sand and little clay
191	194	? record unclear-I think it's as above
194	220	brown clay
220	222	? record unclear-I think it's as above
222	230	blue clay and sand
230	265	blue sand and little clay
265	270	green clay, little sand
270	280	fine sand and little blue clay
280	290	fine sand and little brown clay
290	295	fine sand-heaving in hole
295	305	fine sand and little blue clay
305	309	fine sand and small gravel-sand heaving up hole
309	327	sand and gravel, blue clay
327	329	sand, gravel and little clay
329	330	sand gravel and clay
330	340	sand, gravel, blue clay-hard pan.
340	345	sand, gravel and little blue clay
345	360	dark gray clay, few small rocks, clay very sticky
360	375	gray clay and gravel
375	380	gray clay and little sandy
380	395	gray clay and little sand
395	397	? gray clay and little sand, very little gravel
397	398	gravel and boulders
398	402	gray clay, gravel and boulders
402	405	gray clay, sand, few heavy gravel-hole caving
405	420	gray clay, sand and gravel
420	424	sand and gravel, blue clay
424	425	sand and gravel, blue-gray clay
425	430	sand and gravel, gray clay
430	434	sand and gravel, little gray clay

Driller's log of 699-2-33 cont

Depth (ft) From	To	Description
434	442	sand, small gravel, very little gray-green clay
442	451	sand-gravel-gray clay (very little)
451	452	sand and gravel, little gray-green clay; about 434'-452' have to drive pipe ahead of hole
452	466	basalt-black basalt very solid

Driller's log of 699-2-E14[1] (N001633, E013573)

Land surface altitude[2] 390 feet msl

1. Labeled D.J.B.-1
2. Personal comm. Rod Ledgerwood, 5-13-75
3. Cable tool rig

Depth (ft) From	To	Description
0	140	coarse gravel with sand
140	155	green clay and sand chips
155	160	green-sand
160	175	green sand with clay
175	220	coarse gravel, coarse sand
220	285	? no record
285	320	green sand and gravel
320	325	basalt

Driller's log of 699-2-E19[1] (N001962, E018925)

Land surface altitude[2] 383 feet msl

1. Labeled DJB-3
2. Personal comm. Rod Ledgerwood, 5-13-75
3. Cable tool rig

Depth (ft) From	To	Description
0	15	fine sand with silt
15	40	coarse gravel with sand
40	110	coarse gravel and sand
110	135	sand, silt, and clay
135	150	coarse gravel and sand
150	185	coarse gravel with coarse sand
185	195	fine sand with silt and clay
195	200	fine sand with siltstone and clay
200	255	? no record
255	260	coarse gravel
260	270	? no record
270	275	coarse gravel and sand
275	280	? no record
280	288	basalt

Driller's log of 699-3-45 (N003000, W045000) Hanford Wells, 1973

Land surface altitude[1] 503 feet msl

1. Estimate from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	silt brown in color
5	15	silt and brown sand
15	55	light brown sand (drive barrel samples)
55	60	fine brown sand
60	75	fine light brown sand
75	95	fine brown sand
95	105	fine brown sand with basalt gravel "hit change of material at 98' went into basalt gravel"
105	110	sand and ½"-gravel,brown in color
110	115	sand and ¼"-gravel, brown in color
115	125	¼"-gravel down to fine brown sand
125	131	¼"-gravel and fine brown sand
131	140	honeycomb basalt
140	150	basalt
150	155	basalt coarse ½"
155	165	black and rust color basalt
165	167	hole is falling in--grouted
167	170	rusty red rock, coarse 3/4"-down to fine sand size
170	175	rusty red rock

Driller's log of 699-8-25 (N007995, W025003) Hanford Wells, 1973

Land surface altitude[1] 507 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	25	sand and silt
25	30	sand and gravel and cobbles (4" to 6") bent drive barrel at 29', casing pulled back to 22' and had to redrill
30	33	sand and gravel
33	55	sand and silt
55	65	packed sand and silt
65	75	packed coarse sand
75	85	packed sand and silt
85	90	sand and silt
90	95	sand and silt, few pea gravel
95	100	sand and gravel
100	103	boulder; pulled casing back, redrilled from 30' to 103'
103	105	boulders; pulled casing back 7' and worked with tools 2 days before got progress
105	130	sand and gravel
130	148	tan sand and gravel; sand will fill up in casing
148	165	fine sand and gravel; sand will come up in casing
165	170	packed sand, very little gravel sand that comes in casing cleans out as slow as drilling first time

Driller's log of 699-8-32 (N007875, W031800) Hanford Wells, 1973

Land surface altitude[1] of 552 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	sand
4	48	sand, medium to coarse
48	57	sand, medium
57	64	sand, medium to coarse
64	85	sand with gravel to 1"
85	88	sand, clayey silt
88	97	sand, some gravel
97	101	sand
101	136	sand, few pebbles
136	153	sand, fine to coarse
153	164	sand, gravel to 2"
164	172	gravel, some sand
172	192	sand with pebbles
192	197	gravel and sand
197	200	sand, fine to medium
200	204	gravel, pebbles and cobbles

Driller's log of 966-9-E2[1] (N008577, W002324) Hanford Wells, 1973

Land surface altitude[2] 416 feet msl

1. Labeled 699-9E4 on driller's reports
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig-using some bentonite

Depth (ft) From	To	Description
0	5	sand-silt
5	20	sand-gravel-silt
20	25	sand-gravel-clean
25	30	coarse sand and clean gravel
30	35	cobbles-same as above
35	45	cobbles-gravel-silt
45	50	cobbles-gravel cemented
50	60	coarse sand and gravel-cemented
60	64	gravel and cobbles
64	70	cobbles, gravel cemented
70	75	cemented gravel
75	79	loose gravel and sand
79	85	loose sand and gravel
85	94	cemented sand
94	110	cemented sand and gravel
110	130	sand-gravel
130	138	fine sand-came up the pipe from 130'
138	140	sand-gravel
140	145	cobbles-gravel-sand and silt
145	148	cobbles-gravel-sand
148	150	cobbles-sand-silt
150	167	sand-gravel
167	187	fine sand and gravel-8' sand in well in morning
187	190	sandy-blue clay
190	210	mixed gravel, clay and sand
210	220	hard packed gray clay with gravel
220	225	gray sandy clay-with gravel
225	240	gray sandy clay
240	245	gray sandy clay (hard)
245	275	blue clay, gravel particles
275	285	gray clay with gravel (very hard)
285	300	gray clay with gravel and sand (hard)
300	310	gray clay with sand (soft)
310	315	gray clay with basalt particles
315	320	green clay with basalt particles
320	330	green clay with sand and basalt particles
330	335	black clay with varied rock
335	355	black clay with no rock
355	365	black clay
365	380	black clay with rock particles
380	400	black clay
400	405	black clay with sand-softer
405	424	basalt gravel, sand
424	454	basalt

Driller's log of 699-10-E12 (N010000, E012000) Hanford Wells, 1973

Land surface altitude[1] 429 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Description represents sample for stated interval
3. Cable tool rig

Depth (ft) From	To	Description
0	2	gray sand, fine
2	6	6"-gravel to fine brown sand, gravel 20%, coarse and loose
6	8	cemented gravel
8	10	2" cemented gravel
10	15	3/4" cemented gravel
15	20	½" cemented gravel
20	30	¼" cemented gravel
30	35	1"-gravel down to fine sand cemented color, when washed out seems to be about 10% fine sand
35	40	2"-gravel down to fine sand cemented color, washed out seems to be about 20% fine sand; not so tight
40	45	1½"-gravel down to fine sand, cemented color, washed out seems to be about 25% sand
45	50	1"-gravel down to fine sand cemented color, washed out seems to be about 25% sand
50	55	1½"-gravel down to fine sand cemented color, washed, seems to be about 35% sand
55	60	3" gravel down to fine sand with traces of caliche; 30% sand
60	65	6" gravel down to fine sand with traces of caliche; 25% sand
65	70	5" gravel down to fine sand, cemented color, about 25% sand and traces of caliche
70	75	½" gravel down to fine sand, dark brown color, about 50% sand
75	80	½" gravel down to fine sand, dark brown color, about 50% black sand
80	85	coarse sand with silt binder, brown color, about 30% coarse sand; tightly packed
85	90	1" gravel down to fine sand with silt binder; light brown color; about 60% fine sand; tightly packed
90	95	coarse and fine sand with gold and silver mica, about 85% fine sand
95	100	¼" gravel down to fine sand; light brown; about 50% fine sand with silt binder packed tightly
100	105	2½" gravel down to fine sand; 65% coarse sand; light brown; packed tight with silt binder
105	110	½" gravel to fine sand; light brown; about 25% fine sand with silt binder very tightly packed
110	115	¼" gravel to fine sand; light brown; about 15% fine sand with silt binder-some mica; very tightly packed or cemented
115	120	coarse and fine sand; about 90% fine sand with silt binder; light brown
120	125	½" gravel down to fine sand; about 50% fine sand with silt binder; light brown
125	130	½" gravel down to fine sand; about 50% fine sand with silt binder; light brown; packed very tight

Driller's log of 699-10-E12 cont

Depth (ft) From	To	Description
130	135	2" gravel to fine sand, about 50% fine sand with silt binder and traces of yellow clay; light brown
135	140	1" gravel and some sand 90% brown or gray clay, clay at 137'
140	150	1¼" gravel and some sand 90% brown or gray clay
150	170	brown or gray clay with some sand and gravel
170	175	¼" gravel to fine sand, about 30% fine sand, light brown with silt binder; at 172' as before, sand and gravel
175	180	¼" gravel to fine sand, about 25% fine sand, light brown with silt binder
180	185	1" gravel to fine sand, about 60% fine sand, light brown with silt binder
185	190	2" gravel to fine sand, 30% fine sand, light brown with silt binder
190	195	2¼" gravel to fine sand, about 40% fine sand, light brown with silt binder
195	200	1½" gravel to fine sand, about 50% fine sand, light brown with silt binder
200	205	1¼" gravel to fine sand, about 30% fine sand, light brown with silt binder
205	210	2" gravel to fine sand, about 40% fine sand, light brown with traces white and gray clay and silt binder
210	215	gray clay with 1½" gravel to fine sand, about 20% sand with traces white clay, light brown
215	225	gray clay with ½" gravel to fine sand, about 2% sand, gray
225	230	½" gravel to fine sand, about 40% fine sand with traces grya - clay; color gray; very tightly packed
230	235	¼" gravel to fine sand, about 4% fine sand with traces gray clay; color gray; sand heaves
235	250	white sand with traces gold and silver mica; sand heaves
250	255	white sand with 1/8"-gravel blue green in color, sand comes up hole
255	260	1"-gravel down to white sand with traces black clay; sand comes up hole
260	265	gray clay with 1" gravel
265	270	gray clay with ½" minus gravel
270	275	gray clay with 3/4" minus gravel with coarse sand
275	280	gray clay with ½" minus gravel with some black coarse sand; few pieces gravel which look like decomposed basalt
280	285	gray clay with ½" minus gravel with some fine sand
285	290	gray clay with some green clay with 1" minus gravel with some fine sand in drill mud
290	295	green clay has some ¼" minus gravel with black sand; went into green clay at 293.0 from 00
295	300	green and black clay
300	305	black clay with traces of green clay
305	310	black clay
310	320	black and blue clay
320	325	blue clay
325	335	blue shale
335	340	blue shale clay
340	345	sand, green in color

Driller's log of 699-10-E12 cont

Depth (ft) From	To	Description
345	350	basalt gravel 1"-and black sand
350	355	black sand with 1½" basalt gravel, about 99% black sand; very tightly pack sand and gravel
355	360	fine rock cutting or fine sand with about 40% basalt chips; got a 6" gravel at 358'; bed rock at 358 feet (basalt)
360	368	rock cutting

Driller's log of 699-10-54 (N010150, W053550) Hanford Wells, 1973

Land surface altitude[1] 514 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	9	silt
9	77	sand, silt and some clay
77	81	sand with silt
81	96	gravel with sand
96	124	gravel with sand, some silt
124	128	sand with silt
128	136	sand with gravel, some silt
136	145	sand, and gravel and sand
145	157	gravel with sand
157	169	sand with some silt
169	173	sand with gravel and silty clay
173	181	clay-silt with little sand and gravel
181	184	gravel, some sand and silt
184	200	silt, clayey and chalky

Driller's log of 699-13-64 (N012596, W063975) Hanford Wells, 1973

Land surface altitude[1] 550 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	13	sandy silt
13	21	silt, sandy and clayey
21	45	sand and gravel, some silt
45	53	gravel, sandy
53	65	sand, silty
65	104	silt-clayey
104	109	sand, silty
109	113	gravel, sandy
113	121	silt, sandy
121	133	gravel, sandy
133	137	sand, medium to fine
137	161	sand, gravelly
161	167½	basalt, black

Driller's log of 699-14-E6P (N013711, E005507) Hanford Wells, 1973

Land surface altitude[1] 456 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Rotary rig

Depth (ft) From	To	Description
0	45	sand with gravels
45	60	sand with gravels coarser
60	75	sand with gravels
75	90	gravels, very coarse and boulders
90	105	gravel and boulders
105	135	gravel, boulders, and sand
135	142	gravel, boulders, sand-cemented
142	150	cemented gravel
150	165	cemented gravel and boulders
165	180	gravel and boulders
180	195	gravel and some clay at 188-190
195	240	gravel, boulders, and sand
240	241	? sand, clay and gravels
241	255	sand, clay, and gravels
255	280	clay and gravel
280	305	gravel, very coarse gravel at 280'
305	315	clay and sand
315	330	sandy clay
330	345	sandy clay with gravels
345	350	? blue clay, sandy
350	360	blue clay, sandy
360	390	clay and gravels
390	403	? clay with gravels
403	405	basalt
405	415	no record, probably basalt
415	434	basalt
434	445	basalt and blue clay
445	459	basalt with reddish brown in color
459	474	basalt
474	493	clay with gravel and rocks
493	495	basalt boulder
495	500	"unconsolidated"
500	507	basalt

Driller's log of 699-14-E6Q[1] (N013750, E005507) Hanford Wells, 1973

Land surface altitude[2] 456 feet msl

1. Labeled 12-E6Q
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig

Depth (ft) From	To	Description
0	76	sand and gravels
76	79	gravel cobbles-boulders
79	90	cobbles, boulders and gravel; losing circulation about 85'
90	105	gravel boulders and gravel
105	120	gravel and boulders
120	180	cobbles, boulders, and gravel
180	183	cobbles, gravel
183	188	some silty clay with gravels
188	195	cobbles, gravel
195	205	gravel and boulders
205	238	cobbles, boulders, gravel
238	285	sand, clay with gravel
285	302	gravel, cobbles, boulders
302	330	sandy clay with gravels
330	345	sandy, more clay
345	360	sand clay with gravels
360	390	clay with sand and gravels
390	402	? record unclear, probably clay with sand and gravels
402	403	basalt, hit basalt at 402'
403	435	basalt
435	449	blue clay with gravels
449	452	basalt

Driller's log of 699-14-E6R[1] (N013788, E005508) Hanford Wells, 1973

Land surface altitude[2] 456 feet msl

1. Labeled 12-E6R
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig, drilling with mud

Depth (ft) From	To	Description
0	60	sand and gravel
60	75	sand and gravels, few cobbles
75	113	boulders, cobbles, and gravels; having trouble holding circulation between 85' - 90'
113	235	cobbles, boulders, gravel
235	236	cobbles, boulders, gravel, and clay
236	285	gravel and clay
285	295	cobbles and gravel
295	300	cobbles and boulders and gravel; apparently lost hole to 285' and redrilled
300	390	sandy clay with gravels

Driller's log of 699-14-E6S[1] (N013830, E005506) Hanford Wells, 1973

Land surface altitude[2] 456 feet msl

1. Labeled 12-E6S
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Coordinates on log are: N13831, W5499
4. Rotary rig

Depth (ft) From	To	Description
0	60	sand and gravel
60	75	sand and gravel with some cobbles
75	120	cobbles, boulders and gravel; lost circulation about 78'-95'
120	135	cobbles, boulders and gravel, some sand
135	150	cobbles, gravel, some sand
150	165	cobbles, boulders, gravel
165	225	boulders, cobbles and gravel
225	240	boulders, cobbles and gravel (?)
240	255	sandy clay with gravels-(?) hit gray sandy clay at 247
255	270	sandy clay with gravels-cobbles at 265;(?)
270	300	cobbles and gravel
300	301	sandy clay with gravels
301	302	cobbles and gravel

Driller's log of 699-14-E6T[1] (N013869, E005500) Hanford Wells, 1973

Land surface altitude[2] 456 feet msl

1. Labelled 12-E6T
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Coordinates on log are : N13869.2, W5500
4. Rotary rig

Depth (ft) From	To	Description
0	60	sand and gravel
60	75	sand and gravel with few cobbles
75	90	sand and gravel with cobbles and boulders
90	105	gravel, cobbles, and boulders; losing circulation between 90-98 feet
105	122	cobbles, boulders, gravel

Driller's log of 699-14-38 (N014210, W037978) Hanford Wells, 1973

Land surface altitude[1] 513 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	75	sand and silt
75	76	sand and silt (very little silt)
76	85	sand and silt
85	90	sand and heavy silt
90	100	sand and heavy silt, formation changed at 90' to sand with a silt and little clay formation
100	110	sand and silt
110	111	gravel and sand (very hard to drill)
111	116	gray hard pan; gray gravel and sand hard pan encountered at 111'
116	125	gray gravel and sand (cemented gravel)
125	138	sand and gravel (hard pan formation)
138	160	sand and gravel (cemented)
160	167	cemented sand and gravel
167	169	sand and gravel (cemented)
169	179	sand and gravel
179	188	brown clay
188	215	gray clay and little sandy
215	220	gray clay-gravel (little)
220	229	gray clay and few gravel
229	250	mixed gravel-blue gray clay
250	265	blue gray clay
265	270	gray blue clay
270	274	gray blue clay and gravel
274	285	blue clay and gravel and sand mixed
285	295	green clay and gravel
295	300	green clay and small gravel
300	315	blue-green clay (sandy)
315	326	gray rock like basalt; run into a gray and black rock (mixed) at 319'; it is very hard and dense
326	330	gray rock-little clay
330	358	gray clay
358	365	light gray clay
365	380	sandy gray clay
380	390	gravel and rock
390	395	gray and black rock
395	412	gray and black cemented rock
412	420	gray and black rock (cemented)
420	425	basalt; tools stuck in crevice in rock

Driller's log 699-14-47 (N013628, W047317) Hanford Wells, 1973

Land surface altitude[1] 585 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. cable tool rig

Depth (ft) From	To	Description
0	165	sand and silt
165	177	gravel
177	181	cement gravel
181	186	small gravel and sand; sand heaving
186	190	sand and silt and gravel

Driller's log 699-15-15A[1] (N014815, W014963) Hanford Wells, 1973

Land surface altitude[2] 545 feet msl

1. Labeled 699-15-15
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	20	black sand and silt
20	25	? no record but sampled
25	30	fine sand and silt
30	35	seemed to have thin lense of small gravel 1' then into a cemented sand and silt and gravel 1" or smaller
35	40	sand and silt, gravel 1"; less gravel
40	45	sand and silt, gravel up to 2" very small amount
45	50	sand and silt
50	55	sand and silt; sand caving and heaving
55	60	sand and silt, small % gravel at 4"
60	80	sand and silt
80	85	sand and silt; coarser sand, less silt
85	115	sand and silt
115	120	sand and silt and 6" gravel; at 120' gravel from 1" to approx. 6" caving badly
120	125	sand and silt; more silt
125	130	brown sand and silt
130	135	sand and silt
135	140	sand and silt and ½" gravel
140	145	sand and silt
145	150	sand and silt and gravel to 6"; at 147' hit gravel and cobbles from ½" to larger, material kept heaving; at 150' gravel a little smaller 3"
150	155	cobbles
155	160	gravel (clean)
160	165	sand and gravel, small
165	170	gravel to 2", some silt
170	180	sand, silt, small gravel
180	185	sand and silt and gravel at 3"
185	190	sand and silt, gravel to 8"
190	195	sand and silt, gravel to 4"
195	205	sand, silt, gravel to 5", 205'-changed to gray color from brown
205	210	coarse sand and silt
210	215	sand and silt, gravel to 6"
215	230	brown clay and gravel to 2"
230	240	brown clay and coarse sand
240	252	firm brown clay and gravel
252	255	blue sandy clay (firm)
255	280	blue clay with gravel (small)
280	285	blue clay and gravel to 2"; gravel larger and basalt type
285	305	blue clay and gravel to 2"
305	325	blue clay and basalt gravel
325	355	? no record but sampled
355	360	blue clay, less gravel; softer material very little gravel

Driller's log 699-15-15A cont

Depth (ft) From	To	Description
360	365	blue clay, less gravel; very soft clay
365	370	blue clay, small gravel
370	380	sandy blue clay
380	385	blue clay with gravel 2"; hard sandy clay with gravel
385	400	sandy blue clay with gravel
400	405	sandy blue clay with gravel; there seemed to be 2 to 3 ft. of gravel that caved in and had to be redrilled
405	420	blue clay with gravel up to 2"
420	425	blue clay with gravel 4" to 6"; hole caved and filled with large basalt gravels up to 6' in diam.
425	430	grey sticky clay with coarse sand
430	435	grey sticky clay, less sand
435	440	grey hard clay
440	445	grey hard clay with gravel to 1"
445	450	soft grey clay, very little gravel
450	455	black soft clay
455	465	brownish black firm clay
465	475	blue hard clay
475	480	blue hard clay, harder and sticky
480	485	hard sticky light blue clay
485	490	hard sticky light blue clay and gravel
490	495	hard sticky light blue clay
495	500	hard sticky light blue clay and gravel; at 497' hit clean gravel, small
500	510	small gravel and grey clay
510	520	blue clay and gravel; more gravel 515'-520'
520	525	blue clay and fine gravel
525	530	blue clay and coarse gravel
530	540	gravel and blue clay
540	545	blue clay, some gravel
545	550	sticky blue clay and gravel
550	555	? no record but sampled
555	565	pack brown sandy clay with small gravel
565	585	pack brown sandy clay-no gravel
585	605	dark brown sandy clay
605	610	dark brown sandy clay, some small gravel
610	620	grey blue clay, no gravel
620	625	grey blue clay, some small gravel
625	632	? no record but sampled
632	635	real clean gravel up to 2", 95% basalt
635	640	blue clay and gravel
640	650	blue clay cemented; at 645' seems to be chalky clay and some gravel; at 650' seems harder-looks like some basalt gravel and some solid basalt pieces
650	665	cemented gravel to 3"
665	670	gray, black medium clean sand (hit sand at 667')
670	675	gray, black medium clean sand; sand heaves
675	685	clean sand with small gravel
685	690	"seems to have some clay in it"
690	695	coarse sand and small gravel; at 698' drill line parted, tools stuck in bottom of hole

Driller's log 699-15-15A cont

Depth (ft) From	To	Description
695	700	sand and gravel, small; heaves in
700	704	*originally logged as clean sand and gravel to 2"
704	705	*originally logged as sticky blue green clay
705	710	*originally logged as weathered basalt
		*"Remarks" shows special samples taken at 702' green clay with gravel; at 706' black clay; at 708' weathered basalt
710	716	weathered basalt
716	719	hard basalt; cemented at 719'
719	722	basalt

Driller's log 699-15-15B[1] (N014831, W014991) Hanford Wells, 1973

Land surface altitude[2] 546 feet msl

1. Labeled 699-15-15 with added note: 15-15B We have this log again (&before) but labeled 699-15-15D. The drilling dates & TD are 699-15-15B of Hanford Wells
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	1	fine brown sand
1	20	fine brown and coarse black sand
20	30	fine to coarse black sand
30	45	fine brown and black sand
45	50	medium brown and black sand
50	60	brown and black fine to coarse sand
60	65	fine brown sand and black sand and 5'-gravel
65	83	brown and black fine to coarse sand
83	115	black and brown sand fine to coarse
115	117	black and brown sand with some 1½'-gravel
117	140	black and brown sand with some gravel
140	144	black and brown sand with 5'-gravel
144	157	silt and brown sand with 5'-gravel; very tight packed
157	165	brown sand and gravel with some silt

Driller's log of 699-15-15C[1] (N014965, W014813) Hanford Wells, 1973

Land surface altitude[2] 543 feet msl

1. Labeled 699-15-15A
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig with bentonite mud

Depth (ft) From	To	Description
0	50	silk sand
50	80	silk sand with few small boulders
80	140	cemented sand
140	145	sand and gravel
145	155	sand and boulders
155	198	loose gravel and boulders; hole caving at 167'
198	200	clay
200	215	boulders with a little sandy clay
215	245	gravel and sandy clay
245	250	sand and gravel
250	266	clay
266	275	boulders
275	320	gravel, boulders, with little clay
320	324	boulders and gravel
324	359	boulders, gravel imbedded in clay
359	365	clay
365	380	blue clay
380	384	clay
384	395	boulders and gravel imbedded in clay
395	428	boulders imbedded in clay
428	440	clay
440	455	blue clay
455	495	clay
495	515	gravel imbedded in clay
515	530	boulders, gravel and clay
530	540	gravel and clay
540	545	clay
545	560	clay, sand and gravel-a little clay
560	605	gravel, sand with a little clay
605	607	sand, gravel and clay
607	635	gravel and clay
635	640	gravel and clay and sand
640	650	cemented sand
650	671	boulders and clay
671	678	clay
678	680	boulders
680	748	basalt

Driller's log of 699-15-26[1] (N015602, W026370) Hanford Wells, 1973

Land surface altitude[2] 522 feet msl

1. Previously 14-27 on driller's reports
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	15	fine sand
15	25	coarse black sand
25	35	fine sand, little silt
35	45	coarse sand
45	65	coarse sand, little gravel
65	70	50% coarse gravel, 50% coarse sand
70	80	coarse sand
80	90	coarse gravel, "gravel at 82 feet"
90	95	gravel, little sand
95	105	gravel and cobbles
105	110	? no record
110	120	boulders and gravel
120	125	coarse gravel, "ran out of boulders at 123 feet"
125	130	coarse gravel up to 4 inches
130	135	cobbles and gravel
135	140	gravel up to 4 inches
140	145	sand-coarse gravel
145	155	coarse gravel, little sand
155	165	coarse gravel up to 4 feet and sand
165	170	50% sand; 50% gravel and cobbles; sand comes in
170	185	coarse gravel, sand-silt
185	195	coarse gravel, silt, sand; sand comes in
195	200	cobbles and sand
200	205	cobbles, gravel and sand
205	210	boulders, gravel and sand
210	215	cobbles, gravel and sand
215	225	cobbles, gravel and fine sand; sand comes in
225	227	boulders, gravel and sand
227	245	sand and silt
245	250	fine sand, very little silt
250	270	fine sand; 250' fine sand comes in
270	275	fine red sand and gravel; sand comes in
275	280	fine red sand; sand comes in
280	295	sand, gravel; "gray sand at 283' and gravel", sand comes in
295	310	gray sand and gravel
310	320	gray silt, sand and cobbles
320	340	cobbles, sand; sand comes in
340	350	cobbles, gravel and sand

Driller's log of 699-15-E13[1] (N015323, E012713)

Land surface altitude[2] 411 feet msl

1. Labeled D.J.B.-2
2. Personal communication Rod Ledgerwood, 5-13-75
3. Cable tool rig

Depth (ft) From	To	Description
0	60	coarse gravel with fine sand
60	120	coarse gravel with coarse sand
120	180	? no record
180	185	sands-gravel and silts
185	200	? no record
200	205	coarse gravel with sand
205	235	sand and silt
235	260	green sand and silt
260	297	? no record
297	305	clay
305	310	basalt

Driller's log of 699-16-51[1]

1. ?699-15-52 of Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	75% sand 25% silt
5	110	50% sand 50% silt
110	115	25% sand 75% silt, layer brown clay 112 feet-114 feet
115	120	50% sand 25% silt, 25% gravel
120	135	50% sand 50% silt
135	140	50% gravel 50% brown clay, hit brown sand and silt at 136 feet - cemented, 137 feet hit gravel

Driller's log of 699-17-5 (N017450, W004500) Hanford Wells, 1973

Land surface altitude[1] 431 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	32	sand, gravely sand
32	36	gravel and sand
36	40	sand, fine to medium
40	61	gravel with sand
61	68	sand with gravel
68	80	sand medium some fine
80	97	silt, clayey sand
97	105	gravel and sand

Driller's log of 699-17-47[1] (N017354, W047460) Hanford Wells, 1973

Land surface altitude[2] 577 feet msl

1. Previously 699-20-55
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sandy soil
5	120	sand
120	125	sand, very fine
125	140	sand and clay
140	150	sand and little clay
150	155	fine sand
155	170	sand
170	178	sand and gravel
178	192	cemented gravel
192	219	gray cemented gravel
219	220	brown clay
220	226	brown and blue clay
226	265	blue clay, heavy
265	268	blue clay and a little sandy
268	270	sandy blue clay
270	275	blue clay and gravel
275	281	blue clay and heavy gravel
281	290	little blue clay and gravel, very hard
290	300	gravel
300	309	gravel and little blue clay
309	315	blue and gray sandy clay
315	326	little blue clay, gravel hard pan
326	342	gray gravel hard pan
342	353	basalt, black

Driller's log of 699-17-70 (N017000, W070000) Hanford Wells, 1973

Land surface altitude[1] 563 feet msl

1. Altitude of top of casing given in Hanford Wells, 1973; driller's log indicates top of casing is at land surface
2. Cable tool rig

Depth (ft) From	To	Description
0	35	silt
35	38	silt and coarse sand
38	45	silt and gravel
45	48	sand and gravel
48	50	sand, coarse gravel
50	55	sand, gravel, and boulders
55	70	sand and coarse gravel
70	100	sand and gravel
100	112	sand, quicksand, comes up the casing, brown in color with a good deal of mica
112	120	sand, gravel, and clay; quicksand
120	130	brown clay
130	140	blue shale
140	152	sand and gravel; quicksand at 140, sand not so bad 142-152
152	155	sand, gravel, and clay
155	185	caliche and sand; sand and fine gravel came up in the pipe 15' when drove the pipe at 160'
185	190	sand, gravel, and clay
190	200	silt and sand
200	210	silt-sand-fine gravel
210	220	blue shale, soft
220	230	blue shale, sand, and gravel
230	250	sand and gravel; comes in casing
250	260	gray clay-soft and sticky
260	269	? gray clay
269	286	basalt

Driller's log of 699-17-93 (N017000, W093000) Hanford Wells, 1973

Land surface altitude[1] 763 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	15	gravel, cobbles
15	24	sand, gravel and cobbles
24	29	large cobbles and boulders
29	37	black basalt boulders (? or a stratum)
37	42	basalt rock-gray-hard (? boulder)
42	55	hard black basalt (cobbles roll in)

Driller's log of 699-19-9[1] (N019400, W009300) Hanford Wells, 1973

Land surface altitude[2] 448 feet msl

1. Labelled A-36 crib (DJB) and E17-50
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Drilling dates 12-27-65 to 1-4-66 do not agree with Hanford Wells for 699-19-9

Depth (ft) From	To	Description
0	23	? no record
23	29	? no description, samples taken but called "too hot to handle"
29	95	? samples taken but no description
		No sample descriptions in driller's log

Driller's log of 699-19-47A (Hanford Wells, 1973)

Land surface altitude[1] 617 feet msl

1. Personal communication Roy Gephart 11-11-75

Depth (ft) From	To	Description
0	21	? no record
21	33	sand and silt
33	40	sand and silt, 80% silt
40	45	sand and silt, sandy
45	50	coarse sand
50	55	sand and silt, coarse sand
55	65	sand and silt
65	70	sand and silt, gravel to 3", 10% gravel
70	75	sand and silt, gravel to 3", 5% gravel, took 5" cobble at 72'
75	80	silt, 80% silt
80	90	sand and silt, mostly silt
90	110	sand and silt
110	115	sand and silt, 80% silt
115	125	sand and silt
125	135	sand and silt, 80% silt
135	144	sand and silt
144	165	sand and silt, 80% silt
165	175	sand and silt
175	185	sand and silt, 80% silt
185	190	80% silt, gravel to 1" 10%
190	205	sand and silt
205	215	sand and silt (hit sand 207')
215	218	gravel to 3"

Driller's log of 699-19-51 (Hanford Wells, 1973)

1. Cable tool rig

Depth (ft) From	To	Description
0	10	75% sand 25% silt
10	25	60% sand 40% silt
25	30	25% sand 75% silt
30	190	50% sand 50% silt
190	195	20% silt 80% gravel

Driller's log of 699-19-58 (N018953, W058260) Hanford Wells, 1973

Land surface altitude[1] 571 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	40	sand and silt
40	45	fine sand and silt
45	55	sand and silt
55	60	fine sand and silt
60	100	sand and silt, sand is very fine
100	115	fine sand and silt
115	125	clay, sand and gravel
125	149	sand and gravel
149	155	sand, gravel, clay and boulders
155	165	sand, gravel, and boulders
165	175	sand and gravel; went into finer gravel at 169'
175	178	granite boulder
178	185	sand and pebble gravel
185	190	sand and gravel, dark brown in color, caves
190	195	blue-gray clay-getting more blue
195	205	blue clay
205	210	basalt
210	235	black basalt
235	243	gray basalt
243	250	black porous basalt
250	259	gray and black basalt
259	272	soft black rock; mud had green tint at 272'
272	290	black basalt; mud had brown tint from 274'-275', mud at 285' black
290	295	soft black rock
295	300	hard basalt

Driller's log of 699-19-88[1] (N019185, W087736) Hanford Wells, 1973

Land surface altitude[2] 642 feet msl

1. Formerly 20-87
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	15	silt
15	32	gravel
32	34	silt
34	45	gravel
45	55	gravel-black basalt; lost open hole, had to redrill
55	57	silt
57	65	basalt gravel
65	74	gravel-mixed, mostly basalt
74	75	gravel
75	85	small cobbles, gravel; occasionally 6" or 8" of silt
85	88	gravel-caves
88	95	gravle-signs of more basalt
95	110	cemented gravel-very hard
110	115	cemented gravel
115	130	cemented sand and small gravel
130	135	sand, silt and small gravel-softer
135	140	sand, silt, gravel
140	155	coarse sand and silt (150-55 lighter color)
155	165	sand, silt and gravel-lighter in color
165	185	sand, silt, gravel (light brown)
185	200	sand, silt and gravel
200	205	sand and silt
205	247	sand, silt, some gravel-soft
247	265	sand and silt, some gravel
265	270	? no record
270	300	sand, silt, and gravel
300	335	cemented sand and gravel
335	340	sandy silt or clay
340	350	clay-gravel
350	351	* blue clay and basalt gravel
351	360	* basalt-soft
360	365	* basalt-hard
365	372	hard basalt
372	373	soft basalt
373	388	hard basalt
		* log corrected by driller

Driller's log of 699-20-E5P[1] (N020008, E004755) Hanford Wells, 1973

Land surface altitude[2] 465 feet msl

1. Previously 18E-6-P and 4705
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig

Depth (ft) From	To	Description
0	15	sand, gravel, and cobbles
15	60	sand and gravel
60	80	sand, gravel, and cobbles
80	90	gravel, cobbles, and boulders
90	99	cobbles and boulders
99	105	sand, gravel, and some clay
105	130	sand and gravel
130	144	clay
144	150	clay and gravel
150	171	cobbles, boulders and gravel
171	174	cobbles, boulders, and gravel with a little clay
174	181	cobbles, boulders, and gravel
181	190	cobbles, boulders, and gravel with clay-sandy
190	240	cobbles, boulders, and gravel
240	275	sand, gravel, and cobbles
275	302	cobbles, boulders, and gravel
302	320	sandy clay with gravel
320	354	basalt
354	370	clay
370	422	sandy clay
422	427.5	basalt
427.5	456	basalt and clay
456	466	basalt

Driller's log of 699-20-E5Q[1] (N020040, E004750) Hanford Wells, 1973

Land surface altitude[2] 465 feet msl

1. Previously 18-E6Q
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig

Depth (ft) From	To	Description
0	90	sand and gravel
90	125	sand, gravel, cobbles and boulders
125	135	sand, gravel, boulders and cobbles
135	174	boulders, cobbles and gravels
174	180	boulders, cobbles and gravel with some clay
180	190	clay with gravels
190	210	cobbles and gravel
210	247	some clay-gravel-cobbles
247	255	cobbles and boulders
255	301	boulders and cobbles
301	320	clay (redrill 45' to 330')
320	350	basalt
350	356	clay with basalt
356	358	basalt
358	419	clay
419	422	basalt

Driller's log of 699-20-E5R[1] (N020070, E004766) Hanford Wells, 1973

Land surface altitude[2] 465 feet msl

1. Previously 18-E6R
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig

Depth (ft) From	To	Description
0	71	sand and gravel
71	75	sand, gravel, and some cobbles
75	94	sand, gravel, and cobbles
94	105	sand, gravel, cobbles, and boulders
105	130	cobbles and boulders
130	143	brown clay
143	165	gravel and cobbles
165	180	gravel and cobbles, some clay
180	195	gravel, cobbles, and clay
195	200	gravel and cobbles
200	301	cobbles and boulders
301	320	clay
320	321	basalt

Driller's log of 699-20-E5S[1] (N020111, E004772) Hanford Wells, 1973

Land surface altitude[2] 465 feet msl

1. Previously 18-E6S
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig

Depth (ft) From	To	Description
0	85	sand and gravel
85	90	sand, gravel, cobbles and boulders
90	93	sand and gravel
93	120	sand, gravel, cobbles, boulders
120	136	sand, gravel
136	140	clay
140	150	gravel and cobbles
150	165	gravel, cobbles, boulders
165	172	gravel and clay
172	195	clay, gravel and cobbles
195	197	clay and gravel
197	222	cobbles and boulders

Driller's log of 699-20-E5T[1] (N020148, E004780) Hanford Wells, 1973

Land surface altitude[2] 466 feet msl

1. Previously 18-E6T
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig

Depth (ft) From	To	Description
0	84	sand and gravel
84	120	cobbles and boulders
120	125	gravel, cobbles, and boulders

Driller's log of 699-20-E8

1. Cable tool rig

Depth (ft) From	To	Description
0	5	sand and cobbles; casing pulled back and lost 5'
5	20	sand, gravel, and cobbles
20	30	gray sand and gravel, cobbles
30	45	sand and gravel, cobbles
45	50	sand and gravel, cobbles (gray 6")
50	55	sand and gravel, cobbles (gray 3" to 4")
55	65	sand, gravel, cobbles
65	80	gravel, cobbles
80	85	yellow sand and clay 3"
85	90	gray sand and gravel
90	97	? no record
97	105	sand and cobbles
105	150	cemented gravel
150	155	coarse rock and sand
155	175	cemented gravel
175	180	? no record
180	185	gravel and loose sand
185	192	gravel and sand
192	207	brown sand
207	218	hard brown; got out of sand at 218'
218	225	cemented gravel
225	235	loose gravel
235	240	loose gravel, cobble gravel
240	245	sand and loose gravel
245	250	sand and gravel
250	255	sand and loose gravel
255	265	brown clay, tough
265	280	blue clay, tough
280	300	blue and gray clay
300	305	blue gravel
305	310	blue decomposed rock
310	320	blue decomposed rock clay
320	325	blue clay tough
325	340	rotten basalt
340	345	basalt
345	357	black basalt

Driller's log of 699-20-20 (N020389, W020390) Hanford Wells, 1973

Land surface altitude[1] 504 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	33	black sand (caves)
33	45	coarse black sand
45	55	fine black sand
55	80	fine black sand and white sand and silt; caves
80	93	gravel and little clay
93	112	basalt, rocks, boulders, and gravel
112	127	basalt, rocks, coarse sand, and boulders
127	135	fine sand, rocks, and silt; caves
135	137	fine water sand; caves
137	142	fine sand and gravel; caves
142	148	gravel and fine sand
148	150	gravel and coarse sand
150	155	coarse sand and gravel
155	158	gravel and rocks; after perforating sand comes into well.

Driller's log of 699-20-39[1] (N020472, W039078) Hanford Wells, 1973

Land surface altitude[2] 537 feet msl

1. Previously 699-22-38
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	blow sand
5	15	loose sand
15	25	brown sand and silt
25	50	gray coarse sand and silt, 35'-40' clean
50	55	loose sand and silt, gravel to 3", just a streak of gravel
55	65	loose sand and silt, 5% gravel
65	75	fine sand and silt
75	85	coarse gray sand and silt
85	90	gray sand and silt
90	95	gray sand and silt and cobbles
95	110	gray sand and silt
110	115	gravel, sand and cobble
115	135	gravel 6", silt and sand
135	150	large gravels, sand and silt
150	160	coarse gravel, sand and silt
160	170	small gravel, sand and silt
170	180	small gravel and sand, very clean
180	190	small and large gravel and silt
190	200	sand and gravel with silt
200	205	large gravel, sand and silt
205	210	small and large gravel, silt and sand
210	215	small gravel, silt and sand
215	225	loose heaving sand and silt
225	235	sand and silt
235	240	sand with more silt
240	285	gravel and sand and silt
285	290	sand, gravel and silt
290	315	gravel, sand and silt
315	325	fine sand and silt
325	330	sand and silt
330	385	blue clay, gravel streaks
385	394	sand; necessary to drive pipe every 8 to 12 inches
394	410	green clay with gravels
410	425	green clay with gravel streaks
425	440	clay
440	445	? no record but sampled
445	450	blue clay with gravel streaks
450	455	blue black clay
455	470	soft sandy blue clay
470	475	blue sand, some clay; caving and loose
475	484	blue sand, some clay
484	495	green clay with gravel
495	500	clay
500	505	blue sandy clay with gravel lenses
505	510	sticky clay with gravel

Driller's log of 699-20-39 cont

Depth (ft) From	To	Description
510	515	softer clay
515	530	hard, sticky clay with gravel
530	535	sticky clay
535	565	sticky blue clay
565	575	sticky blue clay with gravel
575	580	loose sand with clay; at 578 loose running white sand with some clay but not enough to make it drill
580	595	sandy clay
595	600	sandy clay with some gravels
600	605	gravel and sandy clay
605	610	weathered basalt gravel and sand
610	632	basalt

Driller's of 699-22-55 Hanford Wells, 1973

1. Cable tool rig

Depth (ft) From	To	Description
0	150	50% sand 50% silt
150	155	50% sand 40% silt 10% small gravel
155	160	25% sand 75% gravel

Driller's log 699-22-70 (N022000, W070000) Hanford Wells, 1973

Land surface altitude[1] 613 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	25	fine brown sand
25	55	fine light brown sand
55	100	fine brown sand
100	122	fine brown sand and silt
122	195	basalt, medium hard; material had a rust color at 157'
195	205	gray clay with some sand or rock cutting
205	210	gray clay with sand and gravel
210	215	gray clay with some sand
215	235	gray clay with some sand and gravel
235	250	rock cuttings with some gray clay and sand, 245-255 seemed a lot harder
250	255	rock cutting
255	260	basalt chips, ½ minus gravel, gray color
260	270	basalt chips
270	275	broken basalt and hard chunk of a green material
275	290	basalt; some cave in, real hard
290	310	basalt
310	315	basalt and some colored gravel
315	373	basalt, medium hard

Driller's log of 699-24-1P[1] (N023516, W001355) Hanford Wells, 1973

Land surface altitude[2] 473 feet msl

1. Originally labelled 699-23-1P
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig

Depth (ft) From	To	Description
0	30	sand with gravel
30	45	sand and gravel with cobbles
45	70	sand and gravel
70	142	sand, gravel, and cobbles
142	150	sandy brown clay
150	165	brown sandy clay with gravels
165	170	brown sandy clay
170	175	back in gravel at 170'
175	180	brown sandy clay and gravel
180	220	clay and gravel
220	227	clay
227	240	clay and gravel
240	255	sandy clay with gravels
255	270	sand and gravel
270	297	gravel, boulders, and cobbles
297	310	sandy gray clay
310	320	very trim layer of basalt
320	339	sandy gray clay; drilled smooth
339	362	basalt
362	375	sandy clay with gravels
375	450	sandy clay
450	460	clay blue gray
460	495	basalt
495	537	basalt (hard)

Driller's log of 699-24-1Q[1] (N023620, W001356) Hanford Wells, 1973

Land surface altitude[2] 473 feet msl

1. Originally labeled 699-23-1Q
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig
4. Apparently lost one hole, this log is for second one

Depth (ft) From	To	Description
0	15	gravel, sand, cobbles-boulders
15	30	gravel, cobbles-boulders
30	75	cobbles, gravel, boulders
75	90	cobbles, gravel, sand
90	135	cobbles, boulders, gravel
135	143	cobbles, boulders
143	150	sandy brown clay
150	170	sandy brown clay with gravels
170	180	cobbles and gravel
180	195	cobbles and gravel, some brown clay
195	208	cobbles and gravel
208	225	sandy clay
225	240	gravel, cobbles and boulders
240	255	gravel, sand with some clay
255	270	gravel, cobbles and boulders with some sand
270	298	gravel, cobbles and boulders
298	312	brown sandy clay
312	313	basalt
313	340	sand, gravel and clay
340	355	basalt

Driller's log of 699-24-1R[1] (N023693, W001359) Hanford Wells, 1973

Land surface altitude[2] 474 feet msl

1. Originally labeled 23-1-R-A
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary rig drilling with mud

Depth (ft) From	To	Description
0	60	sand and gravels
60	75	sand, gravel and cobbles
75	105	sand, gravel, cobbles and boulders
105	120	sand, gravel and cobbles
120	143	gravel, cobbles, boulders
143	150	sandy clay with gravels
150	170	clay with gravels
170	180	gravel and cobbles
180	190	gravel with some clay
190	195	gravel and clay, some cobbles
195	208	gravel and clay
208	225	sandy clay
225	240	gravel and clay
240	261	clay
261	265	clay and gravel
265	270	clay and gravel with cobbles
270	299	gravel, cobbles and boulders
299	316	sandy clay; basalt at 316'

Driller's log of 699-24-1S[1] (N023731, W001360) Hanford Wells, 1973

Land surface altitude[2] 474 feet msl

1. Originally labeled 23-1-S
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	15	sand, gravel, and boulders
15	75	sand, gravel, and cobbles
75	95	gravel, cobbles, and boulders
95	105	sand, gravel, cobbles, and boulders
105	135	sand, gravel, and cobbles
135	140	sand and gravel
140	142	sand and gravel and cobbles
142	150	sandy clay and gravels
150	165	sand clay and gravels
165	170	? record unclear, probably sand clay and gravels
170	180	? record unclear, probably gravel, cobbles, and boulders
180	214	gravel, cobbles, and boulders
214	220	sandy clay with gravels
220	221	gravel, cobbles, and boulders

Driller's log of 699-24-1T[1] (N023654, W001357) Hanford Wells, 1973

Land surface altitude[2] 474 feet msl

1. Originally labeled 699-23-1R
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Rotary tool rig

Depth (ft) From	To	Description
0	15	sand, gravel, and cobbles
15	75	sand and gravel
75	90	sand, gravel, and cobbles
90	105	gravel, cobbles, and boulders
105	120	sand, gravel, and cobbles
120	135	sand and gravel
135	144	sand and gravel, cobbles
144	150	? record unclear; some sandy clay with gravels at 144'
150	170	sandy clay with gravels
170	207	cobbles, boulders, and gravel
207	210	clay
210	227	clay with gravels
227	235	cobbles, boulders, and gravel
235	240	cobbles and gravel, some clay
240	243	cobbles and gravel
243	262	sandy clay
262	280	cobbles, gravel, some clay
280	298	cobbles, boulders with gravel
298	300	clay with gravels
300	312	gravel and sandy clay
312	315	basalt mixed with clay
315	316	basalt and clay
316	320	sand, gravel and clay, smooth drilling

*Driller's daily logs show two days "Chasing boulders down hole" followed by a third day with completion work and this: "(Note) Hole # 23-1R has been changed to #23-1T due to boulder caved in hole and could not drill out." This last sheet lists the depth as 134'.

Driller's log of 699-24-33[1] (N023809, W033315) Hanford Wells, 1973

Land surface altitude[2] 522 feet msl

1. Labeled 25-35
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	17	fine sand; caved in 10' - 13'
17	25	basalt sand and little gravel
25	27	fine sand and basalt
27	55	fine black and white sand and silt
55	70	fine sand and silt
70	75	coarse black and white sand and some gravel
75	77	coarse sand and rocks
77	86	rocks
86	90	basalt, granite and rocks
90	92	? record unclear, may be fine black sand
92	93	fine black sand; hit fine black sand at 92' and can't get ahead of casing and casing will only drive 1 to 2 inches, ran out of black sand at 93'
93	110	basalt, granite and rocks; some caving
110	111	? record unclear, may be fine black and white sand
111	116	fine sand, basalt and gravel
116	119	sand, rocks and boulders
119	120	sand, rocks and boulders and gravel
120	126	sand, rocks and gravel-18" caved in
126	130	sand, rocks and gravel and little basalt
130	132	sand, rocks, gravel and basalt
132	134	granite, rocks, boulders and basalt
134	140	sand, silt and rocks
140	144	water sand and little gravel
144	147	water sand; fine water sand
147	152	medium sand
152	153	medium sand and rocks
153	157	sand and rocks
157	158	fine black sand, rocks and basalt
158	163	fine black sand and rocks
163	164½	coarse sand and gravel

Driller's log of 699-24-46 (N023958, W045994) Hanford Wells, 1973

Land surface altitude[1] 589 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig, putting bentonite outside the casing

Depth (ft) From	To	Description
0	20	sand
20	25	sand, beginning of a little clay
25	35	sand with trace of clay
35	65	sand
65	105	coarse sand
105	110	? record unclear, may be coarse sand
110	120	fine sand; so hard packed can drill ahead of pipe
120	125	fine sand and a little silt
125	135	sand and silt
135	145	fine sand
145	155	sand with silt
155	160	sand with gravel
160	165	heavy gravel
165	175	gravel
175	180	gravel-little clay mixed
180	185	gravel-heavy, about the size of golf balls, some clay mixed
185	200	gravel-heavy
200	205	gravel and sand with a little silt
205	210	fine gravel and sand
210	215	gravel with clay-hard packed
215	220	gravel and sand-little clay
220	225	muddy gravel
225	230	sand, gravel and cobbles; we've lost all our clay and silt
230	235	muddy gravel; at 235', we've picked up clay with our gravel again
235	245	gravel and clay; like cemented gravel and doesn't cave much
245	275	hard packed gravel and clay
275	285	gravel and clay (hard)
285	295	fine gravel and sand
295	300	fine gravel and sand with clay; nearly all of the gravel and sand since 200' has been heavy with silt
300	310	sand and silt
310	320	sand; this sand is heaving up in the pipe
320	325	sand and heavy gravel
325	340	sand
340	345	clay
345	350	clay and sand, blue color
350	355	sand-little clay, blue color
355	360	sand-little clay
360	375	sand (gray)
375	380	sand; heaves up pipe and settles hard
380	385	coarse sand; heaves up pipe and settles hard
385	395	sand and gravel; hard and almost cement gravel
395	415	blue sandy clay
415	425	blue clay; few black streaks like shale in it

Driller's log of 699-24-46 cont

Depth (ft) From	To	Description
425	430	sand clay
430	435	sandy clay
435	440	sand (blue); at 440' we picked up more sand
440	450	blue clay; clay at 445' got very sticky
450	455	blue clay mixed with brown
455	460	brown clay
460	480	blue clay (with brown streaks); dense and sticky
480	485	brownish clay; dense and sticky
485	490	brownish clay (a little gravel)
490	495	clay and gravel
495	530	blue clay; clay is very sticky
530	550	brown clay; clay has gradually turned a brown color, is still sticky and hard to drill
550	605	blue clay; clay is the same and sticky
695	610	gravel and clay
610	620	gravel-little silt
620	625	heavy gravel
625	630	fine gravel-silt
630	650	gravel; acts like cemented gravel
650	660	cemented gravel and sand
660	665	sand; heaves up in casing
665	670	sand and gravel; heaves up in casing
670	675	broken basalt
675	682	basalt

Driller's log of 699-24-133[1] (N023500, W133000)

1. Labeled-Well of Mrs. C.E. Coffin (Roberts Ranch?) T.12N.,R24E., Sec.20 SW¼

Depth (ft) From	To	Description
0	317	"soil" loose
317	700	basalt, hard
700	710	sand
710	810	clay and sandstone
810	900	"rock" (basalt) hard
900	976	rock
976	1066	basalt porous

*Not completed. Drilled in 1924 from 274 feet to 1066 feet plus by AD Hughett, Pamona, Washington. Well log from NP RY Land Office

Driller's log of 699-25-51 Hanford Wells, 1973

1. Cable tool rig

Depth (ft) From	To	Description
0	65	sand and silt
65	117	cemented sand and silt
117	119	coarse sand and ½ pea gravel
119	130	cemented sand and silt
130	140	sand and silt
140	175	sand and silt, cemented
175	180	sand and silt, cemented, 1% ½" gravel
180	185	sand and silt, cemented, no gravel
185	190	sand and silt, cemented, 1% ½" gravel
190	200	sand and silt, 1% gravel ½"
200	205	sand and silt, no gravel
205	230	sand and silt
230	235	sand and silt, gravel to 3", 25% gravel
235	255	sand and silt, 80% silt
255	265	sand and silt; drive barrel bent at 260, large rock but no pieces in sample
265	266	cobbles and clay

Driller's log of 699-25-55[1] (N025357, W055192) Hanford Wells, 1973

Land surface altitude[2] 675 feet msl

1. Labeled 25-56
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	18	sandy loam
18	95	fine sand and clay; 60' to 61' hole caved; there is more clay the deeper the hole goes
95	109	fine sand and clay; sand and clay running in at 109' until unable to drill
109	110	fine gray sand and clay
110	135	coarse gray sand and clay; 123' to 140' a coarse sand was mixed with fine sand and clay; hole will not stand up, some caves
135	140	gray sand and clay
140	160	fine gray sand and clay; the sand getting fine
160	178	fine gray sand and clay; 165'-178' drilled easy and hole stayed open for 15' to 178' and caved in to bottom of casing
178	195	fine gray sand and clay; drilled easy and hole stayed open
195	200	fine gray sand with very little clay
200	210	fine gray sand with clay; 195' to 210' more clay with the sand on each sample
210	220	sandy clay; clay with a fine sand
220	223	gravel and boulders
223	236	sand, gravel and boulders
236	237	boulder; or a group of boulders
237	240	sand, gravel and boulders
240	245	sand and gravel; caves at 6" to 8" below casing
245	251	sand, gravel and boulders; caves at 6" to 8" below casing
251	259	sand, gravel and boulders; caved with 4" to 1' of open hole
259	270	? no record
270	275	cement gravel; hole didn't cave as sand and gravel had a brown clay binder
275	278	sand, gravel and boulders; hole caved in 3'--coarse gravel and boulders
278	315	sand and gravel with little clay; there is enough clay with the sand and gravel to act as binder if drilled almost dry; hole stands up

Driller's log of 699-25-70 (N025258, W070080) Hanford Wells, 1973

Land surface altitude[1] 628 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	30	sand and clay
30	130	fine sand and clay; caved 70' to 73'; drilled open hole from 100' to 115' before it caved
130	144	clay with fine sand
144	145	clay with gravel; 144' to 150' sand, gravel and clay
145	150	gravel and clay; 144' to 150' sand, gravel and clay
150	154	clay, sand and gravel
154	187	clay; brown clay, very little fine sand
187	188	gravel; mostly quartz with very little basalt
188	205	sand and gravel
205	226	sand, gravel and boulders; 212' to 215' caved with 1' open hole
226	230	sand; caves 226' to 229'
230	233	sand and gravel; the water bailed with the sand and gravel was a dark brown color
233	245	sand, gravel and boulders
245	261	quick sand and gravel; sand comes in
261	265	clay, sand and gravel
265	267	silty sand
267	274	sand, gravel and silty clay; caves
274	285	gravel, sand and silty clay; caves
285	290	gravel, sand and clayey silt; some large gravel at 287'
290	295	clayey silt, sand and gravel; more clayey silt with all colors gravel also light colored sand
295	296	clayey silt, coarse gravel and sand
296	300	sand, gravel and clayey silt
300	307	medium gravel, sand and clayey silt; caves
307	311	gravel, sand and clayey silt; caves; 307' to 310' some basalt gravel, pea size gravel--all colors, sand and clayey silt
311	315	fine sand
315	320	all colors medium to coarse gravel with sand
320	321	sand and gravel; must be boulder holding casing
321	324	gravel, sand and silt
324	325	medium to coarse gravel, sand and silt
325	328	gravel, sand and silt
328	330	medium gravel all colors, small amount of basalt, sand and silt; caves
330	332	gravel, sand and silt
332	333	medium to coarse gravel, some basalt, sand and silt, caved in
333	334	gravel, sand and silt
334	338	clayey sand, very little gravel
338	340	clayey sand and medium gravel
340	344	gravel, all colors, some basalt and silty sand
344	344½	small gravel, clayey sand, small amount of basalt
344½	348	clayey sand, gravel and small amount of basalt
348	350	medium to coarse gravel, some basalt and clayey sand; caves in

Driller's log of 699-25-70 cont

Depth (ft) From	To	Description
350	352	clayey sand, gravel, and basalt; caved in
352	355	clayey sand, medium gravel with some basalt
355	359	clayey sand, gravel and basalt; caving in 356' to 357'
359	360	clayey sand, medium gravel and a small amount of basalt; caved in
360	362	gravel, all colors, medium size, less clayey sand and small amount of basalt
362	365	grayish sand, medium gravel, all colors, very small amount of basalt; caves in
365	367	grayish sand and gravel; caved in 366' to 367'
367	368	grayish sand, gravel and some basalt
368	371	grayish sand, medium gravel with some basalt
371	373	gravel, some basalt and gray sand
373	375	medium gravel, clayey volcanic ash and gray sand
375	377	medium basalt gravel, some coarse gravel, some volcanic ash, clayey and gray sand
377	380	medium gravel, fine gray sand and some basalt
380	381	medium gravel, gray sand with some basalt
381	385	sand and gravel
385	393	sand and gravel with a trace of volcanic ash
393	395	sand and gravel
395	415	varied colors of coarse sand and gravel with a little clay
415	420	sand and gravel with a little clay; a few large gravel cave in occasionally
420	425	sand and gravel with a trace of volcanic ash; a few large gravel cave in occasionally
425	430	sand gravel with clay
430	440	sand and gravel with clay; more sand; long delay while driving casing
440	445	sand and gravel with a little clay; clay with the 445' sample lighter color
445	460	sand, gravel and clay; soil got lighter in color, less gravel and more clay the deeper we went

Driller's log of 699-25-80 (N025080, W079512) Hanford Wells, 1973

Land surface altitude[1] 614 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	15	sandy loam
15	33	sandy clay
33	40	caliche, drilled hard
40	43	sand and gravel; drilled hard, no coating on gravel
43	50	sand and gravel; bailing are light slate
50	55	coarse sand and silt; bailings are brown
55	71	sand, gravel and silt; bailings are gray
71	80	sand, gravel and boulders; mixed to a slate blue mud
80	85	sand, gravel and boulders; had thin soft layers of sand
85	86	sand and gravel; caved and came up inside casing
86	90	sand, gravel and boulders
90	95	silt, sand, gravel and boulders
95	102	sand, gravel and silt; caved with 1' to 2' of open hole
102	105	sand, gravel and boulders
105	110	basalt boulders; drilled easier than sand and gravel does; bailings were brown at 107'
110	115	broken basalt rock; bailings almost black at 115'
115	119	broken basalt and gravel; bailings are black
119	125	broken basalt with brown clay or ash
125	130	broken basalt rock
130	134	broken basalt rock and brown clay or ash
134	138	broken basalt rock; bailings are back to a dark gray color with no trace of the brown clay-like material
138	145	broken basalt rock with trace of ash-like material
145	148	broken basalt rock with good deal of ash-like material
148	154	broken basalt rock; no trace of ash in bailings
154	158	broken basalt rock with a good deal of brown ash-like material; bailing had lumps of ash-like material, bailings brown in color
158	165	broken basalt rock with some ash-like material, drilled harder, bailings are brown
165	168	broken basalt rock with trace of ash; drilled hard, caved at 168' with 5' of open hole, bailings are darker
168	170	basalt rock; bailings are finer chips of rock, have an olive green cast, no indication of seams as few as before
170	174	basalt rock, bailings very dark
174	176	basalt rock more rotten with some ash, bailings more brown
176	178	basalt rock, bailings are dark
178	182	basalt rock has gas bubbles in it, possible is weathered some, also a good deal of brown ash
182	185	basalt rock; drilled harder, bailings darker and very little coarse material, no ash and the coarses is like sand
185	187	basalt rock; bailings show no ash and are fine and black
187	189	basalt and rock with a trace of hard ash; bailings are black
189	190	basalt and rock; bailings black and show very little hard ash pieces

Driller's log of 699-25-80 cont

Depth (ft) From	To	Description
190	193	basalt rock with trace of hard ash; bailings are more brown and show more hard ash pieces
193	200	basalt rock with some ash; yellow and red ash, some rotten basalt, bailings are brown; some blue-green ash-like material in 200' sample
200	204	hard basalt rock, rotten basalt rock and some hard ash; bailings dark
204	208	less hard basalt rock and more rotten basalt with a hard and soft ash
208	210	some hard basalt, mostly hard and soft ash and clay-like material
210	215	sandy clay with trace of red ash; bailings are yellow, mostly yellow and white lumps of ash-like material and some basalt
215	220	sandy clay
220	225	clay and ash of 3 colors from white to dark yellow; bailings are yellowish brown
225	230	clay and ash; larger percent of clay, ash is light in color and fairly hard, bailings are lighter
230	235	mostly clay, a few fine lumps of ash that is almost white, bailings are lighter
235	240	clay with small ash lumps, bailings are light, core sample was solid and darker than bailings
240	245	clay with some small pieces of ash; bailings are light
245	250	clay, ash and fine sand; mostly light colored clay, some hard light ash lumps and some very fine blakc and white sand; bailings are light
250	255	clay, ash and fine sand; mostly fine black and white sand, some clay and small ash lumps; bailings are brown
255	260	clay, ash and fine sand and basalt; fine sand is black and white, ash is mostly yellow and a few white pieces, small yellow ash balls with very dark brown coating, basalt shows gas bubbles and some are rounded
260	265	clay, ash and fine sand; large hard ash pieces-these are nearly a soapstone, bailings are brown, clay lumps are lighter color, not so much black and white sand
265	270	clay, ash and sand; sand is mixed with ash, ash darker than clay lumps, bailings light yellow
270	280	clay, ash and sand; hard ash chunks, bailings light yellow
280	285	clay, ash and sand; small ash lumps, gray sand and the small chunks of basalt are weathered or have been hot, bailings light yellow
285	290	clay, ash and sand and basalt; ash, sand and basalt; ash is yellow, brown, white and light pink, sand is gray, basalt is in small pieces, full of very small gas bubbles and soft; bailings are brown
290	292	ash and basalt; hard ash and basalt, basalt is harder
292	293	no sample-bailer stuck in clay
293	295	basalt and ash; ash caves in from about 250' level until cannot tell how much at this level, about 50% of washed-out sample is basalt

Driller's log of 699-25-80 cont

Depth (ft) From	To	Description
295	298	basalt and ash; ash and red basalt rock with very small gas bubbles, bailings show red color
298	300	ash and sand; fine ash pieces and red and black sand that appears to be volcanic, bailings red
300	305	volcanic sand and ash; mostly sand that is round and reddish brown, bailings reddish brown
305	310	ash and red rock; red rock with fine gas bubbles, yellow ash like that above, bailings red
310	315	red rock and ash; red rock with very small gas bubbles, ash like above, bailings red
315	318	red rock and ash; mostly red rock with gas bubbles, few pieces black, some ash light and hard; bailings more brown
318	320	red and black rock and ash; red and black rock with small gas bubbles, ash hard and cemented to the rock; settled fast
320	322	red and black rock and ash; settles until cannot bail hole clean, bailings brown, drillings very fine red and black mixed with hard ash
322	323	rock and ash; drillings very fine, mostly black with some fine ash, bailings darker; hard ash caved in from 225' level
323	325	ash, basalt and rock; ash is large chunks, rock ground very fine; bailings brown
325	326	ash, basalt and rock; mostly ash, some fine ground basalt; bailings brown
326	330	basalt, rock and hard ash; bailings black, mostly basalt rock, some rock has very fine gas bubbles, rocks black but inside of bubbles are red, rock has seams filled with red and yellow hard ash
330	332	basalt, rocks and ash; red and black basalt rock with small gas bubbles, some hard ash and some soft brown ash balls, rock full of seams; bailings dark gray
332	334	basalt, rock and ash; black rock has larger gas bubbles than the red; red rock has small gas bubbles, some full of ash; ash stuck to these rocks, few pieces very soft white ash; water nearly white while bailings black, red and yellow; at 334' believe I hit ash crevice; rock is red and black with some black chips that are solid, ash is gray, which is hard, yellow white and brown which is softer; water red while bailings gray
334	336	black and red basalt and ash; red rock has fine gas bubbles, black basalt rock is solid, ash is light and hard; caved in at 330' level

Driller's log of 699-26-15[1] (N025665, W014554) Hanford Wells, 1973

Land surface altitude[2] 441 feet msl

1. Previously 699-24-17
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	76	gravel; about 40' cobble rolled with casing
76	80	cemented sand and gravel
80	89	sand and gravel
89	97	cemented sand and gravel
97	102	sand, gravel size ½'-1"
102	120	clay, fine gravel; hit clay at 102'
120	125	brown clay and gravel
125	135	brown clay
135	140	brown clay and gravel
140	145	sand and silt; tan clay has peg gravel in it at 140', formation at 142' quite hard
145	155	sand, silt, gravel; formation at 150' is a pale green color
155	190	blue shale, gravel; blue shale-165', more gravel and less shale-180'
190	195	blue shale, gravel 1"
195	205	blue shale, gravel 1"-1½"
205	210	clay, gravel
210	225	sand, gravel
225	237	gravel
237	242	blue-gray clay with gravel
242	255	yellow clay, gravel; yellow clay at 242
255	260	clay, gravel
260	300	sand, silt and gravel
300	305	sand and gravel
305	310	cemented gravel
310	315	sand
315	335	cemented sand and gravel
335	345	cemented sand and gravel
345	350	blue clay and gravel

Driller's log of 699-26-15A

1. Drilling with jell

Depth (ft) From	To	Description
0	3	sand
3	22	gravel, coarse; caving from about 12' down

Driller's log of 699-26-47 Hanford Wells, 1973

1. Cable tool rig

Depth (ft) From	To	Description
0	90	sand and silt
90	105	cemented sand and silt
105	110	sand and silt, gravel to 3" 1%
110	115	sand and silt, cemented
115	120	sand and silt, small gravel 1%
120	125	sand and silt
125	130	sand and silt, 10% small gravel
130	135	sand and silt, 20% small gravel
135	140	coarse sand, 10% gravel to 2"
140	145	sand and silt, coarse
145	160	cemented sand and silt
160	165	coarse cemented sand and silt
165	170	sand and silt, gravel to 2"
170	175	sand and silt, gravel to 2" 10%
175	180	sand and silt, gravel to 2"
180	185	sand and silt, small gravel 10%
185	215	sand and silt
215	220	sand and silt, 20% gravel
220	225	sand and silt, 30% gravel
225	229	sand and silt, 70% gravel to 4", loose

Driller's log of 699-26-51

1. Cable tool rig

Depth (ft) From	To	Description
0	65	sand and silt
65	130	cemented sand and silt; coarse sand and ½ pea gravel at 117' to 119'
130	140	sand and silt
140	175	sand and silt, cemented
175	180	sand and silt, cemented, 1% ½" gravel
180	185	sand and silt, cemented, no gravel
185	190	sand and silt, cemented, 1% ½" gravel
190	200	sand and silt, 1% ½" gravel
200	230	sand and silt, no gravel
230	235	sand and silt, 25% gravel to 3"
235	255	sand and silt, 80% silt
255	265	sand and silt; drive barrel bent at 260', large rock but no pieces in the sample
265	266	cobbles and clay

Driller's log of 699-26-89 (N026000, W089000) Hanford Wells, 1973

Land surface altitude[1] 651 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	fine tan sand and silt
5	10	fine sand and silt, brown in color
10	25	silty fine sand, brown
25	30	silty fine sand, very lifht tan
30	40	silty fine sand, tightly packed, very light tan
40	45	silty fine sand with 2" minus gravel; changed core barrel at 45' hit 2" minus gravel
45	50	silty fine sand and basalt gravel; put on bit and hit basalt gravel at 50'
50	60	very tightly packed basalt gravel with trace of coarse and fine sand, trace of silt, light brown in color
60	65	very tightly packed basalt gravel with some coarse and fine sand, trace of silt, light brown
65	70	very tightly packed basalt gravel with coarse and fine sand, trace of silt, light brown
70	80	basalt gravel with fine sand, trace of silt
80	85	basalt gravel with fine and coarse sand with trace of silt
85	90	basalt gravel with fine and coarse sand and silt, dark brown
90	95	basalt gravel with coarse and fine sand, trace of silt. dark brown
95	100	basalt gravel with cobbles with coarse and fine sand, trace of silt, dark brown
100	109	basalt gravel and coarse sand with fine sand and silt, dark brown
109	125	clay with some sand and gravel, brown silt; material changed at 109' from gravel to clay and silt
125	137	clay with coarse and fine sand and silt; material changed back to gravel at 137'
137	140	harder gravel with some clay and sand and silt, brown
140	145	gravel with trace of silt and fine and coarse sand
145	150	gravel with trace of clay and silt and sand
150	155	sand and silt and some gravel
155	160	fine light gray sand with 5" minus gravel, trace of silt
160	165	4" minus gravel and gray sand, trace of silt
165	170	3" minus gravel and light gray sand, trace of silt
170	175	gravel and sand with light silt, light tan
175	190	3" minus gravel with trace of snad and silt; 185' to 190' sample is brown
190	195	tightly packed gravel and sand with a little silt
195	200	sand and gravel with trace of silt
200	205	tightly packed sand and gravel
205	215	tightly packed sand and gravel, trace of silt
215	230	pea gravel and sand; heaving while drilling (in 5' heaves)
230	240	fine sand and gravel with trace of silt, tan in color; heaved 3'-5' when casing was driven
240	245	fine and coarse sand with gravel and silt, tan in color; heaved 3'-5' when casing was driven
245	255	fine and coarse sand with gravel (tan)

Driller's log of 699-26-89 cont

Depth (ft) From	To	Description
255	270	fine sand and gravel with coarse sand
270	275	fine and coarse sand and gravel with trace of silt, tan
275	285	coarse and fine sand with fine gravel, trace of silt, tan in color
285	290	3" minus gravel and sand; trace of silt, tan in color; heaved 15' while driving from 285' to 290'
290	305	fine sand and gravel with coarse sand (tan)
305	310	fine silt and gravel, some clay (tan); acts like it wants to make a change at 307', looks like it is going in clay
310	315	light tan shale clay with some coarse sand
315	320	black clay with trace of coarse sand
320	330	black clay with little light tan shale clay
330	335	black clay with little shale clay
335	350	black clay with some shale
350	355	? black clay with some shale; material changed 355' to clay, shale and gravel
355	360	black clay with some shale and gravel
360	365	1" minus gravel with some shale
365	375	minus gravel with some caliche
375	380	3" minus gravel with fine sand and trace of silt
380	385	gravel and sand, trace of silt, tan in color
385	390	gravel silty sand, tan in color
390	410	gravel and sand, trace of silt
410	419	coarse sand with fine sand, trace of silt; material from 415' to 419' heaved 10'
419	428	yellow clay with little gravel
428	430	blue clay; changed at 428'
430	435	? black silt, trace of clay; changed at 435'
435	455	black silty clay
455	460	black silty clay and some sand and gravel
460	470	black silty clay, sand and gravel
470	475	black sandy silt with trace of 1" minus gravel; heaved 10' per drive
475	480	? black sand and silt; material changed at 476' to blue sand then back to black sand at 480'; heaved 10' per drive
480	485	black sand and silt; heaved 10' per drive
485	490	rotten basalt cuttings with silt and pits of blue shale clay
490	495	basalt cuttings and sand that came in from under shoe
495	500	basalt cuttings and sand "total depth of hole 500' last 10' bed rock"

Driller's log of 699-27-8[1] (N027027, W008281) Hanford Wells, 1973

Land surface altitude[2] 463 feet msl

1. Labeled 699-26-3
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	15	fine brown sand with heavy gravel up to 4"
15	17	material is finer now
17	25	sand and gravels to 2"; 20"-22" larger gravels to 5"
25	30	sandy gravels to 3"
30	36	sand and smaller gravels to 2"
36	45	coarse sand and silt
45	55	coarse sand and silt, finer now
55	85	sand and gravel up to 2"; trouble keeping hole straight, although gravels are not "kicking" the casing over
85	90	clean sand and gravel
90	100	sand and gravels; run in lenses of sand for 2' or 3' then gravel for 2' or 3', sometimes the gravel is clean
100	103	sand and gravels material becoming smaller
103	123	clean gravels to 1½" and sand; streaked or lensed with clean gravels and sands
123	140	sand and gravels to 1"
140	155	fine brown sand, some silt
155	159	soft sandy brown clay
159	160	some gravel to sandy blue clay
160	165	green clay, some gravels to ¼"
165	170	green clay
170	190	green clay and small gravel
190	193	samd and gravels to 1", clay lenses
193	245	sand and gravels to 1", clay lenses, very light formation not cemented 200'-228'
245	250	clay with small gravel
250	268	green clay with gravel
268	270	tan clay some gravels to ¼"
270	275	tan clay-hard
275	280	tan clay, darker now
280	285	tan clay, more gravels
285	300	tan clay? record unclear, may contain gravel
300	305	tan clay with gravel
305	308	coarse brown sand with gravels to ¼", clay lenses
308	315	coarse sand with gravels to ¼", tan clay lenses
315	320	coarse sand with gravels to 1", tan clay lenses
320	325	? record unclear, coarse sand with gravel, tan clay lenses, sandier from 322-327
325	327	same stuff only blue in color
327	330	sand and gravels to 1" with blue clay lenses
330	335	green sand and small gravel, hard
335	340	green sand and small gravel
340	345	green sand and small gravel, getting softer
345	355	sand and gravels to 1"
355	360	green clay, hard and sticky with small gravels

Driller's log of 699-27-8 cont

Depth (ft) From	To	Description
360	365	brown clay, hard and sticky with small gravels
365	375	brown clay, soft, with small gravels
375	385	brown and green soft clay with small gravel
385	410	light gray soft clay
410	415	tan clay with some gravels to ¼"
415	420	tan clay with some gravels to ¼"; very, very sandy now
420	425	tan clay, very sandy, no gravels at all
425	427	fine brown sand and silt
427	440	fine brown sand and silt, gravels to ½"
440	442	fine brown sand and silt, gravels to 3/4"
442	445	fine brown sand and silt, gravels to 3/4", inconsistent streaks of soft sticky tan clay
445	455	? record unclear; fine brown sand and silt, gravels to 3/4", or soft sticky tan clay, or both
455	458	sticky blue clay
458	460	green sandy clay
460	476	blue clay
475	485	blue clay some gravels to ½"
485	490	blue clay, softer now, no gravel
490	495	blue clay, hard and soft streaks
495	505	blue clay, hard now
505	510	hard sticky clay
510	525	blue clay
525	530	dark blue clay
530	535	dark blue clay, hard sticky
535	540	dark blue clay, greenish tint
540	560	dark blue clay; this clay (527'-560') runs in streaks at being hard and stick or soft and a little bit sandy, there is no pattern for the streaks in thickness or for how many feet they last
560	565	dark blue clay with basalt rock
565	577	basalt

Driller's log of 699-28-40[1] (N027696, W040297) Hanford Wells, 1973

Land surface altitude[2] 557 feet msl

1. Originally 28-41
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	25	sand
25	35	no record, probably sand
35	45	sand, little silt
45	50	coarse sand, little silt
50	65	coarse sand
65	75	coarse sand, little silt
75	80	coarse sand
80	85	no record, probably coarse sand
85	90	sand, little silt
90	95	coarse sand; some gravel
95	100	coarse sand
100	107	no record, probably coarse sand
107	110	coarse gravel, little sand
110	115	coarse gravel
115	120	gravel, cobbles
120	125	gravel, boulders
125	130	gravel and boulders, some silt
130	140	cobbles, gravel, sand, little silt
140	152	gravel and cobbles
152	157	boulders
157	160	no record
160	165	cobbles, gravel, little silt
165	175	cobbles, gravel
175	180	cobbles, gravel and silt
180	185	small and coarse gravel-silt
185	190	small and coarse gravel up to 4"
190	195	small and coarse gravel up to 4" and fine sand
195	200	sand and gravel, little silt
200	207	cobbles, gravel and sand; sand came in
207	210	cobbles, gravel and fine sand; sand came in
210	215	fine and coarse sand; sand came in
215	220	small and coarse gravel and sand; sand came in
220	230	gravel, sand; little silt
230	235	gravel up to 5", sand, little silt
235	240	cobbles, sand, little silt
240	255	gravel, sand and silt
255	260	50% silt---50% sand and gravel
260	265	50% sand; silt and gravel
265	280	sand, little silt; sand comes in
280	285	no record
285	290	fine sand; sand comes in
290	300	red sand, little gravel
300	312	coarse gravel and sand; gravel up to 4" at 302'; sand came in
312	315	blue clay
315	337	gray clay

Driller's log of 699-28-40 cont

Depth (ft) From	To	Description
337	340	fine gray sand
340	350	gray sand and silt; silt and sand comes in
350	360	coarse gravel, very little silt and sand
360	377	coarse gravel and sand; sand comes in
377	395	blue clay, small gravel
395	400	blue clay
400	433	gray clay
433	435	blue clay and small gravel
435	447	brown clay
447	455	gray and green clay and gravel
455	460	clay and fine gray sand
460	465	fine sand, gravel
465	470	sand, gravel, clay

Driller's log of 699-28-49 (Hanford Wells, 1973)

Depth (ft) From	To	Description
0	5	sand
5	7	silt and sand
7	35	50% silt, 50% sand
35	40	75% silt, 25% sand
40	45	25% silt, 75% sand
45	90	50% silt. 50% sand; ½" lenses of brown clay 87' to 87½'
90	95	25% sand, 75% silt
95	125	50% sand, 50% silt; 3" lense brown clay 122'
125	130	75% sand, 25% silt
130	135	50% sand, 50% silt
135	145	25% gravel, 50% sand, 25% silt
145	160	coarse sand and silt
160	175	sand and silt
175	215	sand and silt, cemented
215	230	sand and silt
230	235	sand and silt, small gravel 15% to 1½"
235	240	sand and silt, small gravel 15% to ½"
240	245	sand and silt, small gravel 25%, one large piece 4"
245	250	sand and silt, small gravel
250	254	cobbles to 6", assorted gravels, some silt
		* drilling quit at 145', then continued about 20 days later

Driller's log of 699-28-52 (N028400, W051525) Hanford Wells, 1973

Land surface altitude[1] 683 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	90	sand
90	125	no record
125	135	sand
135	145	coarse sand
145	230	sand
230	245	coarse sand
245	250	sand and fine gravel
250	255	sand
255	260	gravel
260	262	sand
262	264	gravel
264	270	cemented gravel
270	275	gravel
275	285	cemented gravel
285	288	gravel
288	290	cemented gravel
290	291	gravel
291	295	cemented gravel
295	310	sand and gravel
310	315	sand and fine gravel
315	320	sand and gravel
320	340	sand, rock; cemented sand, rock and gravel; gravel came in when drove pipe
340	345	sand and gravel
345	350	black sand and gravel
350	355	sand and gravel
355	360	sand, clay and gravel
360	365	fine sand and clay
365	370	no record
370	375	sand, clay and gravel
375	385	sand, gravel and clay
385	390	no record
390	400	gravel and clay; changed rigs after 400'
400	405	clay and gravel
405	410	cemented gravel and clay
410	415	cemented clay and gravel
415	445	blue clay and gravel
445	450	clay and gravel
450	460	sandy blue clay
460	475	blue clay
475	490	yellow clay
490	495	yellow clay, turning blue
495	525	blue sandy clay
525	530	sandy
530	540	sandy clay
540	545	no record
545	548	sandy, fine sand

Driller's log of 699-28-52 cont

Depth (ft) From	To	Description
548	560	clay and gravel
560	565	sandy
565	580	sandy clay
580	585	clay
585	586	gravel
586	590	clay and gravel
590	600	sand and gravel; 595'-601' layers of gravel and clay
600	605	blue clay and gravel
605	610	blue clay and sandy
610	615	sandy blue clay
615	620	sandy clay
620	635	clay, gravel and sand
635	636	gravel, some sand
636	650	cemented blue clay and gravel
650	655	layers of sand and cemented gravel
655	660	sand and gravel
660	665	brown clay; ? remarks "660' to 666'-gravel and water"
665	670	sandy brown clay
670	675	brown clay
675	680	sandy water
680	685	mostly fine sand; sandy clay
685	695	basalt
695	705	record unclear, probably basalt
705	710	basalt
710	715	no record, probably basalt

Driller's log of 699-28-55

1. Cable tool rig

Depth (ft) From	To	Description
0	5	clay
5	10	fine sand
10	75	50% sand, 50% silt
75	80	25% sand, 75% silt
80	110	50% sand, 50% silt
110	117	25% gravel, 75% coarse sand; 112'-117', pea gravel, 75% coarse sand
117	120	sand
120	125	75% silt, 25% sand
125	135	25% silt, 75% sand
135	205	50% sand, 50% silt
205	225	50% sand, 50% silt, hard
225	258	50% sand, 50% silt
258	259	hit sand at 258'
259	260	brown clay; 1 foot layer of clay at 260'
260	265	sand
265	266	25% gravel and small cobbles
266	267	75% large gravel, 25% silt
267	268	75% gravel and cobbles, 25% sand and silt

Driller's log of 699-29-78 (N029000, W078000) Hanford Wells, 1973

Land surface altitude[1] 645 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	25	fine brown sand
25	30	fine brown sand with fine gravel
30	40	¼" gravel and fine brown sand
40	55	fine sand with little coarse sand and silt, tan
55	65	silt, fine sand with little coarse gravel; tan in color
65	75	fine sandy silt, tan in color
75	115	fine sand and silt, brown in color
115	125	fine sand and silt
125	130	3" minus cemented gravel and sandy silt, tan in color
130	135	fine sandy silt and gravel, tan in color
135	140	3" gravel and coarse sand with little silt, dark brown
140	145	2" minus gravel and coarse sand with little silt, dark brown
145	150	2" minus cemented gravel with coarse sand, tan in color
150	155	2" minus possible basalt gravel with coarse sand; got real hard at 151' as if it possibly could be basalt gravel, has changed back to cemented gravel
155	160	2" minus gravel with fine and coarse sand, little silt, tan
160	165	3" minus gravel with fine and coarse sand, little silt, tan
165	175	coarse and fine sand with 3/4" minus gravel, trace of silt, tan in color
175	185	fine sand and silt with 3" minus gravel
185	190	fine sand and silt with 3" minus gravel, tan color
190	195	2" minus gravel with coarse and fine sand and silt, tan color; heaved from 3' to 4' to 5' to 6'
195	200	2"minus gravel with fine sand, and silt, light tan; heaved from 3' to 4' to 5' to 6'
200	210	fine mica sand with 1½" minus gravel and coarse sand, tan color, trace of silt' heaved from 3' to 4' to 5' to 6'
210	215	fine mica sand with 1½" minus gravel and coarse sand, tan color
215	220	fine mica sand with 1½" minus gravel and coarse sand; heaving at 218' through 221'
220	225	fine mica sand with 1" minus gravel and coarse sand; heaving at 218' through 221'
225	230	fine mica sand with 1" minus gravel and coarse sand, tan color
230	235	2" minus gravel and sand with little silt, tan color
235	240	2" minus gravel and sand with some silt, tan color
240	245	2" minus gravel and fine and coarse sand, tan color, trace of silt
245	260	2" minus gravel and coarse sand with little silt
260	265	1" minus gravel and coarse sand with little silt
265	275	2" minus gravel with some coarse and fine sand, color tan; heaving 3' to 15' per drive, gravel came in with sand
275	280	2" minus gravel with coarse and fine sand, trace of silt, tan; heaving 3' to 15' per drive, gravel came in with sand
280	285	2" minus gravel with coarse and fine sand, trace of silt, brown; heaving 3' to 15' per drive; the gravel also came in with the sand

Driller's log of 699-29-78 cont

Depth (ft) From	To	Description
285	295	2" minus gravel with fine and coarse sand and silt, brown
295	305	2" minus gravel with fine and coarse sand, silt
305	310	fine gray sand with a little 2" minus gravel, trace of silt, brown in color; heaved some
310	315	fine gray sand with stray gravel, trace of silt, brown in color; heaved some
315	320	fine gray sand with trace of gravel and silt, brown in color; heaved some
320	325	2" minus gravel with sand and trace of silt, brown; heaved some
325	330	2" minus gravel with sand and trace of silt
330	335	2" minus gravel with sand and trace of silt, brown; heaved at 332' back to 325'
335	349	2" minus gravel with sand and trace of silt
349	353	silty clay with little gravel
353	355	fine and medium sand with trace of 1" minus gravel and seams of hard silt, greenish color
355	360	silty sand with gravel milky in color
360	365	sandy silt with trace of gravel, brown
365	377	sand and silt with some gravel, brown
377	380	silty clay, some gravel, brown
380	385	silty clay with trace of sand (tan)
385	405	silty clay, tan in color
405	410	silty clay, light tan
410	419	sandy silt, tan in color
419	420	2" minus gravel with fine sand, trace of silt, tan in color
420	425	2" minus gravel with some fine and coarse sand, trace of silt; heaved 10' while driving from 420'-425
425	430	2" minus gravel with trace of silt
430	440	2" minus gravel with trace of silt, tan
440	445	silty tan clay with some coarse sand
445	450	silty black clay
450	455	silty black clay with some coarse sand
455	460	silt blue shale clay
460	470	blue shale clay with some coarse sand and pea gravel
470	490	blue clay and pea gravel
490	495	blue clay and shale with some pea gravel
495	504	silty tan clay with fine sand; material from 503' to very heavy 12' heaves
504	520	fine light tan sand; heaving in 12' heaves
520	525	fine sand and gravel with trace of silt (tan)
525	530	fine sand with silt, trace of pea gravel; brown; when you drive, it heaves 10' to 20'
530	545	fine sand with some silt, tan, with some brown sand; when you drive, it heaves 10' to 20'
545	550	fine sand and some silt with some brown gravel
550	555	fine sand and some silt with some gravel
555	566	fine sand and some silt with gravel, brown; while driving from 562' to 566' material heaved 35'
566	570	blue shale clay with 1" minus gravel (volcanic tuff)

Driller's log of 699-29-78 cont

Depth (ft) From	To	Description
570	586	blue clay with 1" minus gravel; while driving casing from 573' to 576' it was heaving in 25 feet heaves
586	588	blue clay, no gravel; layer of shale clay
588	590	basalt with trace of shale clay; bed rock at 588'
590	600	basalt

Driller's log of 699-30-47 Hanford Wells, 1973

1. Cable tool rig

Depth (ft) From	To	Description
0	5	moist sand
5	75	sand and silt dry
75	80	75% sand and 25% silt
80	88	50% sand and 50% silt
88	89	large gravel
89	142	50% sand and 50% silt
142	145	sand and silt, 5% small gravel
145	150	sand and silt, 1% small gravel
150	155	sand and silt
155	160	moist brown clay
160	165	sand and silt
165	170	sand and silt, gravel to 1½"
170	175	sand and silt, gravel small
175	181	sand and silt, gravel 1½"
181	190	sand and silt, gravel 3/4" 80%
190	200	sand and silt, gravel 3" 80%
200	218	sand and silt, gravel coarse
218	227	damp brown clay
277	230	coarse sand, gravel 1½" 60%
230	235	sand and silt dry, one cobble 6"
235	240	several cobbles
240	245	cemented sand and silt
245	251	sand and silt to cobbles 5"

Driller's log of 699-30-51

1. Cable rig

Depth (ft) From	To	Description
0	20	sand and silt
20	29	sand and silt cemented
29	40	sand and silt
40	45	sand and silt cemented
45	55	sand and silt
55	60	cemented sand and silt
60	70	sand and silt
70	75	cemented sand and silt
75	155	sand and silt
155	157	small gravel
157	162	coarse sand and silt, gravel 2"
162	165	sand and silt, small gravel 2%
165	180	coarse gravel 2%
180	185	coarse sand and silt
185	195	coarse sand and silt, 2% loose gravel, small
195	211	coarse sand and silt cemented
211	245	sand and silt, 50% coarse gravel
245	250	50% gravel to 3"
250	255	cemented sand and silt
255	260	cemented sand and silt, small gravel
260	265	sand and silt, small, cemented gravel
265	275	cemented sand and silt, cobbles, gravel 4"

Driller's log of 699-30-55

Depth (ft) From	To	Description
0	5	sand
5	35	50% sand, 50% silt
35	40	75% sand, 25% silt
40	85	50% sand, 50% silt
85	95	25% sand, 75% silt
95	125	50% sand, 50% silt
125	130	50% silt, 25% sand
130	135	50% sand, 50% silt
135	140	75% coarse sand, 25% fine sand and silt
140	240	50% sand and 50% silt
240	245	50% sand, 50% silt, some gravel
245	265	50% sand, 50% silt
265	270	60% sand, 40% silt
270	275	50% sand, 50% silt
275	280	75% sand, 25% silt
280	285	50% gravel, 25% sand, 25% silt

Driller's log of 699-31-31 (N030507, W030678) Hanford Wells, 1973

Land surface altitude[1] 527 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	fine sand
10	15	gravel-sand
15	40	fine black sand-gravel
40	50	no record
50	60	cobbles and gravel
60	70	boulders-cobbles-gravel
70	75	cobbles and gravel
75	82	fine and coarse sand
82	85	small and coarse gravel
85	100	cobbles and gravel
100	105	small and coarse gravel
105	112	boulders
112	120	boulders-cobbles
120	135	cobbles, gravel, little silt
135	142	boulders
142	150	boulders, gravel, little silt
150	155	cobbles, gravel, silt
155	160	coarse gravel and sand
160	163	no record
163	172	cobbles, gravel, fine sand
172	175	cobbles, gravel, sand little
175	177	silt boulders
177	180	cobbles, gravel, sand and silt
180	185	cobbles, gravel and silt
185	190	sand-gravel
190	200	cobbles-gravel
200	212	sand, gravel, and silt
212	220	sand and silt clay
220	235	silt, clay and small gravel
235	240	sand and silt
240	245	sand, very little silt
245	255	gray sand, very little clay
255	260	blue clay
260	265	blue clay and fine sand
265	275	clay, sandstone and silt
275	280	sand and gravel
280	295	sand and silt and gravel
295	300	gravel, sand and silt
300	310	gravel, up to 6'
310	320	gravel, clay and sand
320	325	sand-little silt
325	330	sand, little silt, gravel
330	335	sand, little silt
335	345	gravel and sand
345	350	sand-silt
350	360	sand-gravel

Driller's log of 699-31-31 cont

Depth (ft) From	To	Description
360	365	sand, little silt
365	370	sand and gravel
370	375	gray clay, little gravel
375	390	sand and silt
390	395	fine gray sand
395	407	gravel,,sand
407	410	fine and coarse sand
410	425	fine sand
425	435	gray clay
435	440	clay, little gravel
440	445	gray clay
445	460	clay
460	475	clay-little gravel
475	480	brown clay
480	485	no record
485	495	brown clay
495	505	gray clay
505	520	silty gray clay
520	530	brown silty clay
530	540	gray clay and small gravel
540	545	sand and silt
545	550	soft sandstone
550	562	brown silty clay
562	573	sand, gravel and basalt; formation has a green color
573	575	fine sand, gravel, cobbles up to 6"
575	580	coarse sand, gravel, cobbles
580	585	cobbles, gravel and sand, with little clay or silt
585	587	no record
587	593	cobbles, gravel and sand
593	599	formation is like cement; cobbles, gravel, and sand
599	620	clay
620	633	clay, sand, small gravel
633	638	sand, gravel, and silt
638	640	sand, gravel, and shale; caves in
640	649	* sand, blue shale
		*cleaned and deepened 8 years later

Driller's log of 699-31-53A (Hanford Wells, 1973)

Land surface altitude[1] 704 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	36	sandy top soil; sand
36	80	silty sand
80	95	fine sand
95	120	sand-some clay
120	150	fine sand
150	160	sand and gravel
160	163	medium sand
163	165	sand
165	169	medium sand
169	170	medium sand-trace of clay
170	175	coarse sand
175	182	medium sand
182	190	cemented medium sand
190	195	few gravel and medium sand
195	201	no record
201	219	medium sand
219	220	trace gravel medium sand
220	224	medium sand
224	225	few cobbles medium sand
225	230	no record
230	257	trace of clay, medium sand
257	260	trace of clay; sand
260	270	trace of clay; sand and gravel
270	283	gravel
283	284	drills like clay traces; sand and gravel
284	297	cemented sand
297	310	conglomerate (cemented gravel)
310	313	? no record (probably conglomerate)
313	315	? no record (probably conglomerate)
315	320	changing to cement gravel
320	326	layers of conglomerate and cement gravel
326	330	sand and gravel
330	335	layers of sand and gravel and cemented gravel
335	340	some $CaCO_3$ -- mostly gravel
340	344	gravel and sand
344	345	cemented layers, sand and gravel
345	350	cemented layers, sand and gravel contains some cobbles
350	354	cemented layers, sand and gravel
354	360	gravel and cobbles
360	363	gravel-a few cobbles-some cementing
363	365	heaving sand-gravel-enough clay to make permeability low
365	370	sand-gravel-little clay
370	400	sand, gravel and clay
400	425	cemented gravel
425	430	clay, sand and gravel

Driller's log of 699-31-53A cont

Depth (ft) From	To	Description
430	482	blue clay
482	487	black clay

Driller's log of 699-31-53B (N031149, W052973) Hanford Wells, 1973

Land surface altitude[1] 706 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	30	sand
30	40	silt and sand
40	70	no record
70	93	cemented sand
93	120	cemented clay and sand
120	140	little clay-fine sand
140	150	sand
150	160	gravel
160	180	fine gravel and sand
180	215	sand
215	230	sand and gravel-some cobblestone
230	260	sand and clay
260	270	medium sand
270	288	gravel
288	306	conglomeration
306	312	cemented gravel
312	318	conglomeration
318	328	gravel
328	340	one boulder-sand and gravel-layers of cemented gravel
340	352	sand and gravel layers cemented
352	362	sand and gravel some cemented
362	365	sand and gravel little clay
365	395	sand and gravel layers of clay
395	403	sandy clay layers cemented gravel
403	410	cemented gravel
410	418	sand and gravel some cemented
418	429'6"	sand-clay and gravel cemented
429'6"	430'6"	clay

Driller's log of 699-31-65 (N030536, W065357) Hanford Wells, 1973

Land surface altitude[1] 681 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	192	sand-silt
192	205	sand-coarse, little silt
205	210	sand-fine, little silt
210	223	sand and gravel, ½"
223	230	sand-clay and fine gravel
230	235	sand-silt
235	241	coarse sand and gravel
241	245	sand-silt
245	255	clean coarse sand-gravel
250	270	clean gravel ¼" to 1½"
270	285	clean gravel ½" to 1¼"
285	290	clean gravel ¼" to 3"
290	310	cemented gravel ¼ to 1½"
310	320	gravel, sand and silt
320	335	sand, silt and gravel to 3"
335	360	cemented gravel
360	390	sand, silt and gravel
390	398	sand and silt
398	400	hit yellow clay
400	425	yellow clay/gravel particles
425	435	cemented sand
435	440	cemented sand with gravel
440	445	sandy clay
445	450	sandy clay and gravel

Driller's log of 699-32-22 (N032003, W021995) Hanford Wells, 1973

Land surface altitude[1] 516 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	silt and gravel
5	15	black sand and gravel
15	30	black sand
30	150	sand and gravel
150	160	no record
160	171	sand and silt

Driller's log of 699-32-42 (N032470, W042450) Hanford Wells, 1973

Land surface altitude 515 feet msl

1. Estimated form altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	25	sand
25	45	coarse sand and pea gravel
45	50	no record
50	55	silt
55	65	sand and silt
65	75	cobbles
75	80	sand and gravel
80	85	coarse sand and pea gravel
85	120	sand and gravel
120	125	gravel

Driller's log of 699-32-43 (N032128, W042649) Hanford Wells, 1973

Land surface altitude[1] 515 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	20	sand and silt
20	25	sand
25	35	pea gravel
35	65	coarse sand with gravel
65	80	coarse sand with pea gravel
80	85	no record
85	90	cobbles or small boulders
90	95	cobbles
95	127	sand and gravel

Driller's log of 699-32-49A

Depth (ft) From	To	Description
0	5	50% sand, 50% silt
5	10	75% sand, 25% silt
10	15	80% sand, 20% silt
15	70	50% sand, 50% silt; 6" layer of gravel at 18'
70	75	40% sand, 60% silt
75	80	60% sand, 40% silt
80	185	50% sand, 50% silt
185	190	60% sand, 40% silt, little gravel
190	195	60% sand, 40% silt
195	205	50% sand, 50% silt
205	210	25% sand, 75% silt
210	230	50% sand, 50% silt
230	235	25% sand, 75% silt
235	240	80% sand, 20% silt
240	245	90% sand, 10% silt
245	250	50% sand, 50% gravel

Driller's log of 699-32-62[1] (N031974, W061980) Hanford Wells, 1973

Land surface altitude[2] 705 feet msl

1. 699-32-62(UBM)
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	40	fine sand; sand almost too fine to stay in drive barrel
40	55	no record, probably fine sand
55	140	fine sand
140	145	hard gravel
145	160	hard packed sand
160	180	hard packed sand; just a little brown clay in it
180	190	fine hard packed sand; seems to have a little brown clay in it
190	200	fine packed sand; still hard pack with a little brown clay or silt in it
200	215	hard packed sand and clay; this sand has more brown clay in it
215	223	fine sand
223	245	cemented gravel; at about 223' hit some hard gravel and cobbles, seem to be cemented with a brown material; brown clay
245	260	cemented gravel; more dense with clay, somewhat larger gravel, cemented in gray or blue like material
260	265	cemented gravel; same kind of formation as before but less cemented
265	270	cemented cobbles; in some larger cobbles, they aren't cemented as much as the gravel * changed drillers at 271'
270	280	brown soil with gravel
280	295	gravel, little clay
295	300	sand and gravel; gravel, pipe driving hard
300	350	sand and gravel; sand and gravel packed too hard to use drive barrel
350	380	gravel and sand; hard packed sand and gravel
380	390	sand and gravel; hard packed sand and gravel
390	403	sand and gravel
403	410	yellow clay
410	458	blue clay
458	470	sand and clay
470	475	sand and clay; fine silty sand at 470 ft, a little clay
475	485	fine silty sand
485	492	silty sand
492	501	silty sand with small gravel

Driller's log of 699-32-70 (N032085, W070345) Hanford Wells, 1973

Land surface altitude[1] 665 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	10	gravel, some cobbles
10	25	sand and gravel
25	72	fine sand and silt with streaks of small gravel
72	184	fine sand and silt
184	198	cemented sand and small gravel
198	219	sand, silt and clay
219	232	cemented sand, silt and gravel
232	245	cemented sand and gravel with layers of clean large gravel (4")
245	280	cemented sand
280	295	cemented sand and small gravel
295	310	sand and gravel
310	315	sand and large gravel (3")
315	320	sand and silt
320	330	cemented sand and silt; casing tight-won't drive-finally freed casing and drove to 324, have redrilled back down to 330'-still in cemented sand and gravel
330	335	cemented sand and gravel (small)
335	340	cemented sand and gravel
340	350	sand and silt; small gravel-softer * Cobbles rolling with casing, so left casing at 332'

Driller's log of 699-32-70

1. Abandoned well
2. Cable tool rig

Depth (ft) From	To	Description
0	15	fine sand and silt
15	30	sand and silt
30	35	fine sand and silt
35	65	fine sand-silt, some small gravel
65	80	fine sand-silt; casing going off, so pulled pipe back until straight (to 62'), installed 8' of 10" casing around top of 8" casing, filled between casing with bentonite, worked casing back down to 80'-straight
80	95	sand-silt
95	135	fine sand and silt
135	140	sand-silt
140	180	fine sand-silt and clay
180	185	sand, silt and gravel (¼"-1")
185	190	gravel (¼"-1")
190	195	dark brown sand hard packed
195	200	dark brown sand and small gravel, softer
200	205	dark brown sand, silt and gravel, soft
205	215	dark brown sand, silt, clay and gravel
215	220	sand and gravel, hard packed
220	230	sand-gravel-silt, hard packed
230	235	sand-gravel, gravel increasing ¼" to 2"
235	240	sand and gravel
240	245	sand and gravel (½" to 4")
245	250	clean coarse sand
250	255	sand and gravel; drilling on iron from 252' down
255	258	cemented sand and gravel; still drilling on iron
258	265	cemented sand
265	270	cemented sand, softer
270	280	sand and gravel; ? maybe cemented sand 279' to 280'
280	290	cemented sand and gravel
290	295	sand and silt and gravel particles
		*Drilled to 300', started to drive casing when butt weld broke; decided to abandon this well and move up 20' to drill a new well.

Driller's log of 699-32-72 (N032481, W072041) Hanford Wells, 1973

Land surface altitude[1] 666 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	48	sand
48	120	sand, little silt
120	150	50% sand, 50% silt
150	155	sand, very little silt
155	160	no record
160	185	50% silt, 50% sand
185	190	sand and small gravel; small gravel at 187'
190	195	sand and coarse gravel
195	200	sand, silt and gravel
200	242	sand and silt
242	250	sand, cobbles, gravel; cobbles and gravel at 242'
250	255	cobbles, gravel and sand
255	260	gravel and sand
260	280	cobbles, gravel, fine sand; cement gravel 275' to 279'
280	285	gravel up to 4" fine sand
285	295	gravel, sand and silt
295	300	fine and coarse sand, gravel
300	315	sand and gravel up to 4"; sand comes in
315	330	sand and gravel; sand comes in
330	340	sand and gravel and cobbles; sand comes in
340	345	sand and gravel, little silt; sand comes in
345	355	sand, cobbles, gravel, little silt; sand comes in
355	367	cobbles, gravel, sand and silt
367	370	gravel and sand
370	375	sand, stone
375	385	fine sand; sand came in well at 380'
385	400	fine sand and small gravel; sand came in at 400'
400	405	coarse gravel, fine sand
405	412	sand, gravel, little silt
412	420	clay; light gray clay at 412'
420	430	tan clay
430	437	gray clay
437	445	blue clay
445	450	clay
450	452	no record
452	455	sand and gravel
455	461	boulders
461	507	cobbles, gravel, sand; sand comes back in with water after bailing
507	517	gravel up to 5", sand
517	530	cobbles, gravel sand
530	537	small gravel and sand
537	550	fine sand, gravel up to 2"
550	555	gravel, sand
555	560	fine sand and silt
560	570	fine sand; sand comes in

Driller's log of 699-32-72 cont

Depth (ft) From	To	Description
570	572	clay, some small gravel
572	573	basalt; pipe stopped at 571'

Driller's log of 699-32-77 (N031812, W077032) Hanford Wells, 1973

Land surface altitude[1] 652 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	6	top soil and mostly sand
6	9	sand and clay
9	13	sand; sand and little clay
13	17	sand, gravel, clay and a little silt
17	20	sand, gravel, clay and a little silt; struck gravel at 17' sand and a little gravel
20	25	sand, small gravel and a little clay
25	35	sand and clay; sand with a mixture of yellow clay
35	50	sand and a little clay; sand with a mixture of yellow clay
50	58	coarse sand and gravel
58	61	coarse sand and a little yellow clay
61	65	white sand
65	80	fine sand and clay
80	120	sand and clay
120	125	sand and clay; sandy clay
125	130	clay and very fine sand; sandy clay
130	136	clay and sand; sandy clay
136	142	sand and gravel
142	203	sand, gravel and clay
203	212	gravel, sand and clay; sand, gravel and clay
212	215	sand, gravel and clay
215	229	sand, clay and a little gravel; more clay and sand, a little gravel
229	242	sand, gravel and clay
242	258	sand, gravel and clay; gravel, sand and clay
258	262	white sand and a little gravel
262	268	coarse sand and a little gravel
268	283	sand, gravel and a little clay
283	290	sand, gravel and a little clay; white sand, gravel and traces of clay

Driller's log of 699-33-38?[1] (N033380, W038175) Hanford Wells, 1973

Land surface altitude[2] 533 feet msl

1. Labelled 35-40, 34-39, and 33-38, ?completion date and total depth are not same on the log as in Hanford Wells
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	15	fine gray sand, very soft
15	20	sand and clay; fine gray sand, very soft
20	33	fine gray sand, very soft; caved in 8' of open hole at 33'
33	42	sand
42	43	sand and gravel; struck gravel and boulders at 42'
43	47	different colored gravel and boulders
47	67	gravel and boulders
67	86	boulders
86	90	coarse sand; hole caves ahead of casing
90	97	boulders
97	110	sand, gravel and boulders; boulders and bedrock (no gain after drilling 45 minutes)
110	112	boulders
112	117	gray sand
117	119	boulders and gravel
119	121	boulders; caved from 119' to 120'
121	128	sand, gravel and boulders
128	130	boulders; caved in 18" to 128'6"

Driller's log of 699-33-42 (N032794, W042256) Hanford Wells, 1973

Land surface altitude[1] 514 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	10	sand and silt
10	20	sand; running dry sand, hard to hold in drive barrel
20	30	coarse sand and gravel to 1½"
30	35	coarse sand
35	40	coarse sand, gravel to 4"
40	45	coarse sand and gravel
45	50	sand and silt
50	70	sand and silt, gravel to 2"
70	85	coarse sand and silt
85	90	coarse sand and silt, gravel to 3"
90	92	? sand and silt
92	100	sticky sand and silt like clay; sampled sand and silt at 97' (could be 92') when first hit it
100	105	sand and silt
105	113	sand and gravel, some clay; sand and gravel to 4" at 107', changed to hard tools at 113'
113	115	cobbles and gravel
115	120	clean gravel
120	124	sand and gravel to 2"

Driller's log of 699-33-56 (N033000, W056000) Hanford Wells, 1973

Land surface altitude[1] 715 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	TO	Description
0	5	topsoil, sand
5	165	sand
165	170	medium sand
170	175	medium sand and gravel
175	190	coarse sand
190	200	fine sand
200	239	medium sand
239	255	fine sand
255	265	medium sand
265	270	medium and and gravel (fine)
270	275	medium sand
275	285	sand and gravel
285	295	cement, gravel
295	305	cemented gravel
305	315	cobbles and gravel
315	320	cemented gravel and cobbles
320	350	cobbles and gravel
350	355	gravel, sand and clay
355	360	gravel and sand
360	400	sand and gravel
400	405	sandy clay (yellow)
405	410	blue clay
410	415	sandy blue clay
415	440	blue clay

Driller's log of 699-34-39A[1] (N034094, W038996) Hanford Wells, 1973

Land surface altitude[2] 535 feet msl

1. Labeled 35-40A
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	
0	125	no record
125	129	boulders 2' thick; formation is made up of boulders, when I go through one I have to rock up hole until I get a shelf cut into the next boulder, am using lots of mud from well 321-3 to fill up cravies
129	131½	sand, gravel (also the shoe); lost shoe off pipe, used basalt rock to swedge pipe out and drill up shoe
131½	134	sand, gravel, caves
134	138	boulder; using mud from 321-3 well with bentonite to hold sand back; had to drill through this formation 3 times to whip the cave
138	150	gravel and sand; after bailing at 150', hole caved in 9 ft; think I hit basalt at 149', hole caved before I could test
150	154	gravel and sand, caves
154	155	sand, gravel, drilling out old cave
155	160	fine to coarse sand and gravel
160	162	gravel and sand; gravel
162	165	gravel and sand; this sand and gravel has no silt and does not make silt
165	167	no record; found some small pieces of wood at 166'; must have hit basalt and it lies on a slant, pipe is bent 8' from bottom of hole

Driller's log of 699-34-39B[1] (N034044, W038951) Hanford Wells, 1973

Land surface altitude[2] of 533 feet msl

1. Labeled 35-40B
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	25	fine gray sand, very soft
25	42	sand
42	75	gravel and boulders; struck boulders and gravel at 42'
75	81	boulders
81	98	gravel and boulders; hole caves ahead of casing
98	114	gravel and boulders
114	115	bedrock; rock is so hard it will take the hard facing and corner off of bit

Driller's log of 699-34-41 (N034200, W041209) Hanford Wells, 1973

Land surface altitude[1] 569 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	61	sand and silt
61	141	sand and gravel
141	148.5	sand and silt and boulders at 148'; hit boulders in loose sand at 148.5'
148.5	160	boulders; caved in from 160' to 155'
148	154	coarse clean sand and gravel; adding brown clay from another well
154	164	large rock, gravels, coarse sand
164	166	coarse sand, gravels, cobbles, boulders; material is real clean; 166'-171' cuttings are sand coarse, real fine basalt sand, gravels and broken pieces of rock
166	170	sand coarse, gravel to 1"; sand and gravel heaves
170	179	coarse and fine sand, boulder; sand heaving

Driller's log of 699-34-41

1. Cable tool rig

Depth (ft) From	To	Description
0	25	sand and silt
25	30	sand and silt and cobbles
30	61	sand and silt
61	70	cobbles, very little sand
70	92	cobbles, gravel and sand
92	145	sand and gravel
145	150	sand and silt
150	155	boulders
155	159	sand and gravel; pulled casing and put in casing, then continued drilling
159	162	boulders
162	163	gravel or boulders

Driller's log of 699-34-42 (N034554, W041778) Hanford Wells, 1973

Land surface altitude[1] of 538 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	40	sand and silt
40	115	sand and gravel
115	130	sand, silt and gravel
130	175	sand and gravel; sand comes in; 160' to 175' (or maybe 182') much more sand than gravel, sand runs from coarse to very fine and silty
175	182	no record, probably sand and gravel
182	183	fine sand and gravel; white sand came up on the perforater; after perforating hole filled up to 137'; black fine sand

Driller's log of 699-34-51 (N033873, W051282) Hanford Wells, 1973

Land surface altitude[1] 735 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	25	dune sand and basalt and white sand; dune sand, basalt and white sand with lots of silt
25	26	black and white sand; black and white sand with very small amount of coarse gravel
26	27	black and white sand
27	30	black and white sand and gravel; fine black and white sand with quite a few coarse gravels and some silt; caved
30	35	black and white sand and little gravel
35	49	black and white sand and clayey silt
49	53	clayey silt, and black and white sand
53	64	gray and black sand and gravel; at 53' gray and black sand, fine gravel and clayey silt; sand settled in at 54'
64	90	gray and black sand, clayey silt; more clayey silt 70' to 75'
90	96	gray sand, black and white sand
96	100	clayey silt, gray and black sand
100	105	no record, probably clayey silt, gray and black sand
105	110	clayey silt, gray and black sand
110	115	clayey silt, gray and white sand; gray and white sand, showing fine gravel and clayey silt
115	117	no record, probably gray and white sand, clayey silt
117	120	gray and white sand, clayey silt
120	140	gray sand and tan silt mud
140	215	black and white sand, tan silt, mud
215	220	black and white sand, tan silt, mud, 50% basalt and small gravel
220	225	coarse sand and gravel (fine), silt and 35% basalt
225	227	no record
227	233	fine gravel and coarse sand, 25% silt
233	235	gravel, black and white sand and silt, at 234' picked up fine gravel; 50% basalt chips, very little sand, 25% silt
235	236	gravel, basalt chips, 50% sand and silt; gravel coarser, about size of hen eggs
236	240	gravel, basalt chips, 50% sand (black and white) very little silt; less gravel, more black and white sand, 50% basalt, very little silt
240	244	black and white sand, very little gravel, silt; 240' to 250' black and white sand, silt and caliche
244	250	black and white sand, silt and caliche
250	258	fine brown and white sand, lots of silt and caliche; caves
258	260	fine black and white sand, silt and caliche
260	270	fine black and white sand, pea size gravel and silt; 260'-275' layers of black and white sand, silt and gravel up to egg size; black and white sand, basalt chips, silt and caliche
270	273	basalt chips, small gravel and silt
273	275	basalt chips, pea gravel, black and white sand and silt
275	278	black and white sand

Driller's log of 699-34-51 cont

Depth (ft) From	To	Description
278	285	fine black and white sand (80%), silt, basalt chips, pea to egg size gravel and some caliche
285	287	pure clay, core sample
287	290	heavy clay and basalt chips; 286' to 289½' pure clay
290	293	99½% fine black and white sand-silt, ½% coarse sand
293	295	fine black and white silt and sand 99½% with ½% gravel
295	298	80% fine black and white silt and sand 99½% with ½% gravel
298	300	black and white sand and silt, 4" boulder and gravel
300	302	black and white sand and silt, boulders and gravel; lost sampler in hole
302	305	4" of gravel, sand basalt chips and silt;
305	310	gravel, sand, basalt chips and silt binder
310	315	heavy gravel, silt, sandy binder; caves, lost core pipe
315	325	gravel and sandy silt binder; drilled up coring pipe
325	330	medium gravel, basalt, black and white sand; caving; core pipe broke off in threads at 115'
330	332	gravel, basalt, black and white sand, drilling up core pipe
332	333	medium gravel, basalt; medium gravel, basalt, gray white and black sand; caving
333	335	medium to coarse gravel, gray sand, white and black sand, basalt; caving
335	338	coarse gravel and sand; caving, lost sand pump and fished it out, still some core pipe in hole
338	339	coarse gravel, basalt, gray sand; caving
339	340	quartzite, medium basalt, gravel, medium gravel and gray quicksand
340	344	medium to coarse gravel, basalt, gray sand
344	345	gravel, basalt and clay silt
345	347	coarse gravel and basalt; caving
347	350	mostly coarse gravel, some medium and basalt, less clayey silt
350	353	coarse gravel, basalt, gray sand and clayey silt
353	355	coarse basalt rocks; coarse rocks, basalt rocks, all colors gravel, basalt gravel; caves
355	357	fine gray sand, black and white sand; caves; also medium gravel, basalt gravel
357	359	medium gravel, basalt gravel, gray sand, black and white sand
359	360	medium basalt gravel and gray water sand; medium gravel all colors
360	365	coarse gravel, basalt gravel, some gray water sand
365	370	coarse gravel, basalt gravel, rocks basalt rocks, gray water sand or quicksand
370	372	lot of rocks and basalt rocks, medium gravel, basalt gravel, some gray sand; caves
372	380	gravel and fine sand; water gravel fine to 3", fine to coarse sand, some clay and silt
380	385	fine to coarse gravel, fine to coarse sand, clay and silt; 380' to 381' core sample showed fine gray sand

Driller's log of 699-34-88[1] (N034404, W088207) Hanford Wells, 1973

Land surface altitude[2] 631 feet msl

1. Previously labeled 34-88.5 and 34-89
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	12	sandy loam
12	32	sand and silt
32	43	fine sand and silt
43	55	black and white sand, silt, and very little gravel
55	60	black and white sand, gravel and silt
60	63	sand, gravel, and silt
63	73	sand, clay and some gravel
73	75	sand and gravel with some clay
75	90	sand, gravel, boulders and some clay
90	105	dark brown clay, basalt boulders and silt
105	118	clay and boulders
118	125	sand, silt, and clay
125	135	sand, silt, clay, gravel and boulders
135	142	sand, silt, and clay
142	152	sand, silt, gravel, and boulders
152	167	sand, gravel, boulders and clay
167	175	sand, gravel and some silt
175	185	sand, gravel and rocks
185	194	silt and sandy gravel
194	207	silt, sandy gravel and some basalt
207	217	some silt, sand, gravel and rocks
217	225	sandy gravel, rock and some silt
225	228	coarse sand, gravel, rock and silt
228	263	sand, silt and gravel
263	266	medium and coarse gravel
266	308	sand, gravel, and silt
308	311	white sand, silt, some gravel
311	315	white sand, silt, gravel
315	317	white sand, some silt, 50% medium gravel
317	328	black and white sand, coarse gravel and silt
328	337	sand, gravel, silt and some clay
337	340	sand, silt, gravel, and some clay
340	346	sand-gravel and silt
346	347	sand, gravel, and silt
347	355	50% sand, 30% silt, and 20% gravel
355	358	sand, gravel and silt, and clay
358	362	gravel 50%, clay 40%, sand 10%
362	372	gravel 40%, sand 40%, clay 20%
372	375	gravel 40%, sand 40%, clay 20%
375	382	coarse gravel 50%, sand 40%, silt 10%
382	385	60% gravel, 30% sand, 10% silt and clay
385	401	80% gravel, 5% sand, 15% silt and clay
401	405	gravel 50%, sand 30%, silt and clay 20%
405	411	gravel 25%, sand 50%, silt and clay 25%
411	422	75% sand, 15% silt, 10% gravel
422	425	90% clay, 10% gravel

Driller's log of 699-34-88 cont

Depth (ft) From	To	Description
425	426	100% clay
426	433	clay
433	476	blue clay
476	480	sand or ash
480	485	basalt and sand
485	503	sand, ash, or clay, and small basalt gravel
503	505	light brown ash or clay
505	510	light brown ash or clay and small gravel
510	526	light brown fine sand, ash or clay and small gravel
526	526'6"	brown ash
526'6"	537	95% gray sand and 5% silt
537	539	sand, gravel, and silt
539	543	60% sand, 30% gravel, and 10% silt
543	547	40% sand, 40% gravel and 20% silt
547	551	60% gravel, 20% silt, 20% sand
551	565	50% clay, some ash, and 50% sand
565	566	gravel, sand and silt
566	575	50%sand, 50% silt
575	580	60% sand, 40% silt; sample in jar settled out as 50% sand, 50% silt, with a thin layer of clay
580	584	60% sand, 40% silt
584	589	50% gravel, 30% sand, 20% silt
589	590	45%sand, 50% silt, 5% gravel
590	603	50% sand, 50% silt
603	612	50% fine sand, 50% brown silt
612	614	50% coarse sand, 50% silt
614	634	45% fine sand, 50% chocolate brown silt or ash, 5% gravel
634	635	50% fine sand, 50% silt
635	637	50% sand, 50% silt
637	642	75% sand, 15% silt, 10% gravel
642	649	50% sand, 30% gravel, 20% silt
649	688	basalt

Driller's log of 699-35-9 (N034700, W009175) Hanford Wells, 1973

Land surface altitude[1] 498 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	sand,fine to medium
4	45	sand and gravel
45	49	medium sand
49	64	sand and gravel
64	77	sand
77	88	sand with clay and silt
88	116	sand and gravel
116	117	sandy, light tan silt
117	133	sand and gravel
133	137	silt and clay
137	148	sand with gravel, Ringold formation
148	165	sand, medium grained
165	176	silt and gray clay

Driller's log of 699-35-27[1] (N034673, W027437)

Land surface altitude[2] 533 feet msl

1. Labeled DB-4
2. Personal communication with Rod Ledgerwood 5-13-75
3. Cable tool rig

Depth (ft) From	To	Description
0	10	? no record
10	44	black sand
44	55	Ringold
55	60	clean gravel and cobbles; very clean
60	80	loose gravel and cobbles
80	95	Ringold
95	125	sandy silt
125	230	Ringold
230	241	brown sandy silt
241	250	blue clay; hard
250	300	Ringold
300	311	blue clay and gravel
311	315	black sand
315	320	blue clay, sand, and gravel
320	325	sand, clay, gravel
325	335	black sand, some blue clay
335	345	black sand, some blue clay and little gravel
345	365	? no record
365	370	blue clay, small gravel
370	385	blue clay, sand, and small gravel
385	405	hard, sticky, blue clay
405	425	hard, sticky, blue clay, some small gravel
425	445	gray-blue clay, hard and sticky
445	480	gray-blue clay, sticky-hard
480	490	brown and gray clay
490	505	gray clay, hard and sticky
505	520	brown clay, some black sand
520	530	blue clay and gravel
530	570	blue clay, gravel, and cobbles
570	580	blue clay, some gravel
580	600	blue clay, gravel and cobbles
600	602	gravel, cobbles, and blue clay
602	604	boulder
604	605	gravel, cobbles, and blue clay
605	615	blue clay, sand, gravel, and cobbles
615	625	blue clay, broken basalt; hit broken basalt at 618' I think cutting show basalt pieces
625	633	broken basalt

Driller's log of 699-35-66 (N034860, W065758) Hanford Wells, 1973

Land surface altitude[1] 724 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	sand
10	20	sand-gravel
20	30	gravel-loose
30	35	gravel-sand
35	255	sand-silt
255	260	sand-mixed rock or gravel
260	290	sand-gravel
290	295	sand-gravel-clay
295	300	sand-gravel
300	330	cemented gravel
330	335	cemented gravel and sand
335	398	sand-silt-gravel
398	410	yellow sandy clay
410	425	blue sandy clay
425	430	black sandy clay with mica
430	440	black sandy clay, coarse sand
440	445	black sand and silt
445	450	black sand and silt-yellow clay
450	452	yellow clay with gravel particles

Driller's log of 699-35-70[1] (N034623, W069988) Hanford Wells, 1973

Land surface altitude[2] 692 feet msl

1. Previously 34.5-69.5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	top soil
5	20	black and white sand-loam
20	25	lots of black sand, medium gravel, loam mud
25	33	lots of black sand, small gravel, loam mud
33	54	black and white sand and loam mud
54	60	black and white sand, small amount of gravel and loam mud
60	77	gray sand and tan silt mud
77	165	fine to medium gray sand, tan silt mud
165	170	fine sand and some clay
170	172	fine sand and more clay
172	175	fine sand and lots of clay
175	179	fine sand and less clay
179	203	fine gray sand and heavy clay mud
203	217'6"	gray sand and clayey silt
217'6"	222	medium to coarse basalt gravel with a small amount of gray sand and clayey silt and some colored gravel
222	225	gray sand, clayey silt and some medium basalt gravel
225	230	clayey silt, gray sand and some basalt
230	235	clay and some basalt gravel
235	240	clay and basalt
240	248	clayey silt, gravel and gray sand
248	267	gray sand, medium gravel, some basalt and very little clayey silt
267	268	more medium gravel, with some basalt, clayey silt and gray sand
268	269	more clayey silt, gray sand, medium gravel
269	270	clayey silt, medium to coarse gravel, gray sand
270	272	medium gravel, some basalt gravel, clayey silt and gray sand
272	275	medium to coarse gravel with basalt, gray sand and clayey silt
275	277	medium gravel, gray sand and caving in clayey silt
277	282	medium gravel and gray sand
282	284	medium gravel, some coarse gravel and gray sand
284	285	medium gravel, basalt and gray sand
285	287	medium gravel, gray sand and clayey silt settled in bailers; lots of gray sand, basalt and medium gravel
287	288	gray sand, basalt and gravel
288	291	medium basalt gravel, gray sand; sand settles in
291	293	gray sand and gravel
293	295	gray sand and medium gravel, some basalt
295	298	clayey silt, little medium gravel
298	301	clayey silt and less gravel
301	302	clayey silt and medium gravel
302	304	clayey silt, gray sand and some medium gravel and basalt
304	305	clayey silt, less gravel and less basalt, some fine gray sand
305	310	clayey silt, basalt gravel, medium gravel-all colors and fine gray sand

Driller's log of 699-35-70 cont

Depth (ft) From	To	Description
310	313	clayey silt, gray sand, medium gravel
313	315	clayey silt, fine gray sand and some medium gravel and little basalt
315	318	more medium gravel clayey silt, fine gray sand and some basalt
318	320	medium gravel, clayey silt and fine gray sand
320	321	gray sand and medium gravel
321	322	medium gray sand and medium gravel
322	325	clayey silt, medium gravel and some gray sand

Driller's log of 699-35-78 (N035478, W078190) Hanford Wells, 1973

Land surface altitude[1] 659 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil and sand, some gravel
5	20	sand and gravel-caves in
20	35	coarse sand, fine sand, silt, gravel
35	40	gravel, silt, sand
40	44	gravel, sand, less silt
44	57	gravel and sand-caves
57	60	gravel, silt and sand
60	70	sand and silt
70	115	fine sand and silt
115	120	clay and sand
120	125	clay, very fine sand, few small basalt chips
125	130	3' clay and sand 2' sandy silt
130	135	sand and silt
135	140	clay and very fine sand
140	145	clay and volcanic shot sand
145	150	gravel, silt and sand
150	155	gravel, 3 ft clay and gravel 2"
155	160	gravel, sand, lots of silt
160	165	gravel and sand no silt
165	171	gravel and sand, trace of silt
171	175	gravel and sand; caves
175	184	gravel, and sand, tan silt
184	200	gravel, sand and gray-tan silt
200	220	gravel, sand and tan silt
220	225	gravel up to 4",sand and silt
225	230	gravel up to 10", sand and silt
230	253	gravel, sand and silt
253	255	gravel, sand, silt-caves
255	265	gravel, sand, silt
265	268	gravel, sand, silt-caves
268	270	gravel, sand, silt
270	272	gravel, sand, silt-caves
272	279	gravel, sand, less silt-caves

Driller's log of 699-36-46P (N036195, W045612) Hanford Well, 1973

Land surface altitude[1] 703 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Rotary

Depth (ft) From	To	Description
0	75	sand and gravels
75	120	sand, gravels and some clay
120	291	sand, gravel and clay
291	358	cobbles, boulders and gravel
358	360	cobbles boulders, gravel, clay
360	432	clay sand and gravel
432	435	basalt and clay
435	450	basalt boulders with clay
450	465	gravel and cobbles with clay
465	476	gravel and cobbles with little clay
476	495	gravel cobbles with clay
495	497	cobbles and gravel
497	519	clay-gravel
519	533	basalt

Driller's log of 699-36-46Q (N036234, W045607) Hanford Wells, 1973

Land surface altitude[1] 703 feet msl

1. Estimated from altitude of top of casing given in Hanford Well, 1973
2. Rotary rig

Depth (ft) From	To	Description
0	90	sand and gravel
90	270	sand and gravel with clay
270	285	sand-gravel-clay-some cobbles
285	315	cobbles and boulders
315	317	gravel cobbles and boulders
317	357	cobbles and boulders
357	375	clay and gravel and sand
375	385	clay and gravel
385	430	clay sand and gravel
430	431	boulders and gravel
431	452	boulders with clay

Driller's log of 699-36-46R (N036273, W045603) Hanford Wells, 1973

Land surface altitude[1] 703 feet msl

1. Estimated from altitude of top of casing given in Hanford Well, 1973
2. Rotary rig

Depth (ft) From	To	Description
0	75	sand and gravel
75	280	sand, gravel and clay
280	285	sand, gravel, with clay and few cobbles
285	300	boulders, cobbles
300	305	2' boulders and cobbles
305	358	boulders and cobbles
358	382	sand, gravel with clay

Driller's log of 699-36-46S (N036313, W045999) Hanford Wells, 1973

Land surface altitude[1] 702 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	15	sand and gravel
15	30	sand and gravel with few cobbles
30	75	sand and gravel
75	300	sand and gravel with clay
300	305	cobbles and boulders
305	312	no record

Driller's log of 699-36-61A (N036365, W060704) Hanford Wells, 1973

Land surface altitude[1] 746 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	blow sand
5	23	sand and basalt gravel
23	30	basalt gravel and black and white sand and mud
30	45	basalt sand and mud
45	80	black and white sand and mud
80	120	black and white sand and lots of mud
120	200	black an white sand, mud and clay
200	205	black and white sand, small gravel, mud and clay
205	210	black and white sand, less mud and clay
210	225	black and white sand, more mud and clay
225	230	black and white sand, some rock, mud and clay
230	238	black and white sand, mud and clay
238	245	fine black and white sand and less mud
245	260	fine black and white sand and more mud
260	295	fine white sand, lots of mud and trace of black sand
295	300	fine white sand and thick clay mud
300	324	fine white sand and lots of mud and trace of black sand
324	325	medium gravel and coarse white sand
325	369	gravel, sand and silt
369	370	small rocks, gravel, sand and mud
370	383	gravel and white sand
383	390	gravel-fine to coarse-all colors and sand-fine to coarse, black and white

Driller's log of 699-36-61B (N036463, W060685) Hanford Wells, 1973

Land surface altitude[1] 747 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand
10	35	fine gravel
35	40	fine gravel (silt)
40	55	coarse sand
55	60	sand
60	65	coarse sand
65	95	fine sand
95	105	sand and silt
105	125	no record
125	145	fine sand
145	150	fine sand and one cobble
150	155	silt
155	160	hard silt with sand
160	170	sand and silt
170	180	silt and fine sand
180	185	clay streaks
185	190	fine gravel
190	195	silt
195	215	silt and clay
215	225	silt and sand
225	235	silt and clay
235	240	more clay and silt
240	245	silt and clay
245	250	hard streaks-sand and clay
250	265	sand and clay
265	270	sand and silt
270	290	sand and clay
290	295	sand and silt
295	310	silt and clay
310	315	fine gravel
315	345	clay and gravel
345	355	gravel
355	360	mixed gravel and clay
360	370	sand
370	375	fine sand
375	380	cobbles
380	400	sand and clay
400	410	yellow clay
410	435	blue clay
435	440	black sand and clay
440	448	black sand
448	460	blue clay
460	470	no record
470	495	blue clay, and gravel
495	505	hard, cemented basalt gravel with little clay
505	520	cemented gravel; formation same as above with some blue clay

Driller's log of 699-36-61B cont

Depth (ft) From	To	Description
520	525	fine sand
525	530	no record
530	540	hard packed gravel
540	545	hard cemented gravel
545	560	basalt rock
560	568	harder basalt

Driller's log of 699-36-93 (N036000, W093000) Hanford Wells, 1973

Land surface altitude[1] 643 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	dry real fine silt
5	25	silt and fine sand
25	30	silt and fine sand, more sand than silt
30	40	brown sand
40	45	silt with moisture
45	60	sand and gravel, cobble 6"
60	70	brown silt, sand and gravel 2 to 3"
70	80	sand and gravel 3"
80	85	multi-colored sandy silty clay mixed with gravel
85	90	? no record but was sampled
90	110	4 to 5" of sand in bottom of core barrel around 90'-93', brown sand and gravel up to 4"
110	115	brown silty and sandy clay
115	120	sandy clay and gravel up to 4"
120	125	gray sand and gravel 1"
125	130	small gravel and brown sand
130	135	coarse gray sand, some gravel
135	140	hit some large cobble in gray sand at 136' to 140', lost hole 140' to 136'
136	140	? fine brown sand
140	150	fine brown sand
150	155	light silt, sand, gravel and cobble-core barrel hit a boulder at 154'
155	160	silt, sand and gravel up to 3 to 4"-broke core barrel about 155'
160	165	sand and gravel 3 to 5"
165	170	sand and gravel up to 4"
170	175	silt, sand, gravel and some cobble, cemented
175	180	cemented gravel
180	190	sand, gravel, few cobbles, cemented
190	195	sand and gravel
195	200	? no record
200	205	silt, sand and gravel, some cemented
205	210	fairly hard cemented gravel
210	220	loose silt sand and gravel
220	225	a little cemented-?
225	230	light brown cemented gravel, more binding material than before
230	240	fairly hard cemented gravel
240	250	cemented gravel
250	255	cemented gravel; formations have hard layers
255	280	cemented gravel
280	283	? no record
283	287	hit hole in formation, shows no increase or decrease in water static
287	345	cemented gravel

Driller's log of 699-36-93 cont

Depth (ft) From	To	Description
345	350	loose silt, sand and gravel up to 243'; somewhat cemented; caved in 3 ft. at about 345'
350	390	cemented gravel
390	392	light gray clay
392	395	gray clay with gravel
395	400	light gray clay and large cobble; hard drilling
400	405	light gray clay some gravel
405	410	light gray sticky, still a few gravel and cobble; hit real sticky clay at 408, pretty tough to drill
410	415	dark gray silty clay; hit dark gray silty at 413-drills good
415	420	hard cemented gravel; hit hard layer at 418'
420	425	sticky blue clay with gravel
425	430	blue and brown clay
430	432	gravel, cemented gravel
432	435	silt and sand, layer of cemented gravel
435	442	cuttings are multi-colored, mostly dark gray, cut very fine; drills like a solid material, but not definitely a basalt
442	443	clay
443	449	cuttings are a multi-colored, mostly dark gray, cut very fine; drills like a solid material, but not definitely basalt
499	450	blue silty clay
450	464	gray silty clay
464	465	gray
465	475	silty sticky clay with some gravel
475	480	? no record
480	485	sticky silty clay
485	490	gray sticky silty clay
490	491	blue sand rock or clay, hard layer
491	506	hard blue green sand, drilled like sand rock
506	510	black sand
510	515	black sand and blue clay
515	530	light brown clay with some grit
530	535	yellow clay with decayed rock and gravel; clay is very sticky
535	540	gray sand, clay; sand seems to run in
540	545	gray sand, little silt; sand coming in
545	547	? probably as above
547	550	sand, rock; something hard at 547'
550	555	gray sand with gravel and basalt cuttings; look like basalt cutting mixed with gray sand, drills hard enough
555	560	cemented gravel
560	570	cemented gravel; sluffing quite a bit
570	582	cemented gravel
582	585	brown silty clay
585	590	silty clay with some gravel
590	600	silty sandy clay
600	605	brown sand and silt
605	610	brown sand; sand heaving under pipe
610	613	sand, rock; think I hit basalt at 613'
613	615	sand, rock; drill as hard as basalt
615	620	silty sandy clay

Driller's log of 699-36-93 cont

Depth (ft) From	To	Description
620	625	brown sand, some pea gravel
625	640	brown sand, some gravel, gravel fairly firm
640	645	brown sand and gravel, some silt
645	650	brown silt, sand, gravel, clay
650	655	sand and silt, gravel
655	665	sand, silt, clay and gravel; hard and soft streaks
665	670	gravely silty sand (dominantly quartz, some mica)
670	680	more gravel, sand, quartz and mica
680	686	sticky reddish brown silt, sand and gravel
686	700	black basalt; hard formation

Driller's log of 699-37-43[1] (N037061, W042874) Hanford Wells, 1973

Land surface altitude[2] 688 feet msl

1. Previously 38-43
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	10	fine sand
10	20	black sand and some gravel
20	30	black soil
30	40	black sand little gravel
40	60	fine black sand
60	130	fine sand-little silt
130	145	75% sand 25% silt
145	150	black sand
150	170	75% sand 25% silt
170	180	50% sand 50% silt
180	190	sand and silt
190	195	coarse gravel
195	220	gravel and cobbles
220	240	boulders and gravel
240	245	fine black sand
250	255	fine black sand and coarse sand
255	263	cobbles and gravel
263	265	sand, silt and small and coarse gravel
265	275	coarse sand,little silt
275	280	coarse sand and gravel
280	285	fine sand-coarse gravel
285	295	blue clay
295	300	sand and gravel
300	305	sand-very little gravel
305	315	50% sand 50% gravel
315	335	sand and small and coarse gravel
335	355	blue clay
355	375	brown clay
375	380	blue clay
380	385	sand, silt and clay
385	400	black sand on gravel
400	405	gray clay
405	420	light gray clay
420	425	brown clay
425	433	sand and gravel
433	435	sand, little gravel
435	445	sand, gravel and cobbles
445	450	sand, silt,little gravel and cobbles
450	455	sand,silt, gravel, cobbles, and clay
455	460	sand, silt, gravel,basalt and cobbles
460	465	sand, gravel and cobbles
465	470	cobbles, gravel, sand and silt
470	480	gray clay
480	487	coarse gravel and sand
487	495	gravel, sand and clay
495	500	gravel, sand and silt

Driller's log of 699-37-43 cont

Depth (ft) From	To	Description
500	510	gravel, sand and basalt
510	517	? no record

Driller's log of 699-37-82A (N037018, W081988) Hanford Wells, 1973

Land surface altitude[1] 635 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	fine brown sand and silt
5	10	coarser now some gravels (1½" max)
10	20	coarse sand and heavy gravel (4" max)
20	22	coarse sand and finer gravel
22	24	coarse sand and cobbles
24	95	fine brown sand and silt
95	102	gravel
102	115	coarse sand and gravel (1" max)
115	120	coarse sand and gravel (1" max) (material is larger)
120	125	heavy gravel and cobbles
125	130	(cemented material smaller) sand and gravel
130	132	cemented sand and gravel
132	140	sand, silt and gravel 1" max
140	141	sand, silt and gravel, 1" max gravel clean in streaks
141	170	sand, silt and gravels (1" max)
170	175	sand and gravels with clay streaks; soft brown clay; 6"-2' thick; fine brown runny sand streaks (mostly clay)
175	180	streaks of soft brown clay 6"-2' thick; streaks fine brown runny sand; more and larger gravels now; sluffing off
180	190	sand and gravel with clay streaks; soft brown clay 6"-2' thick; streaks of fine brown running sand
190	195	fine sand and gravel
195	200	fine sand and gravel (hard)
200	201	sluffing off; fine running sand and gravel (1" max)
201	220	fine runny sand and gravel (1" max)
220	225	brown sand
225	227	fine brown sand and gravel
227	230	fine brown sand and some gravel to 3"
230	240	streaks of very sandy clay
240	245	fine sand and small gravel; formation stays open-sand doesn't run
245	252	fine sand and gravels
252	275	fine sand and gravels up to 1"
275	280	fine sand and gravel (sluffing)
280	288	fine sand and gravel
288	291	sand and silt and small gravels
291	294	sandier now; sand silt and small gravel
294	310	sand, silt and small gravel
310	320	sand and small gravel
320	325	sand and silty and small gravel to 1"
325	328	sand and silty and small gravel to 1"; sandier now
328	345	sand and silty and small gravel to 1"
345	352	sand and small gravel
352	375	sand and silt and small gravels
375	380	sand and silt and small gravels (sluffing off a little)
380	382	sand, silt and small gravels
382	398	sand, silt and small gravels to 1"

Driller's log of 699-37-82A cont

Depth (ft) From	To	Description
398	400	coarse brown sand
400	415	clay with sand
415	440	blue clay

Driller's log of 699-37-82B (N037000, W081999) Hanford Wells, 1973

Land surface altitude[1] 634 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand and silt
5	10	coarse sand and silt
10	15	coarse gravel to 4" clean
15	20	clean gravel, small to 4"
20	65	sand and silt
65	75	sand and silt (finer)
75	95	cemented sand and silt
95	100	broken gravel, 3 and 4"
100	102	gravel and silt
102	113	gravel, sand, and silt up to 4"
113	120	gravel, sand and silt to 4"; cobble gravel
120	121	gravel, sand, and silt large; cobble gravel
121	130	clean gravel up to 2"
130	145	gravel with sand, silt
145	155	gravel with sand, silt; more silt
155	160	no record, but sampled
160	170	cobbles, gravel coarse sand and silt
170	173	sand, silt and clay, streaks of clay and loose sand
173	177	sand, silt and clay
177	178	real hard-clean gravel
178	180	sand, silt and clay
180	185	large gravel, sand and silt
185	200	some clay streaks, large gravel, sand and silt
200	205	no record, but sampled
205	210	sand, silt, and small gravel
210	220	gravel, clay; streaks sand and silt
220	230	streaks of clay and clean sand
230	240	no record but sampled
240	250	gravel to 2", clean sand
250	270	gravel to 2", clean sand, coarser sand
270	275	fine sand and small gravel, 80% sand
275	285	sand and gravel
285	290	sand and gravel (2" max.)
290	295	sand and gravel; streaks of clean sand
295	325	sand and gravel
325	340	clean sand and gravels to 2"
340	345	clean sand and gravels to 4"
345	350	clean sand and gravels; sandier now
350	360	clean sand and gravel-silt
360	365	clean sand and gravel-silt, coarse sand and silt
365	395	sand, silt and gravel
395	400	brown sandy clay
400	410	gray clay
410	415	gray clay sticky
415	420	gray clay, very dark gray now, not sticky
420	430	green clay

Driller's log of 699-37-82B cont

Depth (ft) From	To	Description
430	445	clay
445	458	blue gray clay
458	465	black blue sand
465	470	blue sticky clay
470	480	light blue clay
480	485	blue, hard, sticky clay
485	490	no record, but sampled
490	500	dark green, sticky, hard, clay
500	510	small gravel, sand and clay
510	525	large gravel, sand and clay
525	540	assorted gravels, green sand, black sand, and gravels
540	550	sand and silt, more sand and little silt
550	555	sand and silt
555	560	coarse sand and silt
560	565	sand and silt and clay
565	570	sand and clay
570	575	no record, but sampled
575	580	clay and sand
580	590	clay with sand and gravel
590	595	clay
595	600	clean sand
600	605	clean sand, darker color
605	627	basalt

Driller's log of 699-38-65 (N037965, W064973) Hanford Wells, 1973

Land surface altitude[1] 751 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	gravelly sand
10	25	sandy silt
25	34	no record, but sampled
34	84	sandy silt
84	113	silty sand
113	135	sandy silt
135	165	silty sand
165	170	silty sand, hard packed
170	185	no record
185	190	silty sand
190	218	no record; from 205-208, soft packed material, rest hard packed
218	221	sand
221	234	heavy sand
234	240	hard packed silt
240	245	no record
245	261	sandy silt
261	264	brown heaving sand
264	266	sandy silt; soft packed sand and silt
266	282	sandy silt
282	284	cemented gravel
284	295	sandy gravel
295	311	no record
311	334	record unclear, I think it is sandy gravel
334	335	sandy gravel
335	345	no record
345	350	sand and gravel
350	355	no record
355	365	sandy, silty gravel, unclear record
365	371	no record
371	375	sandy, silty gravel
375	382	no record
382	385	heaving sand, gravel
385	392	no record
392	395	brown clay, with fine gravel in it
395	403	no record
403	406	brown clay
406	410	blue clay
410	420	no record
420	425	blue clay
425	437	no record
437	443	? gravel at 443
443	449	sandy clay
449	450	gravel and black sand
450	455	gravel and colored sand; sand gray
455	460	gray sand
460	463	gray sand, some gravel 2" size
463	470	gray sand and gravel
470	475	gray fine sandy gravel

Driller's log of 699-38-65 cont

Depth (ft) From	To	Description
475	483.9	gray sand and gravel; sand heaving at 482
483.9	485	basalt gravel; medium hard with soft streaks of brown sand coming in under shoe; black and gray mixed
485	490	medium hard basalt gravel
490	493.9	sand and basalt gravel
493.9	495	hard basalt gravel
495	503	no record
503	505	hard basalt and gravel, some sand
505	516	no record
516	520	gravel and sand hard basalt
520	526	no record
526	530	basalt rock
530	536	hard basalt

Driller's log of 699-38-70 (N038142, W070226) Hanford Wells, 1973

Land surface altitude[1] 709 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	4	sand
4	10	small gravel
10	20	sandy silt and gravel
20	25	silt coarse sand
25	30	sandy silt
30	35	sand-silt
35	40	sandy silt
40	50	sand-silt gravel
50	65	sand-silt
65	70	sand-small gravel
70	72	sand-coarse and clean
72	75	clean sand
75	115	sand-silt
115	125	sand-silt (hard packed)
125	185	sand-silt
185	200	sand-silt-small gravel
200	205	no record
205	215	sand-silt
215	225	sand-silt-soft- more clay than sand
225	230	clay and small gravel
230	240	small gravel and clay
240	245	clay
245	250	clay-gravel
250	260	sand-silt-gravel
260	270	sand-gravel
270	275	gravel- clean gravel; hole won't stay open
275	280	sand-gravel; hole won't stay open, using bentonite
280	285	clean sand and gravel; hole won't stay open
285	286	no record
286	305	sand-gravel
305	310	silt-gravel, a little more silt
310	315	sand-silt, gravel-clay
315	320	sand, silt and gravel
320	325	sand, silt and gravel (hard packed)
325	330	sand, silt and gravel
330	340	sand-gravel
340	345	clean coarse sand
345	350	fine clean sand
350	355	clean sand
355	360	sand
360	365	sand-small gravel
365	370	sand-hard packed; slow, casing going hard
370	375	sand-softer-very fine
375	385	sand-silt-very fine
385	390	sand-gravel
390	395	sand
395	400	fine sand and silt
400	413	fine sand and silt (little more silt); gravel caving

Driller's log of 699-39-39 (N39044, W38651) Hanford Wells, 1973

Land surface altitude[1] 535 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	1	top soil
1	5	gravel, sand, silt
5	60	sand and gravel
60	65	cobble gravel, very little fine gravel or sand
65	68	cobbles too large to go in 6" casing, very little material between them
68	70	cobbles and gravel
70	79	coarse gravel and sand
79	85	cobbles, too large to go in 6" casing, very little material between them
85	115	sand and gravel
115	120	sandy clay and gravel
120	125	Ringold clay
125	165	clay
165	185	gray clay
185	200	sandy brown clay

Driller's log of 699-39-79 (N039198, W078751) Hanford Wells, 1973

Land surface altitude[1] 672 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	13	fine sand and silt; caving a little
13	20	fine sand; caving a little
20	25	basalt, gravel and sand
25	28	basalt and some gravel; caving
28	32	basalt and gravel; caving a little
32	35	basalt, gravel and rocks; caving a little
35	39	basalt and rocks
39	43	basalt, rocks and some granite
43	50	black sand and gravel; caving when out of casing
50	58	basalt, gravel and sand; caving when out of casing
58	67	basalt, gravel, sand and some rocks
67	78	fine black sand; have to drive casing ahead to keep it from caving, hard to get sample as there is no sludge
78	87	black sand, rocks and basalt; can't drill ahead of casing as it is caving, it is making a sludge
87	92	clay and fine sand, can drill ahead of casing
92	100	silt and sand
100	125	coarse sand and silt
125	135	silt and fine sand
135	141	silt, fine sand and some clay
141	149	caliche cemented zone, sludge has changed color
149	158	fine sand, silt and clay
158	160	gravel, basalt, sand, silt and clay
160	162	gravel, basalt, silt and clay
162	165	fine sand and gravel
165	170	sand and gravel; caving when 2' out of casing
170	183	sand, rock and gravel; caving a little
183	187	basalt, gravel and sand
187	195	coarse sand, rocks and gravel
195	225	sand, gravel and rocks
225	235	fine and coarse sand and gravel
235	250	clay, sand and gravel
250	260	gravel, rocks and sand
260	265	cemented sand, rocks and gravel; had 7' of open hole but it caved in 6'
265	267	fine sand, rock, gravel and boulders
267	270	fine sand, gravel and rocks
270	278	fine water sand and gravel
278	295	coarse sand and gravel

Driller's log of 699-40-1[1] (N039849, W000570) Hanford Wells, 1973

Land surface altitude[2] 436 feet msl

1. Previously 699-39-0 and/or 699-42-5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand and gravel up to 3"; big cobble a foot and a half down
5	25	sand, gravel and cobble
25	30	silt, sand, gravel and cobble 4 to 6 ft
30	40	no record
40	45	sand, gravel, cobble
45	55	sand, gravel, cobble (large)
		*pulled pipe back 35', have a crooked spot in it, putting it back down
25	30	sand-gravel; coring
30	35	gravel; cored
35	40	sand-gravel; cored
		*casing started leading off again at 46' pulled it back
40	45	gravel, cobbles; cored
		*still going off, pulled back, pulled all pipe; got down to 40'
40	57	no record except "had scattered boulders from 45 to 55 ft; cored
57	70	sand and gravel up to 5 and 6"
70	76	brown sand and 4" gravel
76	80	some sand, 90% gravel
80	85	sand and gravel up to 4"
85	90	brown loose sand and gravel
90	95	brown sand and gravel
95	100	no record; probably brown sand and gravel
100	110	brown sand and gravel
110	120	brown cemented sand
120	125	cemented gravel
125	135	sandy and silty clay with gravel
135	140	silty sand and hard layers
140	155	hard sticky clay and gravel
155	160	sandy clay; at 158' there is a thin layer of fine sand
160	165	sandy clay with large broken rock
165	171	brown clay with pieces of brown rock
171	220	cemented gravel; sand coming under pipe about 193' to 205'
220	225	brown sand and some gravel; sand coming in
225	230	sand and gravel
230	235	sand and gravel, mostly sand
235	245	sand and rock
245	250	sand stone with gravel
250	255	silty sandy clay
255	260	no record; sampled; probably silty sandy clay
260	265	sandy clay
265	275	silty sandy clay with small gravel
275	285	brown and gray silty clay
285	295	gray sticky clay
295	300	dark gray clay with gravel
300	305	dark gray sticky clay and gravel
305	316	dark gray silty clay and gravel

Driller's log of 699-40-1 cont

Depth (ft) From	To	Description
316	320	basalt; "drilled down to 319', 2' in basalt"
320	350	basalt; sand caving in; hit crevice at 348'
350	364	basalt; sand coming in; rock is in layers of hard and soft; interbed noted between 355' and 360'; last foot real soft
364	368	?clay interbed; interbed between 364'-365
368	370	black rock, broken, has hard and soft spots
370	375	black basalt, has hard and soft spots
375	388	black rock, still having soft layers
388	390	dark grey basalt
390	420	black basalt; rock tightening up, no soft layers noted, and specifically no soft layers 401' to 408'

Driller's log of 699-40-33[1] (N40404, W33426) Hanford Wells, 1973

Land surface altitude[2] 516 feet msl

1. Previously 40-35
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	12	sand and boulders
12	13	sand, gravel and boulders; pulled casing and lost 3' of hole, had to drill boulders out again
13	14	sand and boulders
14	32	sand, gravel and boulders
32	40	boulders, sand and gravel
40	73	gravel and sand
73	96	gravel, sand and silt
96	100	medium gravel, black and white sand, small amount of silt; caves
100	102	medium and coarse gravel, black and white sand and gray binder; caves
102	106	more medium gravel, some coarse gravel and very small amount of black and white sand; caves
106	110	medium gravel and gray silty sand
110	115	mostly sand and clay with some gravel
115	120	mostly clay with some sand
120	150	clay and ash
150	180	clay, ash and sand
180	183	clay
183	185	gray clay, no sand
185	195	blue green clay-not so sticky
195	208	gray clay and some small gravel
208	238	gravel, boulders, sand and clay
238	252	small gravel in gray clay
252	254	gravel and clay
254	278	sand and gravel
278	283	basalt

Driller's log of 699-40-62 (N040300, W061500) Hanford Wells, 1973

Land surface altitude[1] 745 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	3	top soil
3	10	sand, gravel, and silt
10	12	sand, gravel, boulders, and silt; there is a boulder at 11' that will not let casing go in straight
12	25	sand, gravel, and silt; top soil came in from outside of casing
25	31	10% silt, 40% sand and 50% gravel; caves easily
31	35	25%fine gravel, 25% silt, and 50% sand; caves easily
35	40	sand and silt
40	59	10% silt, 90% sand, mostly coarse, caving all the time
59	70	15% silt, 85% sand, gray in color, mostly coarse, caves
70	85	25% silt and 75% sand, sand still coarse and gray
85	95	30% silt and 70% sand which is mostly coarse; caves when 3' ahead of casing
95	105	40% silt, and 60% sand, which is finer; hole stays open to 7' then caves in
105	113	35% silt and 65% sand; caves at 5'open hole
113	125	30% silt and 70% sand, sand coarser; caves at 2' open hole
125	130	35% silt and 65% sand, sand finer
130	155	25% silt and 75% sand, sand fine and gray; hole will stay open for 5'
155	165	30% silt and 70% sand, some coarser sand with fine sand; hole caves but can be drilled for 5' ahead
165	170	15% silt and 85% sand, sand coarse; hole caves at 2'
170	195	20% silt and 80% sand, sand 50% fine and 50% coarse
195	203	40% silt and 60% sand, sand mostly fine
203	207	coarse sand and pea gravel-50%, 30% fine sand and 20% silt, hole caves at 2'
207	215	80% sand and 20% silt, caves with 2' open hole
215	230	35% silt and 65% sand-fine
230	240	25% silt and 75% sand, hole caves at 2'
240	247	20% silt and 80% sand, sand coarser; hole caves at 2'
247	248	sand and silt; tools hung at 248'
248	250	25% silt, and 75% sand
250	260	40% silt and 60% sand, sand is finer
260	265	30% silt, 70% sand, sand a little coarser; caved when tried to drill with 2' open hole
265	273	70% sand, 30% silt, sand is mostly fine; caves at 2' open hole
273	300	20% clay and 80% sand which is finer; hole will stay open for 5'
300	313	20% silt and 80% sand; caves at 4'
313	318	15% silt, 30% gravel and 55% sand, sand is fine to coarse
318	325	20% silt, 20% sand, 60% gravel and boulders; gravel and boulders stuck together with a light colored silt or clay, a few gravel showed a lime coating

Driller's log of 699-40-62 cont

Depth (ft) From	To	Description
325	330	10% silt, 40% sand, 50% gravel; sand is mostly fine and very light color, gravel is 10% basalt and 90% others, very little gravel over 1"
330	332	10% silt, 60% gravel, 30% sand; gravel is pea gravel and sand is fine, could not drill over 6" open hole
332	342	30% silt, 40% gravel, 30% sand; gravel is larger and stuck together with very light colored silt or clay, hole will stay open
342	344	25% sand, 60% gravel, 15% silt; gravel is pea gravel, hole stays open 8"
344	355	60% gravel, 30% sand, 10% silt; can drill 2' open hole, gravel getting larger
355	360	60% gravel, 25% sand, 15% silt; gravel mostly fine, hole will stay open 3'
360	366	60% gravel, 25% sand, 15% silt; gravel coarse, hole will stay open 2'
366	370	30% gravel, 20% silt, 50% sand; sand is fine and comes in when drilling, hole will stay open 2'
370	374	20% gravel, 20% silt, 60% sand which is light color and mostly fine, hole stays open for 3', fine gravel caves in when open hole is bailed clean
374	375	85% clay, 15% coarse sand
375	384	100% clay, light brown with light gray and dark brown streaks

Driller's log of 699-41-23 (N040692, W022876) Hanford Wells, 1973

Land surface altitude[1] 465 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand, rocks and boulders
10	19	basalt rocks and boulders
19	20	basalt and boulders
20	30	basalt rocks and boulders
30	33	basalt, rocks, and boulders, and fine black sand
33	39	basalt and black sand; basalt, rocks and boulders and fine black sand
39	43	fine black and white sand; basalt, rocks and boulders and fine black sand
43	63	basalt, rocks and fine sand
63	65	gravel and rocks; basalt, rocks and fine sand
65	75	sand, rocks, and boulders and basalt
75	85	coarse sand, rocks and basalt; sand, rocks, boulders and basalt and coarse sand
85	95	gravel and rocks
95	101	fine sand, fine gravel, sand and silt
101	110	sand and gravel
110	120	coarse sand, gravel and basalt

Driller's log of 699-42-12 (N042474, W011725) Hanford Wells, 1973

Land surface altitude[1] 512 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand
10	18	gravel-cobbles
18	19	no record
19	20	gravel-small cobbles
20	27	cemented gravel
27	31	gravel-cobbles
31	37	gravel
37	48	gravel-cobbles
48	56	sand-gravel
56	68	black coarse sand
68	80	black-basalt-sand
80	85	small gravel
85	88	black basalt, sand and gravel
88	90	black basalt, sand and mixed gravel
90	98	black sand-small mixed gravel
98	115	clean mixed sand
115	130	sand-small gravel
130	140	layers of sand and cemented gravel
140	142	cemented gravel
142	158	cemented sand
158	160	sand-gravel-softer
160	170	cemented sand and gravel
170	175	softer sand and gravel
175	182	clean gravel
182	185	sand and gravel
185	190	cemented sand and gravel
190	192	no record
192	197	sand and small gravel
197	200	sand and gravel
200	205	cemented sand
205	210	sand, gravel and silt
210	223	sand-silt
223	235	sand-silt (conglomerate)
235	245	sand-silt-gravel (conglomerate)
245	250	conglomerate (more clay)
250	275	conglomerate
275	285	brown clay
285	328	blue clay
328	340	basalt
340	350	basalt-very hard

Driller's log of 699-42-42[1] (N041992, W042063) Hanford Wells 1973

Land surface altitude[2] 600 feet msl

1. Previously 42-39
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	blow sand, top soil
5	10	sand-layers of gravel
10	20	sand-gravel
20	40	sand-caves
40	70	sand-some silt-caves
70	115	sand, very little silt
115	120	coarser sand, some silt
120	130	coarse sand-small gravel, some silt
130	147	gravel
147	188	pure gravel-caves
188	190	3' gravel-2' heavy silt-small gravel, caliche
190	205	heavy silt with small chips of basalt and caliche
205	210	2' heavy silt and 3' gravel* *formation is a conglomerate of sand, silt and gravel
210	218	silt and gravel-sand*
218	240	conglomeration sand-gravel-silt
240	245	2' conglomeration, 3' lava ash? or bluish silt?
245	250	lava ash?-bluish silt or shale? fine basalt chips and gravel up to 1"
250	260	shale with basalt and heavy quartzite-small gravel
260	265	shale with basalt and heavy quartzite-small gravel-found 2 pieces of wood. This formation has a layer of shale, then a layer of gravel-shale is black wet-gray when dried.
265	270	2' above-3' sand-gravel
270	275	2' sand-gravel-3' conglomeration
275	280	conglomeration
280	290	black mud-gravel basalt-sand
290	295	basalt-gravel
295	300	rotten basalt gravel-looks like cinders-very porous
300	305	4' above-1' basalt
305	314	basalt

Driller's log of 699-43-42 (N043049, W041716) Hanford Wells, 1973

Land surface altitude[1] 562 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	sand and cobbles
10	30	sand and gravel to 4"
30	92	sand
92	120	cobbles
120	150	sand, gravel and cobbles
150	154	sand, gravel and some clay

Driller's log of 699-43-88[1] (N043174, W088400) Hanford Wells, 1973

Land surface altitude[2] 642 feet msl

1. Previously 43-88.5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	10	sandy loam
10	24	silt, sand, and clay
24.5	27.5	silt, sand, clay and gravel
27.5	33	silt, sand, and clay
33	48	sand, silt, and some clay
48	52	gravel, boulders, and silt
52	68	sand, gravel, and silt, dark brown
68	70	sand, gravel, and silt, light brown
70	83	fine sand, light brown silt, and gravel
83	87	fine sand and silt
87	100	sand, silt, and gravel
100	105	all sand and silt
105	110	light brown silt, sand, and some gravel
110	140	fine sand, and brown silt
140	142	sand, silt, and gravel
142	143	sand and gravel
143	147	sand, gravel, and silt
147	148	sand, gravel, boulders, and clay
148	152	sand, gravel, and clay
152	162	sand, clay and gravel
162	167	sand, gravel, silt, and clay
167	175	sand, gravel, and clay
175	186	sand, clay, and gravel
186	190	fine sand and fine gravel
190	196	fine sand, gravel, and clay
196	203	sand, gravel, clay, and silt

Driller's log of 699-43-89[1] (N043200, W088500) Hanford Wells, 1973

Land surface altitude[2] 642 feet msl

1. Previously U.S.G.S. no. 13, 43.0-88.5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	13	recent alluvium
13	29	silt and fine sand
29	44	silt, clay, and sand
44	72	sand and gravel
72	97	sand, gravel, and silt
97	112	sand and silt
112	140	fine and medium sand
140	245	sand and silty gravel
245	281	sand with gravel and silt
281	293	sand and gravel
293	296	gravel, granule to boulder size
296	300	medium and coarse sand
300	307	granule to cobble size gravel

Driller's log of 699-43-89A

Depth (ft) From	To	Description
0	10	sandy loam
10	45	sand, silt, and clay
45	50	sand, gravel, and silt
50	52	sand, gravel, silt, and boulders
52	83	sand, silt, and gravel
83	87	sand and silt
87	100	sand, silt, and gravel
100	103	sand and silt
103	110	sand, silt, and gravel
110	135	sand and silt
135	142	sand, silt, and gravel
142	143	sand and gravel
143	147	sand, gravel, and silt
147	148	sand, gravel, boulders, and clay
148	162	sand, clay, and gravel
162	167	sand, gravel, silt, and clay
167	186	sand, gravel, and clay
186	190	fine sand and gravel
190	196	fine sand, gravel, and clay
196	203	sand, gravel, clay, and silt

Driller's log of 699-43-104 (N042979, W104298) Hanford Wells, 1973

Land surface altitude[1] 764 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	silt
4	10	basalt gravel
10	25	basalt
25	120	basalt gravel
120	150	brown sandy clay with gravel
150	162	sandy conglomerate
162	180	sand and gravel paritcles
180	185	sand and gravel cemented
185	191	sand, gravel cemented very hard
191	211	cemented sand and gravel-gray
211	232	coarse sand and gravel
232	245	clean gravel and sand
245	267	sand, gravel, silt
267	270	sand and gravel, clean
270	275	sand and gravel with silt
275	295	sand and gravel, clean
295	304	clean sand and gravel
304	315	sandy clay and gravel
315	320	sand-gravel-silt-loose
320	330	yellow clay and gravel
330	335	yellow clay and gravel hard
335	347	yellow clay-basalt gravel
347	350	brown sandy clay and basalt gravel
350	355	green sandy clay and basalt gravel
355	370	green caly and mixed gravel
370	378	hard rock-black and some green
378	380	mixed gravel and clay
380	390	basalt cuttings-less clay
390	396	basalt cuttings
396	420	basalt
420	425	gray clay and basalt particles; hit clay at 424'
425	430	gray clay-basalt particles
430	450	gray clay-sand particles
450	455	runny sand and little clay
455	460	soapstone float
460	464	soapstone float, basalt particles

Driller's log of 699-44-64 (N044053, W063751) Hanford Wells, 1973

Land surface altitude[1] 724 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	32	gravel is compact and dry with occasional cobbles; large boulders at 9'
32	35	1 large boulder or series of boulders; gravel-boulder
35	40	gravel-boulders
40	48	gravel
48	50	pea gravel to 2", slightly more clay and dirt in gravel
50	55	sand and gravel, clay
55	60	mostly gravel, some sand
60	70	gravel, sand and clay
70	80	sand and clay
80	95	sand
95	104	sand-few gravels
104	113	sand-coarse
113	115	medium sand
115	120	fine sand
120	125	sand, dirt
125	130	fine sand
130	140	sand and clay
140	160	coarse sand and gravel
160	170	sand and clay
170	175	sand
175	180	sand-compact
180	190	sand and clay
190	215	coarse sand
215	225	sand, medium to fine
225	230	medium sand
230	235	medium to fine sand
235	245	fine sand
245	250	medium sand
250	260	medium to fine sand
260	265	sand and gravel
265	270	gravel up to 4"; gravel is large and compact
270	275	gravel, pea to 4"; gravel is large and compact
275	285	gravel, up to 4" and tight; large rocks 282'-286'
285	290	gravel and clay; gravel large and light, occasional boulder
290	295	gravel, large and light, occasional boulder
295	300	gravel, large and compact
300	315	gravel and clay; gravel up to 4" and tight
315	320	gravel, large and compact
320	335	gravel and clay; gravel to 4"
335	354	gravel and sand; most gravel very large up to 6"
354	355	smaller gravel and more sand
355	363	sand
363	365	blue clay
365	375	blue clay and gravel

Driller's log of 699-44-64 cont

Depth (ft) From	To	Description
375	380	sand, gravel, and clay
380	390	gravel, large and tight
390	395	gravel and sand
395	400	coarse gravel
400	405	gravel and basalt
405	410	sand, gravel, and basalt
410	420	no record
420	425	medium basalt gravel
425	430	heavy gravel
430	435	basalt and gravel; this conglomerate drills just like basalt
435	442	sand and basalt
442	452	basalt

Driller's oog of 699-45-42[1] (N045274, W042099) Hanford Wells, 1973

Land surface altitude[2] 575 feet msl

1. Previously 46-43, 46-42.5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	15	sand and boulders
15	25	boulders
25	34	black sand and gravel
34	35	coarse black sand
35	50	coarse black sand and gravel-small
50	60	sand and gravel with some clay
60	85	black sand and gravel with some clay
85	90	gray sand with some clay
90	115	sand and silt
115	120	sand, gravel, and silt
120	125	sand and gravel
125	132	boulders
132	135	gray sand and silt
135	140	gray sand and boulders
140	141	coarse gravel and boulders
141	143	gray sand and gravel
143	145	gray sand and boulders
145	157	gray sand and coarse gravel
157	160	sand, clay, and gravel
160	165	sand and quite a lot of clay
165	175	sand and a lot of red clay
175	185	Volcanic ash
185	189	volcanic ash and rock
189	190	volcanic ash and basalt
190	195	black basalt

Driller's log of 699-45-69[1] (N045003, W069428) Hanford Wells, 1973

Land surface altitude[2] 723 feet msl

1. Previously 45-69-5, 45-70
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	blow sand and gravel at 2'
5	8	gravel
8	16	black basalt sand and rocks
16	22	black sand and gravel
22	40	sandy clay -- lots of clay
40	48	black basalt gravel and then more clay
48	50	sandy clay and basalt gravel
50	68	sandy clay - basalt sand
68	70	black and white sand -- caves
70	75	black and white sand, basalt, and very little clay
75	98	black and white sand, basalt and more clay as I go down
98	100	sandy clay and small boulders
100	105	sandy clay and small gravel
105	125	sandy clay
125	135	clay, sand and 30% gravel
135	140	clay, sand and 60% gravel-basalt
140	148	60% gravel, shale and sand
148	150	75% basalt rock, sand and shale
150	158	shale, fine sand and basalt
158	162	75% gravel, shale and sand
162	167	gravel, shale, and sand
167	175	basalt rock (shale or volcanic sand, mud)
175	185	sand and shale (black and white), small gravel
185	187	hard basalt rocks, sand and gravel
187	196	basalt rock, gravel, black and white sand, and shale
196	209	black basalt rock -- various colors of gravel, black and white sand and shale binder
209	222	black basalt rock, gravel -- all colors, black and white sand with a fine gray sand, shale as binder
222	225	black basalt rock, gravel and black and white sand with shale and clay binder
225	245	lots of clay, gray sand and about 10% gravel; at 240' bailed out some steel chips that look like drive shoe
245	255	gray sand, clay, and 50% gravel
255	267	lots of clay, 50% gravel -- all colors, sand and basalt
267	280	lots of clay, 50% gravel -- all colors, fine gray sand and coarse sand
280	290	clay, sand and 50% gravel still drilling on shoe; lots of metal
290	292	lots of clay, sand and 50% gravel
292	300	lots of clay, gray sand, and 20% gravel
300	302	clay, gray sand, and large gravel; at 302' hit a bed of boulders - pieces
302	305	fine gravel, lots of clay and sand
305	310	lots of clay and gray sand
310	315	lots of clay, sand-gray and fine gravel

Driller's log of 699-45-69 cont

Depth (ft) From	To	Description
315	318	clay, sand, and 50% coarse sand and gravel
318	335	lots of clay, sand and very little gravel
335	338	greenish gray sand, and gravel
338	340	greenish gray sand and medium to fine gravel layers of clay in this formation from 338'-344'
340	343	clay, sand, and gravel
343	355	sand, fine gravel, and clay binder
355	368	sand, clay, and gravel

Driller's log of 699-46-21[1] (N046093, W020629) Hanford Wells, 1973

Land surface altitude[2] 520 feet msl

1. Previously 45-20, redrill
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	3	gravel, boulders
3	25	boulders
25	30	sand, gravel, boulders
30	37	sand, gravel
37	45	no record, probably sand, gravel
45	57	sand, and gravel
57	79	gravel
79	124	clay
124	161	gravel
161	181	boulders, gravel
181	196	boulders, gravel, silt
196	265	sand, silt, gravel; sand comes in hole overnight from 246' on
265	325	clay
325	328	blue clay
328	333	green clay and shale, very sticky to drill, has pieces of rock in it
333	337	sand, gravel, and clay

Driller's log of 699-46-21[1]

1. Previously 45-20, original well; (drilled 6-25-55 to 7-20-55)
2. Cable tool rig,using bentonite

Depth (ft) From	To	Description
0	26	boulders
26	35	gravel
35	42	sand, gravel
42	53	gravel
53	65	sand, gravel
65	82	sand
82	100	brown clay
100	110	clay
110	146	cemented gravel
146	150	sand, gravel

Driller's log of 699-47-35[1] (N046860, W034659) Hanford Wells, 1973

Land surface altitude[2] 474 feet msl

1. Previously 46-34
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	15	boulders and sand
15	20	boulders and gravel
20	25	coarse gravel and black sand
25	27	boulders
27	30	black sand and boulders
30	38	boulders and coarse gravel
38	55	sandstone, silt, some clay; or sand, silt and clay
55	60	sand and silt
60	65	coarse gravel, little fine sand
65	75	coarse gravel, little fine sand and silt
75	82	boulders, sand, gravel and silt; boulders at 77
82	85	cement gravel
85	95	cobbles, gravel, and sand
95	100	no record, probably cobbles,gravel and sand
100	102'6"	cobbles, gravel and sand
102'6"	107	basalt

Driller's log of 699-47-35B (N046917, W034694)[1]

Land surface altitude[1] 477 feet msl

1. Obtained from personal communication with Roy Gephart, 11-20-75
2. Air rotary drill

Depth (ft) From	To	Description
0	5	sand; fine to very fine
5	10	gravel, sandy; medium pebbles with medium to coarse sand
10	15	gravel; pebbles and small cobbles
15	20	gravel; pebbles and cobbles with medium sand
20	25	sand, gravelly; coarse sand with small to medium pebbles
25	31	gravel; pebbles and cobbles with some coarse sand
31	32	boulder
32	35	sand; very fine to medium sand with small pebbles, light tan
35	39	mud; silt and very fine sand
39	41	sand, muddy; very fine sand and silt, brown
41	46	sand; muddy
46	55	sand, muddy, slightly less
55	58	sand
58	60	gravel
60	65	sand, gravelly
65	70	gravel, sandy; medium to coarse pebbles with medium sand
70	95	gravel; pebbles with medium to coarse sand
95	100	gravel, sandy; pebbles with fine to medium sand
100	105	sand, gravelly; may be 1-2' of clay above basalt, unable to sample
105	108	basalt

Drilling log of 699-47-46 (N047000, W046000) Hanford Wells, 1973

Land surface altitude[1] 578 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	1	silty sand
1	5	cobbles
5	20	gravel and cobbles
20	25	1" gravel
25	30	gravel
30	40	brown clay and gravel
40	45	gravel
45	48	3/4"-1" gravel
48	50	cobble and gravel 2"-3"
50	55	no record but sampled, probably cobbles and gravel
55	70	sand, gravel, and cobble 3"
70	75	cobbles 1"-6", gravel
75	100	cobble, gravel and sand 3"-5"; had to use some sand to pick up core
100	103	cobble, sand and gravel; had to use some sand to pick up core
103	105	1" gravel
105	110	gray gravel
110	120	gravel
120	135	sand, gravel to 2 to 3"
135	140	sand and gravel 1 to 2"
140	150	cobble 6" to 8"
150	155	sand, gravel 2 to 4"
155	160	gravel 2 to 3"
160	165	no record, probably gravel
165	174	brown sand, gravel
174	175	rotten basalt
175	180	red volcanic rock
180	185	basalt, gray rock; rock started to get harder at 181' and getting harder
185	190	red volcanic rock, broken; sluffing some
190	195	basalt and red lava or volcanic rock
195	197	no record
197	207	basalt

Driller's log of 699-47-51[1] (N047481, W050989) Hanford Wells, 1973

Land surface altitude[2] 581 feet msl

1. Previously 699-48-51
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	10	cobbles
10	15	boulders and gravel
15	25	heavy gravel
25	40	gravel
40	50	gravel; going into just a little finer gravel
50	65	heavy gravel; hitting some big rocks in this gravel
65	85	boulders
85	90	boulders; heavy gravel and scattered boulders
90	95	gravel
95	100	gravel, boulders, big boulders now,
100	110	boulders
110	115	coarse gravel
115	120	gravel
120	125	gravel and boulders
125	130	gravel
130	135	gravel and boulders
135	140	cobbles and coarse gravel
140	145	gravel and cobbles
145	150	boulders
150	157	no record
157	160	record unclear, probably basalt
160	165	hard basalt
165	167	no record, probably hard basalt

Driller's log of 699-47-60[1] (N047137, W060266) Hanford Wells, 1973

Land surface altitude[2] 648 feet msl

1. Previously 47.5-60.5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	top soil and black sand
5	10	gravel, sand, and mud basalt
10	17	gravel, sand, and basalt mud, caves badly from 10' on down
17	20	black basalt rock and sand; caves badly from 10' on down
20	21	black sand
21	31	black sand, basalt and gravel; used top soil as binder
31	45	basalt rock, gravel and sand; dirt binder, top soil put in hole
45	49	basalt rock, gravel and sand
49	50	fine to medium coarse black and white sand; caves badly
50	55	fine to medium coarse black and white sand and some gravel; caves badly
55	60	fine, black basalt sand or powder
60	65	black and white sand and some clay
65	67	black and white sand, gravel and little clay
67	73	sandy clay and gravel (all colors)
73	75	black and white sand, clay and small gravel
75	80	sandy clay, basalt and gravels
80	81	coarse gravel
81	82	gravel, basalt and some clay
82	85	coarse basalt gravel, sand and clay
85	86	gravel; caves
86	103	fine to coarse basalt gravel-- mud binder; 82'-103' gravel; fine to coarse, black and white sand and some clay, caves badly
103	125	fine to medium basalt gravel, fine to coarse black and white sand and very little mud binder
125	146	basalt gravel, black and white sand and very little mud binder
146	155	basalt gravel, black and white sand and more mud
155	158	basalt gravel, black and white sand and less mud
158	162	basalt gravel, black and white sand and mud binder
162	167	fine black sand, very little binder
167	170	some clay with black and white sand and fine basalt gravel
170	173	fine black sand and very little clay
173	190	basalt gravel, black and white sand and very little mud
190	195	basalt gravel, black and white sand and more mud
195	203	medium basalt gravel, black and white sand and lots of mud
203	206	fine black sand; caves
206	210	some coarse gravel, black and white sand and very little mud; caves
210	215	fine gray sand and very little mud; caves
215	218	gravel, sand and very little mud; caves
218	225	black and gray sand and no mud; caves
225	240	medium gravel, sand and very little mud; black and white sand, basalt gravel and other gravel--all colors; a little clay at 235'

Driller's log of 699-47-60 cont

Depth (ft) From	To	Description
240	244	gravel and clay
244	245	sand and less clay
245	252	sand, gravel and some clay; caves
252	265	lots of gravel, all colors, and sand with medium amount of clay; formation will cave
265	270	fine gravel, clay and coarse to fine sand; fine gray water sand; caves in
270	275	gray sand, gravel and clay
275	280	basalt gravel, small gravel--all colors, gray sand and clay
280	282	slight trace of clay and pure fine sand
282	287	basalt rock (solid) steel in the 285' sample is hard facing that chipped off of bit

Driller's log of 699-48-71 (N047838, W070660) Hanford Wells, 1973

Land surface altitude[1] 686 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil, gravel
5	27	boulders, gravel; trouble keeping casing straight so pulled it several times
27	28	sand, silt, some gravel
28	40	sand, silt; patches of silt and then pure sand
40	67	sand; black and white sand at 42'
67	68	sand, gravel, cobbles
68	78	cobbles, sand, gravel
78	90	sand, gravel, cobbles
90	92	cemented gravel, silt
92	116	sand, silt, and gravel
116	138	sand, silt, gravel; boulders
138	152	sand; silt, gravel; boulders, silt runs in layers
152	170	sand, gravel, boulders-no silt
170	280	sand, silt, gravel; picked up some silt with gravel at 170', could be cemented gravel
280	295	sand, gravel; sand comes in, can get 1' open hole before hole caves
295	303	sand, silt, gravel
303	305	going out of gravel at 303' into sand and silt

Driller's log of 699-49-28[1] (N049288, W028100) Hanford Wells 1973

Land surface altitude 533 feet msl

1. Previously hole GM-6
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig?

Depth (ft) From	To	Description
0	1	sand
1	5	cobbles, gravel and sand
5	10	sand, gravel and cobbles
10	19	sand and some gravel
19	20	sand
20	25	sand with some gravel
25	40	black sand and 3½" gravel
40	46	sand and gravel
46	65	sand, gravel and cobbles
65	85	sand and silt
85	90	sand, fine brown
90	110	brown, fine sand comes in hole while drilling
110	111	sand and traces of clay
111	130	fine brown sand, comes in pipe when drilling
130	145	fine brown sand
145	150	sand and silt
150	154	brown sand, silt and 2½"-gravel comes in the pipe when drilling
154	155	no record, probably sand, silt and gravel
155	160	sand and gravel
160	162	sand
162	165	clay with sand and some gravel
165	177	clay and fine sand

Driller's log of 699-49-48[1] (N049367, W048347) Hanford Wells, 1973

Land surface altitude[2] 550 feet msl

1. Previously 50-48.5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand, silt and boulders
5	15	sand, gravel and boulders
15	20	sand, coarse gravel
20	35	coarse gravel and sand
35	40	coarse gravel
40	45	gravel and cobbles
45	52	coarse gravel
52	60	cobbles, coarse gravel
60	70	small and coarse gravel
70	80	coarse sand and gravel
80	85	cobbles and gravel
85	100	cobbles, and coarse gravel
100	105	coarse gravel
105	118	cobbles and gravel
118	120	basalt and gravel
120	125	basalt
125	128	no record, probably basalt
128	153	basalt
153	156	no record, probably basalt
156	173	basalt

Driller's log of 699-49-55 (N049000, W055000) Hanford Wells, 1973

Land surface altitude[1] 528 feet mal

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	silt, sand, and cobbles 6"
5	10	gray silt, sand, gravel, and boulders; boulders kicked casing out of line, have to pull it back
7	12	boulders
12	21	gray silt and sand
21	24	got into some gravel at 21', got out of it at 24'
24	50	gray silt and sand
50	50'6"	gray clay; just got into clay at 50', ran out of clay at about 50'6"
50'6"	55	gray coarse sand and silt
55	60	gray coarse sand, silt, and gravel 2"
60	65	gray coarse sand and silt
65	70	gray silt and sand
70	80	gray sand
80	90	gray silt with some sand
90	100	gray coarse sand
100	110	gray silt, sand, and some gravel 1"
110	118	gray silt, sand, gravel, and cobbles 6"
118	123	grayish brown clay
123	130	gray coarse sand and gravel 2"
130	135	coarse sand and gravel 3"
135	136	hit heaving sand at 135'; casing hung on boulders, formation is gravel
136	137	bit shows definitly very hard rock; still some sand coming in around shoe
137	138	hard rock; can't drive past 136'; *several days of trouble and attempts to drill deeper including backfill hole with rock, and cement
138	140	lots of sluff coming under pipe
140	144	basalt; sluff coming very bad, can't get clean enough sample to tell just what it is, drills hard
144	149	gray basalt; best sample I could get since 137'

Driller's log of 699-49-57[1] (N048960, W056913) Hanford Wells, 1973

Land surface altitude[2] 551 feet msl

1. Previously 49-57-#2
2. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	3	topsoil
3	5	gravel
5	13	gravel, boulders, caves
13	25	gravel and boulders
25	30	gravel, boulders, and silt; *this is 10" hole to 30' then changed to 8" and ran 8" pipe
30	35	gravel, boulders and silt
35	65	gravel and sand
65	70	sand and gravel
70	80	sand-pure-caves
80	90	sand, some gravel
90	100	sand, some silt
100	110	fine sand and silt
110	115	fine sand and silt, gravel
115	125	gravel, sand
125	137	pure gravel
137	150	gravel, caves bad
150	160	pure gravel
160	162	gravel, sand
162	164	basalt
164	168	basalt; steel in this sample is from broken bit

Driller's log of 699-49-57[1]

1. Previously labeled 49-57-#1

Depth (ft) From	To	Description
0	5	topsoil, silt, sand, gravel 4'
5	10	big boulders and rocks
10	15	boulders, gravel and sand
15	17	big boulders, rocks
17	18	big boulders, rocks, caves
18	19	boulder sits at an angle and cannot get tools to dig into it
		*Pulled pipe-getting ready to move Northeast -15 feet

Driller's log of 699-49-79 (N048650, W079095) Hanford Wells, 1973

Land surface altitude[1] 687 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	
0	14	rocks; started to put casing in hole, it hit rock on the side and the hole caved in 12'
14	19	rocks
19	21	gray sand
21	24	black sand
24	27	gravel
27	30	fine black sand; added little topsoil to take sample at 30'
30	32	black sand
32	35	black and white sand
35	44	clay, sand, and gravel
44	45	coarse black and white sand and little gravel
45	47	fine black and white sand, little gravel and clay
47	80	sand and clay with little gravel
80	90	sand and clay with very little gravel
90	115	sand and clay; hole caved at 108'
115	118	sand, clay and rocks; hole caving at 118'
118	120	sand and gravel with little clay
120	123	sand and coarse gravel
123	125	sand and gravel
125	128	sand and little gravel; added two shovels of topsoil so that I could mix up the sand and gravel and bail it out
128	131	gray sand
131	135	sand, gravel, and rock
135	138	sand and gravel
138	148	gravel and little sand
148	153	sand and gravel; added little clay at 150' so that I could mix the sand and gravel with it so that I could bail it all out of the hole
153	155	sand
155	159	sand, gravel and rocks
159	161	fine sand-gray
161	163	sand and gravel
163	165	sand, gravel and rocks
165	166	sand and gravel; tools hang, put rocks in hole then drilled them out
166	170	sand and gravel; hole caving at 170'
170	179	sand, gravel, and rock; hole caved from 168' to 175' and from 175' to 179'
179	199	sand and little gravel and rocks; added a little clay to get gravel and rock to mix; hole caved in from 195' to 199'
199	209	sand, gravel, and rocks with some clay
209	221	sand, rocks, and some clay
221	253	sand, clay and rocks; swedged; hole caved in from 235 to 242' and at 249'
253	255	sand, clay and few rocks; hung up
255	264	sand, clay and rocks; hung up

Driller's log of 699-49-79 cont

Depth (ft) From	To	Description
264	267	sand and silty gravel; added some topsoil at 267' so I could mix the gravel up to bail
267	275	sand, gravel and little clay
275	277	sand and gravel
277	279	sand, gravel and rocks
279	283	silty sandy gravel
283	287	silty sand and gravel
287	290	sand and gravel; hole caving at 290'

Driller's log of 699-49-95[1] (N049400, W095100) Hanford Wells, 1973

Land surface altitude[2] 808 feet msl

1. Previously 1325-33-D1
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Summary of 1943 driller's log and 1948 re-entry log

Depth (ft) From	To	Description
0	5	soil
5	8	sand, some gravel
8	12	sand and coarse gravel
12	20	boulders with sand and gravel
20	70	gravel, cemented
70	86	gravel, clay, and sand
86	95	sand, clay and sandstone
95	125	sandstone
125	145	sand, loose caving
145	250	sandstone (caving 194-200)
250	288	sand, gravel, some clay
288	342	gravel, cemented
342	349	gravel, pea-sized, carrying sand and a little clay
349	365	sand and pea gravel, loose
365	391	sandstone
391	403	record unclear; "sand and pea gravel" or "sandstone"
403	429	sand and gravel
429	430	sandstone and pea gravel
430	453	sand and gravel
453	471	sandstone (washed cuttings are of quartz, feldspar, basalt, and mica; drills into greenish-brown sludge); *this interval divided as 453'-461' and 461'-471' but only one description (that above) opposite these depths in table
471	480	sandstone, hard
480	492	sandstone and pea gravel
492	512	clay, sandy, brown
512	517	sand and gravel
517	540	sand and pea gravel
		Descriptions below from 1948 re-entry log
351?	339?	sand, gravel, and silt or clay-like lumps; U.S.G.S. measurements were 334' of hole, my measurements were 351' in the dust; lost 2' when water was put on before drilling, drilled and bailed, lost 10' more
331	340	sand, gravel and silt; rocks; acts like a reduced well with top of outside casing removed; pipe broke while working

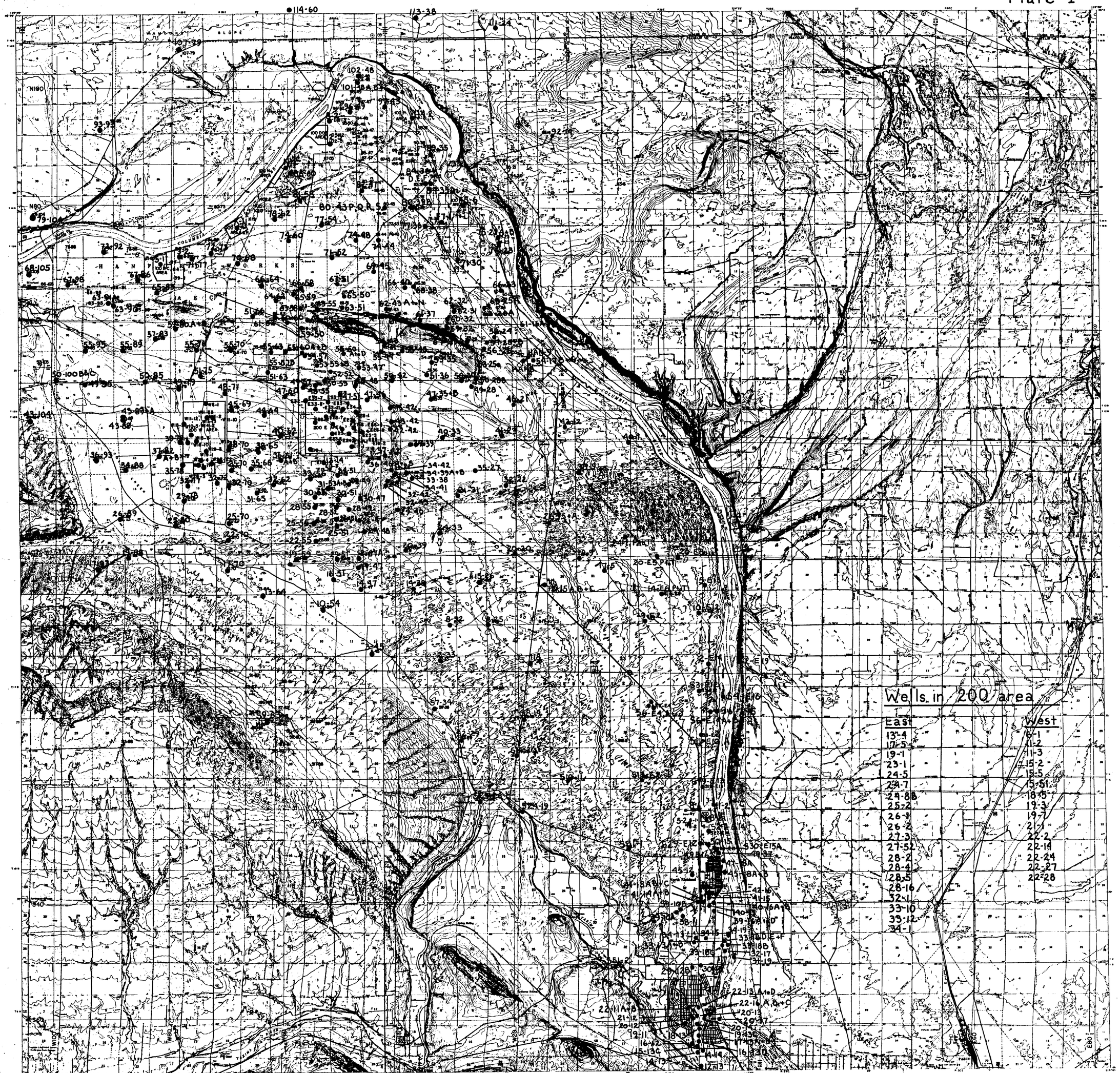
Driller's log of 699-50-28B[1] (N050299, W027510) Hanford Wells, 1973

Land surface altitude[2] 535 feet msl

1. Previously hole GM-5, and 699-50-26
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	brown sand
5	30	sand and gravel, gray, size 2"
30	35	clay, and gravel, size 2", yellow
35	75	clay and silt, brown, soft
75	80	clay and silt, brown
80	95	clay and silt, yellow
95	115	sand and silt, light yellow
115	135	sand and silt and clay, yellow
135	160	sand and silt, yellow, soft
160	165	sand and silt, soft
165	167	no record, probably sand and silt

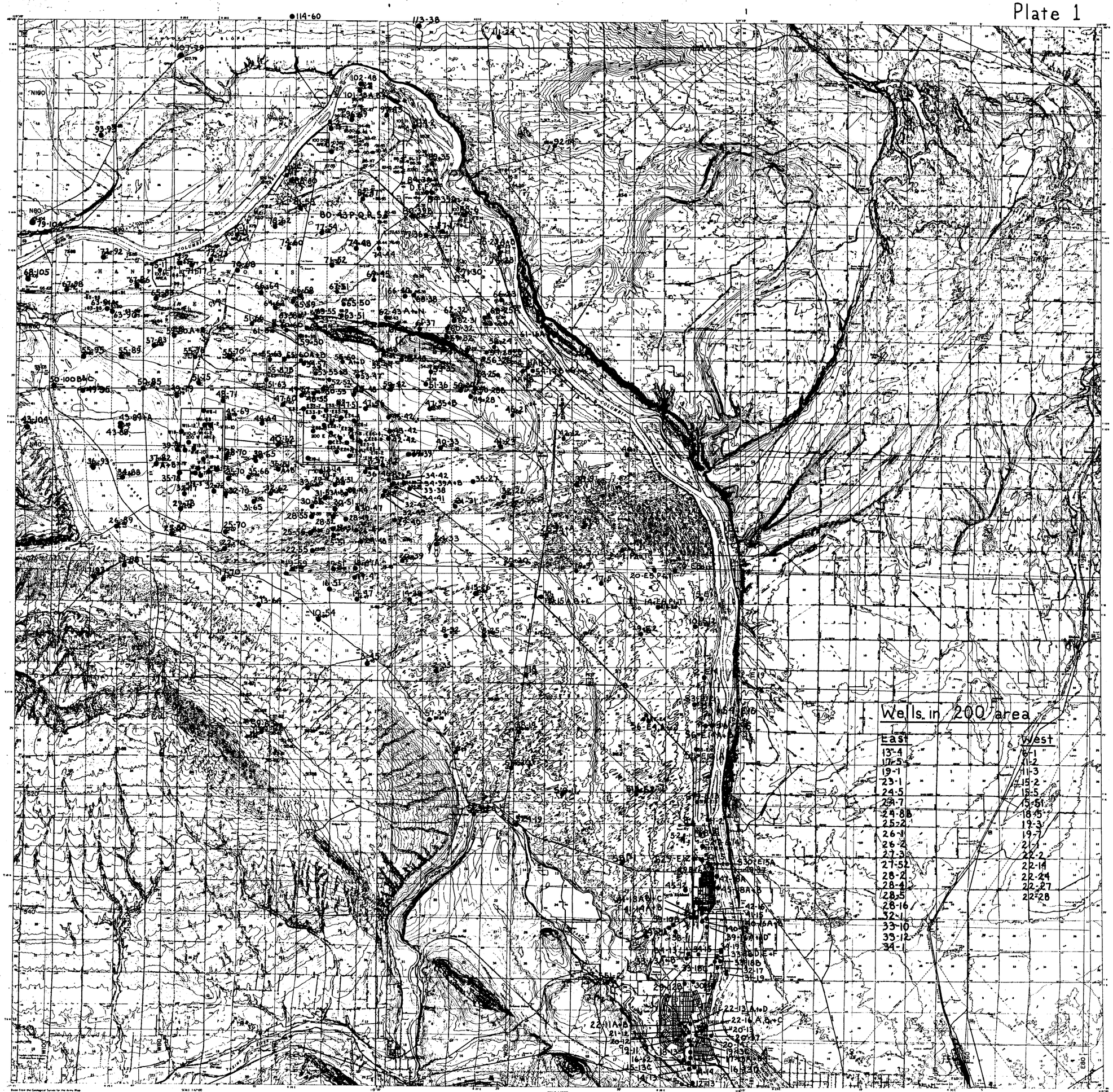
Plate 1



Well Location Map

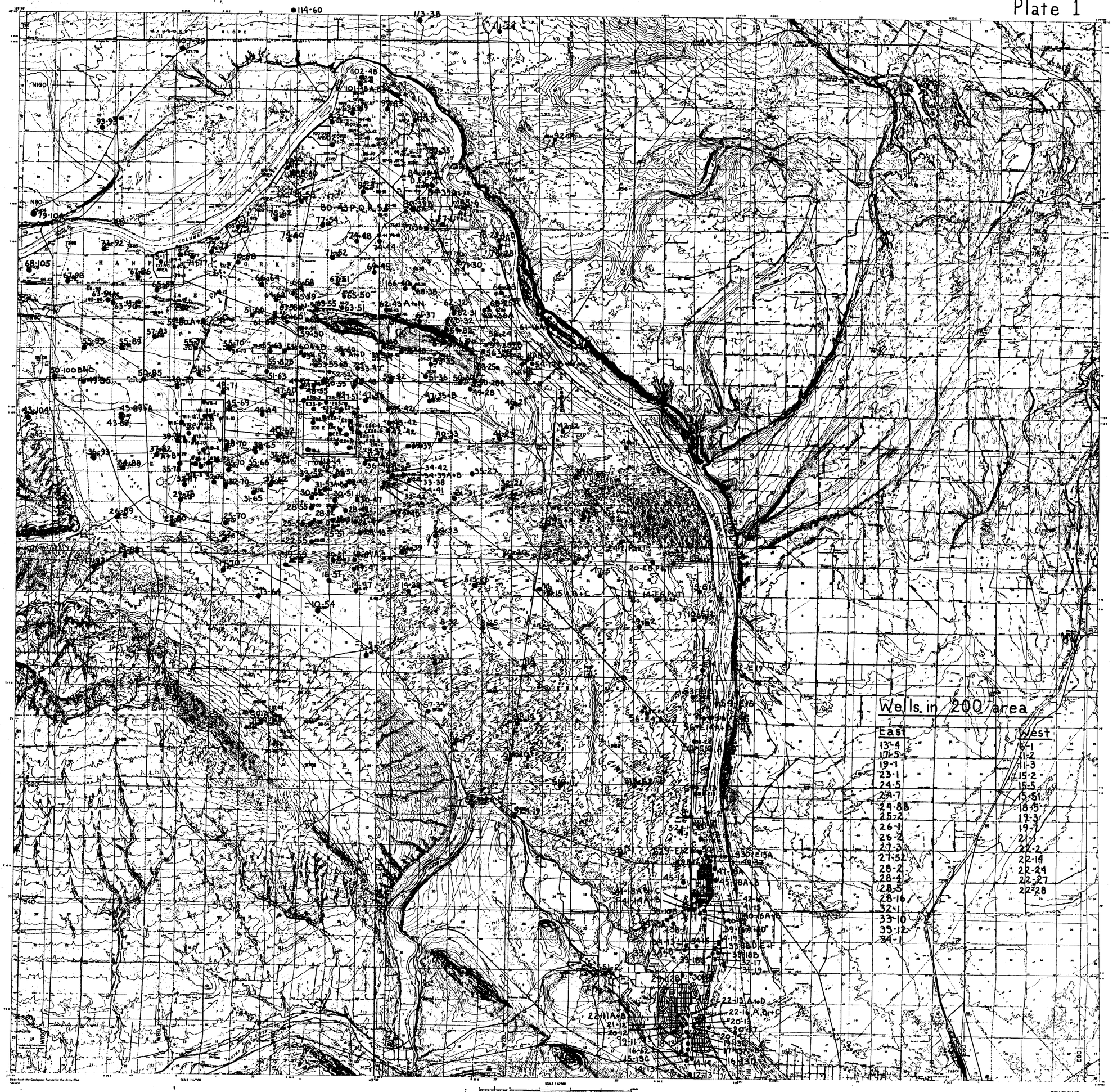
ARH-C-16

Plate 1



Well Location Map

Plate 1



Well Location Map

AEH-C-16
Vol I

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Vol. II

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Drillers' Logs of Wells in the Hanford Reservation

W. K. Summers

Geraldine Schwab

Two Volumes

January, 1977

Prepared for the U.S. Energy Research
and Development Administration
Under Contract EY-76-C-06-2130

Atlantic Richfield Hanford Company
Richland, Washington 99352

ARH-C-00016

DRILLERS' LOGS OF WELLS IN THE HANFORD RESERVATION

(Two Volumes)

VOLUME II

W. K. Summers
G. Schwab

W. K. Summers and Associates
Consultants

January 1977

This report is based on work sponsored by Atlantic Richfield Hanford Company under United States Energy Research and Development Administration Contract EY-76-C-06-2130.

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Driller's log of 699-50-30 (N050299, W029833) Hanford Wells, 1973

Land surface altitude[1] 527 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	20	rocks and boulders
20	25	little clay, rocks and boulders
25	65	clay
65	70	rocks, boulders, little sand and little clay
70	85	rocks and boulders
85	89	rocks, boulders, and little sand
89	100	clay and gravel
100	105	clay
105	110	clay and fine sand; caving when out of casing; put in 8 buckets of topsoil and clay so we could bail
110	137	fine sand; caving when out of casing
137	155	sandy clay
155	160	fine, sandy clay
160	166	sand and rocks
166	170	rocks; caving when out of casing
170	175	rocks and gravel; caving
175	177	water sand; caving
177	178	fine water sand; caving
178	191	boulders and rocks; caving
191	197	coarse sand and rocks
197	207	sand and boulders
207	220	fine black and white sand, caving
220	230	little clay and fine sand
230	245	fine white sand
245	265	sand and rocks
265	273	fine sand; caving
273	275	white sand and rocks; sand runs in
275	280	white sand, little clay and rocks, sand runs in
280	295	clay
295	300	gray sand; sand runs in
300	310	fine white sand; sand runs in
310	315	little clay, fine sand and rocks
315	330	clay, soapstone, and rocks
330	350	blue clay and rocks
350	365	blue clay
365	370	basalt sand
370	380	basalt

Driller's log of 699-50-42 (N050206, W041909) Hanford Wells, 1973

Land surface altitude[1] 465 feet msl

1. Estimated from altitude of top of casing given in Hanford files
2. Cable tool rig, using bentonite

Depth (ft) From	To	Description
0	5	boulders, sand, and gravel
5	15	gravel, boulders
15	38	gravel
38	54	clay
54	56	record unclear, probably clay
56	64'8"	cemented gravel
64'8"	77	basalt
77	80	gray basalt, brown and red rock
80	90	brown and red rock, porous
90	104	no record, probably brown and red rock
104	115	black and brown rock
115	125	black rock

Drilling log of 699-50-53[1] (N049840, W053267) Hanford Wells, 1973

Land surface altitude[2] 555 feet msl

1. Also labeled 50-54, 54-50, 241-By-13
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	silt, gravel, and cobbles
5	15	gravel and cobbles
15	30	coarse gravel up to 3"
30	37	boulders and gravel
37	47	cobbles and gravel
47	50	gravel and cobbles
50	65	cobbles and gravel
65	72	small and coarse gravel
72	75	coarse gravel
75	87	75% coarse gravel, 25% coarse sand
87	90	50% gravel, 50% sand
90	105	fine and coarse sand
105	110	80% sand, 20% small gravel
110	130	fine and coarse sand
130	143	fine and coarse sand and silt
143	147	coarse gravel and sand
147	156'6"	sand, gravel, and basalt; hard to drill just like basalt; pipe stopped at 156'6"--basalt at 156'6"
156'6"	185	basalt

Driller's log of 699-50-85[1] (N049878, W084505) Hanford Wells, 1973

Land surface altitude[2] 738 feet msl

1. Labeled 699-50-84 and 699-50-85 in driller's log
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	1	topsoil
1	9	gravel; caved from the grass and roots
9	15	gravel
15	35	boulders, gravel, sand
35	45	sand, gravel, and a littl bit of silt
45	50	60% sand, 25% gravel, 15% silt
50	55	60% gravel, 35% sand, 5% silt
55	60	60% gravel, 30% sand, 10% silt
60	65	gravel, sand, no silt; caves
65	70	granules, small gravel, sand, caliche, no silt; caves, comes back up pipe
70	75	sand, gravel, some silt, caliche
75	100	sand, some silt, caliche
100	120	caliche, sand, fine gravel
120	135	very heavy silt or clay
135	185	heavy silt
185	190	sandy silt, heavy
190	195	pure sand, very little silt
195	205	sandy silt
205	210	sand, some gravel, very little silt
210	215	some boulders, sand, some gravel, very little silt
215	230	90% gravel, sand, very little silt
230	245	60% gravel, 30% sand, 10% silt
245	260	conglomerate, gravel, silt, sand
260	275	gravel, sand, and silt
275	292	sand, gravel, little silt
292	315	conglomeration
315	323	sand, gravel, some silt; comes back up pipe for 20'
323	327	sandy muck with gravel; comes back up pipe
327	331	changed at 327 to better drilling; sand, some silt
331	341	sand, gravel, silt; comes back up pipe
341	355	sand, gravel, silt-just muck; comes back up pipe
355	365	gravel, sand and muck
365	367	muck-came in faster than I could drill it out
367	375	muck; comes back up hole 8 to 12', this formation acts like it is pinching in
375	386	muck-hole makes lots of it; muck, sand, gravel, silt; comes back up hole
386	402	muck, less gravel and coarse sand, more silt and fine sand
402	405	sand, silt, and gravel
405	410	cobbles, gravel, and sand; boulder field
410	415	cobbles, gravel, silt, and sand
415	423	gravel, boulders, sand, silt or muck
423	425	muck
425	430	muck, boulders

Driller's log of 699-50-85 cont

Depth (ft) From	To	Description
430	435	less muck, more boulders
435	437	boulders
437	441	gravel, sand, and muck
441	460	conglomeration-gravel 35%, sand 25%, silt 40%
460	465	40% silt, 35% gravel, 25% silt; making muck
465	470	50% gravel, 20% sand, 30% silt-first 2' *Note: I got a good side wall cutting of this true formation at 468'
470	475	60% gravel, 25% sand, 15% silt, 3' whitish clay
475	478	whitish clay or ash
478	480	whitish clay-for 4', very dark gray-1'; makes lots of muck
480	490	dark gray, looks like clay or rotten shale; makes lots of muck
490	497	bluish-green rotten shale, muds up badly
497	500	bluish-green shale
500	505	yellow shale
505	518	bluish green shale and silt; between 505' and 510' picked up a strata of very fine sand, cannot be over 6" to 10" thick
518	520	fine to coarse sand, small gravel
520	532	slate color mud with 50% gravel, 20% sand, 30% silt; the mud in this formation could be lava mud; this mud smells to high heavens
532	545	50% gravels and boulders, 30% sand, 20% silt
545	558	50% gravel and boulders, 25% silt of some kind; this silt when wet is greenish-blue, when dry is yellow-tan, very hard dry
558	560	50% gravel and boulders, 25% sand, 25% silt or mud
560	565	40% gravel and boulders, 35% sand, 25% silt, some wood; wood in sample jar
565	572	40% gravel and boulders, 35% sand, 25% silt, no wood
572	573	gravel, sand, silt
573	576	heavy shale or clay
576	580	gravel, sand, silt
580	585	40% gravel, 35% sand, 25% silt
585	585.5	gravel, sand, and black mud
585.5	596	basalt
596	598	hard basalt
598	600	basalt; drilled about 1' per hour

Driller's log of 699-50-100B

1. Rotary drill rig
2. ? used where record is not clear

Depth (ft) From	To	Description
0	10	sand, fine to very fine sand
10	16	sand, fine to very fine sand with medium pebbles
16	20	gravel with silt
20	28	sandy gravel; pebbles and cobbles with very fine sand and silt
28	30	very fine sand
30	35	fine to very fine sand
35	40	gravel, slightly sandy, fine sand
40	68	sandy gravel; pebbles and cobbles with very fine to medium sand
68	70	gravel cemented with calcareous silt
70	80	sandy gravel, cemented with (?) very fine to medium sand
80	90	sandy gravel, pebbles and cobbles with fine to medium sand (cemented)
90	95	no sample
95	100	sandy gravel; pebbles and cobbles with fine to medium sand (cemented)
100	110	sandy gravel; small to medium pebbles with medium to coarse sand
110	115	gravelly sand; coarse sand with small to medium pebbles
115	118	sandy gravel; small to medium pebbles with fine to coarse sand; heavy cementation zone
118	120	muddy gravel; pebbles with fine sand and silt
120	125	muddy gravel; small pebbles with fine sand and silt
125	135	muddy sandy gravel; pebbles with sand and silt
135	140	muddy gravelly sand
140	145	muddy sand; coarse black with silt
145	150	sand, well sorted, clean, very fine to medium
150	155	gravelly sand
155	165	sand, very fine to coarse
165	170	sand, very fine
170	174?	sand, fine to medium, well sorted, clean

Driller's log of 699-50-100C

1. Cable tool rig
2. ? used where difficult to read

Depth (ft) From	To	Description
0	26	no record
26	40	70% gravel to small cobbles, 30% medium sand, gray in color
40	50	50% gravel to small cobbles, 50% sand, gray
50	55	60% coarse sand, 20% gravel, 20% clay or fine sand
55	65	60% very coarse sand, 20% gravel, 20% clay
65	70	80% coarse sand, 20% pea gravel
70	74	dark brown dirt
74	75	cemented gravel 50%, coarse sand 50%
75	80	lightly cemented gravel 50%, sand and clay 50%
80	85	lightly cemented gravel to 2 inches, 50% sand and clay
85	95	50% gravel, 20% very coarse sand, 30% medium sand, lightly cemented, dark gray
95	100	70% gravel, 20% very coarse sand, 10% medium sand, not cemented
100	105	60% gravel, 20% coarse sand, 20% medium sand
105	110	70% gravel, cemented, 30% sand; dark gray
110	115	65% gravel, 35% medium sand; dark gray
115	120	70% gravel, 30% sand; dark gray
120	125	60% medium sand, 40% cemented gravel
125	140	50% clay, 30% very coarse sand, 20% fine sand; tan
140	145	40% clay, 40% pea gravels to 1 inch, 20% medium fine sand; tan
145	150	60% gravel, 10% clay, 30% medium sand; tan
150	160	60% gravel, 20% very coarse sand, 20% medium fine sand; gray
160	170	tan silt
170	180	silt 80% very fine sand, tan
180	185	90% very fine sand, 10% clay, gray
185	190	60% coarse sand, 40% medium fine
190	195	70% very coarse sand, 30% silt
195	200	70% gravel, 30% medium sand
200	210	50% coarse sand, 50% clay
210	220	100% clay, tan
220	225	50% large cobbles and gravel, 30% clay, 20% medium sand, tan
225	230	cobble, coarse gravel and very coarse sand, 10% medium sand
230	235	50% gravel and cobbles, 50% coarse sand, gray
235	240	? 50% gravel and cobbles, 50% coarse sand, gray
240	245	50% gravel, 30% very coarse sand, 20% medium sand
245	250	boulders
250	255	cobbles, very coarse sand
255	260	sand and gravel
260	265	50% gravel to 3", 30% very coarse sand, 20% medium sand, tan
265	270	boulders, gravel
270	275	boulders,
275	285	70% cobbles and gravel cemented with brown clay-like material
285	290	70% cobbles and gravel, 30% dark brown clay-like material
290	295	70% gravel, 20% medium fine sand, 10% clay
295	305	60% cobbles and gravel, 20% medium sand, 20% hard brown clay, cemented
305	310	cobbles and gravel 50%, 30% very fine white sand, 20% brown clay
310	320	60% gravel, 40% hard clay-like with white sand

Driller's log of 699-50-100C cont

Depth (ft) From	To	Description
320	325	40% gravel, 60% hard clay-like with white sand
325	330	90% brown clay-like material with sand, 10% gravel
330	335	50% very coarse sand, 50% brown clay-like material and white sand * driller's note: found a mistake in well depth, had the hole 8 feet too deep
328	340	60% gravel, 20% medium sand, 20% very fine sand and clay-like material
340	342	? no record, bailed white sand out of hole

Driller's log of 699-51-36[1] (N051236, W035886) Hanford Wells, 1973

Land surface altitude[2] 515 feet msl

1. Previously hole GM-7
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	6	black sand
6	17	black sand and gravel and cobbles
17	20	sand with some gravel
20	30	sand and gravel and boulders and cobbles
30	39	sand and gravel and cobbles and boulders
39	50	red broken rock
50	57	rock basalt
57	63	basalt

Driller's log of 699-51-63 (N051449, W063060) Hanford Wells, 1973

Land surface altitude[1] 570 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig?

Depth (ft) From	To	Description
0	6"	topsoil
6"	5	gravel, silt, boulders
5	17	boulders, gravel; caves; hit a large boulder at 5"
17	22	gravel, boulders, silt
22	26	gravel, fine sand
26	35	gravel, sand; caves
35	40	boulders, gravel, sand; caves
40	50	boulders, sand, gravel; caves
50	55	boulders, gravel, black sand; caves
55	60	black sand, caves
60	65	black sand, gravel; caves
65	75	gravel, black sand; caves
75	80	gravel; caves
80	91	pure gravel; caves
91	142	gravel; caves
142	151	pure gravel; caves
151	167	gravel, sand; caves
167	170	gravel; caves
170	182	gravel, sand; caves
		*Hung up, looked like I lost the shoe, pulled pipe, hole filled back up to 17'
17	22	no record
22	25	big boulder
25	45	boulders, gravel
45	50	boulders, gravel, some silt
50	65	old hole; hit old hole at 50', old hole caved in at 65'
65	70	gravel, boulders
70	80	gravel, cavings; caves
80	87	gravel
87	120	gravel, boulders
120	142	gravel, boulders; caves
142	144	gravel, boulders; very bad cave
144	157	boulders, gravel; caves
157	173	gravel, boulders; caves
173	181	boulders, gravel, some silt; caves
181	183	boulders; drills slow and hard
183	184.5	either large boulder bed or basalt; from formation and color of bailings, I think it is basalt

Driller's log of 699-51-75 (N050667, W075151) Hanford Wells, 1973

Land surface altitude[1] 640 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	boulders, gravel and sand
10	42	boulders, gravel
42	50	cobbles, boulders
50	60	boulders, gravel
60	70	cobbles, gravel, boulders
70	95	cobbles, gravel
95	110	sand, gravel, and cobbles
110	125	cobbles, gravel
125	155	gravel, sand, silt
155	165	cobbles, gravel, sand, silt
165	220	gravel, sand silt; 212' sandstone, hard formation
220	225	cobbles, gravel, sand
225	230	gravel, sand
230	235	coarse sand, little gravel
235	240	gravel, sand
240	250	sand, gravel
250	255	sand, gravel, cobbles
255	266	gravel, sand
266	270	sand, little silt; sand and silt at 266', no gravel
270	275	sand, gravel, silt
275	280	sand, gravel
280	292	sand, cobbles, gravel
292	300	coarse gravel, fine sand
300	315	small and coarse gravel, fine sand
315	332	coarse gravel and sand
332	335	sand, silt, gravel
335	340	sand, gravel
340	347	sand, gravel, cobbles
347	355	sand, gravel, basalt, cobbles
355	362	sand and gravel
362	365	sand, silt, gravel
365	372	sand, gravel, basalt
372	375	sand, gravel, basalt, cobbles
375	382	basalt; pipe stopped at 376'8"

Driller's log of 699-52-52[1] (N051890, W052377)

Land surface altitude[2] 558 feet msl

1. Labeled D.J.B.-5
2. Personal communication with Rod Ledgerwood, 5-13-75
3. Cable tool rig

Depth (ft) From	To	Description
0	10	coarse gravel with silt
10	20	coarse sand, black
20	65	coarse gravel with silty sand
65	80	? no record
80	145	gravel, sand, silty
145	152	basalt

Driller's log of 699-53-25

1. Cable tool rig

Depth (ft) From	To	Description
0	15	no record
15	30	sand, and silt
30	40	sand and gravel
40	122	sand and silt
122	135	sand and gravel; hit cobble gravel at 122'
135	140	cemented gravel
140	143	sand and gravel
143	159	fine sand and gravel; sand comes in casing when driving
159	166	sand and gravel
166?	170?	fine packed sand (depth numbers marked over, hard to read)
170?	174	packed sand and gravel

Driller's log of 699-53-35[1] (N053199, W034763) Hanford Wells

Land surface altitude[2] 529 feet msl

1. Previously hole GM-4
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	fine, silty sand
4	5	fine black and brown sand
5	18	brown sand, fine
18	25	sand and gravel
25	40	coarse sand and some gravel
40	43	silt
43	45	fine brown sandy silt
45	50	sandy silt
50	53	silt
53	60	fine sand
60	70	sand, and some 1"-gravel
70	76	sand and 3/4"-to 4"-gravel
76	87	fine sand and gravel and cobbles
87	95	brown sand and gravel, coarse gravel
95	105	brown sand and 2" gravel and some silt
105	112	brown sand and coarse gravel; at 109' there is a layer of cobbles
112	123	sand and gravel
123	138	brown clay with some sand
138	148	gray clay with some sand

Driller's log of 699-53-47[1] (N052518, W047463) Hanford Wells, 1973

Land surface altitude[2] 436 feet msl

1. Also labeled 699-52-47
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig?

Depth (ft) From	To	Description
0	3	cobbles in dirt
3	13	gravel, cobbles
13	20	boulder, sand and gravel
20	30	sand, gravel, boulders
30	34	boulders; very hard rock could be boulders or fractured basalt, some clay
34	41	boulders

Driller's log of 699-53-55 (N053000, W055000) Hanford Wells, 1973

Land surface altitude[1] 574 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig
3. All measurements taken from deck level

Depth (ft) From	To	Description
0	5	gravel and sand and cobble
5	15	gray sand, gravel and cobbles; hit boulders at 5'
15	20	gravel, sand and cobbles
20	25	gravel and sand
25	30	sand and gravel to 3"
30	35	sand, gravel and cobble
35	40	gray silt, sand and cobbles 4"
40	45	gray silt, sand and cobbles 6"
45	50	gravel and cobble up to 5"
50	59	sand, gravel, large cobble
59	60	fine silty sand
60	67	gray sand with a little silt; heaves
67	75	gray sand and gravel
75	80	clean gravel and cobble-boulders
80	85	gravel, cobble, boulders
85	100	gray, gravel, sand, and cobbles
100	105	gravel and sand
105	110	gravel, cobble, sand
110	115	sand and gravel
115	130	gray silt and sand
130	135	sand
135	140	gravel up to 3" in sand
140	150	sand
150	155	gravel and sand
155	160	sand
160	165	gray silt, sand and gravel
165	170	gray mostly gravel with a little sand and silt
170	175	gray gravel with some sand and silt
175	180	small gravel and sand
180	185	coarse sand and gravel
185	187	coarse sand and gravel, clean
187	190	sand, silt, gravel
190	195	sand, silt and mostly gravel
195	200	silt, sand and mostly gravel
200	205	silt, sand, and gravel, too many colors to list
205	210	coarse sand and gravel
210	213	heaving fine silt
213	220	large gravel, cobble up to 5"
220	225	gray sand
225	235	gravel
235	240	sand and gravel
240	245	gray sand
245	250	some sand, gravel
250	258	gravel, cobble

Driller's log of 699-53-55 cont

Depth (ft) From	To	Description
258	265	white silt ?; got into the white stuff at 258'
265	275	gray pebbly clay with silt
275	280	brown pebbly clay and silt
280	285	brown pebbly clay
285	290	clay
290	295	clay with broken rock
295	296	some form of rock, not basalt; very hard, may be cemented gravel, doesn't drill like cemented gravel
296	300	rock
300	305	gray basalt (honeycomb)
305	315	broken wormy rock
315	335	gray basalt
335	340	hard, gray basalt
340	345	very hard, gray basalt
345	355	gray basalt
355	360	basalt; last 8" very hard
360	365	gray basalt
365	370	basalt
370	375	dark gray basalt
375	380	basalt; crevice giving trouble, back-filled
380	385	dark gray basalt
385	400	basalt
400	405	very hard
405	440	basalt
440	445	very hard basalt, no interbeds as yet
445	455	no record, probably very hard basalt
		* 3 years later a clean-out found clay, blue, sandy from 333 to 450'

Driller's log of 699-53-55B (N052979, W055030)[1]

Land surface altitude[1] 565 feet msl

1. Obtained from personal communication with Roy Gephart, 11-20-75
2. Air rotary drill

Depth (ft) From	To	Description
0	5	sand, fine
5	20	gravel; cobbles and boulders with fine to medium sand
20	25	sand, slightly gravelly; coarse black sand with pebbles and cobbles
25	35	gravel, sandy
35	40	gravel
40	45	gravel, slightly muddy, slightly sandy
45	55	gravel, sandy; cobbles, boulders
55	60	sand, gravelly
60	65	gravel, slightly sandy; fine sand and silt blowing off
65	90	gravel, sandy; no sam;le 80-85'; fines lost at 65-85'
90	95	sand, gravelly
95	105	gravel, slightly sandy
105	110	sand, gravelly; very coarse sand
110	145	sand; coarse to medium
145	150	sand; fine to medium
150	160	sand; medium to coarse
160	165	gravel, sandy; small pebbles with coarse sand
165	170	gravel, slightly sandy; small well sorted pebbles
170	175	gravel, sandy; small pebbles with fine to coarse sand; sand at 172'
175	185	sand, gravelly; coarse sand with small pebbles
185	190	sand, pebbly; very coarse sand with medium to fine pebbles
190	195	gravel, sandy; medium to fine pebbles with very coarse sand
195	200	sand, gravelly; coarse to very coarse sand with medium to fine pebbles
200	205	gravel; medium to fine pebbles with some very coarse sand
205	215	gravel, sandy; pebbles with medium to coarse sand
215	240	gravel, sandy; pebbles with fine to coarse sand
240	251	gravel, sandy; coarse pebbles and small cobbles with fine to medium sand
251	252'8"	mud; gray very fine sand and silt, slightly pebbly

Driller's log of 699-54-17B (N053886, W017330)[1]

Land surface altitude[1] 403 feet msl

1. Obtained from personal communication with Roy Gephart, 11-20-75
2. Air rotary drill

Depth (ft) From	To	Description
0	20	pebbles, coarse to medium; sandy, fine to medium

Driller's log of 699-54-17C (N053873 W017345)[1]

Land surface altitude[1] 404 feet msl

1. Obtained from personal communication with Roy Gephart, 11-20-75
2. Air rotary drill
3. ? used where entry is undecipherable

Depth (ft) From	To	Description
0	12	gravel, sandy; pebbles and cobbles with fine to medium sand
12	17	sand, slightly pebbly; medium to coarse sand with small pebbles
17	30	gravel, sandy; pebbles with fine to medium sand
30	37	gravel, slightly sandy; small, large, medium pebbles to cobbles, very fine to fine sand
37	40	sand, gravelly; black sand with small to medium pebbles
40	55	gravel, sandy; pebbles with coarse sand
55	60	gravel, slightly sandy; small to medium pebbles
60	70	gravel, ? sandy, coarse sand
70	75	gravel, sand; pebbles with coarse sand
75	80	mud; very fine sand and ? silt, brown
80	95	mud, gravelly; very fine sand and silt
95	103	gravel, muddy

Driller's log of 699-54-57[1] (N054311, W056639) Hanford Wells, 1973

Land surface altitude[2] 573 feet msl

1. Labeled 55-55
2. Estimated from altitude or top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	10	no record
10	25	boulders
25	35	gravel
35	45	boulders, gravel
45	55	gravel
55	60	no record, probably gravel
60	65	coarse sand
65	154	gravel; bentonite in hole at 110'
154	160	sand, silt, gravel
160	162	no record, probably sand, silt, gravel
162	175	sand, silt, gravel
175	178	sand, gravel, boulders; large boulder at 178'
178	180	boulders
180	181	boulders, gravel; pea gravel; shoe breaking up, bring chunks of iron in bailer, hole caving
181	199	basalt

Driller's log of 699-55-40[1] (N055331, W040435) Hanford Wells, 1973

Land surface altitude[2] 541 feet msl

1. Previously hole GM-9
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	25	brown and black sand with traces of silt
25	30	brown and black with some gravel and traces of silt
30	50	sand with some gravel
50	65	sand and gravel
65	95	sand and gravel and cobbles
95	110	gravel and silt, size 3", yellow
110	123	sand and gravel, size 2", yellow
123	130	clay with sand, yellow
130	140	gravel with clay, size 3", yellow
140	145	gravel and sand, fine, yellow

Driller's log of 699-55-44[1] (N055462, W043677) Hanford Wells, 1973

Land surface altitude[2] 518 feet msl

1. Also labeled Gable Mountain Well #2
2. Estimated from altitude of top of casing given in Hanford Wells
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	10	sand and gravel
10	20	sand, gravel, cobbles; 16' to 19' was a boulder or large cobble
20	25	sand, gravel
25	40	sand, gravel, cobbles
40	75	sand and gravel, some silt
75	90	sand, gravel, cobbles, some silt
90	95	sand, gravel, cobbles
95	100	sand, gravel, cobbles with some brown clay
100	140	brown sandy clay
140	160	gray to brown clay with gravel

Driller's log of 699-55-50A[1] (N055006;W050000) Hanford Wells, 1973

Land surface altitude[2] 441 feet msl

1. Also labeled 699-55-50#1
2. Estimated from altitude of top of casing in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil and black sand
5	20	black sand and boulders
20	25	black volcanic rock
25	33	black lava rock
33	37	boulders
37	43	gray sand and gravel
43	45	gray sand and boulders
45	60	boulders and black sand
60	70	black sand
70	80	water gravel
80	95	gray sand and gravel
95	100	red volcanic ash
100	105	basalt
105	108	no record, probably basalt
		* Deepened 8 years later, as logged below; this hole had 24 measuring devices in it, rocks 2" to 4" in diameter, assorted nails, and pieces of steel; my 8" bit hung and snapped the pin off; finished with 5 3/4" bit
108	110	porous basalt, not very hard

Driller's log of 699-55-50B[1] (N055000, W049940) Hanford Wells, 1973

Land surface altitude[2] 441 feet msl

1. Also labeled 55-50#2
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5"	fine sand
5"	10	gravel
10	16	gravel, cobbles and black sand; cobbles at 14'
16	26	cobbles, gravel and black sand
26	32	cobbles, gravel, sand, little silt; some silt at 28', run out of silt at 32'
32	33	coarse gravel up to 2½" and black sand
33	36	coarse gravel up to 3" and black sand
36	44	gravel up to 3", black sand, little silt
44	45	pea gravel, some gravel up to 2", fine and coarse black sand
45	57	small and coarse gravel up to 3" and sand; very little pea gravel at 50'
57	60	50% small and coarse gravel up to 2", 50% black sand, very little silt; 58' sand came in with water
60	62	black sand, small and coarse gravel up to 4"; formation drills like basalt
62	68	50% pea gravel and coarse gravel up to 4", 50% black sand, little silt
68	70	50% small and coarse gravel up to 2", 50% black fine and coarse sand, some silt; at 70' sand and gravel came back up pipe 3'
70	75	50% fine and coarse sand, 50% small and coarse gravel run up to 4"; at 73', 5' of sand and gravel came in the pipe
75	82	gray sand, gravel, little silt, small and coarse gravel up to 11"; 80' fine and coarse gray sand; sand comes in
82	87	75% small and coarse gravel up to 3", 25% fine and coarse gray sand, little silt
87	89	50% gravel, small up to 3", 50% fine and coarse gray sand
89	93'6"	light gray clay and fine sand
93'6"	95	basalt

Driller's log of 699-55-50C[1]

Land surface altitude[2] 443 feet msl

1. Also labeled 55-50#3
2. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	topsoil, blow sand; caves
5	19	gravel, boulders, sand; caves
19	20	blue gravel
20	25	2' pure gravel, 3' gravel, silt, sand
25	40	gravel, sand, silt
40	45	pure gravel
45	48	pure gravel, small to 2" diameter
48	50	pure gravel
50	55	1' gravel, 4' black medium sand, some gravel
55	58	black sand, some gravel
58	60	coarse black sand, some gravel; caves

Driller's log of 699-55-50D[1] (N055017, W050150) Hanford Wells, 1973

Land surface altitude [2] 439 feet msl

1. Also labeled 55-50-#4
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	blow sand, some silt; caves
5	15	boulders, gravel, silt; caves
15	32	boulders, gravel, sand, silt; caves
32	45	black sand, some gravel; caves
45	50	black sand, more small gravel
50	60	black sand, small gravel
60	64	? fine sand and granules small gravel-record unclear
64	67	? fine sand and granules, 1½" gravel-record unclear
67	72	? fine sand and granules, gravel, sand and silt-record unclear
72	75	? fine sand and granules to gravel-record unclear
75	80	fine sand to coarse granules, gravel up to 4½'; caves; runs back up pipe
80	86	fine sand, coarse sand, granules, some gravel; sand comes back up hole
86	88	? sand more coarse, more gravel record unclear; at 88' sand came back up pipe 8'
88	89	? sand-record unclear
89	91	gravel and sand
91	95½	basalt, porous and rotten, can drive pipe into this basalt
95½	100	basalt gets harder the deeper I go, pipe stopped 95½'

Driller's log of 699-55-57B (N054608, W057208)[1]

Land surface altitude[1] 555 feet msl

1. Obtained from personal communication with Roy Gephart, 11-20-75
2. Air rotary drill

Depth (ft) From	To	Description
0	5	sand
5	10	gravel (10-12" boulders at 2')
10	20	gravel, sandy
20	25	gravel
25	35	gravel, sandy
35	40	gravel (boulder at 34')
40	50	gravel, sandy
50	55	sand, gravelly; medium to coarse sand
55	75	gravel, sandy
75	80	sand, gravelly
80	130	gravel, sand
130	145	sand, gravelly; very coarse sand with pebbles
145	150	sand, slightly pebbly
150	160	sand, gravelly
160	170	sand, very coarse sand
170	180	basalt

Formation record of 699-55-60A[1] (N055100, W060100) Hanford Wells, 1973

Land surface elevation[2] 568 feet msl

1. Also labeled 200 North Area Durand No.1
2. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	topsoil
4	132	heavy gravel and boulders
132	138	pea gravel
138	190	gravel and boulders
190	192	wash gravel
192	198	coarse gravel
198	202	heavy gravel
202	233	gravel-boulders

Formation record of 699-55-60B[1] (N055425, W060140), Hanford Wells, 1973

Land surface altitude[2] 569 feet msl

1. Also labeled 200-North Area, Durand #5 Well
2. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	boulders and gravel
5	23	gravel
23	27	boulders
27	35	gravel and boulders
35	42	gravel
42	53	gravel and boulders
53	57	gravel and sand
57	69	gravel
69	75	gravel and boulders
75	107	gravel
107	123	gravel and sand
123	126	gravel
126	133	gravel and sand
133	140	gravel
140	148	fine gravel and sand
148	170	coarse gravel
170	180	medium gravel
180	190	fine gravel and coarse sand
190	200	fine sand
200	210	fine gravel
210	220	coarse sand
220	230	fine gravel and coarse sand
230	236	fine gravel and fine sand
236	238	medium gravel
238	248	fine gravel
248	258	coarse gravel
258	268	fine gravel
268	278	fine gravel and fine sand
278	288	coarse sand

Formation record of 699-55-63[1] (N055100. W062740), Hanford Wells, 1973

Land surface altitude[2] 570 feet msl

1. Also labeled 200 Area Durand No, 4
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Hole abandoned, all casing pulled

Depth (ft) From	To	Description
0	16	boulders
16	20	rock and boulders
20	22	coarse gravel and boulders
22	27	black gravel
27	39	sand and gravel
39	49	gravel
49	54	coarse gravel
54	62	gravel
62	68	gravel and boulders
68	76	gravel
76	89	gravel and boulders
89	98	gravel
98	105	gravel and sand
105	121	gravel
121	128	fine gravel
128	138	gravel
138	147	fine gravel and sand
147	157	fine gravel
157	169	gravel and sand
169	179	fine gravel
179	198	basalt

Driller's log of 699-55-70 (N055326, W069955), Hanford Wells, 1973

Land surface altitude[1] 567 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	8"	topsoil
8"	5	gravel and boulders
5	25	sand and boulders
25	35	boulders
35	44	gravel and boulders
44	45	sand, boulders, trace of clay
45	61	sand, boulders and clay; 25% clay at 60' with boulders
61	72	boulders, gravel, and clay; 25% clay
72	80	boulders, gravel and clay
80	83	gravel and boulders; at 80' in agate gravel with some boulders and very little clay
83	90	clay and coarse gravel
90	101	sand, gravel and clay; at 90' hit some sand with clay and gravel
101	121	gravel, sand, and 25% clay
121	140	light brown clay, sand and gravel
140	155	brown clay and sand
155	165	sand and clay
165	180	clay
180	182	gravel
182	190	sand, clay and gravel; 13' of open hole at 190' but caving in
190	196	brown clay, sand and gravel
196	200	clay, sand and boulders
200	205	basalt; I am in basalt or on a big boulder

Driller's log of 699-55-76 (N055001, W075897) Hanford Wells, 1973

Land surface altitude[1] 581 feet msl

1. Estimated fron altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	3	rock, sand, and gravel
3	5	boulders
5	7	no record, probably boulders
7	10	boulders
10	15	sand and gravel
15	25	gravel
25	30	no record, probably gravel
30	45	sand and gravel
45	65	gravel and boulders
65	90	sand and gravel
90	100	gravel and boulders
100	105	sand and gravel, some boulders
105	115	sand and gravel
115	120	no record but sampled
120	125	gravel and boulders
125	129	muddy gravel, few boulders
129	147	muddy gravel and sand
147	152	gravel, hard pan
152	167	sand and gravel, little brown clay
167	180	brown clay, sand and gravel
180	185	sand, gravel (heavy to sand), little brown clay
185	220	sand, gravel, little brown clay; formation heavy to fine sand from 185' to 219'
220	223	record unclear, possibly sand, gravel, little brown clay
223	238	basalt

Drilling log of 699-55-89[1] (N054969, W088592) Hanford Wells, 1973

Land surface altitude[2] 615 feet msl

1. Also labeled 55-88.5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig using aquagel

Depth (ft) From	To	Description
0	6	no record
6	12	sand, gravel, and boulders
12	17	sand and gravel
17	20	gray sand
20	26	boulders, and medium gravel; some basalt at 22', 22' to 24' gravel is about ½ basalt
26	31	coarse and medium gravel; lot of basalt gravel
31	35	coarse to medium gravel, a little over 1/3 basalt and boulders
35	37	coarse to medium gravel and little sand; a lot of the gravel is basalt
37	40	coarse to medium gravel and sand
40	45	coarse to medium gravel with granite and quartzite
45	48	coarse to medium gravel and sand
48	54	gravel and sand
54	55	coarse to medium gravel and sand
55	56	medium gravel and little sand
56	62	silt and gravel
62	68	sand, gravel, boulders and silt
68	81	gravel and boulders 50%, sand 30%, silt 20%
81	85	about 50% gravel, 25% basalt and 25% other, sand 30%, silt 20%
85	90	about 60% gravel and boulders (25% basalt and 35% others), 25% sand, 15% silt
90	91	a boulder at least 1' thick
91	94	50% gravel, ground gravel, and boulders, 30% sand and 20% silt
94	95	mostly small boulders, 60% gravel and rock, 15% silt and 25% sand
95	100	60% gravel and boulders (20% basalt and 40% other rock), 20% silt and 20% sand
100	105	gravel 60% (20% basalt, 40% other) sand 15%, light color and fine, and silt and rotten basalt balls 25%
105	110	gravel and boulders 60%, sand 15%, and silt and rotten basalt 25%; caved at 108'
110	115	60% gravel and boulders, sand 20% and silt 20%
115	118	40% gravel, 40% sand, and 20% silt
118	120	40% gravel, 40% fine light colored sand and 20% rotten basalt or silt that is dark brown; could find no lumps
120	125	50% gravel, 30% sand, and 20% silt, brown clay-like material, also white lumps
125	128	large boulder or boulders
128	132	60% gravel, 30% sand, 10% silt; gravel about 20% basalt and 80% other, sand fine and light colored, silt light brown 128' to 130' and dark brown 130' to 132', clay-like lump real deep red in 128' to 130'
132	135	60% gravel, and boulders, 30% sand, 10% brown silt

Drilling log of 699-55-89 cont

Depth (ft) From	To	Description
135	144	60% gravel and boulders, 20% sand and 20% light brown silt
144	145	40% gravel, 40% sand and 20% silt
145	150	50% gravel and boulders, 30% sand and 20% silt
150	155	40% gravel and boulders, hit boulders at 154', sand 30%, silt 30% which showed brown rotten basalt, or clay-like lumps that were soft
155	160	35% gravel, 40% sand and 25% silt
160	172	50% gravel and boulders, 25% sand and 25% silt; boulder bed 162' to 164'; 168' to 170' there is sand cemented to the gravel, and a few white very soft clay like lumps
172	179	60% gravel and boulders, 25% sand, 15% silt; weathered basalt rocks have fine sand cemented to them
179	188	40% gravel and boulders, 35% sand and 25% silt
188	195	40% gravel and boulders, 20% sand and 40% silt; 20% of gravel and boulders is basalt and 80% other rocks
195	200	40% gravel and boulders, 25% sand, 35% silt; caved; have weathered basalt rocks and brown rotten basalt lumps of clay-like material
200	210	40% gravel and boulders, 40% sand, 20% silt; sand cemented to weathered basalt and any other rough rocks
210	216	40% gravel, 40% sand, 20% silt; rocks have sand cemented to them
216	223	40% gravel and boulders, 35% sand and 25% silt; some sand came in, sand is fine and white
223	227	60% gravel and rock, 30% sand and 10% silt; the gravel and sand all appear to be cemented together; rocks have sand coating and sand like chunks came out that were almost rock; some brown, light brown, and almost white clay-like lumps are mixed with a coarse sand
227	230	60% gravel and boulders, 25% sand and 15% silt; rock and gravel about 20% basalt, 80% others with mostly yellow rock; sand cemented to them, sand is light gray
230	235	50% gravel and boulders, 25% sand and 25% silt and clay-like material; found rock with a hard ash-like coating which was olive green, sand with white clay-like material was outside of this rock, mostly yellow

Drilling log of 699-55-95 (N055000, W094950) Hanford Wells, 1973

Land surface altitude[1] 775 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	20	boulders and gravel
20	65	gravel
65	75	gravel and boulders
75	100	gravel
100	110	fine sand and gravel
110	135	silty sand
135	150	sand and gravel
150	160	sand
160	175	gravel
175	200	gravel and sand
200	215	sand and gravel, a little clay
215	225	sand and gravel, some clay
225	230	sand, gravel and clay
230	245	small gravel, sand and clay
245	265	gravel, sand, clay
265	285	boulders, gravel and clay
285	315	gravel, sand and clay
315	330	boulders, gravel and clay
330	375	gravel, sand and clay
375	385	sand and clay
385	395	clay
395	405	gravel and clay
405	445	clay
445	460	clay and fine sand
460	470	sand and clay
470	480	sand, gravel and clay
480	490	sand and clay
490	500	sand, clay, and gravel
500	505	gravel and clay
505	510	sand, clay, gravel
510	515	basalt, rock, some cavings; basalt figured at 512'
515	530	basalt rock

Driller's log of 699-56-26[1] (N055801, W025736) Hanford files

Land surface altitude[2] 407 feet msl

1. Also labeled hole GM-13
2. Estimated from altitude of top of casing given in Hanford files

Depth (ft) From	To	Description
0	3	sand
3	4	broken red rock
4	19	red rock
19	25	basalt

Driller's log of 699-56-43[1] (N056261, W043048)

Land surface altitude[2] 538 feet msl

1. Also labeled Gable Mountain Well #1
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	brown sand
5	10	brown sand and silt
10	15	silt and brown sand
15	53	black sand
53	60	broken rock
60	147	weathered basalt, brown clay
147	150	weathered basalt, brown clay; fairly solid basalt, vesicular
150	155	vesicular basalt, brown clay

Driller's log of 699-57-25[1] (N056755, W025477) Hanford files

Land surface altitude[2] 413 feet msl

1. Also labeled hole GM-14
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	28	black sand
28	47	black sand and gravel
47	55	black sand with some gravel
55	60	black sand, fine to medium coarse; after setting screen, total depth 58'

Driller's log of 699-57-25B

1. Air rotary drill

Depth (ft) From	To	Description
0	7	no record
7	24	medium sand, 85-90% basalt
24	25	pebbles, medium to fine
25	30	pebbles, sandy; medium to fine pebbles, medium to fine sand
30	40	sand, pebbly; very coarse to coarse sand, medium to fine pebbles
40	45	pebbles, coarse to fine
45	65	pebbles, medium to fine
65	70	sand, pebbly; very coarse to coarse sand, medium to fine pebbles
70	75	pebbly, sandy; medium to fine pebbles, very coarse to coarse sand
75		silt, sandy; fine to very fine sand

Driller's log of 699-57-29B (N057108, W028686)[1] Hanford Wells, 1973

Land surface altitude[2] 416 feet msl

1. Personal communication with Roy Gephart, 11-20-75
2. Personal communication with Roy Gephard, 11-20-75
3. Air rotary drill

Depth (ft) From	To	Description
0	5	sand; medium-fine
5	20	sand; medium, 50% basalt
20	26	gravel, sandy; pebbles with medium to fine sand
26	28	large boulder
28	30	gravel, sandy
30	45	gravel, sandy; small to medium pebbles with fine to coarse sand
45	50	sand, gravelly; coarse sand with small pebbles
50	55	gravel, sandy; small pebbles with coarse sand
55	60	gravel; small to medium pebbles, little sand
60	65	gravel; small to medium pebbles, little sand
65	80	gravel, small to medium pebbles, little sand
80	81	some signs of clay at 81'

Driller's log of 699-57-83 (N057020, W082993), Hanford Wells, 1973

Land surface altitude[1] 576 feet msl

1. Estimated fron altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	solid cobble bed, cobble 12" minus
5	15	12" minus cobble and silty sand
15	36	cobbles and silty sand; hit large boulder 18'; hit boulder at 34'
36	40	cemented gravel, sand
40	55	silty gravel and sand; very silty gravel and sand 44'; hit boulder at 49'
55	60	silty gravel and sand, a few large cobble 6"-8" minus; hit boulder at 59'
60	205	silty gravel and sand; hit boulder 136', added 4" minus cobble to aid bit drilling boulder; between 176' and 180' added cobbles and resumed drilling
205	210	Ringold conglomerate
210	225	sand and silt
225	235	brown silty sand
235	240	yellow sand and silt
240	245	no record but sampled; probably sand and silt
245	265	sand and silt
265	315	sand and gravel
315	325	sand
325	343	sand and gravel
343	355	rock
		* Note written on driller's log says "Basalt from 343'-353' not recorded in logs"

Driller's log of 699-58-24[1] (N058012, W024181) Hanford files

Land surface altitude[2] 417 feet msl

1. Also labeled as hole GM-15
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	3	sand with some gravel
3	5	sand and gravel
5	10	sand and gravel and cobbles
10	24	sand and gravel 1½-
24	27	black sand
27	30	black sand and gravel
30	35	no record; probably black sand and gravel
35	55	black sand and gravel
55	60	black sand

Driller's log of 699-59-32[1] (N059424, W032378) Hanford files

Land surface altitude[2] 422 feet msl

1. Also labeled hole GM-10
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	2	surf sand, brown
2	45	sand and gravel, size 1½", black
45	50	gravel, dark, size 2"
50	65	sand
65	70	sand and gravel, size ½"
70	75	no record

Driller's log of 699-59-58[1] (N058859, W057763) Hanford Wells, 1973

Land surface altitude[2] 496 feet msl

1. Also labeled GBM-8
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	13	sand, gravel, cobbles
13	35	no record but sampled
35	40	silt, gravel, cobbles
40	42	sand, gravel, cobbles, boulder
42	43	boulder; had to redrill 38' to 42'
43	45	sand, gravel, cobbles, boulder
45	66	sand, gravel, cobbles
66	75	sand and gravel; broke weld at approximately 30', pulled casing, redrilled 38' to 75'
75	89	sand, gravel, cobbles; broke weld at 33', pulled casing, redrilled 70' to 85'
89	90	sand and gravel
90	102	sand
102	112	medium sand
112	114	no record but sampled

Driller's log of 699-59-80A[1] (N059445, W079548) Hanford Wells, 1973

Land surface altitude[2] 579 feet msl

1. Also labeled 60-80A
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	rocks and sand
5	10	rocks, sand, and little clay
10	11	rocks and sand
11	16	basalt gravel and little sand
16	20	basalt chips
20	24	coarse basalt chips
24	26	basalt sand
26	29	coarse basalt gravel
29	33	basalt sand
33	36	fine basalt sand
36	39	basalt sand and mostly basalt gravel
39	41	basalt sand
41	45	sand and gravel (basalt sand and the gravel is mostly basalt)
45	52	fine basalt
52	55	sand and gravel and mostly basalt
55	62	basalt sand
62	68	basalt sand and gravel
68	71	fine gravel--mostly basalt
71	74	sand and gravel--mostly basalt
74	77	gray sand
77	86	sand and gravel
86	87	sand, gravel, and rocks
87	95	sand, gravel, and rocks and lots of basalt; hole started to cave at 95', had to drill the hole out that caved in; bailer hung up; swedged; hole caved in from 91' to 95' while swedging (WELL ABANDONED)

Driller's log of 699-59-80B[1] (N059453, W079548) Hanford Wells, 1973

Land surface altitude[2] 581 feet msl

1. Also labeled 60-80B
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	rocks and sand; dug hole from 0' to 3' with shovel
5	9	basalt rocks, little sand and blue binder
9	10	basalt rocks and little dark gray sand
10	11	basalt rocks with gray sand
11	14	basalt boulder
14	15	basalt boulder and very fine sand
15	16	basalt boulder and fine to medium sand
16	17	very fine to medium basalt sand
17	18	coarse basalt rock and little sand
18	19	fine basalt rock and little sand
19	20	fine and medium basalt sand
20	21	sharp basalt gravel and little fine and medium basalt sand
21	22	coarse basalt gravel and little fine and medium basalt sand
22	23	fine and medium basalt sand
23	28	basalt, gravel, and sand
28	29	medium basalt sand
29	31	very fine to medium basalt sand
31	33	3/4 basalt gravel and 1/4 other gravel with a blue binder
33	35	fine to medium basalt sand
35	39	fine to medium basalt sand and basalt gravel
39	41	fine to medium basalt sand
41	43	fine basalt sand
43	46	fine and medium basalt sand
46	49	fine to medium basalt sand
49	51	fine to medium basalt sand and little gravel
51	52	fine to medium basalt sand
52	54	medium basalt sand
54	61	fine to medium sand and 2/3 basalt; can't get a sample to tell what I am drilling in
61	68	basalt sand and gravel
68	71	sand, mostly basalt
71	73	sand and gravel, mostly basalt
73	75	little sand and gravel -- 1/2 basalt and 1/2 other
75	77	fine to medium gray sand
77	85	silt, sand and gravel
85	88	silt, sand, and fine gravel
88	92	gray sand and gravel
92	95	gray sand, gravel and little silt
95	99	fine to medium gray sand and gravel
99	100	fine to medium gray sand and fine gravel
100	104	fine to medium gray sand and coarse gravel
104	105	fine to medium gray sand and fine gravel
105	109	fine to medium gray sand and coarse gravel
109	110	fine to medium gray sand and medium coarse gravel
110	115	fine to medium gray sand and coarse gravel
115	117	silt and medium gravel
117	120	silt and coarse gravel

Driller's log of 699-59-80B cont

Depth (ft) From	To	Description
120	125	silt and medium to coarse gravel
125	128	silt and coarse gravel
128	135	silt and medium gravel
135	139	silt and medium to coarse gravel
139	140	silt and medium gravel
140	143	silt and medium to coarse gravel
143	145	silt and medium to coarse gravel and little basalt
145	147	silt and medium to coarse gravel
147	152	coarse gravel and silt
152	154	coarse gravel, silt and lump of clay
154	158	coarse gravel, silt and little clay
158	165	medium and coarse gravel, silt and little clay
165	169	medium gravel, clay and little silt
169	173	clay with little fine gravel
173	175	clay with very little fine gravel
175	177	clay and little gravel
177	180	basalt gravel and little clay
180	184	basalt sand and silt
184	185	basalt sand and little clay from above
185	187	basalt sand and gravel
187	190	sharp pieces of basalt
190	192	pieces of basalt gravel
192	198	basalt sand

Driller's log of 699-60-32[1] (N060390, W032032) Hanford Wells, 1973

Land surface altitude[2] 423 feet msl

1. Labeled hole GM-11 also
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	surf sand, brown
2	32	sand and gravel, black 2"
32	65	sand and gravel, black
65	70	clay with gravel, yellow
70	79	clay and gravel, size 2", yellow
79	85	clay and broken rock

Driller's log of 699-60-57[1] (N060350, W056612) Hanford Wells, 1973

Land surface altitude[2] 468 feet msl

1. Also labeled GBM-7
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	6	boulders, cobbles, coarse sand, l. gravel
6	10	cobbles, l. gravel, c. sand
10	11	cobbles, l./m gravel, c. sand
11	12	boulders, cobbles, l/m gravel, c. sand; hit boulders at 12' casing went crooked, pulled casing back, straightened
12	20	cobbles, l/m gravel, c. sand
20	25	cobbles, v.c./f. sand, l/m/s sand
25	30	cobbles, m. sand, l/ms gravel
30	34	cobbles, c/m sand, l/m/s gravel
34	37	v/c m sand, l/m/s gravel
37	38	cobbles, v/c m sand, l/m/s gravel
38	40	vc/m sand, l/m/s gravel
40	45	vc/m /f sand, l/m/s gravel
45	50	vc/m sand, m/s gravel
50	58	f/c sand, m/s gravel
58	62	f/c sand, silt, m/s gravel
62	64	f sand, silt, m/s gravel
64	66	f sand, m/s gravel
66	68	m/f sand, m/s gravel
68	74	f sand, m/s gravel
74	76	f/m sand, m/s gravel
76	81	vf/m sand, m/s gravel
81	84	f/m sand, m/s gravel
84	86	vc/f sand, silt, m/s gravel
86	88	f sand, silt, l/m/s gravel
88	90	f sand, l/m gravel
90	92	m/c sand, l/m gravel
92	94	f/m sand, s. gravel
94	96	vf/f sand, s gravel
96	98	vf/f sand, silt
98	108	vf/f sand; sand heaving 98'-112'
108	110	vf sand; sand heaving 98'-112'
110	114	c sand, m/s gravel; sand heaving 98'-112'
114	118	c sand, l/m/s gravel
118	120	c/f sand, l/m/s gravel
120	125	c/f sand, s gravel, After 125', skipped 10 days and changed drillers
125	133	black sand; 8 feet of sand in hole at start of shift; this sand heaves up the casing some
133	135	blue sand and pea gravel
135	141	blue sand; sand will start to heave up the hole when the tools get within 1 foot of bottom of casing
141	144	blue black sand, sand is fine and heavy
144	145	blue black sand, basalt @ 145'
145	147	rotten basalt

Driller's log of 699-60-57 cont

Depth (ft) From	To	Description
147	154	basalt; basalt is very rotten to 148'
154	155	basalt; the basalt is rotten and is light in weight

Driller's log of 699-60-60 (N060030, W059964) Hanford Wells, 1973

Land surface altitude[1] 510 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	topsoil and boulders
5	16	sand and boulders
16	20	fine black sand
20	26	boulders
26	33	fine gray sand and boulders
33	35	fine black sand
35	40	coarse black sand
40	50	sand, gravel and boulders
50	56	sand and gravel
56	60	black sand
60	65	coarse black sand
65	68	sand, gravel and boulder
68	70	black and white sand
70	77	black and white sand and gravel
77	81	black and white sand
81	87	black and white sand and gravel
87	90	black and white sand
90	95	black and white sand and gravel
95	98	? record unclear, logged as brown clay but remarks say "hit brown clay at 98'
98	108	brown clay and 1/3 gravel
108	110	fine black and white sand and clay
110	123	clay and gravel
123	126	coarse black and white sand and boulders
126	128	basalt

Driller's log of 699-61-16A[1] (N061467, W015673) Hanford Wells, 1973

Land surface altitude[2] 411 feet msl

1. Also labeled CC-133, Foster Ranch
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	40	sandy clay and caliche
40	57	clay caliche and sand; heavy clay, yellow and tan color, lot of caliche and some hard rock-like formation, could be shale
57	65	blue-green shale or clay and hard sandstone
65	70	blue shale, gray shale; at 67' hit a break in formation, water rose about 15' in hole; at 70' was back into blue-green shale or mud
70	78	blue shale
78	80	blue shale with a showing of yellow clay
80	90	brown sandy clay or shale
90	95	yellow clay
95	100	brown clay
100	105	reddish brown shale or clay, some pieces of sandstone and caliche in this sample
105	125	reddish brown clay, shale and caliche
125	140	tan, brown, sandy silt
140	146	fine white sand and silt; caves, sand will work back up hole
146	150	light clay and sand, some basalt gravel Hole was perforated and test pumped; when drilling resumed hole had 30' of sand and shale in it, sand was brownish-red color, shale pure blue.
150	165	fine white sand, clay and tan silt
165	185	tan silt, clay mud and fine white sand, showing of sandstone and blue shale; sandstone is fine and rotten, can break it with fingernail
185	194	fine white sand, tan silt and clay, very little sandstone and blue shale
194	195	fine white sand, tan silt and clay, very little gravel
195	205	very fine white sand, mud binder, darker color
205	215	white shale, small amount of fine gravel
215	220	white shale, small amount of fine gravel and some sandstone
220	227	white shale, small amount of fine gravel, layers of reddish-brown sand and clay
227	230	reddish-brown sand, very little binder
230	233	reddish-brown sand
233	235	white tight shale
235	240	layers of red-brown sand and white shale, some blue shale, very little fine gravel
240	243	white shale; hole is making lots of muck Cleaned out 125' of muck; perforated; after 3' months returned pulled pump left in well, it parted; cleaned out and deepening hole
243	250	blue shale, sand, and white clay
250	260	white sticky shale, brown sand and blue shale; pieces of pump strainer; a little gravel showed up at 260'

Driller's log of 699-61-16A cont

Depth (ft) From	To	Description
260	265	white clay and sand
265	270	white clay or shale, some sand and sandstone; lots of mud running in hole
270	278	white clay and fine sand; muds up
278	279	pink soapy clay, no sand in it
279	286	white clay and sand; hole is making lots of mud
286	295	white sandy clay; muds up
295	300	white clay, sand and a showing of blue shale; muds up
300	303	blue shale and some basalt chips
303	308	loose green silt, gray sand and basalt chips; sand comes in hole
308	309	green sandy silt and basalt chips
309	310	black sandy basalt; looks like we have struck basalt, hole bridged in above with white quicksand; had to spud out for over 100 feet; casing stopped at 303'
310	318	basalt rock; sand in 315' sample is foreign
318	320	layer of sticky black shale and lots of basalt
320	323	basalt with layers of black shale
323	327	basalt
		left hole about 3 months; cleaning out muck and deepening
327	329	basalt gravel and lava mud
329	330	at 330' fine basalt gravel (rotten basalt) and black basalt mud
330	335	layers of blue shale with basalt gravel and black mud
335	340	basalt gravel, lava mud, some shale
340	348	basalt chips, lava mud; this lava mud runs in along with the sand
348	352	basalt
352	362	no record
362	367	solid basalt
367	368	fine gray sand; put some aquajell in to try and stop this sand from running in
368	370	basalt; muck still comes in hole
370	374½	solid basalt; muck still comes in hole
374½	375½	small break in basalt, some sand and gravel in this break
375½	390	solid basalt; muck still comes in, not as bad
390	415	solid basalt
415	418½	solid basalt, very hard; 20' muck in hole at start of shift
418½	423	solid basalt
423	430	solid basalt, small break; 428'-430' very hard
430	435	solid basalt, very hard
435	436	basalt, showing of Ringold
436	438½	drilled through basalt at 436' and into a rotten sandstone, sand and small gravel, caliche and various other formations
438½	446	solid basalt
		test pumped 2 days; had very thick sand and mud, a lot of gray white sand in hole when resumed drilling
446	451½	solid basalt
451½	458	dark shale, pink mud, basalt chips, and sand; this shale is dark bluish gray when wet and when dried out it is a light whitish gray

Driller's log of 699-61-16A cont

Depth (ft) From	To	Description
458	469	gray sandstone, ash, sand, basalt chips
469	472	basalt
472	473	layer of shale, and muds up
473	475	layers of basalt and shale
475	490	lava mud, basalt chips, blue shale, iron, sand, and about everything; 25' muck in hole at start of shift
490	505	porous basalt with blue shale and ash-like substance impregnated all through the pores
505	512	black basalt, some ash; at 505' into a more solid basalt, this basalt is rotten, 510' to 512'-more solid
512	517	basalt, black ash mud, various other soft muds; at 517' broke through solid basalt
517	520	loose basalt and sand, caves in, some small gravel in this cave
520	528	solid hard basalt; hole is making more sand
528	565	hard solid basalt; 552' to 555' hardest basalt we have hit
565	568	basalt--small break
568	573	solid basalt with some volcanic ash and mud
573	577	basalt with layers of ash
577	582	basalt and ash
582	583	no record, probably basalt
583	584	solid basalt
584	600	rotten basalt; after changing bits about 586', noted a hard solid layer of basalt at 581' to 583' that bit would not pass through; hole caved in above tools, this cave I would say is between 500' and 560', bailed out big pieces of basalt, caliche, rotten sandstone and etc.
600	607	hard basalt

Driller's log of 699-61-37[1] (N060618, W037043) Hanford Wells, 1973

Land surface altitude[2] 441 feet msl

1. Labeled hole GM-18
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	3	surf sand, brown
3	25	sand and gravel, size 1½", black
25	50	sand and gravel, size 1½", dark
50	65	sand and gravel, size 2", dark
65	70	sand and gravel, size 1½", dark
70	76	sand, black, medium fine

Driller's log of 699-61-41[1] (N061355, W041118) Hanford Wells, 1973

Land surface altitude[2] 427 feet msl

1. Labeled GM-16
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	surf sand, brown, medium fine
5	10	sand, gray, medium fine
10	15	sand, brown, medium fine
15	30	sand and silt, yellow, fine, soft
30	35	sand and silt and gravel, size 1"
35	40	sand and gravel, size 2", dark
40	45	clay and silt, cream color, soft
45	52	blue soft clay

Driller's log of 699-61-62[1] (N060532, W062217) Hanford Wells, 1973

Land surface altitude 496 feet msl

1. Labeled GBM-1
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	fine sand; hand dug
2	4	large gravel, cobbles, fine sand, hand dug
4	5	large gravel, small gravel, cobbles, fine sand
5	9	large-small gravel, very fine sand
9	10	large gravel, very fine sand
10	15	l.s. gravel, v.f. sand
15	16	cobbles, v.f. sand/l. gravel
16	18	cobbles, l. gravel, v.f. sand
18	19	no record, probably cobbles, l. gravel, v.f. sand
19	21	cobbles, boulders, l. gravel, v.f. sand
21	22	boulder, l. gravel, v.f. sand
22	25	boulders, s. gravel, v.f. sand; encountered 5 or 6 large boulders 21'-25'
25	28	boulders, cobbles, l. gravel record unclear
28	30	cobbles, l/s gravel; casing took off crooked around boulders, jarred it back, filled hole up 4' with rocks, reamed hole
30	32	boulders, cobbles, l. gravel, v.f. sand
32	33	boulders, cobbles, s. gravel, v.f. sand
33	34	cobbles, s. gravel, v.f. sand
34	35	cobbles, l. gravel, c./f. sand
35	37	l/s gravel, f. sand
37	40	cobbles, l. gravel, c./f. sand
40	43	l. gravel, c./f. sand
43	45	cobbles, l/s gravel, c/f sand; casing took off crooked again, pulled back and straightened hole
45	47	cobbles, gravel, c. sand
47	52	cobbles, gravel, c. sand
52	53	cobbles, gravel, c. sand
53	54	boulders, c. gravel, cobbles, c. sand
54	55	cobbles, c. gravel, c. sand
55	59	boulder, c. gravel, c. sand; a layer of coarse sand 6" to 8", separating boulders ~ approx. 57'
59	60	boulder, cobbles, c. sand
60	61	boulders, cobbles, c. sand, gravel
61	63	cobbles, gravel, c. sand
63	65	cobbles, l. gravel, c. sand
65	66	l. gravel, c. sand
66	69	cobbles, l/s gravel, c. sand; 64'-69' caves quite a bit
69	70	l/s gravel, c. sand, cobbles
70	72	cobbles, c. sand, l/m/s gravel
72	74	boulders, l/m/s gravel; hit rather large boulder at 72'
74	75	boulder, f. sand, l/m/s gravel
75	79	boulders, cobbles, l/s gravel, c/f sand
79	80	cobbles, c. sand, l/m/s gravel
80	85	cobbles, c. sand, m/s gravel

Driller's log of 699-61-62 cont

Depth (ft) From	To	Description
85	87	l/m/s gravel, c. sand, silt
87	89	l/m/s gravel, c. sand
89	91	l/m/s gravel, c/f sand
91	93	cobbles, c. sand. l/m/s gravel
93	95	cobbles, c./f. sand, l/m/s gravel
95	97	c/f sand, l/m/s gravel
97	99	cobbles, c. sand, l/m/s gravel
99	100	no record
100	101	cobbles, c./f. sand, l/m/s gravel
101	103	cobbles, c. sand, l/m/s gravel
103	107	c. sand, l/m/s gravel
107	108	c/f sand, m/s gravel
108	109	v.c. sand, m/s gravel
109	111	v.c. sand
111	114	v.c. sand, l/m/s gravel
114	115	v.c. sand, l/m gravel; sand heaving 114'-119'
115	121	v.c.sand, l/m/s gravel; sand heaving 114'-119'
121	127	c. sand, l/m/s gravel
127	129	c/m sand, l/m/s gravel; sand heaving 127'-133'
129	133	v./c sand, m/s gravel; sand heaving 127'-133'
133	137	v/c sand, l/m/s gravel
137	139	cobbles, v.c. sand, l/m/s gravel
139	141	cobbles, v.c. sand, m/s gravel
141	143	vc/m sand, l/m/s gravel
143	145	v/cm sand, l/m gravel
145	146	boulder, v.c. sand, l/m gravel; hit boulder at approx 146'
146	147	v.c. sand, l/m/s gravel
147	150	v.c./c. sand, l/m/s gravel
150	151	v.c. sand, l/m/s gravel
151	153	boulder, cobble, v.c. sand, l/m/s gravel
153	157	v.c. sand, l/m/s gravel
157	161	v.c. sand, m/s gravel
161	163	v.c. sand, s. gravel
163	165	v.c. sand, cobbles, l/m gravel
165	167	v.c. sand, cobbles, l/m/s gravel
167	169	v.c. sand, l/m/s gravel
169	170	v.c./c. sand, l/m/s gravel
170	173	cobbles, v.c. sand, l/m/s gravel
173	175	cobbles, v.c./c. sand, l/m/s gravel
175	176	v.c. sand, m/s gravel
176	177	v.c. sand, l/m/s gravel
177	177½	cemented m/s gravel
177½	181	black basalt, M; black basalt at 177½' recovered piece of honeycombed basalt
181	183	black basalt (H); sand coming in hole
183	186	black basalt; sand coming in hole
186	187	no record, probably black basalt
187	188	black basalt (M)

Driller's log of 699-61-66[1] (N061062, W065626) Hanford Wells, 1973

Land surface altitude[2] 523 feet msl

1. Labeled 61-65
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	boulders, gravel and sand
5	10	no record, probably boulders, gravel and sand
10	20	cobbles and gravel
20	35	small and coarse gravel
35	40	cobbles and gravel, little sand
40	50	cobbles and gravel
50	55	coarse gravel and black sand
55	60	coarse gravel, little sand
60	65	cobbles and gravel, sand and silt
65	70	small and coarse sand, gravel and silt
70	75	coarse gravel
75	85	cobbles and coarse gravel
85	90	fine sand, coarse sand and gravel
90	110	coarse sand and gravel
110	125	cobbles and gravel
125	140	coarse gravel, little silt
140	145	no record
145	160	coarse gravel, fine sand
160	165	coarse sand and gravel-clay
165	170	fine and coarse sand; sand came back up the pipe 8'
170	175	fine and coarse sand and coarse gravel; sand comes in with water
175	180	coarse gravel and sand
180	185	fine and coarse sand
185	195	fine and coarse sand and gravel
195	205	fine and coarse sand, coarse gravel, sand keeps coming up the pipe
205	215	cobbles, coarse gravel, fine and coarse sand; sand comes back up the pipe
215	225	basalt, fine sand comes in with the water; pipe stopped at 216'6"

Driller's log of 699-62-31[1] (N062454, W031412) Hanford Wells, 1973

Land surface altitude[2] 432 feet msl

1. Labeled hole GM-12
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	2	surf sand, brown
2	15	sand and boulders size 8"
15	30	sand and boulders, size 2', dark
30	70	sand and gravel, size 2", dark
70	75	sand and gravel, size 1", brown
75	85	sand and silt, fine, brown; total hole 84'

Summary of driller's log 699-62-32 (N062250, W031575) Hanford Wells, 1973

Land surface altitude[1] 430 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	74.5	character of material gravel and sand; dug well

Formation record of 699-62-43A[1] (N061938, W042880) Hanford Wells, 1973

Land surface altitude[2] 432 feet msl

1. Labeled Gable Mountain Test Hole R-1
2. Altitude given on formation record in Hanford files

Depth (ft) From	To	Description
0	5	sand and coarse gravel
5	15	medium gravel
15	20	basalt boulders
20	28	coarse gravel and sand
28	36	coarse gravel
36	46	sand and gravel
46	54	coarse gravel and sand
54	66	sand and gravel
66	72	yellow clay

Driller's log of 699-62-43B[1]

Land surface altitude[2] 420 feet msl

1. Labeled 13-26-13-R2
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	
0	5	topsoil and sand
5	7	gravel and sand
7	10	gravel and black sand
10	20	gravel, very little sand
20	25	50% loose sand and 50% gravel
25	30	loose sand and gravel
30	45	no silt, 25% coarse sand, 75% gravel shot size to 4" diameter; 50% of gravel is 1" to 2" size, 40% small, 10% large
45	50	95% fine to coarse gravel, 5% sand; about 55% granules, 45% pebbles, 5% cobbles, 5% sand; this formation would come back up pipe
50	64	95% black and white sand, 5% gravel
64	68	light tan silt
		Hole is 68½' deep

Driller's log of 699-62-43C[1] (N062000, W043000) Hanford Wells, 1973

Land surface altitude[2] 428 feet msl

1. Labeled 13/26-13-R3
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	12	sand
12	25	coarse gravel up to 3"
25	30	gravel up to 1½, little black sand
30	35	coarse gravel up to 4"
35	40	small and coarse gravel, little sand
40	45	small and coarse gravel up to 4"
45	50	pea gravel and coarse gravel up to 3"
50	55	small and coarse gravel, 50% black coarse sand
55	61	75% fine black sand, 25% coarse gravel
61	67	fine black sand, no gravel
67	70	white clay
70	90	brown clay and silt
90	100	clay, silt and sand

Driller's log of 699-62-43D[1]

Land surface altitude[2] 427 feet msl

1. Labeled 13/26-13-R4
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	10	blow sand, top soil
10	50	gravel and sand
50	67	pure sand; at 55' lost, sand came up hole 5'
67	73	light tan silt

Driller's log of 699-62-43E[1] (N062356, W042651) Hanford Wells, 1973

Land surface altitude[2] 420 feet msl

1. Sometimes labeled 699-67-43E
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	18	boulders and heavy gravel; same material so far as 1st hole
18	30	boulders
30	40	gravel
40	54	coarse gravel; perforated casing lets in a lot of fine sand
54	56	water gravel, up to 2" size
56	58	fine gravel, coarse sand
58	66	fine water sand; requires quite a lot of sand pumping
66	68	fine black sand; added clay; *It's hard to distinguish a sample due to clay we're adding however, some of this greenish blue clay sticks to the bit
68	70	clay (blue), some sample
70	75	clay, no sample
75	78	clay, (blue), sample
78	83	no record *total depth from f.l. 83', total pipe 85'

Driller's log of 699-62-43E

1. Well abandoned
2. Cable tool rig

Depth (ft) From	To	Description
0	4	sand
4	5	cobbles, size of grapefruit
5	20	heavy gravel, size of golf balls, and cobbles or small boulders, practically no silt or sand mixed with this gravel; samples are not representative, due to outside sand when we add water *Pulled out casing, moved rig ahead 2'

Driller's log of 699-62-43F (N062324, W042718) Hanford Wells, 1973

Land surface altitude[1] 421 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	no record
10	15	coarse gravel, washed sample
15	25	boulders
25	40	heavy gravel
40	48	fine sand; sand coming in
48	59	no record
59	64	fine gravel; using some clay
64	66	no record
66	70	clay
70	75	clay and gravel
75	80	clay
80	81	no record, probably clay

Driller's log of 699-62-43G (N062368, W042748) Hanford Wells, 1973

Land surface altitude[1] 418 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	gravel; sandstone on top, heavy gravel and cobbles
5	10	cobbles, boulders
10	20	heavy gravel
20	35	fine gravel
35	42	coarse sand
42	58	fine sand
58	66	fine gravel; had some trouble from 60'-65' with sand, took quite a little clay to drill it out
66	68	clay
68	81	no record

Driller's log of 699-62-43H (N062279, W042755), Hanford Wells, 1973

Land surface altitude[1] 425 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	medium sand
10	30	sand and gravel
30	50	gravel
50	70	clay and gravel; there's a layer of yellow clay mixed with the gravel
70	90	clay and sand

Driller's log of 699-62-43I (N062332, W042752) Hanford Wells, 1973

Land surface altitude[1] 420 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	cobbles
10	20	heavy gravel
20	30	cobbles, gravel
30	40	fine gravel
40	62	fine sand; we have to use clay in this fine sand
62	64	sand
64	66	sand and clay
66	68	sandy clay
68	79	clay

Driller's log of 699-62-43J (N062340, W042787) Hanford Wells, 1973

Land surface altitude[1] 420 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	25	heavy gravel
25	30	coarse sand
30	62	fine gravel
62	64	coarse sand
64	66	sandy clay
66	80	clay

Driller's log of 699-62-43K (N062289, W042722) Hanford Wells, 1973

Land surface altitude[1] 426 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	60	sand and gravel
60	68	sand; using clay
68	70	clay
70	81	no record

Driller's log of 699-62-43L (N062337, W042809) Hanford Wells, 1973

Land surface altitude[1] 420 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	sand and gravel
5	10	? record unclear, cobbles or heavy gravel
10	20	heavy gravel
20	30	medium gravel
30	58	fine gravel
58	66	fine sand; this fine sand is going to cause trouble in the screen
66	75	clay

Driller's log of 699-62-43M (N062305, W042769) Hanford Wells, 1973

Land surface altitude[1] 422 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	35	sand
35	40	gravelly sand
40	50	no record
50	55	sandy
55	70	sand
70	78	sandy clay

Driller's log of 699-62-43N (N062317, W042790) Hanford Wells, 1973

Land surface altitude[1] 420 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	10	cobblestones
10	15	no record
15	65	sand
65	69	clay

Driller's log of 699-63-25A[1] (N063312, W024806) Hanford Wells, 1973

Land surface altitude[2] 394 feet msl

1. Labeled S1683, P-11
2. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	1	topsoil
1	5	large boulders, sand and topsoil
5	8	large boulders, sand and silt
8	12	boulders, sand and silt; at 10' hit a boulder what started hole crooked, put rocks and concrete in hole to drill off ledge caused by boulder, also same at 12'; sample at 10' had some concrete and surface rocks in it
12	15	boulders, gravel, sand and silt; hole caves at 14', gravel and sand and very little silt
15	28	gravel, basalt boulders, sand and very little silt; used aquagel to keep hole from caving
28	30	gravel, black sand and basalt
30	36	gravel and sand
36	40	gravel
40	49	gravel and sand; good pea gravel to 4½" in diameter, coarse black sand
49	55	black sand and gravel
55	56	gravel
56	58	black sand and gravel
58	62	gravel and black sand
62	65	sandy silt
65	79	sandy clay- heavy clay
79	103	sandstone, sand, gravel, reddish shale and clay; shale looks rotten and full of seams
103	110	fine reddish sand with sandstone, basalt chips and fine gravel

Driller's log of 699-63-26A[1]

1. Labeled 699-63-25A
2. This is probably 699-63-25B of Hanford Wells, which is unlocated still as of 1-19-76, Roy Gephart
3. Cable tool rig

Depth (ft) From	To	Description
0	3	hard packed silt with gravel to 3"
3	3½	boulder
3½	6	no record, probably boulder
6	10	coarse sand, and gravel
10	12	large gravel
12	15	cobbles, sand and silt
15	20	boulders, cobbles and silt
20	25	cobbles, sand and silt
25	35	cobbles and silt
35	40	fine sand and silt
40	50	1" gravel and sand

Driller's log of 699-63-51[1] (N062557, W050622) Hanford Wells, 1973

Land surface altitude[2] 423 feet msl

1. Labeled GM-17
2. Altitude on driller's log in Hanford Files
3. Cable tool rig

Depth (ft) From	To	Description
0	2	surf sand, brown
2	7	sand and gravel, size 1½"
7	15	sand, coarse, and gravel, size 1", black
15	20	sand, coarse black, and fine gravel ½"
20	25	sand and silt and gravel, brown ½"
25	36	clay, gray, soft

Driller's log of 699-63-55[1] (N062616, W055061) Hanford Wells, 1973

Land surface altitude[2] 425 feet msl

1. Labeled GBM-6
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	3"	c. sand, brown
3"	5	c. sand, gray, m. gravel
5	8	c. sand, m./s. gravel
8	10	cobbles, v.c. sand, l/m/s gravel
10	15	v.c. sand, l/m/s gravel
15	20	v.f./m. sand, silt, m/s gravel
20	22	cobbles, v.c. sand, l/m/s gravel
22	26	v.c./m sand, l/m/s gravel
26	30	v.c. sand, m/s gravel
30	32	v.c./f sand, l/m/s gravel
32	38	v.c. sand, m/s gravel
38	40	v.c. sand, s. gravel
40	42	v.c. sand, m/s gravel; unable to recover any sample
42	50	v.c. sand, s. gravel; unable to recover any sample
50	52	no record; probably v.c. sand, s. gravel; unable to recover any sample
52	65	v.c. sand, s. gravel; unable to recover any sample
65	66	v.c. sand, silt, m/s gravel
66	68	v.c. sand, silt, s. gravel
68	70	v.c./f. sand, silt, s. gravel
70	78	v.c./c. sand, silt
78	80	v.c./c./f. sand, silt
80	82	f./c. sand, silt
82	84	f. sand, yellow clay
84	86	f./c. sand, yellow clay
86	88	v.c. sand, yellow clay
88	100	gray sandrock
100	102	c. sand, s. gravel
102	104	v.c. sand, s. gravel
104	106	v.c./f. sand
106	108	v.c./c. sand, s. gravel
108	110	v.c./c. sand
110	112	v.f./f. sand
112	116	black basalt M; unable to recover basalt cuttings for sample
116	121	black basalt H; unable to recover basalt cuttings for sample
121	122	black basalt H

Driller's log of 699-63-58[1] (N062691, W057789) Hanford Wells, 1973

Land surface altitude[2] 490 feet msl

1. Labeled GBM#5
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	2	gravel and silt
2	13	sand and gravel
13	15	cement gravel
15	16	boulders
16	20	boulders and gravel
20	24	cobbles and gravel
24	25	sand and gravel
25	45	sand, gravel and cobbles
45	50	sand and gravel
50	60	sand, gravel and cobbles
60	86	sand and gravel
86	92	sand, gravel and cobbles
92	94	boulder, sand and gravel
94	98	sand and gravel, fine
98	102	sand and gravel, pea
102	110	sand, and gravel
110	112	cemented gravel
112	114	boulder, 20-24 inches
114	120	sand and gravel
120	125	basalt; basalt would break off in pieces at least 3 inches across and sand and gravel would come in hole
125	130	basalt

Driller's log of 699-63-90[1] (N062892, W090264) Hanford Wells, 1973

Land surface altitude[2] 509 feet msl

1. Labeled 62.5-90
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand and boulders
5	19	basalt boulders on top of one another
19	20	basalt boulders and gravel; hole caved in and drilling out cave in
20	25	coarse basalt gravel
25	32	fine black sand and some gravel
32	35	fine black sand and gravel
35	38	black sand and lots of gravel; ran out of sand at 38'
38	42	basalt gravel
42	45	coarse gravel
45	54	boulders and coarse gravel; at 45½' hit a boulder about 1' thick
54	58½	coarse gravel
58½	60	boulders
60	117	coarse black sand and gravel
117	120	fine black sand with some clay and silt
120	124	fine black sand, clay and silt
124	129	sand and coarse gravel
129	130	coarse gravel and sand
130	135	coarse gravel, sand, and clay
135	144	clay, sand, and gravel; lots of coarse gravel
144	150	clay, sand and some coarse gravel
150	163	clay, sand and coarse gravel
163	170	lots of basalt gravel with other gravel mixed in; fine and coarse sand, silt and clay binder
170	175	gravel, sand, clay and silt binder; lot of gravel and coarse sand
175	182	lots of gray sand and gravel, silt and clay binder; will cave at 2' below pipe
182	192	lots of basalt gravel, fine to coarse sand, silt and clay binder, rock as big as baseballs
192	202	3" gravel, lots of sand, silt with a little clay binder
202	207	fine gravel, fine to coarse sand, lots of silt and clay
207	211	3" gravel, sand, silt and clay binder
211	214	fine gravel, fine sand, silt and clay binder; this formation lies in layers of coarse gravel, then a layer of fine gravel with lots of silt and clay
214	215	sand, gravel and silt
215	230	medium small gravel, black and white sand and lots of silt
230	236	medium gravel 25%, coarse sand 35%, fine sand 25%, and 15% silt and clay
236	238	B. basalt, sand and silt, very little gravel; had to rock pipe
238	241	basalt
241	247	solid black basalt
247	253	solid black basalt with some white volcanic ash

Driller's log of 699-63-91A

1. Cable tool rig

Depth (ft) From	To	Description
0	5	sand
5	10	gravelly sand
10	15	large cobbles and boulders
15	20	gravelly medium sand
20	40	sandy gravel
40	45	gravelly sand, medium sand
45	50	sandy gravel, medium sand; boulders at 50'

Driller's log of 699-64-62[1] (N063786, W061746) Hanford Wells, 1973

Land surface altitude[2] 498 feet msl

1. Labeled GBM-2
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	5	sand, gravel, cobbles, and boulders
5	13	cobbles, boulders, sand, and gravel
		*7'-18' the sand logged between these depths is not typical sand but is a finely powdered substance that looks and feels like unmixed cement
13	18	cobbles, sand, and gravel
18	25	silt, gravel, cobbles; the gravel and cobbles, between these depths, are stuck together by a clay-like substance
25	30	cobbles, sand, pea gravel
30	35	silt, cobbles, sand, gravel
35	40	cobbles, boulders, sand, gravel
40	60	cobbles, sand, gravel
60	73	gravel, cobbles, fine sand, silt
73	75	cobbles, sand, gravel
75	83	cobbles, boulder, sand, gravel; boulders keep forcing pipe crooked so have to pull back casing and redrill
83	90	cobbles, boulders, sand, gravel
90	105	cobbles, sand, gravel
105	106	gravel, coarse sand
106	116	cobbles, sand, gravel

Driller's log of 699-65-50 (N064699, W050146) Hanford Wells, 1973

Land surface altitude[1] 465 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	40	fine sand
40	45	fine sand and coarse gravel
45	50	coarse black sand and gravel
50	55	fine black sand and coarse gravel
55	65	cobble, gravel, and sand
65	80	coarse gravel
80	90	coarse gravel, little sand
90	95	sand, silt and gravel
95	101	fine sand, coarse gravel
101	105	sand, silt, and clay
105	125	brown clay
125	160	blue clay
160	165	brown clay
165	170	gray clay
170	180	blue clay
180	185	blue clay and gravel
185	190	sand, gravel and clay
190	210	gray, sandy clay
210	215	brown clay
215	220	sand, silt, gravel, and clay
220	225	brown coarse sand and caliche
225	250	sand, silt and gravel
250	265	sand and silt, little clay
265	285	clay, little sand and silt
285	290	sand, silt, little clay, gravel
290	295	brown clay
295	310	sand, silt, gravel, little clay
310	320	yellow clay
320	335	yellow clay, little gravel
335	345	sand, silt and clay
345	350	clay, some silt, sand, and gravel
350	370	sand, silt and clay
370	375	fine sand
375	380	sand and silt
380	385	fine gravel
385	400	fine sand
400	405	sand, silt, little clay
405	415	sand, silt, clay
415	430	fine sand, little silt
430	445	fine sand, little silt and clay
445	460	sand, silt, little clay
460	473	sand, silt, and clay with small gravel mixed in
473	475	blue clay
475	480	gray clay
480	490	gray clay with little gravel
490	520	gray clay
520	530	blue clay
530	540	blue and gray clay with small gravel

Driller's log of 699-65-50 cont

Depth (ft) From	To	Description
540	550	blue clay
550	555	green clay
555	570	blue and black clay, and sandstone in small pieces
570	575	blue and black shale and sandstone
575	580	basalt, sand, and clay

Driller's log of 699-65-59 (N065050, W058931) Hanford Wells, 1973

Land surface altitude[1] 505 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	sand
2	15	gravel and rocks
15	23	gravel and sand
23	32	gravel and rock
32	99	sand and gravel
99	117	sand and fine gravel
117	138	sand and gravel
138	150	sand
150	166	sand and gravel
166	193	sand
193	200	sandy clay

Driller's log of 699-65-83 (N064944, W082961) Hanford Wells, 1973

Land surface altitude[1] 484 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	tight sand, gravel, and cobbles
5	20	fine loose sand and gravel
20	25	tightly cemented sand and gravel
25	55	loose sand and gravel
55	80	open gravel
80	85	sand and gravel
85	90	sand, gravel, and clay, mostly very fine sand
90	95	fine sand, some gravel
95	100	fine sand, very little gravel
100	115	sand and gravel
115	120	sand

Driller's log of 699-66-23 (N065994, W022997) Hanford Wells, 1973

Land surface altitude[1] 387 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	gray gravel and silt
5	15	cobbles and gravel
15	20	cobbles, and sand to gravel
20	25	gray sand, gravel and 6" cobbles
25	30	gray silt, sand, gravel and 6" cobbles
30	35	sand, gravel and cobbles
35	40	gray clay and rock
40	45	gray clay
45	50	gray clay and some rock
50	55	gray clay
55	60	sandy, soft clay
60	65	brown, sandy clay
65	100	yellow, sandy clay

Driller's log of 699-66-38 (N066000, W038000) Hanford Wells, 1973

Land surface altitude[1] 434 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	sand and 1" gravel
5	15	cemented sand and ½" gravel, cement color
15	20	cemented sand and 1½" gravel, cement color
20	27	cemented sand and 1" gravel, cement color
27	32	fine sand, trace of silt, cement color
32	45	fine sand, clay, trace of silt, cement color
45	50	gray clay with some ¼" gravel
50	55	gray clay, with trace of black and green clay with ¼" gravel and rotten wood
55	60	gray clay with traces of black clay with ¼" gravel and rotten wood
60	65	green clay with traces of black clay
65	80	green clay with traces of brown clay
80	85	green clay with traces of brown clay and ¼" gravel
85	90	gray clay with some shale and sand and gravel
90	100	gray clay with some ¼" gravel
100	105	gray clay
105	110	gray clay with traces of blue clay
110	115	gray clay with traces of green clay and ¼" gravel
115	130	gray clay, ¼" gravel and traces of green clay
130	135	gray clay, fine gravel and trace of green clay
135	145	gray clay with trace of brown clay with some shale
145	150	gray clay with shale

Driller's log of 699-66-40 (N066099, W039459) Hanford Wells, 1973

Land surface altitude[1] 452 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Originally 699-66-39, labeled hole GM-19
3. Cable tool rig
4. ? used where entry hard to read

Depth (ft) From	To	Description
0	25	no record
25	30	coarse sand and gravel size 2"
30	42	sand and gravel, size 3"
42	50	clay, gray, soft
50	60	clay, gray with few gravels size 1"
60	75?	clay, gray, soft
75?	90?	gray clay lighter? color, soft

Driller's log of 699-69-45 (N069000, W045000) Hanford Wells, 1973

Land surface altitude[1] 485 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig
3. ? used where entry hard to read

Depth (ft) From	To	Description
0	2	fine brown sand and silt
2	15	loose black sand-some silt
15	30	sand is brown, now more silt
30	47	black loose sand
47	50	black loose sand, occasional gravels
50	55	black loose sand, more gravels
55	60	black loose sand, very gravelly
60	65?	sand, silt, gravels to 4"
65?	70	sand, silt, gravels smaller
70	86	sand, silt, gravels to 2"
86	91	sand, silt, gravels to 1", clay lenses
91	95	hard, sandy, brown clay, will not mix, have to drill on cable
95	115	hard, brown, clay-small gravels
115	120	brown clay and small gravel lenses, clay is softer now
120	125	blue clay and small gravel lenses
125	133	blue clay, fewer gravels
133	135	blue clay, no gravels
135	139	blue clay, harder now
139	140	hard, blue clay
140	145	no record
145	147	blue clay
147	150	brown clay, some gravels
150	172	brown clay, no gravels
172	185	green clay, or blue
185	190	clay turning to brown
190	200	brown clay
200	205	sandy now, brown clay
205	215	brown clay, very hard now
215	220	brown clay, very sandy
220	225	clean black and white sand, very fine (no gravels)
225	230	no record, probably clean black and white sand, very fine, no gravels
230	235	clean black and white sand, very fine, no gravels, some silt now
235	240	soft, sandy, brown clay
240	250	very sandy, soft, brown clay
250	255	very sandy, soft, brown clay; more clay, less sand
255	291	soft, sandy brown clay
291	295	hard, brown clay, gravels, lenses
295	300	hard, brown clay, gravels, lenses

Driller's log of 699-66-58 (N065807, W057768) Hanford Wells, 1973

Land surface altitude[1] 501 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	18	sand and gravel
18	20	sand and few gravel
20	25	sand, coarse and medium
25	35	few gravels, coarse and medium sand
35	55	coarse and medium sand
55	65	coarse, medium and fine sand
65	96	sand and gravel
96	102	sand, cobbles, gravel
102	112	sand and gravel

Driller's log of 699-66-64 (N066483, W064249) Hanford Wells, 1973

Land surface altitude[1] 504 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	cobbles, sand, gravel
10	28	sand, cobbles, gravel
		redrill 20' to 28'
28	44	sand, cobbles, gravel
44	55	packed sand and gravel
55	60	cobbles, sand, gravel
60	80	sand, cobbles, gravel
80	85	sand and gravel
85	90	sand, cobbles and gravel
90	92	sand, gravel
92	94	sand, cobbles, gravel
94	100	sand, gravel
100	112	sand, cobbles, gravel
112	118	? sampled-but no record

Driller's log of 699-67-51 (N067103, W051490) Hanford Wells, 1973

Land surface altitude[1] 523 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	15	black lava sand and gravel, loose
15	55	black and white sand-loose
55	75	sand and silt, brown
75	90	sand and silt, gray
90	96	gray sand and silt and small gravel 1"
96	105	clean gravel to 1"
105	115	gravel to 2" sand and silt
115	120	no record, probably gravel to 2", sand and silt
120	130	gravel to 4" sand and silt
130	140	gravel to 3" sand and silt
140	145	Ringold
145	150	small gravel and sand, clean
150	155	small gravel, sand and silt, brown
155	170	brown clay and gravel streaks
170	190	gray brown clay, gravel streaks
190	200	blue clay, gravel
200	205	blue clay, sand and gravel
205	210	pure blue clay
210	230	blue clay with sand and gravel
230	240	gray clay with sand and gravel
240	245	gray clay and decomposed rock
245	250	brown sandy clay

Driller's log of 699-67-86 (N067000, W086000) Hanford Wells, 1973

Land surface altitude[1] 470 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	coarse sand and gravel with silt binder 1½" gravel with some cobbles
5	10	coarse sand and 1½" gravel with silt binder and cobbles, light gray in color
10	15	coarse sand and 1½" gravel with silt binder, light gray in color
15	25	basalt gravel
25	30	½" gravel and coarse sand with silt binder, light gray in color
30	35	1" gravel and coarse sand with silt binder, light gray in color
35	40	coarse sand and gravel with silt binder, light gray
40	45	1½" gravel and coarse sand with silt binder, light gray
45	70	coarse sand and gravel with silt binder, light gray
70	75	1½" gravel and coarse sand with silt binder, light gray
75	80	coarse and fine black sand; about 98% fine sand
80	85	coarse and fine black sand
85	90	1 3/4" gravel down to fine sand, blackish in color
90	95	coarse and fine sand, about 50% fine black sand
95	100	2" gravel down to fine black sand
100	115	coarse and fine black sand
115	120	light brown gravel and coarse sand
120	125	coarse and 75% fine sand, light brown
125	130	fine, gray, water bearing, sand with 1½" gravel; broken basalt
130	135	2½" gravel down to fine sand; 80% fine sand, light brown; 4" broken basalt
135	140	2½" gravel down to fine sand with a silt binder; light brown
140	145	¼" gravel down to fine sand with silt binder; light brown
145	150	3" gravel down to fine sand; about 99% fine brown sand
150	155	¼" gravel sown to fine sand; about 90% fine, brown sand
155	160	3/4" gravel down to fine sand; about 99% fine, brown sand
160	165	2" gravel down to fine sand; about 90% fine sand with silt binder, with broken basalt very tightly packed
165	170	basalt gravel with 2" minus gravel with coarse sand and some silt lightly packed
170	175	1" gravel down to fine sand with silt binder; 95% fine brown sand
175	180	¼" gravel down to fine sand with silt binder; about 80% fine brown sand
180	185	1" minus gravel, coarse brown sand, silt binder tightly packed
185	190	4" minus gravel down to fine sand with silt binder
190	195	2" minus gravel down to fine brown sand with silt binder
195	200	2" gravel with 90% coarse brown sand, silt binder
200	205	2" gravel with coarse sand silt binder tightly packed
205	210	4" gravel down to fine brown sand with silt binder and traces of black clay and broken basalt, very tightly packed

Driller's log of 699-67-86 cont

Depth (ft) From	To	Description
210	215	2" minus gravel down to fine brown sand with silt binder and traces of clay and broken basalt, very tightly packed
215	220	2" minus gravel, basalt gravel, coarse brown sand, silt binder, tightly packed
220	225	2" minus gravel, basalt chips, coarse brown sand, silt binder, tightly packed
225	230	½" minus gravel down to fine brown sand with a silt binder tightly packed
230	235	2" minus gravel to fine brown sand with a silt binder very tightly packed
235	245	2" minus gravel, basalt chips, coarse brown sand, silt binder, tightly packed
245	247	silt with some sand
247	250	8" broken basalt and silt and caliche light brown in color
250	260	silt and caliche
260	265	½" gravel down to fine brown sand with silt binder
265	270	1" minus gravel, fine brown sand, silt binder
270	275	½" gravel, fine brown sand, silt binder
275	280	½" gravel down to fine brown sand and silt binder
280	285	¼" gravel down to fine brown sand and silt binder
285	290	2" minus gravel, coarse brown and fine sand
290	295	2" minus gravel, coarse and fine sand, basalt chips, traces of silt tightly packed; light brown
295	300	3" gravel down to fine brown sand and basalt chips
300	306	1½" gravel down to fine brown sand
306	310	2" minus gravel and fine brown sand
310	315	3" minus gravel down to fine brown sand with silt binder and basalt chips
315	320	1" gravel down to fine brown sand with silt binder and basalt chips
320	325	1" minus gravel, basalt chips, fine sand, silt binder
325	330	½" gravel down to fine brown sand with silt binder
330	335	2" gravel down to fine brown sand with silt binder
335	340	1" gravel down to fine brown sand with silt binder
340	345	2" gravel down to fine brown sand with silt binder
345	350	2" minus gravel, fine sand, silt binder
350	355	2" minus gravel down to fine brown sand with traces of caliche and silt binder
355	360	¼" minus gravel down to fine brown sand with a silt binder
360	365	½" minus gravel, brown sand with silt binder
365	370	½" minus gravel, brown sand with traces of silt
370	375	2" gravel down to fine brown sand with basalt chips and silt binder, very tightly packed
375	380	1" gravel, fine sand, basalt chips, silt binder, tightly packed
380	385	1" gravel, brown sand with basalt chips, silt binded, tightly packed
385	390	½" gravel down to fine brown sand with silt binder very tightly packed
390	395	fine sand with basalt chips

Driller's log of 699-67-86 cont

Depth (ft) From	To	Description
395	400	2" gravel down to fine sand with silt binder
400	405	¼" gravel down to fine sand with silt binder tightly packed
405	410	1" minus gravel, fine brown sand, silt binder
410	415	½" gravel, fine brown sand, silt binder
415	420	1" gravel down to fine brown sand with a silt binder, tightly packed
420	425	½" gravel down to fine brown sand with a silt binder tightly packed
425	430	½" gravel, fine sand, basalt chips, silt binder tightly packed
430	435	3" gravel down to fine brown sand with silt binder, tightly packed
435	440	3" gravel down to fine brown sand with silt binder, seems to be more tightly packed sand
440	445	1" gravel down to fine brown sand with silt binder, broken basalt chips tightly packed
445	450	1" gravel, fine brown sand, clay, trace of silt, tightly packed
450	455	½" gravel, fine brown sand, trace of silt, clay tightly packed
455	460	light brown silty clay with 3" gravel and down
460	465	gray or light brown silty clay

Driller's log of 699-67-98[1] (N066501, W098000) Hanford Wells, 1973

Land surface altitude[2] 453 feet msl

1. Labeled 699-66-98 in driller's log
2. Estimated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	25	cobble and silty sand
25	30	gravel and silty sand
30	35	gravel and silty sand; hit boulder at 33', very silty sand 34', few gravels
35	40	silty sand, few gravels
40	45	silty sand, gravel
45	50	gravel and sand
50	55	gravel and silty sand
55	69	gravel and sand
69	115	black silty sand
115	121	black sand, silty, and gravel
121	129	silty sand and gravel
129	130	yellow clay; pipes broken basalt
130	145	yellow clay
145	146	1' layer broken basalt
146	150	hit claiche 146'; small pieces broken basalt in caliche
150	170	caliche, broken basalt
170	180	basalt decomposed; some layers of very hard basalt
180	185	blue basalt

Summary of driller's log 669-68-105 (N068139, W105214) Hanford Wells, 1973

Land surface altitude[1] 450 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	11	loose sand and gravel
11	27	loose gravel and boulders
27	66	loose gravel
66	80	loose sand and gravel
80	93	loose sand and gravel, some boulders
93	94	boulders

Driller's log of 699-70-68 (N070123, W068357) Hanford Wells, 1973

Land surface altitude[1] 524 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	boulders,-sand and silt
10	18	boulders and gravel
18	20	cobbles and gravel
20	25	coarse gravel
25	30	fine and coarse black sand
30	35	black sand and gravel
35	40	black sand
40	45	fine black sand
45	50	sand, small and coarse gravel
50	58	gravel-small to coarse sand
58	63	sand and gravel
63	70	3' sand-2' gravel
70	75	gravel-1' sand
75	77	sand
77	95	gravel and sand
95	100	sand
100	149	gravel and sand

Driller's log of 699-71-30 (N071300, W030400) Hanford Wells, 1973

Land surface altitude[1] 399 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	20	small gravel
20	25	loose gravel-drilling fair
25	30	cemented gravel-drilling hard
30	32	clay
32	35	small gravel
35	50	clay
50	60	clay and gravel mixed
60	70	sandy clay and gravel
70	80	sandy clay
80	85	sandy clay-soft
85	90	sandy clay-harder, small gravel
90	95	sandy clay-softer
95	115	sandy clay-soft
115	120	sandy clay-quantities of small gravel increasing
120	125	sandy clay, quantities of small gravel
125	135	sand-gravel-hard
135	140	sandy clay
140	145	sand and small gravel
145	150	sand and small gravel, some clay

Driller's log of 699-71-52 (N071310, W052368) Hanford Wells, 1973

Land surface altitude[1] 521 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Rotary rig

Depth (ft) From	To	Description
0	3	sand and silt
3	10	small and coarse gravel
10	15	sand and gravel, silt
15	20	sand, very little gravel
20	55	black sand, very little gravel
55	90	black sand, some silt and gravel
90	95	3' sand, 2' gravel
95	100	gravel, some sand
100	110	coarse gravel up to 4" and black sand
110	115	coarse gravel, sand, some silt
115	155	gravel, silt sand; (whitish gray silt at 155')
155	165	sandy silt, sand and gravel
165	175	white clay or shale or silt
175	180	light green silt
180	210	medium green silt

Driller's log of 699-71-77 (N071000, W077000) Hanford Wells, 1973

Land surface altitude[1] 470 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	cobbles or gravel; 3'-8' had trouble keeping casing plumb; probably boulder or large cobbles
5	10	gravel with some sand, trace of silt
10	15	basalt gravel with some sand and trace of silt
15	20	basalt gravel sand and some silt
20	25	basalt gravel, 2" gravel, sand, and some silt
25	35	basalt gravel, sand and some silt
35	40	5" minus basalt gravel with some coarse sand and a little silt
40	45	6" minus basalt gravel and coarse sand with traces of silt
45	55	2" minus basalt gravel with coarse and fine sand, trace of silt
55	60	3" minus gravel with fine and coarse sand, trace of silt
60	65	2" minus basalt gravel, fine and coarse sand, some silt
65	70	2" minus basalt gravel, fine and coarse sand, some silt
70	75	2" minus gravel, coarse and fine sand
75	80	3" minus gravel and sand with some coarse sand
80	85	2½" minus gravel and sand with some coarse sand and trace of silt
85	90	2" minus gravel and sand with silt very tightly packed
90	95	2" minus gravel with fine and coarse sand tightly packed
95	100	2" minus gravel with sand tightly packed
100	105	small gravel with fine and coarse sand; 2" minus gravel with sand
105	115	2" minus gravel with sand and a little silt; very tightly packed
115	120	4" minus gravel with fine and coarse sand and trace of silt-loose
120	125	2" minus gravel with fine and coarse sand, trace of silt
125	130	2" minus gravel, sand tightly packed
130	135	cemented sand and gravel tightly packed
135	140	3" minus gravel with brown sand and some silt with small bits of blue clay, very tightly packed
140	145	3" minus gravel with sand and some silt, very tightly packed
145	150	2" minus gravel with sand and some silt
150	155	2" minus gravel packed, sand and some silt
155	160	1" minus gravel with fine sand and some coarse, trace of silt
160	165	2" minus gravel and sand with some coarse and trace of silt, sample color brown
165	170	2" minus gravel with fine sand and some coarse sand; trace of silt, water color brown
170	175	2" minus gravel with fine and coarse sand, brown
175	190	silt with sand, brown color; hit silt at 177'
190	200	sand and silt, light brown in color
200	205	silt and clay-light brown
205	210	silt and clay with 1" minus gravel, brown
210	220	silt and sand, brown
220	225	silt and sand, brown, trace of gravel

Driller's log of 699-71-77 cont

Depth (ft) From	To	Description
225	240	sand and silt, brown
240	245	small gravel with sand and silt, brown with different color rock
245	250	sand and silt witn 1" minus gravel
250	275	silt, fine and medium sand with light brown color
275	290	sand and silt, brown and gray
290	295	2" minus gravel with sand and silt, brown and gray
295	300	sand and 2" minus gravel, trace of silt

Driller's log of 699-72-73 (N072000, W073000) Hanford Wells, 1973

Land surface altitude[1] 481 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	gray cobbles
5	25	gray gravel, cobbles
25	30	gray boulders and gravel
30	50	gray cobbles, gravel
50	75	sand, cobbles, gravel-gray
75	85	gray gravel, cobbles
85	110	gray cemented gravel, cobbles
110	115	gray, gravel, sand.
115	150	gray, cemented gravel and cobbles
150	160	gray gravel and cobbles
160	165	gray cemented gravel and cobbles
165	170	gray and brown clay
170	175	gray, hard clay
175	200	brown clay

Driller's log of 699-72-92 (N072000, W092000) Hanford Wells, 1973

Land surface altitude[1] 450 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) Form	To	Description
0	15	gray gravel, sand, cobble-3"
15	20	sand, gravel and cobbles-6"
20	25	sand, gravel and cobbles
25	40	gray boulders
40	45	gravel and boulders
45	50	gray gravel and cobbles
50	55	dark gray gravel
55	60	gray sand and gravel
60	70	gray gravel and cobbles
70	75	gravel, boulders to sand and silt
75	80	gravel and cobbles
80	90	gray cobbles
90	95	gray, heaving sand and gravel
95	100	gray, heaving sand
100	105	gray heaving sand and gravel
105	115	gray sand and gravel
115	120	gray silt, sand, and boulders
120	130	gray sand and gravel
130	135	gray silt, sand, and cobbles or boulders
135	140	gray silt and gravel
140	150	gray sand and gravel
150	165	gray cemented gravel and cobbles
165	175	gray cobbles, sand
175	195	gray cemented gravel
195	200	gray gravel and cobbles

Summary of driller's log of 699-74-23 (N074490, W023330) Hanford Wells, 1973

Land surface altitude[1] 374 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	15	small cobbles, coarse gravel and sand
15	20	fine sand
20	23	boulders and sand
23	35	coarse gravel and cobbles with some sand
35	37	sand and yellow silt
37	50	gray silt

Driller's log of 699-74-44 (N074200, W044200) Hanford Wells, 1973

Land surface altitude[1] 443 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable rig

Depth (ft) From	To	Description
0	5	3' sand, 2' cobbles
5	35	gravel
35	40	cobbles, gravel
40	45	gravel
45	50	sand
50	70	sand and clay
70	95	clay
95	105	clay-small gravel streaks
105	110	clay
110	115	clay-gravel
115	135	clay-blue
135	140	clay-yellow and small gravel
140	145	green sandy clay
145	150	sandy clay

Driller's log of 699-74-48 (N074000, W048000) Hanford Wells, 1973

Land surface altitude[1] 485 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	gray sand and gravel
5	12	gray sand and gravel
12	15	coarse black sand and 2" minus gravel with trace of fine sand and silt, dark gray in color
15	20	coarse black sand and 1½" minus gravel with trace of fine sand and silt, dark gray
20	30	3" minus gravel with coarse sand, trace of fine sand and silt, dark gray
30	35	3" minus gravel with coarse black sand, trace of fine sand and silt, dark gray
35	65	coarse black sand with trace of silt minus gravel
65	67	coarse black sand with trace of silt and gravel
67	70	3" minus gravel with a little sand and trace of silt, dark gray
70	75	3" minus gravel with a little coarse sand and fine sand, trace of silt, tanish gray in color
75	85	coarse sand with gravel and some fine sand and silt tanish gray
85	90	coarse and fine sand with a little 1" minus gravel, trace of silt, light brown
90	95	1" minus gravel and coarse black sand with trace of fine sand and silt, dark brown
95	100	1" minus gravel with trace of fine sand and silt, brown
100	105	1" minus gravel and fine sand and silt, (brown)
105	110	minus gravel with trace of sand and silt, brown
110	115	minus gravel with trace of sand and silt
115	124	tightly packed gravel and sand with trace of silt light brown in color
124	125	clay, silt with trace of sand
125	135	silt, clay, brown in color
135	140	silty clay, blue in color
140	145	silty clay and trace of gravel with fine sand
145	150	blue silty clay with trace of gravel

Driller's log of 699-74-60 (N074000, W060000) Hanford Wells, 1973

Land surface altitude[1] 530 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	1	silt and sand gravel with cobbles
1	5	gravel and cobbles
5	20	gravel, sand and cobbles
20	25	3" minus basalt gravel with sand and trace of silt material dark gray in color
25	30	2" minus basalt gravel with fine and coarse sand and little silt material, dark gray
30	35	2" minus basalt gravel with coarse black sand, some fine sand with a little silt color material
35	45	coarse black sand and 1" minus gravel with fine sand and silt
45	55	black sand with 1" minus fine gray sand
55	60	black basalt, gravel with fine and coarse sand
60	75	black basalt, gravel with coarse sand and some silt
75	80	basalt gravel with coarse sand and silt, gray
80	85	black basalt gravel, sand, and some gray silt
85	95	2" minus gravel with coarse sand, some fine sand, trace of silt, dark gray
95	100	1" minus gravel with coarse sand and a little fine sand and silt possibly cemented
100	105	3/4" minus gravel with coarse sand and a little fine sand and silt
105	110	2" minus gravel with coarse and fine sand, traces of silt, dark gray
110	112	gravel caving in
112	115	gray gravel
115	120	gray sand
120	133	tan sand and gravel
133	140	2" minus gravel and fine sand with trace of coarse sand and silt material, brown
140	150	15" minus gravel with fine sand and trace of silt-brown

Summary of driller's log of 699-75-23A (N074590, W023350) Hanford Wells, 1973

Land surface altitude[1] 377 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	cobbles, coarse gravel and sand filling the spaces
10	27	fine to medium-grained sand
27	30	coarse gravel and sand with scattered cobbles
30	35	fine grained sand

Summary of driller's log of 699-75-23B (N074690, W023370) Hanford Wells, 1973

Land surface altitude[1] 278 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	coarse gravel and cobbles
10	15	coarse gravel and sand
15	20	boulders and sand
20	25	sand and scattered boulders
25	28	boulders
28	36	fine sand

Driller's log of 699-77-36 (N076700, W036150) Hanford Wells, 1973

Land surface altitude[1] 410 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	2	top sand
2	3	cemented gravel
3	5	sand, cemented gravel
5	15	gravel
15	20	hard, cemented gravel
20	25	loose gravel
25	30	loose gravel, small
30	40	loose gravel
40	45	loose gravel, sandy green clay
45	55	green, sandy clay-streaks of yellow
55	60	green, sandy clay
60	70	gray clay
70	75	firm brown clay
75	90	firm gray clay
90	110	green, sandy clay
110	120	brown, sandy clay
120	135	brown sandy clay, coarse sand
135	150	brown sandy clay, fine gravel

Driller's log of 699-77-54 (N076700, W054100) Hanford Wells, 1973

Land surface altitude[1] 479 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	cobbles and boulders
10	20	cobbles and gravel
20	30	loose gravel
30	35	gravel
35	40	gravel-silt streaks
40	41	cobbles
41	42	gravel and cobbles
42	43	gravel
43	44	gravel and cobbles
44	56	gravel
56	70	loose gravel
70	75	loose gravel and sand
75	85	loose fine gravel
85	90	gravel-sand
90	100	cemented gravel
100	110	cemented gravel and sand
110	115	hard packed sand and gravel
115	118	sand heaving-large gravel mixed with sand
118	120	heaving sand and gravel
120	130	sand and small gravel
130	140	sand and small gravel-clay
140	145	gravel and sand
145	150	clean gravel

Driller's log of 699-78-62 (N077750, W062300) Hanford Wells, 1973

Land surface altitude[1] 468 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	1	top sandy
1	2	large loose gravel
2	10	small cemented gravel-hard
10	15	small boulders and large loose gravel
15	20	small gravel-cemented-hard
20	25	large loose gravel
25	30	loose gravel-caving, slow
30	40	loose gravel-slow drilling
40	44	loose gravel-caving, slow
44	50	small cemented gravel-hard
50	60	cemented gravel-hard
60	61	sandy clay, soft
61	65	cemented gravel-hard
65	70	layers of gravel and clay 6-12" of gravel and 1-½ to 2' of clay
70	75	large loose gravel-slow, hole caving-pulled out and redrilled
75	90	gravel
90	91	green sand
91	93	gravel
93	95	green sand and gravel
95	100	green sand
100	120	sand-gravel
120	125	sand and gravel, softer with some signs of clay
125	130	sandy clay
130	132	clay and small gravel
132	140	sandy clay and gravel
140	150	sandy clay

Driller's log of 699-79-104

Land surface altitude[1] 772 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	topsoil
4	37	loose, black sand
37	50	sand, loose gravel and cobbles
50	52	brown sand
52	60	gravel and sand, some binder
60	125	boulders
125	160	gravel, some clay and sand
160	169	brown sand
169	206	coarse black sand, hard streaks
206	294	sand, similar to above with clay
294	320	sand, talus and clay
320	324	sand and loose gravel
324	541	clay, sand and cemented gravel boulders at 368'
541	550	sandy clay
550	570	clay, sand and cemented gravel
570	699	brown sand, clay and gravel

Driller's log of 699-80-39B (N079801, W038544) Hanford Wells, 1973

Land surface altitude[1] 402 feet msl

1. Given in formation record in Hanford files

Depth (ft) From	To	Description
0	4	sand and gravel
4	23	gravel
23	38	coarse gravel
38	40	fine sand
40	43	gravel and clay
43	53	clay

Driller's log fo 699-80-43P (N079538, W043176) Hanford Wells, 1973

Land surface altitude[1] 412 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	1	sand
1	40	gravel
40	45	clay and gravel
45	60	sandy clay
60	75	sandy-clay-brown
75	105	clay
105	112	sand and clay with gravels
112	126	sandy clay, with gravels
126	135	sandy clay
135	210	sand and clay with gravel
210	225	sandy clay
225	255	clay and sand
255	270	clay and sand with gravel
270	345	sandy clay
345	375	sandy clay with gravels
375	380	sandy clay-green
380	390	sandy clay-blue green
390	405	clay-blue-gray, sticky
405	421	clay-blue-gray with gravels
421	435	clay with gravels

Driller's log of 699-80-43Q (N079588, W043178) Hanford Wells, 1973

Land surface altitude[1] 411 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	15	gravel and sand
15	30	gravel
30	45	sand and clay with gravel; 42'-sandy clay with gravel
45	75	brown clay; 55'-brown clay
75	90	clay, brownish gray
90	135	sand and clay and gravel
135	150	sand and clay and very coarse gravel
150	165	sand and gravel
165	180	sand and clay

Driller's log of 699-80-43R (N079638, W043180), Hanford Wells, 1973

Land surface altitude[1] 411 feet msl

1. Estiamted from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	30	gravel
30	45	sandy clay with gravels
45	60	clay with gravels
60	90	firm clay
90	140	sandy clay

Driller's log of 699-80-43S (N079685, W043182), Hanford Wells, 1973

Land surface altitude[1] 411 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	40	gravel
40	45	sandy clay with gravels
45	50	no record, probably sandy clay with gravels

Driller's log of 699-81-58 (N081004, W057993) Hanford Wells, 1973

Land surface altitude[1] 438 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	large gravel with sand and trace of silt
5	10	3" minus gravel
10	14	boulders
14	15	boulders and gravel
15	20	large gravel and cobble with some sand and trace of silt; 16'-boulders
20	25	3' minus gravel with some trace of silt, coarse sand and fine sand, stray cobbles
25	40	sand and gravel
40	45	3" minus gravel with fine sand and some coarse sand and a little silt, brownish gray
45	50	3" minus gravel with some fine and coarse sand, traces of silt, brownish gray
50	55	1 1/8" minus gravel with fine sand and silt, brownish gray
55	60	light gray sand and gravel
60	65	sand
65	67	gray sand
67	70	1" minus gravel with fine sand and some silt, light brown
70	75	1" minus gravel with coarse and fine sand, trace of silt, light brown
75	80	1" minus gravel with coarse and fine sand with trace of silt, light brown
80	85	sand and gravel
85	90	sand and gravel, silt, light brown
90	97	tan silt
96	105	silt with a little sand and 3/4" minus gravel, light brown
105	115	silt with some sand, lumps of silt and a few pea gravel, brown
115	120	silt with some hard lumps of silt and some pea gravel, brown
120	135	tan silt
135	145	light gray-green silt with flakes of gravel
145	150	sand and gravel

Driller's log of 699-83-47 (N082850, W047100) Hanford Wells, 1973

Land surface altitude[1] 433 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	brown sand
10	25	gray sand
25	30	no record, possibly gray sand
30	35	boulders and cemented gravel; hit boulders at 32' with sand
35	50	small gravel-cemented
50	55	coarse sand
55	80	gravel
80	90	gray clay and gravel
90	105	brown sandy clay
105	115	gray sandy clay
115	120	brown sandy clay
120	125	brown sandy clay with gravel
125	130	brown sandy clay
130	140	brown sandy clay-loose
140	145	brown sandy clay with two streaks of gravel at 144'
145	150	brown sandy clay

Driller's log of 699-84-35A[1] (N084000, W035000) Hanford Wells, 1973

Land surface altitude[2] 398 feet msl

1. Labeled 699-84-35
2. Calculated from altitude of top of casing given in Hanford Wells, 1973
3. Cable tool rig

Depth (ft) From	To	Description
0	35	sand and gravel
35	40	gray silt and small gravel
40	48	tan silt
48	50	clay, silt with trace of coarse sand, grayish brown in color
50	55	clay, silt with a little fine gravel and coarse sand, grayish brown in color
55	65	silty sand with very light trace of gravel, brown in color
65	70	silt and fine sand with trace of coarse sand, tightly packed
70	75	silty fine sand with tightly packed 1" minus gravel
75	100	brown silt and sand
100	130	light brown sand, silt, and gravel
130	140	brown silty sand with traces of fine gravel
140	150	brown silty sand with a few hard lumps
150	195	silt with little clay and some gravel, golden brown in color
195	200	silty sand with light trace of gravel, brown in color
200	210	silty sand with some 3/4" minus gravel, brown in color
210	215	tan silt and gravel
215	220	light gray clay and caliche
220	225	silty clay with some pea gravel and coarse sand, tan in color
225	230	silty clay with trace of gravel and coarse sand, tan in color
230	240	silty clay with trace of gravel and sand, tinted blue
240	245	silt with trace of sand and 1" minus gravel, brownish color
245	255	sand and silty gravel
255	260	sand and silty pea gravel
260	270	light brown sand and silty pea gravel with rusty colored streaks
270	281	light brown sand and silty pea gravel
281	290	silt with cemented 3/4" minus gravel, light brown in color
290	295	light blue silt with little "schall"
295	300	light blue silt with a little blue "schall" and gravel
300	303	no record; but brown mica sand came in with the water at 303'
303	305	black clay with "schall"
305	325	grayish black clay and silt
325	335	grayish black clay and pea gravel
335	340	silty black clay with some "schall" clay
340	345	silty black clay with black "schall" clay
345	350	blue and black "schall" clay
350	355	light blue "schall" clay with ¼" minus basalt gravel
355	359	no record
359	360	basalt bedrock
360	365	coarse and fine basalt chips
365	370'1"	bedrock with a lot of fine sand and silt in sample

Driller's log of 699-84-36D White Bluff

Depth (ft) From	To	Description
0	8	no record
8	25	60% gravel, 40% gray sand
25	35	50% gravel, 50% sand

Driller's log of 699-84-36E

Depth (ft) Form	To	Description
0	20	60% gravel, 40% sand
20	35	60% gravel, 40% sand

Driller's log of 699-84-36F

Depth (ft) From	To	Description
0	2	80% sand, 20% brown gravel
2	12	60% sand, 40% gray gravel
12	25	60% sand, 40% gray gravel
25	35	60% gravel, 30% sand, 10% cobbles

Driller's log of 699-86-60 (N085723, W059826) Hanford Wells, 1973

Land surface altitude[1] 452 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	6	sand and gravel with some cobble
6	10	sand, gravel and cobbles-8 and 9"
10	15	cobbles and boulders
15	16	sand
16	20	cobbles, gravel and sand
20	25	sand, silt and gravel
25	30	sand, silt and gravel up to 1"
30	35	silt, sand and 4" gravel
35	40	sand, gravel and cobbles
40	45	sand and gravel
45	50	gravel and cobbles
50	55	cemented sand and gravel
55	60	silt, sand and gravel up to 5"
60	62	sand and gravel and moisture
62	65	sand and gravel to 6"
65	70	cobble
70	75	sand, gravel and cobble
75	80	clean gravel and cobble to 6 and 8"
80	85	sand and gravel
85	90	very little sand, 2/3 gravel
90	95	mostly gravel
95	96	light gray clay
96	100	light gray clay with some gravel
100	130	light gray clay
130	155	silty clay
155	160	brownish red clay
160	165	brownish clay with some small gravel
165	170	brown silt and sandy clay
170	175	brown silt and sandy clay, some pea gravel
175	195	sandy clay; small bits of sandstone at 180'
195	200	silty sand
200	220	sandy clay and gravel
220	230	silty sand
230	240	brown silty sand with decayed pea gravel
240	245	brown silty sticky clay
245	255	brown silty sandy clay
255	275	brwon, sandy sticky clay
275	280	light brown, sandy sticky clay
280	285	dark brown clay, drills slowly
285	290	weathered rock and gravel
290	295	brown silt, sand, and weathered gravel; hardpan at 291'
295	305	brown silty clay, with pea gravel
305	310	sticky, silty clay with pea gravel
310	315	brown and gray, sticky, silty clay and pea gravel
315	335	sandy clay
335	345	sandy, sticky clay

Driller's log of 699-86-60 cont

Depth (ft) From	To	Description
345	350	sandy clay
350	355	sticky clay
355	360	sticky, brown clay
360	380	sticky, brown, silty clay
380	390	blue silty clay with some gravel
390	395	tough, sticky blue clay
395	400	tough sticky blue clay with pea gravel
400	405	sticky, dark, gray clay
405	410	very sticky, dark gray clay
410	415	sticky blue and black silty clay
415	435	brown and gray silty clay
435	440	brownish gray sticky clay
440	445	grayish black clay
445	455	"softer" from 446 to 453 is a multicolored material that is fairly hard. Has a lot of gravel in it. Drills like some kind of cemented material
455	460	small gravel and clay with areas of cemented material
460	465	clay, light gray gravel up to 3" with areas of cemented material
465	470	caliche and gravel
470	475	light clay and pea gravel
475	480	sticky brown silty clay,pea gravel and some 1"
480	490	hard, brown sand and gravel
490	510	cemented gravel
510	515	cemented gravel, 70% quartz
515	530	basalt

Driller's log of 699-89-35 (N089000, W035000) Hanford Wells, 1973

Land surface altitude[1] 395 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	silt and 12" cobbles, brown
5	10	silt and 10" cobbles, brown
10	25	cobbles and boulders
25	30	gravel and cobbles
30	40	no record
40	50	sand and gravel; 47' to 54'-fine sand
50	75	brown clay

Summary of driller's log of 699-92-14 (N092000, W014000) Hanford Wells, 1973

Land surface altitude[1] 860 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	3	topsoil
3	9	caliche
9	210	light brown clay, sandy
210	278	sticky blue clay, shale streaks; sand 270-274
278	291	green and black clay
291	303	blue clay
303	329	gray clay
329	365	hard gray clay and green shale
365	397	blue clay and streaks of shale
397	415	brown sandy clay
415	438	blue and brown clay layers
438	580	brown silt and clay, limey streaks, pea gravel in clay 573-580'
580	588	sandstone and gravel
588	601	hard gray basalt
601	625	soft red basalt
625	648	black basalt
648	697	gray basalt
697	701	green shale and talus
701	730	gray hard pan
730	770	black basalt
770	804	hard, gray basalt
804	810	broken black basalt
810	836	hard, gray basalt
836	839	broken, gray basalt
839	841	hard gray basalt
841	842	black basalt
842	854	hard, gray, basalt
854	860	broken, gray basalt with hard streaks
860	874	hard gray basalt
874	883	red porous rock and clay
883	1146	porous black basalt
1146	1165	hard gray basalt
1165	1195	blue gumbo clay
1195	1246	gray basalt
1246	1276	probably conglomerate; sand, gravel and black basalt layers
1276	1283	blue clay
1283	1291	probably conglomerate; sand, gravel and black basalt
1291	1294	black basalt
1294	1313	gray basalt
1313	1348	black basalt
1348	1371	gray basalt, hard
1371	1396	porous black basalt, clay and gravel layers; black basalt at 1396'

Summary of driller's log of 699-93-93[1]

Land surface altitude[2] 635 feet msl

1. Summary gives location as SW¼, SE¼, Sec. 16, T14N, R25E, Wahluke Slope
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	22	coarse gray sand
22	77	fine gray sand
77	197	sandy clay
197	214	sandy clay and gravel
214	227	cement gravel
227	263	sand, clay and gravel
263	268	cement gravel
268	274	gray clay, sand and gravel
274	288	brown and gray sand with clay
288	290	gray clay
290	300	yellow clay
300	310	gray clay
310	325	clay, sand and gravel
325	343	light brown clay
343	378	sand and gravel, clayey
378	407	cement gravel
407	429	yellow clay
429	451	yellow clay with gravel
451	453	yellow and blue clay
453	480	blue shale
480	486	yellow sandy clay
486	488	soft sand and clay
488	506	hard sand and clay
506	513	sand, gravel and clay
513	520	cement gravel

Driller's log of 699-96-49 (N096388, W049232) Hanford Wells, 1973

Land surface altitude[1] 417 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	3" gravel
5	10	3" minus gravel with some coarse and fine sand, trace of silt, gray in color
10	20	2" minus gravel with some fine and coarse sand, trace of silt, gray in color
20	50	3" minus gray gravel and fine sand and silt
50	55	fine sand with some coarse sand and fine gravel, gray in color
55	60	gray, fine and coarse sand
60	65	brown sand and silt with little fine gravel
65	70	brown sandy silt with bit of hard lumps of silt and fine gravel
70	75	brown sand and silt with bit of hard lumps of silt
75	85	brown sand and silt with schall, silt and calcihe
85	100	brown sandy silt with fine caliche

Driller's log of 699-97-43 (N097143, W043421) Hanford Wells, 1973

Land surface altitude[1] 420 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	3" minus gravel with coarse and fine sand, little silt, gray in color
5	25	3" minus gray gravel with coarse and fine sand
25	30	8" minus, gray gravel, fine silt and sand
30	35	fine sand with trace of coarse sand and 1" minus gravel and silt, light gray in color
35	45	3" minus gravel with coarse and fine sand, trace of silt, gray
45	50	clay and silt with gravel, reddish brown in color
50	60	reddish brown clay and silt with bits of fine gravel
60	65	reddish brown clay and silt with bits of coarse sand and hard silt
65	80	brown sand and hard silt
80	100	brown sand and caliche

Summary of driller's log of 699-101-48A (N101465, W047884) Hanford Wells, 1973

Land surface altitude[1] 388 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	35	boulders, cobbles, coarse gravel with some sand and sandy clay in the openings
35	40	fine sand
40	48	medium sand with very little gravel and a few cobbles
48	50	firm yellow sandstone

Summary of driller's log of 699-101-48B (N101454, W047787), Hanford Wells, 1973

Land surface altitude[1] 388 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	35	boulders, cobbles, with some sand and sandy clay in the openings
35	46	fine sand and cobbles with scattered boulders
46	48	sand with medium and coarse gravel

Summary of driller's log of 699-101-48C (N101476, W047985) Hanford Wells, 1973

Land surface altitude[1] 388 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	21	boulders and cobbles with some sand and sandy clay in the openings
21	24	sand and cobbles
24	43	coarse gravel and cobbles with some sand
43	45	medium and coarse gravel with very little sand
45	47	sand and fine gravel
47	49	clay bound medium and coarse gravel
49	77	fine yellow sandstone-calcareous cement

Summary of driller's log of 699-102-48 (N101550, W047790) Hanford Wells, 1973

Land surface altitude[1] 388 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	38	boulders, cobbles, with some sand and sandy clay in the openings
38	41	fine and medium sand
41	56	yellow sandstone-calcareous cement, streak of pebbles on top

Summary of driller's log of 699-107-79 (N107000, W078890) Hanford Wells, 1973

Land surface altitude[1] 657 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	soil
10	49	caliche (hard 26-28) cemented gravel, very hard at 40'
49	51	gravel
51	60	clay
60	80	shale and clay
80	84	clay
84	93	hard shale
93	110	shale and clay
110	181	red, sandy shale
181	191	sand carrying water; hard sand streak at 185'
191	193	consolidated material, drills like rock
193	224	sand and clay
224	226	sand
226	234	consolidated material
234	246	sandy clay
246	251	caliche
251	278	sand and clay
278	290	brown sand, hole caves
290	316	white, sticky clay
316	328	brown, sticky clay
328	335	fine sand
335	354	shale
354	363	black basalt
363	368	alternate shale and basalt streaks
368	458	black basalt
458	470	broken basalt
470	485	conglomerate of rock and shale
485	490	broken red basalt
490	492	basalt (harder)
492	499	basalt
499	625	gray basalt, very dense at 518', extremely hard at 523'-525' and 541'-543'; crevices at 590'
625	630	broken rock, some water
630	635	brown clay, very sticky
635	643	basalt
643	645	basalt and brown clay streaks
645	658	gray clay
658	661	basalt and clay streaks
661	665	brown clay
665	673	basalt with crevices
673	680	gray basalt
680	685	basalt with streaks of blue clay
685	748	gray basalt as above
748	760	porous blue basalt; clay streaks at 755'
760	767	gray basalt
767	769	blue clay
769	798	gray basalt; blue clay streak at 795'

Summary of driller's log of 699-107-79 cont

Depth (ft) From	To	Description
798	813	blue clay
813	823	yellow sand and clay
823	859	gray sandstone
859	861	yellow clay
861	862	basalt
862	880	yellow clay and sand
880	889	blue shale
889	895	blue shale and sand
895	900	sand bearing water
900	905	shale and basalt streaks
905	934	basalt
934	935	white porous rock

Summary of driller's log of 699-111-24 (N111000, W024000) Hanford Wells, 1973

Land surface altitude[1] 698 feet msl

1. Altitude given on summary driller's log, Hanford files

Depth (ft) From	To	Description
0	109	hard, compact, white clay
109	148.5	red-brown shale
148.5	151	sand lense, red; caves at 148'
151	204	red-brown shale
204	208	blue clay; hole caves
208	219	brown and gray basalt
219	226	alternate layers of hard and soft rock
226	238	hard gray basalt
238	254	medium hard gray basalt, green clay in seams
254	269	porous black basalt, somewhat vesicular
269	294	very hard black basalt
294	297	brittle, hard basalt
297	339	porous black basalt, sand in interbedding
339	354	hard, black basalt, sand in interbeds
354	367	fractured basalt, hard
367	390	hard basalt
390	433	hard, rough, black basalt
433	476	hard gray basalt, crevasse at 468', rock showed smooth side
476	490	brown and gray basalt, softer
490	509	gray basalt
509	535	gray basalt with seams of blue clay
535	560	broken basalt
560	568	gray basalt
568	590	gray and black basalt
590	598	hard, broken basalt
598	604	gray basalt
604	608	gray basalt with soapstone streaks
608	614	gray basalt, closely fractured from 608' to 609'
614	620	vesicular basalt, slightly altered, vesicules coated with blue clay
620	634.5	basalt

Summary of drilling log of 699-113-38 (N113000, W038000) Hanford Wells, 1973

Land surface altitude[1] 730 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	6	topsoil
6	23	caliche
23	78	white clay and gravel
78	107	brown clay scattered gravel
107	145	hard caliche
145	158	brown sandy clay
158	163	brown clay, sand and gravel
163	172	fine brown sand
172	275	brown clay, basalt talus, hard
275	277	coarse sand and gravel
277	300	porous black basalt
300	324	gray basalt
324	358	porous black basalt with green material in pores
358	377	hard gray basalt
377	405	porous gray basalt and clay
405	458	medium hard, gray basalt
458	510	soft, dark gray basalt
510	560	hard gray basalt
560	565	black basalt
565	580	gray clay
580	598	gray basalt
598	643	black basalt
643	662	gray basalt
662	702	black basalt
702	706	gray basalt
706	715	black basalt
715	721	gray basalt
721	765	soft gray basalt with streaks of white ash
765	797	blue clay
797	816	blue clay and sand
816	846	sticky yellow clay
846	872	black clay with decomposed rock
872	876	black basalt
876	879	broken black basalt and black sand
879	921	black sandstone
921	955	gray basalt
955	982	black basalt
982	998	porous brown basalt, broken
998	1032	black basalt
1032	1034	hard gray basalt
1034	1038	red and brown cinders
1038	1067	black basalt
1067	1077	broken black and brown basalt
1077	1100	broken black basalt
1100	1124	hard black basalt
1124	1132	light brown basalt
1132	1140	hard gray basalt

Summary of drilling log of 699-114-60 (N114000, W060000) Hanford Wells, 1973

Land surface altitude[1] 786 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	13	topsoil
13	16	clay and gravel
16	23	brown sand
23	101	brown and gray clay
101	193	soft brown clay with pebbles
193	276	light gray sandy clay
276	288	broken basalt
288	341	hard gray basalt (crevices)
341	360	porous black rock with clay
360	366	yellow clay
366	373	porous black rock and clay
373	399	brown and black porous rock
399	522	medium hard, gray basalt
522	527	gray clay, sand and gravel
527	536	brown clay and gravel
536	546	brown sand and clay
546	549	brown and red clays in streaks
549	570	broken rock
570	640	gray basalt; crevices at 635'
640	660	broken gray basalt
660	710	yellow sticky clay
710	744	brown sand
744	754	yellow clay
754	770	yellow, brown, and green clay and talus rock
770	774	red clay with some rock
774	784	gray clay-brown rock
784	861	gray basalt
861	868	red, yellow, and gray broken rock
868	880	gray, broken basalt

Formation record of 699-HAN-8 (N053862, W018985) Hanford Wells, 1973

Land surface altitude[1] 382 feet msl

1. Given in formation record, Hanford files

Depth (ft) From	To	Description
0	2	top soil
2	9	gravel
9	19	gravel and boulders
19	26	gravel
26	28	pea gravel
28	50	sand and gravel
50	60	sand, some gravel

Formation record of 699-HAN-9 (N054065, W018331) Hanford Wells, 1973

Land surface altitude[1] 392 feet msl

1. Given in formation record, Hanford files

Depth (ft) From	To	Description
0	10	sand, gravel, boulders
10	16	gravel, boulders
16	18	boulders
18	48	sand, gravel
48	50	sand
50	79	sand, gravel-coarse
79	90	yellow clay entered

Summary of driller's log of 1199-12-13 (N011822, W013489) Hanford Wells, 1973

Land surface altitude[1] 349 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	topsoil
5	15	rock and gravel
15	18	coarse, dry gravel
18	70	sandy blue shale

Summary of driller's log of 1199-14-13 (N014060, W013015) Hanford Wells 1973

Land surface altitude[1] 369 feet msl

1. Ground altitude given on summary log; top of casing given in Hanford Wells, 1973 is 363 feet

Depth (ft) From	To	Description
0	8	silt
8	13	boulders and coarse gravel
13	20	boulders and gravel
20	35	fine sand
35	48	gray shale

Drilling log of 1199-14-14 (N014130, W013980) Hanford Wells, 1973

Land surface altitude[1] 353 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	5	gravel and boulders
5	19	sand, gravel, and boulders
19	33	silt, sand, gravel and boulders
33	36	brown clay and fine gravel
36	85	clay
85	95	greenish blue shale
95	100	dark green shale; a little white sand on top of basalt; gravel
100	102	basalt, and gravel
102	112	basalt
112	121	solid basalt
121	123	solid basalt and some white sand
123	131	solid basalt

Summary of driller's log 1199-15-13C (N015060, E013015) Hanford Wells, 1973

Land surface altitude[1] 358 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	18	fine sand
18	28	silt and clay
28	32	sand and gravel
32	34	coarse gravel
34	41	sand
41	45	coarse sand, gravel
45	61	fine sand, coarse gravel
61	70	gravel and boulders
70	72.3	clay

Summary of driller's log of 1199-16-12 (N015600, E012000) Hanford Wells, 1973

Land surface altitude[1] 418 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	37	silt and fine sand

Summary of driller's log of 1199-16-13D (N016059, E013014) Hanford Wells, 1973

Land surface altitude[1] 357 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	21	overburden
21	25	silt, sand
25	29	basalt and quartz; sand and gravel
29	65	cobbles, rocks; sand and gravel
65	70	green clay

Summary of driller's log of 1199-17-13A (N016955, E013000) Hanford Wells, 1973

Land surface altitude[1] 358 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	16	yellow silt
16	20	sand and silt
20	25	dark sandy silt
25	30	sand and silt
30	33	coarse sand and gravel
33	35	medium gravel
35	48	coarse gravel
48	51	sand and gravel
51	56	boulders and gravel
56	61	gravel and brown sand
61	67	blue clay

Summary of driller's log of 1199-17-13B (N016986, E013013) Hanford Wells, 1973

Land surface altitude[1] 354 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	yellow silt
10	54	sand and gravel
54	56	sand
56	65	blue shale

Summary of driller's log of 1199-18-13 (N018454, E013007) Hanford Wells, 1973

Land surface altitude[1] 358 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	23	sand and silt
23	40	sand and medium gravel
40	51	sand and gravel
51	68	sand and clay

Summary of driller's log of 1199-19-11 (N019330, E010920) Hanford Wells, 1973

Land surface altitude[1] 413 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	40	fine sand
40	58	fine sand and gravel
58	69	sand and gravel
69	77	gravel
77	87	blue shale

Summary of driller's log of 1199-19-13C (N019254, E013085) Hanford Wells,1973

Land surface altitude[1] 354 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	30	silt and sand
30	31	gravel
31	35	cemented sand
35	39	sand
39	41	sand and gravel
41	45	sand and coarse gravel
45	48	coarse gravel
48	52	sand and gravel
52	54	green clay

Summary of drilling log of 1199-20-12 (N020300, E012200) Hanford Wells, 1973

Land surface altitude[1] 400 feet msl

1. Estimated from altitude of top of casing given in Hanford files, 1973

Depth (ft) Form	To	Description
0	34	sand, gravel and silt
34	39	boulders
39	45	boulders, sand and gravel
45	50	boulders and gravel
50	54	boulders and sand
54	57	fine gravel
57	62	sand and gravel
62	68	coarse gravel
68	71	brown shale
71	76	blue shale

Summary of driller's log of 1199-20-13 (N020200, E013100) Hanford Wells, 1973

Land surface altitude[1] 354 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	22	overburden-sand and gravel
22	33	gravel, little sand
33	40	clay and cemented sand
40	44	basalt sand
44	51	clean basalt and quartz
51	62	blue-gray silt

Summary of driller's log of 1199-20-14 (N020139, E014267) Hanford Wells, 1973

Land surface altitude[1] 355 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	topsoil
4	17	gravel
17	36	sand
36	45	medium gravel
45	53	fine sand
53	55	sand and gravel
55	65	blue sandy clay

Summary of driller's log of 1199-20-17 (N019800, E016800) Hanford Wells, 1973

Land surface altitude[1] 353 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 197

Depth (ft) From	To	Description
0	18	overburden
18	26	sand and gravel
26	48	brown clay
48	70	black clay
70	88	coarse gravel
88	138	black clay
138	155	basalt

Summary of driller's log of 1199-21-12 (N020507, E011942) Hanford Wells, 1973

Land surface altitude[1] 405 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973; summary log gives ground elevation of 408 feet

Depth (ft) From	To	Description
0	10	sand and silt
10	37	quartz, basalt and sand
37	43	fine sand
43	46	fine sand and little gravel
46	48	coarse gravel
48	54	coarse gravel, sand and rock
54	57	gravel, sand, and rock
57	60	coarse gravel
60	67	coarse gravel, and sand
67	70	gravel and sand
70	72	sandy brown shale
72	77	brown shale
77	82	green shale

Summary of driller's log of 1199-22-11A (N021838, E011360) Hanford Wells, 1973

Land surface altitude[1] 402 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	45	sand and gravel
45	70	sand and coarse gravel
70	72	boulders
72	82	boulders and coarse gravel
82	84	sand and fine gravel
84	94	yellow clay
94	98	coarse gravel
98	108	coarse gravel and sand
108	111	boulders
111	117	blue mud
117	125	blue mud and coarse gravel
125	140	blue shale
140	170	basalt boulders and gravel
170	178	brown shale

Summary of driller's log of 1199-22-11B (N021851, E011356) Hanford Wells, 1973

Land surface altitude[1] 403 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	topsoil
10	18	gravel
18	40	gravel and sand
40	45	sand
45	55	small gravel and sand
55	62	fine gravel and sand
62	70	little gravel and fine sand
70	74	boulders and fine sand
74	80	quicksand
80	86	silt, sand, and gravel
86	92	fine gravel and sand
92	103	fine sand, very little gravel
103	111	fine sand, gravel and silt
111	124	fine sand, some shale, silt
124	130	fine sand, little shale
130	141	coarse gravel and sand
141	146	basalt gravel and sand
146	175	basalt gravel-coarse quartz
175	190	little gravel, sandy shale
190	200	gray shale

Driller's log of 1199-22-13A (N022054, E013139) Hanford Wells, 1973

Land surface altitude[1] 356 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	12	blue sand
12	33	sampled but not recorded
33	50	blue clay

Driller's log of 1199-22-13B (N022072, E013192) Hanford Wells, 1973

Land surface altitude[1] 352 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft)		
From	To	Description
0	10	sand and clay
10	15	yellow clay
15	27	yellow and blue clay
27	30	blue clay

Driller's log of 1199-22-13C (N022053, E013017) Hanford Wells, 1973

Land surface altitude[1] 368 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable rig

Depth (ft) From	To	Description
0	15	sand, hole caved in at 15'
15	25	sand and clay
25	50	no record
50	55	blue clay

Summary of driller's log of 1199-22-13D (N021743, E013117) Hanford Wells, 1973

Land surface altitude[1] 355 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	32	overburden
32	38	cobble rock
38	39	sandy shale
39	56	shale
56	61	sand and gravel
61	63	sand
63	119	shale
119	129	gravel; entered shale at 129'

Driller's log of 1199-22-16A (N021720, E015780) Hanford Wells, 1973

Land surface altitude[1] 357 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	small gravel, little sand, small and coarse gravel up to 3"
5	10	little sand and silt
10	15	coarse gravel (up to 6"), little sand and silt
15	17.5	small and coarse gravel and sand
17.5	18	small and coarse gravel and sand, little silt

Driller's log of 1199-22-16B (N021735, E015900) Hanford Wells, 1973

Land surface altitude[1] 358 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	sand and gravel to 6"
10	12.5	small and coarse gravel
12.5	17.5	gravel up to 4", sand
17.5	22	small and coarse gravel

Driller's log of 1199-22-16C (N021875, E016240) Hanford Wells, 1973

Land surface altitude[1] 358 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2.5	gravel to 3", and silt
2.5	· 5	boulders, pea gravel, sand and silt
5	7.5	gravel to 3", little sand, silt
7.5	10	gravel up to 3" and sand
10	12.5	pea gravel and sand
12.5	17.5	gravel up to 4", sand and silt
17.5	20	coarse gravel, little sand

Driller's log of 1199-29-12B

1. No coordinates given but log indicates "tract house"

Depth (ft) From	To	Description
0	9	topsoil
9	15	sand and gravel
15	54	sand
54	55	quicksand

Summary of driller's log of 1199-30-14 (N029600, E013600), Hanford Wells, 1973

Land surface altitude[1] 357 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	topsoil
2	7	loose gravel
7	32	cemented gravel and boulders (gray binder)
32	35	loose sand and gravel
35	39	cemented gravel with yellow binder
39	53	yellow clay
53	55	blue clay

Driller's log of 1199-31-19[1]

Land surface altitude[2] 343 feet msl

1. Driller's log calls this N. Richland Island test hole and gives coordinates N30,850, E19,300
2. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	50% gravel and 50% fine sand
5	8	60% gravel and 40% fine sand
8	14	60% golfball to pea size gravel, 40% white sand
14	16	pure gravel
16	21	60% gravel and 40% fine sand
21	25	60% gravel and 40% sand and silt
25	29	80% gravel and 20% sand and silt
29	33	50% gravel, 50% sand and silt
33	47	5% gravel, 10% silt, and 85% fine sand; there are thin layers of gravel, not over a foot thick, in this fine sand

Driller's log of 1199-32-17 (N031840, E017417) Hanford Wells, 1973

Land surface altitude[1] 370 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	15	coarse gravel and rocks
15	20	rocks and coarse gravel
20	25	coarse gravel and rocks
25	35	fine black and white sand
35	40	coarse sand and gravel
40	50	sand
50	53	gray sand
53	55	gray sand and some yellow clay
55	60	gray sand and yellow clay
60	68	sand and red clay
68	75	blue clay and shale

Driller's log of 1199-33-13A (N033285, E012622) Hanford Wells, 1973

Land surface altitude[1] 378 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	7	sandy loam; large boulder at 7'
7	15	boulders
15	20	coarse sand and gravel
20	25	coarse sand, getting finer
25	38	coarse sand and fine gravel
38	40	coarse sand and yellow clay
40	47	sand, gravel and clay
47	48	yellow sand
48	58	yellow sand and gravel
58	60	yellow clay, sand and gravel
60	80	yellow clay, coarse sand and gravel
80	84	yellow clay sand and gravel
84	100	yellow clay
100	105	yellow clay with coarse gray sand
105	108	white sand, water gravel with trace of blue clay
108	110	slate and sand
110	115	blue clay and sand
115	120	blue clay or shale

Driller's log of 1199-33-13B (N033258, E013195) Hanford Wells, 1973

Land surface altitude[1] 378 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	sand
5	15	sand and gravel
15	20	black sand and gravel
20	25	black sand and coarse gravel
25	40	black sand and gravel
40	45	yellow clay, sand and gravel
45	55	yellow clay and gravel
55	90	yellow clay, sand, and gravel
90	105	yellow clay and sand
105	117	yellow clay and less sand
117	130	blue clay

Summary of driller's log of 1199-33-18B (N032564, E018161) Hanford Wells, 1973

Land surface altitude[1] 376 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	sand
2	4	coarse gravel
4	5	sand
5	8	sandy gravel
8	17	gravel and sand
17	23	2" gravel
23	28	gravel and sand
28	30	gravel
30	56	gravel, 26% sand
56	66	gravel, 30% sand
66	73	sand, 4" gravel
73	77	clay and conglomerate

Summary of driller's log of 1199-33-18C (N032578, E017746) Hanford Wells, 1973

Land surface altitude[1] 374 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	1	clay, sand, and gravel
1	3	sand and gravel
3	10	fine sand
10	16	fine sand and gravel
16	22	fine sand and gravel to 6"
22	29	fine sand and gravel to 8"
29	34	fine sand and gravel to 6" cemented with some clay
34	44	fine sand and gravel to 6" cemented with clay
44	48	fine sand and gravel, some clay (cemented), stones to 9"
48	52	fine sand and gravel, some clay; cemented, stones to 10"
52	56.5	fine sand and gravel, less clay, (loose) stones to 6" diameter
56.5	60	fine sand and gravel, (trace of clay), stones to 6"
60	67	fine sand and gravel, (some clay); stones to 6"
67	69	fine muddy sand with chunks of clay (brown), stones to 4"
69	70.6	fine muddy sand with chunks of clay (yellow sticky)

Driller's log of 1199-33-18D (N032764, E017918) Hanford Wells, 1973

Land surface altitude[1] 363 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	boulders
5	8	coarse sand and boulders; caves at 8'
8	25	sand and gravel
25	30	coarse sand and fine gravel
30	33	coarse gravel
33	37	coarse sand and gravel
37	40	washed sand and silt
40	41	gravel and silt
41	46	clay, sand and gravel
46	80	blue shale
80	84	gravel
84	85	shale
85	100	slate, sand, and fine gravel
100	101	fine black sand

Driller's log of 1199-33-18E (N032855, E018200) Hanford Wells, 1973

Land surface altitude[1] 374 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth(ft)		
From	To	Description
0	18	sand and little gravel
18	27	fine black and white sand
27	50	coarse sand and gravel
50	60	fine black and white sand
60	70	brown sand and gravel
70	80	blue clay

Summary of driller's log of 1199-33-18F (N032964, E018217) Hanford Wells, 1973

Land surface altitude[1] 366 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	1	sand and gravel
1	21	fine sand, gravel, stone
21	26	fine sand, gravel
26	43	fine sand, gravel, stone
43	44	sand
44	50	fine sand, gravel, stones to 8"
50	52	conglomerate

Driller's log of 1199-34-13 (N034026, E013203) Hanford Wells, 1973

Land surface altitude[1] 389 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	25	sandy loam
25	30	sand and gravel
30	49	coarse gray sand
49	50	fine black and white sand
50	52	fine black and white sand with little clay
52	65	coarse pea gravel and clay, with sand
65	75	gravel with lots of clay
75	85	sandy clay
85	86	boulders, sand, and clay
86	92	gravel-pea to marble size, sand and gravel
92	103	gray sand and gravel

Summary of driller's log of 1199-34-15 (N033750, E014700) Hanford Wells, 1973

Land surface altitude[1] 369 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	18	topsoil
18	24	coarse gravel, some sand (cemented)
24	27	coarse gravel, some sand
27	36	coarse gravel, some sand and clay
36	38	gravel with some sand
38	44	gravel, sand, and clay
44	66	loose gravel
66	100	sand, gravel, some clay
100	119	sand, gravel, some clay
119	120	blue clay

Driller's log of 1199-34-19 (N034260, E018598) Hanford Wells, 1973

Land surface altitude[1] 378 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	20	sand and gravel
20	30	gravel
30	40	sand
40	50	gravel
50	60	sand
60	62	sand and gravel
62	63	sand

Summary of driller's log of 1199-38-11 (N037856, E010621) Hanford Wells, 1973

Land surface altitude[1] 362 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	3	sand and silt
3	4	coarse gravel
4	10	sand and gravel
10	22	sand and gravel, some boulders
22	24	coarse gravel
24	30	sand and gravel
30	40	fine sand, heavy gravel
40	55	fine sand, with a little yellow clay
55	68	fine sand
68	75	sand and gravel
75	90	sand, fine gravel

Summary of driller's log of 1199-39-10A (N038585, E009526) Hanford Wells, 1976

Land surface altitude[1] 367 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	sand and silt
10	20	sand and gravel
20	30	medium gravel
30	40	fine sand and gravel
40	55	fine heaving sand
55	65	coarse gravel
65	70	fine gravel and sand
70	75	coarse gravel
75	84	fine gravel and sand
84	94	blue slate and mud
94	100	blue slate and sand

Summary of driller's log of 1199-39-10B (N039072, E010160) Hanford Wells, 1973

Land surface altitude[1] 362 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	silt and sand
5	10	gravel
10	17	coarse gravel
17	28	boulders and gravel
28	30	boulders
30	44	sand and gravel
44	54	yellow clay

Summary of driller's log of 1199-39-16A (N038831, E015904) Hanford Wells, 1973

Land surface altitude[1] 367 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	not recorded
2	8	sand
8	10	10" stone
10	12	sand and 4" gravel
12	16	gravel and 6" stone
16	18	sand and gravel
18	21	sand, gravel and boulders
21	31	gravel, sand, and stone
31	33	gravel and sand
33	36	gravel and stone
36	41	sand, gravel, stone and clay
41	57	not recorded
57	62	clay

Driller's log of 1199-39-16B (N038808, E015848) Hanford Wells, 1973

Land surface altitude[1] 369 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	sand
5	15	sand and gravel
15	20	gravel
20	22	sand
22	30	sand and fine gravel
30	35	sand and gravel with little clay
35	38	rocks, sand, and gravel
38	40	sand and gravel
40	42	white sand and gravel
42	45	whitish brown sand
45	60	gray sand and gravel
60	63	gravel and sand
63	65	clay
65	77	yellow clay
77	85	yellow clay and gravel
85	95	blue shale, gravel and black basalt
95	100	blue shale and basalt
100	105	blue shale, clay, and basalt
105	110	blue shale and clay

Driller's log of 1199-39-16C (N039097, E015621) Hanford Wells, 1973

Land surface altitude[1] 385 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	5	sand and boulders
5	8	sand
8	14	black and white sand
14	16	sand and gravel
16	20	rocks and sand
20	25	sand, and gravel
25	32	black sand and gravel
32	36.5	black sand and rocks
36.5	67	gravel and sand
67	75	boulders and sand

Driller's log of 1199-39-16D (N039300, E015945) Hanford Wells, 1973

Land surface altitude[1] 369 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand and rocks
10	18	rocks and boulders
18	27	sand, rocks, and boulders
27	35	rocks and boulders
35	39	rocks and gravel
39	40	fine sand, rocks and gravel
40	47	sand, rocks, and boulders
47	56	sand and gravel
56	60	quicksand, gravel and yellow clay
60	65	yellow clay, heavy

Drilling log of 1199-40-15 (N040088, E015442) Hanford Wells, 1973

Land surface altitude[1] 394 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	4	sand and boulders
4	5	boulders
5	20	sand and boulders
20	25	black sand
25	38	black sand and gravel
38	43	boulders
43	46	fine gray sand
46	48	sand and gravel
48	51	coarse gravel
51	55	coarse gravel and rocks
55	66	pea to baseball size gravel and sand
66	72	gravel, sand, and clay
72	75	pea gravel, coarse sand and clay
75	77	pea gravel, coarse sand and very little gravel
77	82	gravel and sand and some clay
82	83	gravel, sand and more clay
83	84	gravel and sandy clay
84	88	fine to coarse sand and gravel

Driller's log of 1199-40-16A (N040100, E016000) Hanford Wells, 1973

Land surface altitude[1] 388 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	10	sand, gravel, and boulders
10	20	coarse gravel, boulders, and gray sand
20	30	rocks and black sand
30	55	black sand and boulders
55	60	gray sand and boulders
60	85	sand and gravel with some yellow clay; lot of clay at 83'
85	90	yellow clay
90	117	yellow clay and gravel
117	120	blue shale and clay
120	125	blue clay

Driller's log of 1199-40-16B (N040087, E015977) Hanford Wells, 1973

Land surface altitude[1] 391 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	6	boulders
6	13	boulders and cemented gravel
13	21	boulders and sand
21	34	rocks and sand
34	36	fine black sand
36	44	black sand and gravel
44	45	black sand
45	48	black sand and rocks
48	54	rocks and boulders
54	55	boulders, coarse gravel and gray sand
55	73	boulders and gray sand
73	81	gray sand and boulders with some yellow clay
81	82	gray sand and boulders
82	87	gray sand and boulders with a lot of clay (yellow)
87	90	gray sand, boulders and yellow clay

Summary of driller's log of 1199-41-13A (N040796, E013256) Hanford Wells, 1973

Land surface altitude[1] 402 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	overburden
2	40	coarse gravel
40	52	gravel
52	58	sand
58	63	sand and fine gravel; entered silt at 63'

Summary of driller's log of 1199-41-13B (N040949, E013351) Hanford Wells, 1973

Land surface altitude[1] 403 feet msl

1. Calculated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	overburden
2	54	sand, gravel and cobble
54	55	sand and gravel
55	64	fine sand and gravel
64	65	cemented gravel

Summary of driller's log of 1199-41-13C (N041030, E013259) Hanford Wells, 1973

Land surface altitude[1] 404 feet msl

1. Altitude given in driller's log in Hanford Files

Depth (ft) From	To	Description
0	5	sand
5	29	coarse gravel
29	37	sand and gravel
37	40	coarse gravel and rock
40	66	boulders and gravel
66	70	sand and gravel
70	72	fine sand
72	77	coarse gravel
77	79	boulders and gravel
79	84	sand and gravel
84	95	brown clay

Summary of driller's log of 1199-41-15 (N040767, E015184) Hanford Wells, 1973

Land surface altitude[1] 397 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	6	fill
6	44	fine sand and gravel (stones to 6")
44	46	fine sand and gravel (stones to 16")
46	49	fine sand and gravel (stones 4 to 5")
49	74	fine sand, stones, boulders, cemented with clay
74	76.5	brown clay

Driller's log of 1199-45-12

Land surface altitude[1] 400 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Labeled North Richland

Depth (ft) From	To	Description
0	42	no record
42	53	sand, gravel, and muck
53	60	sand and gravel
60	63	gravel, sand, and sandy clay
63	70	sand, silt and small gravel
70	80	sand, very little gravel, silt
80	90	lots of sand, some good gravel

Driller's log of 3099-41-14 (N040907, E014022) Hanford Wells, 1973

Land surface altitude[1] 398 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	sandy loam
2	15	coarse gravel and sand
15	22	fine sand
22	35	gray sand
35	44	sand and gravel
44	50	black sand
50	55	fine black sand
55	60	coarse gray sand
60	65	coarse gray sand, silt, and clay

Summary of driller's log of 3099-41-14A (N040956, E013532)

Depth (ft) From	To	Description
0	2	sand overburden
2	54	cobbles, coarse gravel and sand
54	55	cobbles
55	64	small gravel with streaks of sand
64	68	cemented gravel (conglomerate)

Summary of driller's log of 3099-41-14B[1]

1. Approximately 250' NW of well 3099-41-14A

Depth (ft) From	To	Description
0	2	sand overburden
2	40	coarse gravel and cobbles
40	52	gravel (muddy)
52	56	sand
56	63	sand and pea and medium gravel

Summary of driller's log of 3099-42-16 (N041572, E016180) Hanford Wells, 1973

Land surface altitude[1] 406 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	2	sand
2	6	gravel and boulders
6	16	coarse gravel
16	26	medium gravel
26	32	coarse gravel and sand
32	40	medium gravel and some sand
40	78	coarse gravel and some sand
78	80	medium gravel and sand
80	83	boulders
83	94	coarse gravel and some sand
94	98	fine sand and medium gravel
98	112	coarse gravel and boulders
112	120	medium gravel and some sand
120	124	coarse gravel and some sand
124	128	boulders and some sand
128	134	blue sandy shale

Driller's log of 3099-45-18A (N045450, E017980) Hanford Wells, 1973

Land surface altitude[1] 359 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	10	sand and gravel
10	15	boulders
15	19	gravel, and boulders
19	25	sand, gravel and boulders
25	28	sand and gravel
28	60	yellow sand and gravel
60	63	sand and gravel
63	74	white sand and gravel
74	79	sand and gravel
79	87	blue shale
87	90	slate clay
90	95	blue clay
95	99	blue clay with trace of coarse sand

Driller's log of 3099-45-18B (N045475, E017960) Hanford Wells, 1973

Land surface altitude[1] 359 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973
2. Cable tool rig

Depth (ft) From	To	Description
0	15	sandy loam
15	25	sand, gravel and boulders
25	30	yellow sand and finer gravel
30	37	gray, and yellow sand and gravel
37	40	yellow clay
40	50	heavy clay
50	54	clay
54	70	pea to medium and coarse gravel, blue slate and white fine sand with shale as binder
70	71	fine, gray sand
71	77	slate and gravel; 77' to 80' caving in
77	78	sand
78	80	sand, gravel and clay; 80' caving in
80	90	slate, sand and clay, all more blue in color
90	93	finer clay, slate and green clay
93	95	green and gray clay
95	101	blue clay and gravel

Driller's log of 3099-47-18A (N047102, E017686) Hanford Wells, 1973

Land surface altitude[1] 372 feet msl

1. Estimated from altitude of top of casing given in Hanford Wells, 1973

Depth (ft) From	To	Description
0	12	sand
12	15	gravel
15	24	fine, black sand, and gravel
24	27	sand
27	40	fine gravel and gray sand
40	45	fine yellow sand, marble size gravel, and gray clay
45	50	fine yellow sand, marble size gravel, and lots of gray clay
50	55	fine yellow sand, marble size gravel and heavy gray clay
55	67	yellow clay, sand and gravel
67	75	gray sand, gravel, and gray shale; 67' to 75' is a gray shale binder
75	88	lot of muck, gray shale, fine sand, and pea to marble size gravel
88	90	no record
90	91	sand, gravel, basalt, and less shale
91	92	shale, black basalt, gravel, and gray sand
92	95	shale, sand, gravel and basalt
95	98	shale, sand, gravel, and basalt, and gray sand
98	100	gray shale, gray, fine sand, gravel
100	102	fine sand and gravel
102	115	blue shale
115	120	blue shale, very fine water-sand, and sandstone
120	125	good water gravel-large marble to pea size, fine sand, gray shale
125	135	white sand and gravel, gray shale
135	136	pure white, gray sand
136	146	shale, sand and pea to marble gravel
146	150	blue shale
150	160	dark gray shale, mud
160	165	dark gray shale
165	167	dark gray shale, mud
167	172	gray shale, mud
172	174	coarse black and white sand
174	180	fine black and white sand with red particles in it
180	185	fine black and white sand
185	191	basalt-coarse and black cuttings

Driller's log of 3099-49-E16

Depth (ft) From	To	Description
0	2	brown, fine sand
2	3	cemented gravel and 10" minus cobbles
3	5	cemented gravel with a little sand, dark gray in color
5	15	cemented gravel and cobbles with a trace of sand
15	20	cemented 2" minus gravel with coarse black sand, dark gray to black
20	25	4" minus gravel with some coarse black sand and a trace of brown sand
25	30	lightly cemented, 3" minus gravel with sand color gray
30	35	3" minus gravel with coarse sand and some finer sand
35	40	2½" minus gravel and coarse sand with a little fine sand
40	45	coarse sand with 2½" minus gravel, trace of fine sand
45	50	3" minus gravel with a little sand
50	60	2½" minus gravel with a trace of sand, color-gray
60	65	2" minus gravel with coarse and fine sand
65	70	3" minus gravel with some sand, light brown in color
70	75	1'5" minus gravel with coarse and fine sand
75	80	1½" minus gravel with coarse and fine sand
80	85	1" minus gravel with some coarse and fine sand
85	90	1'5" minus gravel, tightly packed with light brown and blue sand
90	95	2" minus gravel with green sand and a little black clay very tightly packed
95	100	3" minus gravel with green sand and a little black clay, very tightly packed
100	105	2½" minus gravel with green sand very tightly packed
105	110	2" minus gravel with green sand very tightly packed
110	115	3" minus gravel with a little light gray sand very tightly packed
115	120	3½" minus gravel and white and gray sand
120	125	greenish blue clay with small pebbles in it (silty)
125	130	greenish blue clay with small pebbles; clay a little silty
130	135	fine green sand, with some lumps of sand
135	140	3" minus gravel with green sand
140	145	2" minus gravel with fine and coarse sand
145	150	1" minus gravel with fine sand and some coarse sand
150	155	4" minus gravel with some greenish blue sand
155	160	1" minus gravel with greenish blue sand; very tightly packed
160	165	clay-like silt
165	170	dark brown silt and clay
170	175	silt and clay with stray 1" gravel-dark brown
175	195	silt and clay with blue tint
195	200	2" minus pits of soft basalt with coarse sand and blue clay
200	205	basalt gravel and coarse sand with some clay
205	210	basalt bedrock with sand
210	218.5	basalt bedrock

Driller's log of 3099-49-17

Depth (ft) From	To	Description
0	9	sand, gravel ¼" to boulders
9	20	sand, ¼" gravel to cobbles
20	35	coarse to fine black sand and 1½" gravel
35	55	no record
55	60	black sand
60	65	black sand, coarse to fine with 1½" gravel
65	68	fine brown sand with coarse black sand and silt with 2" gravel
68	75	fine brown sand, and 4" gravel
75	80	fine brown sand

Driller's log of 3099-50-15

Depth (ft) From	To	Description
0	3	sand and cobbles
3	9	brown and black sand with boulders and gravel
9	17	black sand, coarse, gravel, and cobbles
17	20	coarse black sand and gravel with boulders
20	30	black sand, gravel and cobbles
30	45	black, coarse sand and gravel
45	50	brown sand, fine to 1½" gravel
50	63	fine, brown sand and 1½" gravel with some silt
63	65	fine brown sand with very little gravel
65	68	brown sand, some silt and ½" gravel
68	75	brown sand and some silt with ½" gravel
75	80	brown sand with some 1½" gravel and traces of silt

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