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Page 1 of 1

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1	WHC-SD-EN-DP-029	N/A	0	Unconfined Aquifer Hydrologic Test Data Package for the 200 West Aggregate Area Management Study	4	~~1~~ 2	jb - per telecon w/ F. Stone, 4/23	

16. KEY

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1	1	Cog.Eng. S. J. Trent		4/16/92	H4-56						
1	1	Cog. Mgr. R. A. Carlson		4/16/92	H4-55						
		QA									
		Safety									
		Env.									
1	1	C. D. Wittreich			H4-55						

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S. J. Trent Signature of EDT Originator — Date 4/16/92	Authorized Representative for Receiving Organization — Date	R. A. Carlson Cognizant/Project Engineer's Manager — Date 4/16/92	Ltr. No. [] Approved [] Approved w/comments [] Disapproved w/comments

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6. Author

Name: S. J. Trent

S. J. Trent 4/16/92

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7. Abstract

WHC, 1992, *Unconfined Aquifer Hydrologic Test Data Package for the 200 West Groundwater Aggregate Area Management Study*, WHC-SD-EN-DP-029, Rev. 0, prepared by D. R. Newcomer, S. S. Teel, A. W. Pearson, K. R. O. Barton, B. N. Bjornstad, and T. J. Gilmore, Pacific Northwest Laboratory, for Westinghouse Hanford Company, Richland, Washington.

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INTRODUCTION

This report includes hydrologic test data, well construction, and geologic information from wells completed in the unconfined aquifer in and around the perimeter of the 200-West Area at the hanford Site as of December 1991. This information was requested by Westinghouse Hanford Company (WHC) as part of the 200 West Ground-water Aggregate Area Management study. Table 1 consists of a list of all known tests for which aquifer property values were determined or data were not analyzed, but for which aquifer property values could possibly be determined. For some tests included in this list, specific capacity data is available for estimating transmissivity. Table 2 consists of a list of other tests conducted, but because of poor data quality, aquifer property values cannot be determined. This list is only intended to show where other hydrologic tests were attempted. Appendix A includes well construction and geologic information are also included for each of the wells in these two tables.

Coverage Area

The perimeter around the 200-West Area predominantly covers an area between Gable Butte to the north and the Yakima basalt ridge to the south, and between Highway 240 to the west and just west of the 200-East Area to the east.

Information Included in the Inventory

The hydrologic data inventory includes the Hanford well designation, current depth, depth of the test interval, current screen or perforated interval, current depth to water, date of test, type of test, values for transmissivity and storage coefficient, references, and any notable comments pertaining to the tests. The recovery tests, listed under the column heading "Type of Hydrologic Test", are recovery from constant discharge tests unless otherwise noted. "PNL Files" listed in the reference column refer primarily to the cabinet file in Room 2521 in the Sigma V building. "WHC Files" listed in the reference column refer to the RCRA and/or CERCLA files at Westinghouse's 450 Hills building. This file contains most of the original hydrologic test data and analyses.

Clarifications

For several tests, the depth of the test interval is not the same as the current screen or perforated interval. This is because 1) the well was tested before final completion, 2) the well was completed again since the test was conducted, or 3) the screen or perforations extend above the water table. The references indicate that conventional analysis techniques (e.g., Jacob 1946; Theis 1935) were applied to the data to calculate the aquifer properties. The more recent test data from WHC Files are awaiting analyses for estimates of aquifer hydraulic properties.

Wells 299-W11-2P and 299-W15-5R are completed in what was referred to as the Upper Beverly member. Data on these wells are kept in PNL Files. This member is in contact with the overlying Ringold Formation nd amy be under confining conditions. However, this member is not confined by basalt at these well locations and was therefore included in the inventory.

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There was some confusion as to whether well 699-43-88 or 699-43-89 was the pumping well or the observation well. However, it appears that well 699-43-89 was the pumping well and well 699-43-88 was the observation well for all tests that were conducted at this well cluster site.

The current depth and current screen or perforation interval is not given for the following piezometers because these piezometers have been removed since the tests were conducted: 299-W22-14P, 699-32-72Q, 699-32-72R, 699-32-72S, 699-34-88P, 699-34-88Q, 699-34-88R, 699-34-88S, 699-38-70P, 699-57-83AP, 699-57-83AQ, and 699-57-83AR.

Data Quality

No attempt was made to objectively distinguish between good and poor data quality. However, after briefly reviewing the data, some initial conclusions can be made regarding the data quality.

The aquifer property values were taken from the references listed or from unpublished PNL files. Data from some tests analyzed by Kipp and Mudd (1973) were reanalyzed by PNL several years ago. Values calculated from the reanalyses are considered more reliable. No analyses were applied to any of the hydrologic test data during this inventory study.

Performance of slug displacement tests in the last few years may not have stressed the wells sufficiently and, consequently, may have some bearing on the values estimated for transmissivity. Also, some of the slug tests were conducted prior to well development.

Tests conducted in clustered piezometers in the same borehole, designated by P, Q, R, S, or T, may or may not represent true aquifer responses. This is because sandpack material was used to isolate each open interval and may have caused hydraulic intercommunication between each of the tested zones through the annulus.

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TABLE 1. UNCONFINED AQUIFER TEST DATA FOR THE 200-WEST AREA

Hanford Well Designation	Current Depth (a) (ft)	Test Design	Depth of Test Interval (ft)	Current Screen/ Perforation Interval (a) (ft)	Current Depth to Water (d) (ft)	Pre-Test Depth to Water bls (ft)	Date of Test	Type of Hydrologic Test	Transmissivity (ft^2/d)	Storage Coefficient	Data Quality	References	Data Location	Comments
299-W6-2	245	S	227-245	225-245	233	227	11/05/87	Constant Discharge	350		2	Last (1989)	Lst	
•	245	S	227-245	225-245	233	227	11/03/87	Recovery	500		2	Last (1989)	Lst	
299-W6-4	256	S	239-256	235-256	239	239	12/09/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W6-7	267	S	251-267	246-267	251	251	10/08/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W7-1	244	MP	226-244	224-244	231	226	07/15/87	Constant Discharge	1000		2	Last (1989)	Lst	
•	244	MP	226-244	224-244	231	226	07/15/87	Recovery	1400		2	Last (1989)	Lst	
299-W7-2	222	MP	211-222	202-222	217	211	09/16/87	Constant Discharge	430		2	Last (1989)	Lst	
•	222	MP	211-222	202-222	217	211	09/16/87	Recovery	740		2	Last (1989)	Lst	
299-W7-3	470	MP	449-470	449-470	218	213	10/30-31/87	Constant Discharge	- -		3	Last (1989)	Lst	151' of Drawdown at 1680 min; 2.8 gpm
299-W7-4	233	S	205-233	203-233	211	205	11/12/87	Constant Discharge	3300		2	Last (1989)	Lst	
•	233	S	205-233	203-233	211	205	11/12/87	Recovery	2800		2	Last (1989)	Lst	
299-W7-5	228	S	208-228	208-228	214	208	11/21/87	Constant Discharge	170		1	Last (1989)	Lst	
299-W7-6	229	S	215-229	209-229	220	215	10/14/87	Constant Discharge	14		2	Last (1989)	Lst	
•	229	S	215-229	209-229	220	215	10/14/87	Recovery	40		2	Last (1989)	Lst	
299-W7-7	228	S	211-228	207-228	216	211	12/05/89	Slug Withdrawal	45 (e)		1	Burgisse et al. (1990)	Byh	
299-W7-8	241	S	228-241	220-241	232	228	03/01/90	Slug Withdrawal	26 (e)		1	Barton (1990)	Bin, Jane's Mes	
299-W7-10	241	S	225-241	220-241	231	225	02/13/90	Slug Withdrawal	18 (e)		1	Barton (1990)	Bin, Jane's Mes	
299-W7-11	233	S	218-233	212-233	218	218	07/28/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W7-12	241	S	225-241	220-241	225	225	08/09/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W8-1	258	S	236-258	238-258	241	236	07/11/87	Recovery	80		2	Last (1989)	Lst	
299-W9-1	286	S	269-286	266-286	275	269	10/23/87	Slug Withdrawal	43-65 (e)		2	Last (1989)	Lst	
•	286	S	269-286	266-286	275	268	10/23/87	Slug Injection	55 (e)		2	Last (1989)	Lst	
299-W10-13	247	S	229-247	227-247	235	229	08/11/87	Step Drawdown	- -		3	PNL Files		Data Not Analyzed; 2-Hr Test
•	247	MP	229-247	227-247	235	229	09/14/87	Recovery	7000		2	Last (1989)	Lst	
299-W10-14	447	MP	427-447	427-447	235	231	10/26/87	Recovery	900		2	Last (1989)	Lst	
•	447	MD	240 (OH)	427-447	235	7	09/14/87	Recovery	3500		2	Last (1989)	Lst	Pumping Well is 299-W10-13
299-W10-15	222	S	206-222	201-222	212	206	11/03/89	Slug Withdrawal	510 (e)		1	Newcomer et al. (1990)	Newc90	
•	222	S	206-222	201-222	212	206	11/03/89	Slug Withdrawal	540 (e)		1	Newcomer et al. (1990)	Newc90	
299-W10-16	220	S	203-219	198-219	209	203	10/30/89	Slug Injection	670 (e)		2	Newcomer et al. (1990)	Newc90	
•	220	S	203-219	198-219	209	203	10/30/89	Slug Withdrawal	540 (e)		1	Newcomer et al. (1990)	Newc90	
299-W10-17	224	S	204-224	204-224	203	203	01/10/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W10-18	224	S	204-224	204-224	202	202	01/16/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W11-2P	498	MP	486-508	486-508	215	195	04/24/70	Recovery	104		1	PNL Files, Deju (1974)	PNL2521BF	
299-W11-27	234	S	219-234	214-234	219	219	12/11/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W15-5H	448	MD	435-460	435-460	202	2007	04/27/70	Constant Discharge	- -		3	PNL Files	PNL2521BF	85 ft of drawdown; 2.7 gpm Pumped from Well 299-W15-5P
299-W15-5S	395	MD	375-400	375-400	202	215	04/27/70	Constant Discharge	- -		3	PNL Files	PNL2521BF	20 ft of drawdown; 2.7 gpm Pumped from Well 299-W15-5P
299-W15-15	253	S	243-253 (b)	223-253	231	226	08/21/87	Constant Discharge	10,000		2	Last (1989)	Lst	
299-W15-16	238	MP	228-238	208-238	218	212	08/20/87	Constant Discharge	5000		3	Last (1989)	Lst	
•	238	MP	228-238 (b)	208-238	218	212	08/20/87	Recovery	12,000		2	Last (1989)	Lst	
299-W15-17	432	MP	422-432	422-432	218	213	08/28/87	Constant Discharge	- -		3	Last (1989)	Lst	19 ft of Drawdown at 360 min; 6 gpm
W15-17 (cont)	432	MD	220 (OH)	422-432	218	212	08/20/87	Constant Discharge	12,000		2	Last (1989)	Lst	Pumping Well is 299-W15-16
•	432	MD	220 (OH)	422-432	218	212	08/20/87	Recovery	12,000		2	Last (1989)	Lst	Pumping Well is 299-W15-16
299-W15-18	238	MP	232-242 (b)	208-238	218	212	07/21/87	Recovery	14,000		3	Last (1989)	Lst	
299-W15-19	235	S	219-235	214-235	225	219	10/30/89	Slug Withdrawal	20 (e)		1	Burgisse et al. (1990)	Byh	
299-W15-20	241	S	226-241	220-241	232	226	11/03/89	Slug Withdrawal	75-250 (e)		1	Burgisse et al. (1990)	Byh	2 Tests Conducted
299-W15-22	219	S	200-219	199-219	209	200	01/15/91	Slug Injection and Withdrawal	- -		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W15-23	230	S	228-230	219-230	233	228	03/01/90	Slug Withdrawal	240-330 (e)		1	Barton (1990)	Bin, Jane's Mes	2 Tests Conducted
299-W15-24	241	S	230-241	222-241	233	230	12/18/89	Slug Withdrawal	600 (e)		1	Burgisse et al. (1990)	Byh	
299-W18-2	244	MD	210-244	205-255	213	210	07/17/87	Recovery	17,000		2	Last (1989)	Lst	Pumping Well is 299-W18-24
299-W18-21	225.5	MP	215.5-225.5	215.5-225.5	202	195	07/14/87	Constant Discharge	1300		2	Last (1989)	Lst	
•	225.5	MP	215.5-225.5	215.5-225.5	202	195	07/14/87	Recovery	51,000		2	Last (1989)	Lst	
299-W18-22	447.5	MP	437.5-447.5	437.5-447.5	202	197	08/26/87	Recovery	420		1	Last (1989)	Lst	

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TABLE 1. UNCONFINED AQUIFER TEST DATA FOR THE 200-WEST AREA

Hanford Well Designation	Current Depth (a) (ft)	Test Design	Depth of Test Interval (ft)	Current Screen/ Perforation Interval (a) (ft)	Current Depth to Water (d) (ft)	Pre-Test Depth to Water (b) (ft)	Date of Test	Type of Hydrologic Test	Transmissivity (ft^2/d)	Storage Coefficient	Data Quality	References	Data Location	Comments
299-W18-23	251	S	241-251	241-251	230	224	06/22/87	Constant Discharge	27,000		2	Last (1989)	Last	
"	251	S	241-251	241-251	230	224	06/22/87	Recovery	23,000		2	Last (1989)	Last	
299-W18-24	240	MP	230-240	230-240	217	210	07/17/87	Recovery	44,000		2	Last (1989)	Last	
299-W18-25	215	S	191-215	194-215	191	191	12/12/90	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W18-26	243	S	227-243	222-243	232	227	11/22/89	Slug Withdrawal	200 (w)		1	Burghese et al. (1990)	Bph	2 Tests Conducted
299-W18-27	238	S	220-238	217-238	220	220	07/18/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W18-28	229	S	210-229	208-229	210	210	07/17/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W18-29	136	S	123-136	120-136	123	123	07/16/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W18-30	234	S	202-234	198-234	202	202	12/10/91	Slug Injection and Withdrawal	--			WHC Files	?	Analyses Pending, Data Not In File
299-W18-31	222	S	193-222	187-222	193	193	12/14/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W19-31	223	S	203-223	201-223	203	203	01/17/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W19-32	223	S	203-223	202-223	203	203	01/14/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W21-1	253	S	239-2537	220-290	244	239	07/28/69	Constant Discharge	5400		1	Kipp & Mudd (1973), Graham (1981)	PNL2521, BF	
"	253	S	239-2537	220-290	244	239	07/28/69	Recovery	29,000		1	Kipp & Mudd (1973)	PNL2521, BF	
299-W22-24Q	476	S	475-497	475-497	245	245	04/30/63	Development w/ Al	--		3	PNL Files	ACB	188 ft of Drawdown at 80 min; 17 gpm
299-W22-39	222	S	203-222	201-222	203	203	04/09/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W22-40	244	S	228-244	224-244	234	228	04/23/90	Slug Withdrawal	600 (w)			Goodwin (1990)		
299-W22-41	245	S	229-245	224-245	233	229	04/23/90	Slug Withdrawal	140 (w)			Goodwin (1990)		
299-W22-42	243	S	228-243	223-243	233	228	04/30/90	Slug Withdrawal	190 (w)			Goodwin (1990)		
299-W22-43	244	S	228-244	224-244	232	228	04/23/90	Slug Withdrawal	790 (w)			Goodwin (1990)		
299-W22-44	242	S	210-242	205-242	210	210	12/17/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W22-46	229	S	207-229	183-229	207	207	12/03/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W23-13	218	S	197-218	197-218	197	197	12/12/90	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W23-14	216	S	197-216	195-216	197	197	04/12/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W23-15	223	S	190-223	186-223	190	190	12/03/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W26-7	206	S	189-209	185-206	189	189	05/09/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W26-8	219	S	200-219	199-219	205	200	05/31/90	Slug Withdrawal	--		17	Airhart (1990)	Airht90	Data Not Analyzed
299-W26-9	208	S	190-208	188-208	194	190	05/31/90	Slug Withdrawal	--		17	Airhart (1990)	Airht90	Data Not Analyzed
299-W26-10	222	S	207-222	202-222	207	207	05/03/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
299-W26-11	139	S	123-139	119-139	123	123	05/31-06/01/90	Slug Withdrawal	--		3	Airhart (1990)	Airht90	Data Not Analyzed; Lack Recovery; Tested Perched Water
299-W26-12	229	S	211-229	208-229	211	211	05/10/91	Slug Injection and Withdrawal	--		1	WHC Files	RCRA Files, 450 Hills, WHC	Analyses Pending
699-26-89	254	S	198-488, 492-500 (c)*	165-488	181	176	06/27/69	Constant Discharge	620		2	Deju (1974), Kipp & Mudd (1973)	PNL2521	Well Penetrates 3 Aquifers, Sand Filled In During Test
"	254	S	198-488, 492-500 (c)*	165-488	181	176	06/27/69	Recovery	430		2	Deju (1974), Kipp & Mudd (1973)	PNL2521	Well Penetrates 3 Aquifers, Sand Filled In During Test
699-32-70B	280	S	212-330	207-330	216	212	06/20/74	Constant Discharge	--		3	PNL Files	PNL2521-General	Data Not Analyzed; 3.17 ft of Drawdown at 180 min; 100 gpm
699-32-72Q	--	MO	460-480	--	215	216	09/19/68	Constant Discharge	--		3	PNL Files	ACB	18 ft of Drawdown at >100 min; 5 gpm Pumped from Well 699-32-72P
699-32-77	220	S	179-2207	175-290	193	179	08/25/69	Constant Discharge	4500		1	Kipp & Mudd (1973), Graham (1981)	PNL2521	
"	220	S	179-2207	175-290	193	179	08/25/69	Recovery	57,000		1	Kipp & Mudd (1973)	PNL2521	
699-34-88P	--	MP	668-688	--	164	187	04/29/70	Recovery	1		3	PNL Files	PNL2521BF, ACB	2.5 gpm; Poor Test; U Bev

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TABLE 1. UNCONFINED AQUIFER TEST DATA FOR THE 200-WEST AREA

Hanford Well Designation	Current Depth (a) (ft)	Test Design	Depth of Test Interval (ft)	Current Screen/ Perforation Interval (a) (ft)	Current Depth to Water (d) (ft)	Pre-Test Depth to Water Me (ft)	Date of Test	Type of Hydrologic Test	Transmissivity (ft^2/d)	Storage Coefficient	Data Quality	References	Data Location	Comments
699-34-88D	- -	MP	590-600	- -	164	162	05/04/70	Recovery	4 3		3	PNL Files	PNL2521BF, ACB	8 5 gpm; 12 7 ft Drawdown in P Tube
"	- -	M	590-600	- -	164	7	05/11/70	Recovery	24		3	PNL Files	PNL2521BF, ACB	13 gpm
699-36-61A	363	MP	358-389*	330-389	340	339	07/22/69	Step Drawdown and Recovery	2800		2	Dojo (1974), Graham (1981)	PNL2521	Average Transmissivity
"	363	MP	358-389*	330-389	340	339	07/22/69	Step Drawdown	870		2	Kipp & Mudd (1973)	PNL2521	
"	363	MP	358-389*	330-389	340	339	07/22/69	Step Drawdown	730		2	PNL Files		Data Reanalyzed
"	363	MP	358-389*	330-389	340	339	07/22/69	Step Test Recovery	40,000		2	Kipp & Mudd (1973)	PNL2521	
"	363	MP	358-389*	330-389	340	339	07/22/69	Step Test Recovery	4300			PNL Files		Data Reanalyzed
699-36-61B	363	MO	339-505?	330-505	340	339?	07/22/69	Step Drawdown	400		2	Kipp & Mudd (1973)	PNL2521	Pumping Well is 699-36-61A
"	363	MO	339-505?	330-505	340	339?	07/22/69	Step Drawdown	5000		2	PNL Files		Data Reanalyzed
"	363	MO	339-505?	330-505	340	339?	07/22/69	Step Test Recovery	53,000		2	Kipp & Mudd (1973)	PNL2521	Pumping Well is 699-36-61A
"	363	MO	339-505?	330-505	340	339?	07/22/69	Step Test Recovery	4200		2	PNL Files		Data Reanalyzed
699-37-82A	175	MO	163-175	155-410	170	163	08/15-17/79	Constant Discharge	T(early) = 270	0 02	1	Graham (1981)	Ghm81	Pumping Well is 699-37-82B
"	175	MO	163-175	155-410	170	163	08/15-17/79	Constant Discharge	T(late) = 370	0 16 (I)	1	Graham (1981)		Pumping Well is 699-37-82B
"	175	MO	163-175	155-410	170	163	08/15-17/79	Constant Discharge	T(early) = 350	0 018	1	Hall (1981)	H	Pumping Well is 699-37-82B
"	175	MO	163-175	155-410	170	163	08/15-17/79	Constant Discharge	T(late) = 400	0 15 (I)	1	Hall (1981)	H	Pumping Well is 699-37-82B
699-43-88	191	MO	178-198	177-198	170	178	09/10/69	Constant Discharge	2000	0 01 0 021	1	Kipp & Mudd (1973), Hall (1981)	PNL2521	Pumping Well is 699-43-89
"	191	MO	178-198	177-198	170	178	09/10/69	Constant Discharge	1300	0 009	1	PNL Files		Data Reanalyzed
"	191	MO	178-198	177-198	170	178	09/10-13/69	Recovery	19,000		2	Kipp & Mudd (1973)	PNL2521	
"	191	MO	178-198	177-198	170	178	09/10-13/69	Recovery	700		2	PNL Files		Data Reanalyzed
"	191	MO	178-198	177-198	170	178	10/23/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; Pumping Well is 699-43-89
"	191	MO	178-198	177-198	170	178	10/23/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	191	MO	178-198	177-198	170	178	10/28-29/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed, Pumping Well is 699-43-89
"	191	MO	178-198	177-198	170	178	10/29/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	191	MO	178-198	177-198	170	179	10/30/69	Constant Discharge	- -		2	PNL Files	PNL2521	Data Not Analyzed; Pumping Well is 699-43-89
"	191	MO	178-198	177-198	170	179	10/30-31/69	Recovery	- -		2	PNL Files	PNL2521	Data Not Analyzed
"	191	MO	177-198	177-198	170	177	11/06-07/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; Pumping Well is 699-43-89
"	191	MO	177-198	177-198	170	177	11/07/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	191	MO	178-198	177-198	170	178	11/10-11/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; Pumping Well is 699-43-89
"	191	MO	178-198	177-198	170	178	11/11/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	191	MO	178-198	177-198	170	178	11/13-14/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; Pumping Well is 699-43-89
"	191	MO	178-198	177-198	170	178	11/14/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	191	MO	177-198	177-198	170	7	09/25/79	Constant Discharge	970	0 05	2	Graham (1981), Hall (1981)	Ghm81	Pumping Well is 699-43-89
"	191	MO	177-198	177-198	170	7	09/11/80	Constant Discharge	800	0 04	2	Graham (1981), Hall (1981)	Ghm81	Pumping Well is 699-43-89
"	191	MO	177-198	177-198	170	7	09/11/80	Constant Discharge	800	0 03	2	Hall (1981)	H	Pumping Well is 699-43-89
699-43-89	300	MP	178-247	175-247	178	178	1969	Constant Discharge	1400		1	Kipp & Mudd (1973)	PNL2521	Exact Date of Test Unknown
"	300	MP	178-247	175-247	178	178	1969	Recovery	18,000		1	Kipp & Mudd (1973)	PNL2521	Exact Date of Test Unknown
"	300	MP	178-247	175-247	178	178	09/10/69	Constant Discharge	850		1	PNL Files	PNL2521	10-hr Test
"	300	MP	178-247	175-247	178	178	09/10-11/69	Recovery	1100		1	PNL Files	PNL2521	
"	300	MP?	178-247	175-247	178	178	10/23/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; 14-hr Test
"	300	MP?	178-247	175-247	178	178	10/23/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	300	MP?	178-247	175-247	178	178	10/28-29/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; 25-hr Test
"	300	MP?	178-247	175-247	178	178	10/29/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	300	MP?	178-247	175-247	178	178	10/30/69	Constant Discharge	- -		2	PNL Files	PNL2521	Data Not Analyzed; Test Stopped at 6 33 Hours Due to Engine Trouble
"	300	MP?	178-247	175-247	178	178	10/30-31/69	Recovery	- -		2	PNL Files	PNL2521	Data Not Analyzed
"	300	MP?	178-247	175-247	178	178	11/06-07/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; 21-hr Test
"	300	MP?	178-247	175-247	178	178	11/07/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	300	MP?	178-247	175-247	178	178	11/10-11/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; 24-hr Test
"	300	MP?	178-247	175-247	178	178	11/11/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed
"	300	MP?	178-247	175-247	178	178	11/13-14/69	Constant Discharge	- -		1	PNL Files	PNL2521	Data Not Analyzed; 23-hr Test
"	300	MP?	178-247	175-247	178	178	11/14/69	Recovery	- -		1	PNL Files	PNL2521	Data Not Analyzed

TABLE 1. UNCONFINED AQUIFER TEST DATA FOR THE 200-WEST AREA

* Well Recompleted Since Test Was Conducted
(a) Taken From Hanford Ground Water Data Base
(b) Temporary Screen Installed Prior to Final Well Completion
(c) Interval Completed In Confined Basalt Aquifer
(d) Measured or Estimated As of June, 1991
(e) Transmissivity Calculated by Multiplying Equivalent Hydraulic Conductivity by Thickness of the Test Interval
(f) Specific Yield
OH = Open Hole

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TABLE 2. OTHER UNCONFINED AQUIFER HYDROLOGIC TEST DATA FOR THE 200-WEST AREA

Hanford Well Designation	Current Depth (a) (ft)	Test Design	Depth of Test Interval (ft)	Current Screen/ Perforation Interval (a) (ft)	Current Depth to Water (d) (ft)	Pre-Test Depth to Water bls (ft)	Date of Test	Type of Hydrologic Test	Data Quality	References	Data Location	Comments
299-W11-2Q	434	MO	408-434	408-434	215	194	04/24/70	Constant Discharge and Recovery	4	PNL Files, Deju (1974)	PNL2521BF	No Drawdown; Pumping Well is 299-W11-2P
299-W11-4	310	S	278-312	257-312	278	278	1950's	Bail Test	4	Newcomb & Strand (1953)	?	20 gpm
299-W11-13P	466	S	443-468	443-468	232	232	11/19/63	Development w/ Air	4		ACB	250 Total Gallons Pumped
299-W15-5P	418	MP	524-594	524-594	202	195	04/27/70	Constant Discharge	4	PNL Files	PNL2521BF	2.7 gpm, Pumping Well; Poor Test
299-W15-5Q	336	MO	495-520	495-520	202	194	04/27/70	Constant Discharge	4	PNL Files	PNL2521BF	No Drawdown, 2.7 gpm Pumped from Well 299-W15-5P
*	336	MP	495-520	495-520	202	194	04/27/70	Constant Discharge	4	PNL Files	PNL2521BF	No Drawdown, Poor Test; 5.5 gpm
299-W15-5R	448	MO	435-460	435-460	202	2007	04/27/70	Constant Discharge	4	PNL Files	PNL2521BF	No Drawdown, 5.5 gpm Pumped from Well 299-W15-5Q
299-W15-16	238	MO	215-238	208-238	218	215	09/28/87	Constant Discharge	4	Last (1989)	Lst	Pumping Well is 299-W15-17
299-W15-18	238	MO	232-242 (b)	208-238	218	212	07/17/87	Constant Discharge	4	Last (1989)	Lst	Pumping Well is 299-W18-24; No Drawdown
299-W15-19	235	S	219-235	214-235	225	219	10/30/89	Slug Injection	4	Burgiess et al. (1990)	Byh	Poor Test
299-W18-4	246	MO	212-246	194-254	212	212	07/21/87	Constant Discharge and Recovery	4	Last (1989)	Lst	Pumping Well is 299-W15-18; Negligible Drawdown
299-W18-18	?	S(2)	1837-204	183-204	188	?	1984	Constant Discharge	4		PNL2606	Sand Filled in During 2 Tests
299-W18-21	225.5	MO	196-225.5	195.5-225.5	202	196	08/26/87	Constant Discharge	4	Last (1989)	Lst	Pumping Well is 299-W18-22; No Drawdown
299-W18-22	205	MO	205 (OH)	437.5-447.5	202	196	07/14/87	Constant Discharge	4	Last (1989)	Lst	Pumping Well is 299-W18-21; No
299-W18-8	284	S	268-302*	214-244	224	?	11/25/44	Injection Test	4		PNL2606	
299-W22-14P	--	MP	293-308	--	--	205	10/28/68	Development w/ Air	4	PNL Files	ACB	No Drawdown at 150 min; 4 gpm
299-W22-24P	296	S	537-561	537-561	245	245	04/64, 09/68	Development w/ Air	4	PNL Files	ACB	Flow Rate Not Sustained
299-W22-27P	240	S	550-570	550-570	230	230	10/23/64	Development w/ Air	4	PNL Files	ACB	200 Total Gallons Pumped; 0.5 gpm
299-W22-27Q	451	S	470-490	470-490	218	218	10/23/64	Development w/ Air	4	PNL Files	ACB	150 Total Gallons Pumped; 7 gpm
299-W22-27R	398	S	400-420	400-420	214	214	10/23/64	Development w/ Air	4	PNL Files	ACB	
299-W22-27S	356	S	330-350	330-350	214	214	10/23/64	Development w/ Air	4	PNL Files	ACB	10 gpm for 20 min
699-31-65P	353	S	410-430	410-430	242	100	06/24/64	Development w/ Air	4	PNL Files	ACB	
699-31-65Q	371	S	370-390	370-390	242	126	06/24/64	Development w/ Air	4	PNL Files	ACB	
699-31-65R	322	S	310-330	310-330	242	217	06/24/64	Development w/ Air	4	PNL Files	ACB	
699-32-72P	470	S	465-470	465-470	215	?	06/22/64	Development w/ Air	4	PNL Files	ACB	50 Total Gallons Pumped; < 0.5 gpm
*	470	MP	465-470	465-470	215	218	09/19/68	Constant Discharge	4	PNL Files	ACB	>500 Total Gallons Pumped; 5 gpm
699-32-72Q	--	S	460-480	--	--	?	06/22/64	Development w/ Air	4	PNL Files	ACB	250 Total Gallons Pumped; 8 gpm
699-32-72R	--	S	390-410	--	--	?	06/22/64	Development w/ Air	4	PNL Files	ACB	50 Total Gallons Pumped; 5 gpm
699-32-72S	--	S	340-360	--	--	?	06/22/64	Development w/ Air	4	PNL Files	ACB	200 Total Gallons Pumped; 4 gpm
699-34-88Q	--	M	590-600	--	--	?	05/14/70	Recovery	4	PNL Files	PNL2521BF	19 gpm; Poor Test
699-34-88R	--	S	510-520	--	--	?	05/12/70	Constant Discharge	4	PNL Files	ACB	10 gpm
699-34-88S	--	S	430-440	--	--	?	05/12/70	Constant Discharge	4	PNL Files	ACB	5 gpm
699-34-88T	--	S	350-380	--	--	?	05/12/70	Constant Discharge	4	PNL Files	ACB	7 gpm
699-37-82UP	344	S	540-560	540-560	170	119	11/02/64	Development w/ Air	4	PNL Files	ACB	157 ft of Drawdown at 30 min
*	344	S	540-560	540-560	170	119	11/03/64	Development w/ Air	4	PNL Files	ACB	49 ft of Drawdown; 1 gpm
699-37-82US	414	S	230-250	230-250	170	170	10/16/64	Development w/ Air	4	PNL Files	ACB	75 Total Gallons Pumped; 2 gpm
699-38-65	395	S	330-520	220-520	323	330	12/59	Bail Test?	4	Haney (1959)	Unknown	Tested by Bach Drilling Co
699-38-65P	510	S	500-510	500-510	323	330	10/27/64	Development w/ Air	4	PNL Files	ACB	100 Total Gallons Pumped; 2 gpm
699-38-70P	--	S	396-430	--	--	260	10/27/64	Development w/ Air	4	PNL Files	ACB	200 Total Gallons Pumped; 4 gpm
699-40-62	384	S	359-374*	335-374	342	340	12/11/69	Constant Discharge	4	Kipp & Mudd (1973)	PNL2521	Poor Test
699-49-100B	?	M	328-401	?	316	316	06/15/77	Constant Discharge	4	PNL Files	PNL2521-General	380 gpm, No Water-Level Measurements
699-51-75P	375	S	370-375	370-375	192	202	09/04/63	Development w/ Air	4	PNL Files	ACB	250 Total Gallons Pumped; 1 gpm
699-57-83AP	--	S	335-355	--	--	154	08/04/64	Development w/ Air	4	PNL Files	ACB	200 Total Gallons Pumped; 7 gpm
699-57-83AQ	--	S	270-290	--	--	154	08/04/64	Development w/ Air	4	PNL Files	ACB	200 Total Gallons Pumped; 8 gpm
699-57-83AR	--	S	216-236	--	--	154	08/04/64	Development w/ Air	4	PNL Files	ACB	120 Total Gallons Pumped; 3 gpm

* Well Recompleted Since Test Was Conducted
(a) Taken From Hanford Ground Water Data Base
(b) Temporary Screen Installed Prior to Final Well Completion
(c) Interval Completed in Confined Basalt Aquifer
(d) Measured or Estimated As of June, 1991
OH = Open Hole

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REFERENCES

Airhart, S. P. 1990. Borehole Completion Data Package for the 216-S-10 Ditch and Pond. WHC-MR-0206, Westinghouse Hanford Company, Richland, Washington.

Barton, K. R. O. 1990. Borehole Completion Data Package for Low-Level Burial Grounds - 1990. WHC-MR-0205, Westinghouse Hanford Company, Richland, Washington.

Borghese, J. V., D. R. Newcomer, W. E. Cronin, and S. M. Goodwin. 1990. Hydrologic Testing at the Low-Level Burial Grounds, 1989. PNL-7333, Pacific Northwest Laboratory, Richland, Washington.

Deju, R. A. 1974. The Hanford Field Testing Program. CA-168-RAD-3, Atlantic Richfield Hanford Company, Richland, Washington.

Goodwin, S. M. 1990. Borehole Completion Data Package for the 216-B-63 Trench--1990. WHC-MR-0207, Westinghouse Hanford Company, Richland, Washington.

Graham, M. J., M. D. Hall, S. R. Strait, and W. R. Brown. 1981. Hydrology of the Separations Areas. RHO-ST-42, Rockwell International, Rockwell Hanford Operations, Richland, Washington.

Hall, M. D. 1981. Near-Field Impact of 216-U-10 (U-Pond) Decommissioning on the Unconfined Aquifer. RHO-LD-157, Rockwell International, Rockwell Hanford Operations, Richland, Washington.

Haney, W. A. 1959. Chemical Effluents Technology Waste Disposal Investigations, October-December 1959. HW64094, General Electric Company, Richland, Washington.

Jacob, C. E. 1946. Drawdown Test to Determine Effective Radius of Artesian Well, Proc. Am. Soc. Civil Engrs., Vol. 79, No. 5.

Kipp, K. L. and R. D. Mudd. 1973. Collection and Analysis of Pump Test Data for Transmissivity Values. BNWL-1709, Battelle, Richland, Washington.

Last, G. V., B. N. Bjornstad, M. P. Bergeron, D. W. Wallace, D. R. Newcomer, J. A. Schramke, M. A. Chamness, C. S. Cline, S. P. Airhart, and J. S. Wilbur. 1989. Hydrogeology of the 200 Areas Low-Level Burial Grounds-An Interim Report. PNL-6820, Pacific Northwest Laboratory, Richland, Washington.

Newcomb, R. C. and J. R. Strand. 1953. Geology and Ground-Water Characteristics of the Hanford Reservation of the Atomic Energy Commission, Washington. U. S. Geol. Survey Admin. Rept., Hanford Doc. U. S. Geol. Survey WP-8.

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Newcomer, D. R., J. V. Borghese, and W. E. Cronin. 1990. Hydrologic Testing at the Single-Shell Tanks, 1989. PNL-7330, Pacific Northwest Laboratory, Richland, Washington.

Theis, C. V. 1935. The Relation Between the Lowering of Piezometric Surface and the Rate and Duration of Discharge of a Well Using Ground-Water Storage, Trans. Am. Geophys. Union, 16th Ann. Meeting, pt. 2.

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APPENDIX A

WELL CONSTRUCTION AND GEOLOGIC DATA FOR WELLS LISTED IN TABLES 1 AND 2

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Well Completion Report/Title III Inspection List

Project KEH-1914
Location 200 WEST AREA - HANFORD
Driller KELLY OLSON
Drilling Co. OLNNEGO
Geologist AIRHART, WILBUR, WILMCEE

Well Number 299-W6-2
Temporary Well Number —
Coordinates N.45,571 W.75,302
Casing Elevation 692.45
Ground Elevation 690.17

DRILLING METHOD

Rotary Air — Mud —
Cable Tool D — H 16'-248'
Drilling Fluid — H2O
Other BACKHOE 0-16'

COMPLETION DATA

Drilled Depth 248'
Completion Depth 245'
Date Started 9/30/87 Completed 11/13/87
Static Water Level/Date 227.8' BELOW LAND SURFACE 10/29/87

CASING DATA

Type	Size	
TYPE 304 STAINLESS STEEL CASING	4' DIAMETER	to 224'
		to
		to

Approved By S.P. Airhart Date 11/30/87

PERFORATIONS

Type —

Depth	Schedule
-	
-	
-	

App. By — Date —

SCREEN

	4" dia Type 304 SS	6" dia Type 304 SS
Type	CONTINUOUS WRAP	CONTINUOUS WRAP
Length	21'	10'
Slot Size	20-SLOT	30-SLOT
Depths	224' to 245'	235' to 248'

App. By S.P. Airhart Date 11/30/87

ANNULAR SEAL

Type	Interval	Volume
COLORADO SILICA SAND	226'-245'	16.33 ft³
DRY BENTONITE	3.5'-26' 47'-217'	166.91 ft³
BENTONITE SLURRY	26'-47'	40.11 ft³
CONCRETE	0'-3.5'	12 ft³
VOLCLAY PELLETS	217'-226'	2.87 ft³

App. By S.P. Airhart Date 11/30/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0'-248'	10/29/87
NEUTRON	0'-248'	10/29/87
DENSITY	0'-248'	10/29/87
	-	
	-	
	-	
	-	

Approved By S.P. Airhart Date 11/6/87

AQUIFER TESTING

Type of Test CONSTANT DISCHARGE
Length of Test 5 HOURS
Volume Pumped 8200 GALS.
Drawdown 13.76 ft.

Approved By S.P. Airhart Date 11/30/87

OTHER APPLICABLE ITEMS

- SPA Steam Cleaning
- SPA Storage of Const. Material
- SPA Tool Lubricants
- SPA Concrete Pad
- SPA Protective Steel Posts
- SPA Safety Paint
- SPA Straightness Test
- SPA Well Development
- TVI Downhole TV Inspection
- — Well Abandonment
- SPA Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By S.P. Airhart Date 11/30/87

Reviewed By W.L. McGhee Date 1-8-88

A-1800-187 (3/87)

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AS-BUILT DIAGRAM

Well Number 299-W6-2 Geologist WILBUR GILMORE AIRHART Page 1 of 2

Reviewed by J. L. McClain Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete surface seal (0'-3.5')		5'		SLIGHTLY SILTY GRAVEL
-10+100 mesh Big Horn bentonite (3.5'-20')		10'		
0'-20' 16" CARBON STEEL CASING		15		SLIGHTLY SANDY GRAVEL
0'-40'6" 12" CARBON STEEL CASING		20		SANDY GRAVEL
0'-148'2" 10" CARBON STEEL CASING		25		
0'-252' 5" CARBON STEEL CASING		30		
+2'-245' 4" STAINLESS STEEL CASING (PERMANENT)		35		
NOTE: ALL CARBON STEEL CASING REMOVED.		40		
		45		
Bentonite slurry Lib bentonite : 1 gal. H_2O mixture (20'-47')		50		
		55		
		60		CLAYEY SANDY GRAVEL
		65		SANDY CLAY
		70		CLAYEY SAND
		75		SAND
		80		
		85		
-10+100 mesh Big Horn bentonite (dry) (47'-247')		90		SILTY SAND
		95		SLIGHTLY GRAVELLY SILTY SAND
		100		SILTY SANDY GRAVEL
		105		SANDY GRAVEL
		110		
		115		SLIGHTLY SILTY GRAVELLY SAND
		120		SILTY SANDY GRAVEL
		125		SANDY GRAVEL
		130		SILTY SANDY GRAVEL

O - CASING

A-1800-188 (3/87)

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Battelle
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AS-BUILT DIAGRAM

Well Number 299-W6-2 Geologist AIRHART Page 2 of 2

Reviewed by W.L. McGhee Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135'		SILTY SANDY GRAVEL
		140'		
		145'		
		150'		
		155		
		160		GRAVELLY SAND
		165		
		170		
		175		
		180		
		185		
10-100 mesh Big Horn bentonite (dry) (47'-217')		190		
		195		SILTY/CLAYEY SANDY GRAVEL
		200		
		205		SILTY SANDY GRAVEL
		210		
centralizers		215		
¼" Volclay tablets (217'-220')		220		
Top of screen @ 224'		225		
10-20 mesh Colorado Silica Sand (220'-248')	227'10"	230		
		235		
8" telescoping screen 238'-248'		240		
Bottom of screen @ 245'		245		
Depth Drilled: 248'		250		248' SILTY GRAVELLY SAND

A-1800-186 (3/87)

9413205.0244

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project: 200 West Area RCRA Well Drilling
Location: Hanford Site 200 West Area
Driller: Bill Moomaw
Drilling Co.: Onweso Drilling
Geologist: JS Wilbur, SS Teel, SP Airhart, T Gilmore

Well Number: 299-W7-1
Temporary Well Number: none
Coordinates: N.46,551 W.78,601
Casing Elevation: 690.71
Ground Elevation: 688.55

DRILLING METHOD

Rotary Air ____ Mud ____
Cable Tool D 0'-15' H 15'-244'9"
Drilling Fluid: Water
Other ____

COMPLETION DATA

Drilled Depth: 244'9"
Completion Depth: 243'9"
Date Started: 6/1/87 Completed: 7/30/87
Static Water Level/Date: 226' 7/13/87

CASING DATA

Type	Size	
Type 304 Stainless Steel Casing	4" diameter	to 225'
		to
		to

Approved By: ASW Date: 7/30/87

PERFORATIONS

Type: NA

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

Telescoping

	8" dia. type 304 S.S.	4" dia. type 304 S.S.
Type	Continuous Wrap	Continuous Wrap
Length	10'	20'
Slot Size	30	20
Depths	243'	245'
	233'	224'

App. By: ASW Date: 7/30/87

ANNULAR SEAL

Type	Interval	Volume
Sand	217'-243'9"	23.33 ft³
Volclay Pellets	212'-217'	3.59 ft³
Volclay Grout	3-212'	203.35 ft³
Concrete	0-3'	8.67 ft³

App. By: ASW Date: 7/30/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Neutron	0'-244'	7/10/87
Density	0'-244'	7/10/87
Natural Gamma	0'-244'	7/10/87
	-	
	-	
	-	
	-	

Approved By: JS Wilbur Date: 7/10/87

AQUIFER TESTING

Type of Test: Constant Discharge Test
Length of Test: 8 hrs
Volume Pumped: 8,400 gals.
Drawdown: 3.96'

Approved By: ASW Date: 7/15/87

OTHER APPLICABLE ITEMS

- [N/A] Steam Cleaning
- [N/A] Storage of Const. Material
- [N/A] Tool Lubricants
- [N/A] Concrete Pad
- [ASW] Protective Steel Posts
- [ASW] Safety Paint
- [ASW] Straightness Test
- [ASW] Well Development
- [N/A] Downhole TV Inspection
- [✓] Well Abandonment
- [ASW] Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By: ASW Date: 7/30/87

Reviewed By: J.R. McKinney Date: 1-7-88

A-1800-187 (3/87)

9413205.0245

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W07-01 Geologist WILBUR, TEEL, JENSEN, BISHOP, AIRHART Page 1 of 2

Reviewed by J.L. McElhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete surface seal (0'-3')		5		SLIGHTLY SILTY GRAVELLY SAND
		10		SLIGHTLY SILTY SANDY GRAVEL
0'-63'5" 12" dia. Carbon Steel Casing		15		SILTY SANDY GRAVEL
0'-157'1" 10" dia. Carbon Steel Casing		20		
0'-245' 8" dia. Carbon Steel Casing		25		
		30		SANDY GRAVEL
0'-225' 4" dia. Stainless Steel Casing		35		
		40		
		45		
		50		
		55		
Volclay Grout (3'-212')		60		
		65		SILTY SAND
		70		
		75		SILTY SAND W/ CALICHE
		80		CALICHE & SAND
		85		SILTY SAND
		90		
		95		
		100		SAND (COARSE)
		105		
		110		
		115		
		120		
		125		
		130		SLIGHTLY GRAVELLY SAND

A-1800-186 (3/87)

9413205.0246

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W07-1 Geologist WILBUR, TEEL, JENSEN BISHOP AIRHART Page 2 of 2

Reviewed by V.L. McGhan Date 1-7-87

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		SAND (SILT W/ CONC. & CLAYS)
		140		SAND
		145		SILTY SANDY GRAVEL
		150		
		155		
		160		
		165		
		170		
		175		
		180		
		185		
		190		GRAVELLY SAND
		195		SILTY SANDY GRAVEL
D/T of bottom pellets @ 212'		200		
D/T of 20-30 sand @ 217'		205		
		210		
D/T of 4" SS screen @ 225'		215		
D/C of 4" SS screen @ 245'		220		
		225		
		230		
D/T of telescoping screen @ 232'		235		
		240		
D/C of telescoping screen @ 243'		245		GRAVELLY SILTY SAND

A-1800-186 (3/87)

9413205.0247

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project: 200 West RCRA Drilling
Location: 200 West
Driller: Homer Jay
Drilling Co.: Onwego Drilling Co
Geologist: CW Bishop / T Gilmore, JS Hilbur

Well Number: 299 W7 2
Temporary Well Number: NA
Coordinates: Unavailable
Casing Elevation: Unavailable
Ground Elevation: Unavailable

DRILLING METHOD

Rotary Air: NA Mud: NA
Cable Tool D: NA H: 10'-236'
Drilling Fluid: Water
Other: Backhoe 0-10'

COMPLETION DATA

Drilled Depth: 236
Completion Depth: 222'
Date Started: 8/4/87 Completed: 9/30/87
Static Water Level/Date: 212.5' 9/4; 217.9' 9/9

CASING DATA

Type	Size	
8" 304 Stainless Steel Telescoping 30 slot Screen	222'	to 212'
4" 304 Stainless Steel Casing	202'	to Surface
		to

Approved By: [illegible] Date: 9/17

PERFORATIONS

Type: NA

Depth	Schedule
-	
-	
-	

App. By: ____ Date: ____

SCREEN

Type: 304 Stainless Steel 4"
Length: 20' 4"
Slot Size: 20 Slot
Depths: 222' - 202'
App. By: [illegible] Date: 9/17/87

ANNULAR SEAL

Type	Interval	Volume
10-20 Sand	222'-199.3'	2900 lbs
Volclay pellets	199.3'-194.3'	25 gal
Grout	194.3'-4'	5300 lbs
Cement	0'-4'	~6 ft³

App. By: [illegible] Date: 11/5/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Nat Gamma	0 - 221'	9/18/87
Nuetron	0 - 221'	9/18/87
Density	0 - 221'	9/18/87
	-	
	-	
	-	
	-	

Approved By: [illegible] Date: 9/18/87

AQUIFER TESTING

Type of Test: Constant Discharge / Recharge
Length of Test: 7 hr
Volume Pumped: 4900 gal
Drawdown: 5.41'

Approved By: [illegible] Date: 9/16/87

OTHER APPLICABLE ITEMS

- [illegible] Steam Cleaning
- [illegible] Storage of Const. Material
- [illegible] Tool Lubricants
- [illegible] Concrete Pad
- [illegible] Protective Steel Posts
- [illegible] Safety Paint
- [illegible] Straightness Test
- [illegible] Well Development
- [illegible] Downhole TV Inspection
- NA Well Abandonment
- NA Complete As-Built Diagram.
- [illegible] Driller's and Geologist's Logs

Approved By: [illegible] Date: 11/3/87

Reviewed By: [illegible] Date: 1-7-88

A-1800-187 (3/87)

9413205.0248

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-2 Geologist C. W. Bishop Page 1 of 2

Reviewed by D. L. McGhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
12" Carbon Steel Casing		5		SILTY SANDY GRAVEL
12" Carbon Steel Casing		10		" " "
12" Carbon Steel Casing 159' 8"		15		" " "
8" Carbon Steel Casing 249' 5"		20		SANDY GRAVEL
4" Stainless Steel Casing		25		SILTY SANDY GRAVEL
		30		GRAVELY SAND
		35		SILTY SANDY GRAVEL
		40		SILT
		45		GRAVELY SANDY SILT
		50		SILTY SANDY GRAVEL
		55		" " "
		60		" " "
		65		" " "
		70		" " "
		75		SILTY GRAVELY SAND
		80		SILTY SAND
		85		" "
		90		" "
		95		SILTY SANDY GRAVEL
		100		GRAVELY SILTY SAND
		105		SILTY SANDY GRAVEL
		110		" " "
		115		" " "
		120		" " "
		125		" " "
		130		" " "

A-1800-188 (3/87)

9413205.0249

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299 W7 2 Geologist T. Gilmore Page 2 of 2

Reviewed by [illegible] McGhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		
		140		
		145		GRAVELY SAND
		150		SILTY SANDY GRAVEL
		155		
		160		
		165		
		170		
		175		
Centralizers 50' above Screen		180		
		185		
Envirogel Bentonite Grout		190		
Uniform caliche to 194.3' (25 gal)		195		
Sand Pack to 199.3'		200		
		205		SANDY GRAVEL
	211.26' 9/15/87	210		SILTY SANDY GRAVEL (C)
		215		SANDY GRAVEL
10' of Telescoping Screen @ 221'		220		GRAVELY SAND
		225		
		230		GRAVEL
10-30 Colo. Silica Sand		235		SILTY GRAVELY SAND
Total Depth 236'		240		TD 236'
		245		
		250		
		255		
		260		

A-1800-186 (3/87)

9413205.0250

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project 200 West RCRA Drilling Project
Location 200 West
Driller Bill Moomaw
Drilling Co. Onwego Drilling Co
Geologist C.W. Bishop / T Gilmore / Steve Tool

Well Number 299-W7-3
Temporary Well Number NA
Coordinates N. 46,520 W. 77,420
Casing Elevation 676.14
Ground Elevation 673.71

DRILLING METHOD

Rotary Air NA Mud NA
Cable Tool D NA H 8'-475'
Drilling Fluid Water
Other BACKHOE 0'-8'

COMPLETION DATA

Drilled Depth 475'
Completion Depth 470'
Date Started 7/27/87 Completed 11/23/87
Static Water Level/Date 210.2' 9/9; 208.4' 9/10; 211.7' 9/15

CASING DATA

Type	Size	
TYPE 304 STAINLESS STEEL CASING	4" DIAMETER	to 470'
		to
		to

Approved By S.P. Ambert Date 11-8-87

PERFORATIONS

Type —

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

	4" dia Type 304 S.S.	8" dia Type 304 S.S.
Type	continuous wrap	continuous wrap
Length	21'	10'
Slot Size	20-slot	30-slot
Depths	449' to 470'	~470' to 476'8"

App. By S.P. Ambert Date 11-8-87

ANNULAR SEAL

Type	Interval	Volume
Col. Silica Sand	476'-427'	17.89 ft³
Volclay Grout	427'-196'	213.90 ft³
Bentonite Slurry	196'-20	~~668.45 ft³~~ 748.66 SPA
Dry Bentonite	20-5	93.66 ft³
Concrete	4'-0	7.33 ft³

App. By S.P. Ambert Date 11/30/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0'-476'	10/28/87
NEUTRON	0'-476'	10/28/87
DENSITY	0'-476'	10/28/87
	-	
	-	
	-	
	-	

Approved By S.P. Ambert Date 10/28/87

AQUIFER TESTING

Type of Test CONSTANT DISCHARGE
Length of Test 28.25 hrs.
Volume Pumped 4779 gallons
Drawdown 154.78'

Approved By S.P. Ambert Date 10/31/87

OTHER APPLICABLE ITEMS

- TB Steam Cleaning
- TB Storage of Const. Material
- TB Tool Lubricants
- SPA Concrete Pad
- SPA Protective Steel Posts
- SPA Safety Paint
- TB Straightness Test
- TB Well Development
- TB Downhole TV Inspection
- — Well Abandonment
- SPA Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By SP Ambert Date 11-30-87

Reviewed By W.T. McGhan Date 1-7-88

A-1800-187 (3/87)

9413205.0251

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-3 Geologist C.W. BISHOP Page 1 of 4

Reviewed by D.L. McGhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
concrete surface seal				
20" Carbon steel casing 20'11"		5		GRAVEL
16" Carbon steel casing 145'6"		10		SILTY SANDY GRAVEL
12" Temporary Carbon Steel Casing 232'6"		15		" " "
10" Temporary Carbon Steel Casing 314'6"		20		" " "
8" Temporary Carbon Steel Casing 377'		25		" " "
		30		" " "
		35		GRAVELY SILTY CLAY
		40		SILT
		45		GRAVELY SANDY SILT
Dry bentonite		50		SILTY SANDY GRAVEL
		55		" " "
		60		" " "
		65		GRAVELY SILTY SAND
		70		" " "
		75		" " "
Dry bentonite		80		" " "
		85		GRAVELY SAND
		90		" "
Dry bentonite		95		SAND
		100		GRAVELY SAND
		105		" "
		110		SILTY SANDY GRAVEL
		115		" " "
		120		" " "
		125		" " "
		130		" " "

A-1800-188 (3/87)

9413205.0252

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-3 Geologist T Gilmore Page 2 of 4

Reviewed by D.L. McKlam Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		125		SILTY SANDY GRAVEL
		130		
		135		
Dry bentonite		140		
		145		
		150		
Bentonite slurry (-196')		155		Trace Sand
		160		
		165		
		170		SANDY GRAVEL
		175		GRAVELY SAND
		180		< lith change
		185		SANDY GRAVEL
		190		
		195		SILTY GRAVELY SAND
Volclay Grout (196'-477')	99 ▼	200		Tr Clay
		205		▼ Water level 210.2' *
		210		SANDY GRAVEL
		215		
		220		SILTY SAND
		225		
		230		Tr Clay
		235		
		240		SAND
		245		

A-1800-186 (3/8)

9413205.0253

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AS-BUILT DIAGRAM

Well Number 299 W7 3 Geologist T. Gilmore Page 3 of 4

Reviewed by D.L. McKhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		245		Clay (Bentonite?) 259'-261'
		250		SANDY GRAVEL @ 262'
		255		Sandy Gravel
		260		Gravely Sand
		265		Sandy gravel
		270		" "
		275		" "
		280		" "
		285		" "
		290		Gravel
		295		Gravely sand
Volclay Grout		300		Silty sandy gravel
		305		" " "
		310		" " "
		315		Sandy gravel
		320		" "
		325		Gravelly sand
		330		Silty sandy gravel
		335		Gravelly silty sand
		340		" " "
		345		Gravely sand
		350		Sand
		355		"
		360		Silty sandy gravel
		365		Sandy gravel
		370		Gravely sand

A-1800-188 (3/87)

9413205.0254

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-3 Geologist S. Teel Page 4 of 4

Reviewed by V.L. McGhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		395		Gravely sand
		400		Sandy gravel
		405		Gravely silty sand
		410		Silty sandy gravel
		415		Gravely silty sand
		420		Sandy gravel
		425		" "
		430		" "
20-30 mesh Colorado to inhibit migration of Volcanic ash into sandpack.		435		Gravely sand
		440		Gravely silty sand
		445		Silty sandy gravel
		450		Sandy gravel
10-20 mesh Colorado silica sand (427'-476')		455		" "
		460		" "
		465		Sand
		470		Sandy gravel
8" telescoping screen was damaged while redrilling hole to re-install 8" s.s. casing & screen. Inside of telescoping screen was filled w/ silica sand.	476'8"	475		BASALT CONTACT @ ~473'

A-1800-186 (3/87)

9413205.0255

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project KEH-1914
Location 200 WEST AREA - HANFORD
Driller RUSS VANCE
Drilling Co. ONWELO
Geologist TEEL; GILMORE; WILBUR; AIRHART

Well Number 299-W7-4
Temporary Well Number —
Coordinates N. 45,435 W. 77,040
Casing Elevation 671.69
Ground Elevation 669.02

DRILLING METHOD

Rotary Air — Mud —
Cable Tool D — H 5'-235'
Drilling Fluid H_2O
Other BACKHOE 0'-5'

COMPLETION DATA

Drilled Depth 235'
Completion Depth 233'
Date Started 9/29/87 Completed 11/9/87
Static Water Level/Date 205' / 11-2-87

CASING DATA

Type	Size	
TYPE 304 STAINLESS STEEL CASING	4" DIAMETER	to 233'
		to
		to

Approved By S.P. Ambert Date 11/8/87

PERFORATIONS

Type —

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

	4" dia. Type 304 S.S.	8" dia. Type 304 S.S.
Type	continuous wire	continuous wire
Length	30'	10'
Slot Size	10-slot	30-slot
Depths	203' to 233'	223' to 233'

App. By S.P. Ambert Date 11/8/87

ANNULAR SEAL

Type	Interval	Volume
COLORADO SILICA SAND	194'-233'	22.94 ft^3
WILLAY PELLETS	190'-194'	2.57 ft^3
BENTONITE SLURRY	12'-194'	267 ft^3
DRY BENTONITE	3'-12' 50'-60'	26.08 ft^3
CONCRETE	0'-3'	4 ft^3

App. By S.P. Ambert Date 11/8/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0'-231'	11/5/87
DENSITY	0'-231'	11/5/87
NEUTRON	0'-231'	11/5/87
	-	
	-	
	-	
	-	

Approved By S.P. Ambert Date 11/5/87

AQUIFER TESTING

Type of Test CONSTANT - DISCHARGE
Length of Test 7 hrs.
Volume Pumped 20160 gallons
Drawdown 7.7'

Approved By S.P. Ambert Date 11/12/87

OTHER APPLICABLE ITEMS

- SPA Steam Cleaning
- SPA Storage of Const. Material
- SPA Tool Lubricants
- SPA Concrete Pad
- SPA Protective Steel Posts
- SPA Safety Paint
- SPA Straightness Test
- SPA Well Development
- TV Downhole TV Inspection
- — Well Abandonment
- SPA Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By S.P. Ambert Date 11/30/87

Reviewed By T.L. McKhann Date 1-7-88

A-1800-187 (3/87)

9413205.0256

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-4 Geologist TEEL; GILMORE; WILBUR; ALEWART Page 1 of 2

Reviewed by H.L. McGhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete surface seal 0-3'		5		GRAVEL
Dry bentonite		10		SANDY GRAVEL
16" Carbon Steel Casing (0'-30')		15		GRAVEL
12" Carbon Steel Casing (0'-50' 8 1/2")		20		SANDY GRAVEL
10" Carbon Steel Casing (0'-50' 6")		25		GRAVEL
8" Carbon Steel Casing (0'-722')		30		
4" Stainless Steel Casing (0'-703')		35		SANDY GRAVEL
		40		
NOTE: All Carbon Steel Casing was removed		45		
		50		
Dry Bentonite.		55		SILTY SANDY GRAVEL
		60		GRAVELLY SILT/CLAY
		65		GRAVELLY SANDY SILT
		70		GRAVELLY SILTY SAND
		75		GRAVELLY SAND
		80		SAND
		85		
Bentonite slurry (12'-104')		90		
		95		
		100		
		105		GRAVELLY SAND
		110		
		115		SANDY GRAVEL
		120		
		125		SILTY SANDY GRAVEL
		130		SANDY GRAVEL

A-1800-186 (3/87)

9413205.0257

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 199-W7-4 Geologist ~~TEEL; GILMORE; WILBUR;~~ AIRHART Page 2 of 2

Reviewed by V.L. McGhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		SANDY GRAVEL
		140		
		145		SILTY SANDY GRAVEL
		150		
		155		
Bentonite slurry		160		
		165		SANDY GRAVEL
		170		SILTY SANDY GRAVEL
		175		CAVEY SANDY GRAVEL
		180		SILTY SANDY GRAVEL
		185		
		190		
Volclay pellets (190'-194')		195		
		200		
Top of 4" screen @ 203'		205		
	205' 11/28/87	210		
centralizers		215		SILTY GRAVELLY SAND
10-20 mesh Colorado Silica sand (194'-223')		220		SLIGHTLY SILTY GRAVELLY SAND
Top of telescoping screen	223'	225		SILTY SANDY GRAVEL
		230		
Bottom of 8" & 4" screens @ 233'.		235		
DRILL DEPTH = 235'		240		

A-1800-186 (3-87)

9413205.0258

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project KEH-1914
Location 200 WEST AREA ; HANFORD
Driller HOMER JOY , DAVE GARCIA
Drilling Co. ONWELLO DRILLING
Geologist

Well Number 299-W7-5
Temporary Well Number —
Coordinates N.46,509 W.76,816
Casing Elevation 671.14
Ground Elevation 670.41

DRILLING METHOD

Rotary Air — Mud —
Cable Tool D — H 10'- 229'
Drilling Fluid H_2O
Other BACKHOE 0'-10'

COMPLETION DATA

Drilled Depth 229'
Completion Depth 227.7'
Date Started 9/30/87 Completed 11/10/87
Static Water Level/Date 211' ~~[illegible]~~ SPA 11/7/87

CASING DATA

Type	Size	
TYPE 304 STAINLESS STEEL CASING	4" DIAMETER	to 207'
		to
		to

Approved By S.P. [illegible] Date 11/16/87

PERFORATIONS

Type —

Depth	Schedule
-	
-	
-	

App. By Date

SCREEN

Type 4" dia. TYPE 304 S.S. CONTINUOUS WIRE
Length 20' (2 x 10' lengths)
Slot Size 20 slot
Depths 227.7' - 207.7'
App. By S.P. [illegible] Date 11/16/87

ANNULAR SEAL

Type	Interval	Volume
COLORADO SILICA SAND	200'-208'	18.28 ft³
VERMILAY PELLETS	197'-200'	4.31 ft³
DRY BENTONITE	190'-197'; 2'-5'	10.14 ft³
BENTONITE SLURRY	5'-190'	360.96 ft³
CONCRETE	0'-2'	

App. By S.P. [illegible] Date 11/30/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0' - 224'	11/14/87
NEUTRON	0' - 224'	11/14/87
DENSITY	0' - 224'	11/14/87
	-	
	-	
	-	
	-	

Approved By S.P. [illegible] Date 11/15/87

AQUIFER TESTING

Type of Test Constant discharge test
Length of Test 6 hrs
Volume Pumped 1800 gal
Drawdown 5.02

Approved By A.S. Hill Date 11/23/87

OTHER APPLICABLE ITEMS

SPA Steam Cleaning
SPA Storage of Const. Material
SPA Tool Lubricants
SPA Concrete Pad
SPA Protective Steel Posts
SPA Safety Paint
SPA Straightness Test
SPA Well Development
~~SPA~~ Downhole TV Inspection
— Well Abandonment
SPA Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By S.P. [illegible] Date 11/30/87

Reviewed By W.G. McGhan Date 1-7-88

A-1800-187 (2/87)

9413205.0259

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-5 Geologist Dave Weisman Page 1 of 2

Reviewed by V.L. McGhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete surface seal.		5		GRAVEL
Dry bentonite		10		"
(0'-10') 16" dia carbon steel casing		15		SANDY GRAVEL
(0'-50'97) 12" dia carbon steel casing		20		" "
(0'-154.7') 10" dia. carbon steel casing		25		" "
(0'- 8" dia carbon steel casing		30		SILTY SANDY GRAVEL
All carbon steel casing removed.		35		" " "
		40		" " "
		45		" " "
		50		SILTY GRAVELLY SAND
		55		" " "
		60		GRAVELLY SILTY SAND
		65		SILTY GRAVELLY SAND
		70		" " "
		75		" " "
		80		SANDY GRAVEL
		85		" "
Bentonite slurry		90		" "
(5'-190')		95		" "
		100		" "
		105		" "
		110		SILTY SANDY GRAVEL
		115		" " "
		120		" " "
		125		" " "
		130		Sandy gravel

A-1800-186 (3/87)

9413205.0260

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-5 Geologist AIRHART Page 2 of 2

Reviewed by V.L. McKhan Date 1-7-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		SANDY GRAVEL
		140		
		145		
		150		
		155		SILTY SANDY GRAVEL
Bentonite slurry		160		
		165		
		170		
		175		
		180		
		185		
		190		SILTY GRAVELLY SAND
Dry bentonite (190'-197')		195		
Volclay Pellets (197'-200')		200		
		205		SILTY SANDY GRAVEL
20-30 mesh Colorado Silica Sand (200'-208')	01/13/87	210		SILTY GRAVELLY SAND
	241'	215		GRAVELLY SAND
70 slot S.S. Screen (207'-227.7')		220		SANDY GRAVEL
		225		SILTY/CLAYEY SAND
		230		
Depth Drilled: 229'				

A-1800-186 (3/87)

9413205.0261

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project KEH-1914
Location 200 WEST AREA - HANFORD
Driller BLAINE BOLEY
Drilling Co. ONWEND DRILLING
Geologist WAISHAN, GANN, TEEL, AIEHART

Well Number 299-W7-6
Temporary Well Number —
Coordinates N.46,509 W.76,219
Casing Elevation 678.64
Ground Elevation 676.25

DRILLING METHOD

Rotary Air — Mud —
Cable Tool D _____ H 10'-242.8'
Drilling Fluid WATER
Other BAKHOE 0'-10'

COMPLETION DATA

Drilled Depth 242.8'
Completion Depth 229'
Date Started 9/2/87 Completed 11/2/87
Static Water Level/Date 218' / 10/9/87

CASING DATA

Type	Size	
TYPE 304 STAINLESS STEEL CASING	4" DIAMETER	to 229'
		to
		to

Approved By S.P. [illegible] Date 10/23/87

PERFORATIONS

Type —

Depth	Schedule
-	
-	
-	

App. By _____ Date _____

SCREEN

	4" dia. TYPE 304 S.S.	8" DIA. TYPE 304 S.S.
Type	CONTINUOUS WRAP	CONTINUOUS WRAP
Length	20'	10'
Slot Size	20 slot	30 slot
Depths	209' to 229'	231' to 241'

App. By S.P. [illegible] Date 10/23/87

ANNULAR SEAL

Type	Interval	Volume
COLORADO SILICA SAND	(205.5'-240')	12.06 ft³
VOLCLAY PELLETS	202.5-205.5	2.88 ft³
BENTONITE SLURRY	3'-202.5'	367.70 gal 49.16 ft³ SPA
DRY BENTONITE CONCRETE	2'-3' 0'-2'	1.43 ft³ 2.0 ft³

App. By S.P. [illegible] Date 11/2/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0' - 241'	10/9/87
DENSITY	0' - 241'	10/9/87
NEUTRON	0' - 241'	10/9/87
	-	
	-	
	-	
	-	

Approved By S.P. [illegible] Date 10/9/87

AQUIFER TESTING

Type of Test Constant discharge test
Length of Test 8 hrs
Volume Pumped 3,400 gals
Drawdown 21.42

Approved By [illegible] Date 10/15/87

OTHER APPLICABLE ITEMS

- SPA Steam Cleaning
- SPA Storage of Const. Material
- SPA Tool Lubricants
- SPA Concrete Pad
- SPA Protective Steel Posts
- SPA Safety Paint
- SPA Straightness Test
- SPA Well Development
- TCM Downhole TV Inspection
- — Well Abandonment
- SPA Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By S.P. [illegible] Date 11/12/87

Reviewed By [illegible] Date 1-8-88

A-1800-187 (3/87)

9413205.0262

9413205.0263

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-6 Geologist Dave Waisman (Lynnette Gandl) Page 1 of 2

Reviewed by [illegible] Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
CONCRETE SURFACE SEAL		5		Sandy gravel
DRY BENTONITE		10		Gravely sand
		15		Sandy gravel
(0'-51'3") 12" DIA. CARBON STEEL CASING		20		SILTY SANDY GRAVEL
(0'-152') 10" DIA. CARBON STEEL CASING		25		" " "
(0'-241'9") 8" DIA. CARBON STEEL CASING		30		" " "
ALL CARBON STEEL CASING REMOVED.		35		SLIGHTLY SILTY
		40		" GRAVELLY SAND " " "
		45		GRAVELLY SANDS
		50		" "
4" DIA. STAINLESS STEEL CASING		55		SLIGHTLY GRAV. SAND
		60		" " "
		65		" " "
		70		" " "
		75		GRAVELLY SAND
BENTONITE SLURRY (3'-200.5')		80		GRAVELLY SILTY SAND
		85		" " "
		90		" " "
		95		" " "
		100		SILTY GRAVELLY SAND
		105		SILTY SANDY GRAVEL
		110		Sandy Gravel
		115		" "
		120		" "
		125		" "

□ = caliche

A-1800-186 (3/87)

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AS-BUILT DIAGRAM

Well Number 299 W7-6 Geologist Dave Waisman Page 2 of 2

Reviewed by W. McShane Date 1-9-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		130		Sandy Gravel
		135		" "
		140		" "
BENTONITE SLURRY		145		" "
		150		" "
		155		" "
		160		" "
		165		" "
		170		" "
		175		Silty sandy Gravel
		180		" " "
		185		" " "
CENTRAL SEEDS		190		Silty gravely sand
VOLCLAY PELLETS (200.5'-205.5')		195		Silty sandy gravel
NOTE: 4" S.S. casing & screen		200		" " "
were re-set after complications		205		Sandy gravel
w/ initial completion efforts		210		Silty sandy gravel
It was impossible to conserve		215		Sandy Gravel
original depths since 8"	218' 10/14/87	220		" "
screen had filled w/ sand.		225		" "
10-20 MESH COLORADO SILICA SAND (205.5'-240')		230		Silty gravely sand
4" dia 20-SLOT S.S. SCREEN (208'-229')		235		Silty sandy gravel
8" TELESCOPING SCREEN (231'-241')		240		" " "
TOTAL DELIVERED = 242.8'		245		
		250		

A-1800-188 (3/87)

9413205.0264

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, RO)

Specification No. WAC-5-014 Rev. No. 3
Project W017-LLBG
Location 200 West Area
Drilling Co. Basin and Range Drilling Co.
Driller Lin Cordon
Other (companies) None
Geologist(s) B.N. Bjornstad, J.V. Woznipwicz, T. Gilmore, S.M. Goodwin, M.A. Chamness, R. Miller

Well No. 299-W7-7 Temp. Well No. W3-MW2
Coordinates N 46,509.3' W 76,518.7'
Casing Elev. 674.94' ~~Ground~~ Brass Cap Elev. 671.96'

DRILLING METHOD

Rotary Air N/A Mud N/A
Cable Tool D 40'-65' H 0'-40' 65'-230'
Drilling Fluid 200 West Raw Water Supply
Other None

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Gamma Ray	229 - 3	11-17-89
	-	
	-	
	-	
	-	

COMPLETION DATA

Drilled Depth 230.83' (11/16/89)
Completed Depth 227.8'
Date Started 10/23/89
Date Completed 11/27/89
Static Water Level/Date 211.8' (11/17/89)

AQUIFER TESTING

Type /
Length of Test NA
Volume Pumped /
Drawdown /
Date of Test /

INSPECTION RESULTS

CLEANING

Inspection Method Visual
Acceptance Criteria Sect. 7.6

	Accept	Reject	Date
Drilling Tools/Rig	BNB		10/27/89
Temporary Materials	BNB		11/16/89
Permanent Materials	JB		11/27/89

MATERIAL STORAGE/PACKING

Inspection Method Visual
Acceptance Criteria Sect. 4.2.2

	Accept	Reject	Date
Mtl. Handling/Storage	BNB		11/27/89
Material Packing	BNB		11/27/89

SCREEN

Type	Length	Slot Size
4" ss steel channel rock	20.24	10

Depth(s) 227.6' - 207.06'
Inspection Method Verify with Steel Tape
Acceptance Criteria Sect. 4.2.3
Accept JB Reject ____ Date 11/27/89

LUBRICANTS/ADDITIVES

Inspection Method Visual
Acceptance Criteria Sect. 7.2

	Identify	Accept	Reject	Date
Additives	None	BNB		11/27/89
Lubricants	Food Grade Oil	BNB		11/27/89

STRAIGHTNESS TEST

Inspection Method Run Bailer to Bottom
Acceptance Criteria Sect. 8.3
Accept BNB Reject ____ Date 11/16/89

CASING (permanent)

Type	Size	Placement
4" Stainless Steel	4"	207.06' - +1.99'
		-

Inspection Method Measured w/ Steel Tape
Acceptance Criteria Sect. 4.2.4
Accept JB Reject ____ Date 11/17/89

WELL PROTECTION

Inspection Method Visual
Acceptance Criteria Sect. 4.2.10

	Accept	Reject	Date
Protective Posts	BNB		1/26/90
Locks			

ANNULAR SEAL

Inspection Method Measured w/ Steel Tape
Acceptance Criteria Sect. 4.2.6 - 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
silica sand 20-40 mesh	229.55' - 202.7'	25 ft³ - 100 lb bags	JB		11/21/89
bentonite pellets 3/8" Wyclay	202.7' - 19.9'	3-5 gal. buckets	JB		11/21/89
bentonite crumbles 8-20 mesh	19.9' - 17.4'	(103) - 50 lb bags	MAC		11/27/89
cement grout Portland cement w/ gypsum	17.4' - 1.5'	(12) 94 lb bags	MAC		11/27/89
[illegible]	1.5' - +.5'	1 yd³	BNB		1/24/90

OTHER (initial if performed)

N/A Well Abandonment
BRR Well Development
VEM Downhole TV Inspection
____ Complete As-Built Diagram, Driller's/Geologist's Logs

Reviewed by V. L. Mathews 1-23-90

A-26

For all blanks mark N/A if not applicable.

9413205.0265

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-7 Geologist J. Wozniewicz, B. Bjornstad, R. Miller, S. Goodwin, M. Chamness, T. Gilmore Page 1 of 2

Reviewed by V. L. McGhan Date Well Started: 10/23/89 Well Completed: 11/27/89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
Cement Pad (+0.5' - 2.0')		5	●	Muddy Sandy Gravel
		10	●	" " "
12" dia. carbon steel casing (0' - 20.25') - removed		15	●	" " "
		20	●	" " "
Cement Grout - Portland cement with gypsum (2.0' - 17.4')	HT	25	●	" " "
		30	●	Gravelly Sandy Mud
		35	●	Gravelly Muddy Sand
		40	●	" " "
Casing Centralizer		45	○	Muddy Sandy Gravel
Casing Joint		50	○	Slightly Gravelly Slightly Muddy Sand
	DB	55	○	Sand
8" dia. carbon steel casing (0' - 231.2') - removed		60	○	Slightly Gravelly Sand
		65	○	Slightly Gravelly Slightly Muddy Sand
		70	●	Gravelly Sand
4" dia. stainless steel final casing (+1.99' - 207.06')		75	●	Sandy Gravel
		80	●	" "
		85	●	Muddy Sandy Gravel
		90	●	" " "
		95	●	" " "
8 - 20 mesh bentonite crumbles (17.4' - 198.0')	HT	100	●	" " "
		105	●	Slightly Muddy Gravelly Sand
		110	●	Sandy Gravel
		115	●	" "
		120	●	" "
DB = Drive Barrel HT = Hard Tool		125	●	" "
		130	●	" "

A-1800-186 (3/87)

9413205.0266

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-7 Geologist J. Wozniewicz, B. Bjornstad, R. Miller, S. Goodwin, M. Chamness, T. Gilmore Page 2 of 2

Reviewed by V. L. McGhan Date Well Started: 10/23/89 Well Completed: 11/27/89

Construction Data

Description

8" dia. carbon steel casing (0' - 231.2') - removed

4" dia. stainless steel final casing (+1.99' - 207.06')

8 - 20 mesh bentonite crumbles (17.4' - 198')

HT = Hard Tool

3/8" Volclay pellets (198' - 202.7')

20 - 40 mesh Silica sand (202.7' - 229.55')

4" dia. stainless steel Johnson Channel Pack screen (207.06'-227.80')

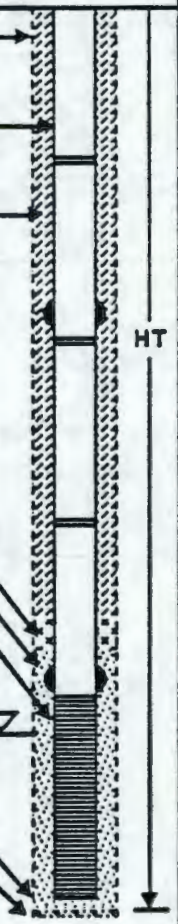
Static Water Table (211.8') - 11/17/89 -

Bottom of well = 227.8'
Backfill (229.55' - 230.83')

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

Diagram



Geologic/Hydrologic Data

Sample Type: ○ Drive Barrel ● Hard Tool ▲ Split Spoon

Depth in Feet	Sample Type	Lithologic Description
135	●	Muddy Sandy Gravel
140	●	
145	●	Sandy Gravel
150	●	
155	●	Muddy Sandy Gravel
160	●	
165	●	
170	●	
175	●	
180	●	
185	●	
190	●	
195	●	
200	●	
205	●	
210	●	
215	●	
220	●	
225	●	
230	●	
	TD=230.83'	

A-1800-186 (3/87)

9413205.0267

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, RO)

Specification No. WHC-S-014 Rev. No. 3
Project UBG
Location 200 West Area
Drilling Co. Basin & Range
Driller L. Condon Jr.
Other (companies) None
Geologist(s) R. Miller / Steve Airhart / Tyler Gilmore
John Woziewicz, I Kennedy,
B. Bjornstad

Well No. 299-W7-8 Temp. Well No. 299-W3-3
Coordinates N 46,509.3' W 75,890.1
Casing Elev. 687.35' ~~Ground~~ Brass Cap Elev. 684.40'

DRILLING METHOD

Rotary Air n/a Mud n/a
Cable Tool D 0.0 - 135' H 135' - 244.5'
Drilling Fluid 200 West Raw Water Supply
Other Split Spoon 0.0' - 73.0'

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Natural Gamma	243 - 3'	11/12/89
	-	
	-	
	-	
	-	
	-	

COMPLETION DATA

Drilled Depth 244.5'
Completed Depth 240.5'
Date Started 10/19/89
Date Completed 12/13/89
Static Water Level/Date 229.2' 11/17/89

AQUIFER TESTING

Type N/A
Length of Test
Volume Pumped
Drawdown
Date of Test

INSPECTION RESULTS

CLEANING

Inspection Method Visual
Acceptance Criteria Section 7.1

	Accept	Reject	Date
Drilling Tools/Rig	RDM		10/19/89
Temporary Materials	RDM		10/19/89
Permanent Materials	JK		11/12/89

SCREEN

Type	Length	Slot Size
Johnson Channel Pack 4" ID	30.34'	15 Slot
	—	—

Depth(s) 240.5' - 210.5'
Inspection Method Visual
Acceptance Criteria Section 4.2.3
Accept JK Reject Date 11/12/89

CASING (permanent)

Type	Size	Placement
Stainless Steel	4" dia	219.8' - +3'
		-

Inspection Method Visual
Acceptance Criteria Section 4.2.4
Accept JK Reject Date 11/12/89

MATERIAL STORAGE/PACKING

Inspection Method Visual
Acceptance Criteria Section 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	JK		11/12/89
Material Packing	JK		11/12/89

LUBRICANTS/ADDITIVES

Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	none	RDM	n/a	10/19/89
Lubricants	Chevron Pelnu FM-2	RDM	n/a	10/19/89

STRAIGHTNESS TEST

Inspection Method 20' long 7" dia. bailer
Acceptance Criteria Section 8.3
Accept JK In JVW Reject Date 11/30/89

WELL PROTECTION

Inspection Method Visual
Acceptance Criteria Section 4.2.9 - 4.2.10

	Accept	Reject	Date
Protective Posts	BNB		1/24/90
Locks			

ANNULAR SEAL

Inspection Method Visual / steel tape
Acceptance Criteria Section 4.2.6 - 4.2.9

Type	Interval	Volume	Accept	Reject	Date
20-40 Mesh Col. Silica Sand	217.3' - 243.4'	14.6 ft³	JK		11/28/89
1/4" Volclay Tablets	215' - 217.3'	1.2 ft³	JK		11/28/89
8-20 Mesh Bentonite	18.7' - 215'	26.6 ft³	JJA		11-29-89
Cement Grout	2.0' - 18.7'	21.9 ft³	BNB		12/1/89
~~Cement Pad~~	~~0.5' - 2.0'~~	1.0 ft³	JJA		12/1/89

OTHER (initial if performed)

N/A Well Abandonment
JRH Well Development
JVW Downhole TV Inspection
____ Complete As-Built Diagram, Driller's/Geologist's Logs

Reviewed by [illegible] 1-26-90

A-29 For all blanks mark N/A if not applicable.

9413205.0268

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-8 Geologist R. Miller, S. Airhart, T. Gilmore, J. Wozniewicz, I. Kennedy, B. Bjornstad Page 1 of 2

Reviewed by V. L. McGhan Date Well Started: 10/19/89 Well Completed: 12/13/89

Construction Data

Description

Cement Pad (0' - 2.0')

12" dia. carbon steel casing (0' - 18.61') - removed

Cement Grout (2.0' - 18.7')

8" dia. carbon steel casing (0' - 243.0') - removed

4" dia. stainless steel final casing (+3.0' - 240.6')

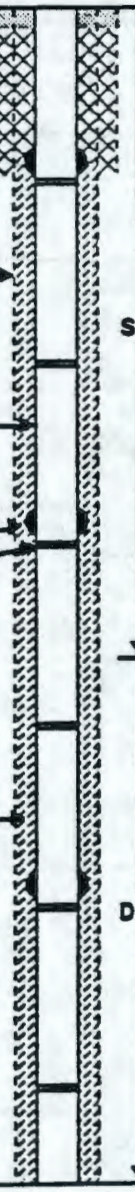
Casing Centralizer

Casing Joint

8-20 mesh Bentonite (18.7' - 215.0')

DB = Drive Barrel
SS = Split Spoon

Diagram



Geologic/Hydrologic Data

Depth in Feet	Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
5	▲	Sandy Gravel (trace cobbles)
10	▲	" " " "
15	▲	" " " "
20	▲	Muddy Sandy Gravel
25	▲	" " "
30	▲	Sandy Mud - 28.5'
35	▲	Muddy Sand (trace caliche)
40	▲	Sandy Gravel - 39.5' (trace caliche)
45	▲	Sandy Gravel (fines 47.0 - 48.0')
50	▲	Sand (fines - 47.0'-48.0') Slightly Gravelly Sand (48.0'-51.0')
55	▲	Muddy Sandy Gravel
60	▲	Gravelly Sand (to 59.0')
65	▲	Sand
70	▲	"
75	○	"
80	○	Gravelly Sand (@78.0')
85	○	Sandy Gravel (trace cobbles)
90	○	" "
95	○	" "
100	○	" "
105	○	" "
110	○	" "
115	○	" "
120	○	Sand
125	○	Sandy Gravel
130	○	Muddy Sandy Gravel

A-1800-186 (3/

9413205.0269

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-8 Geologist R. Miller, S. Airhart, T. Gilmore, J. Wozniewicz, I. Kennedy, B. Bjornstad Page 2 of 2

Reviewed by V. L. McGhan Date Well Started: 10/19/89 Well Completed: 12/13/89

Construction Data

Description

8" dia. carbon steel casing (0' - 243.0') - removed

4" dia. stainless steel final casing (+3.0' - 219.8')

8-20 mesh Bentonite (18.7' - 215.0')

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

DB = Drive Barrel
HT = Hard Tool

1/4" Volclay Tablets (215.0 - 217.3')

Static Water Table (225.2') - 11/17/89 -

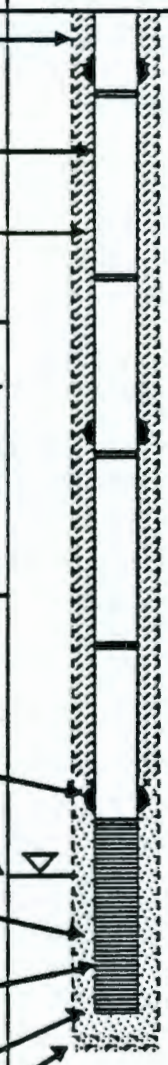
20-40 mesh Colorado Silica Sand (217.3' - 243.4')

4" dia. stainless steel Johnson Channel Pack screen (219.8' - 240.6')

Bottom of well = 240.6'

Backfill (243.4' - 244.5')

Diagram



Geologic/Hydrologic Data

Depth in Feet	Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
135	○	Muddy Sandy Gravel
140	●	
145	●	
150	●	
155	●	
160	●	
165	●	
170	●	
175	●	
180	●	
185	●	
190	●	
195	●	
200	●	
205	●	
210	●	
215	●	
220	●	
225	●	
230	●	
235	●	Slightly Muddy Gravelly Sand
240	●	Muddy Sandy Gravel
245		
		TD= 244.5'

A-1800-188 (3/87)

9413205.0270

Page 1 of 2

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, RO)

Specification No. WHC-S-014 Rev. No. 3
Project W-017 Low Level Burial Grounds
Location 200 West Area
Drilling Co. Kaiser
Driller M. Thorsen
Other (companies) None
Geologist(s) B.N. Bjornstad, S. Goodwin, T. Gilmore, R.P. Biegen, M. Chamness, A. Pearson, S. Airhart, T. Kennedy, K.R.O. Barton

Well No. 299-W7-9 Temp. Well No. W5-MW1
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD
Rotary Air N/A Mud N/A
Cable Tool D 0'-144' H 144'-244'
Drilling Fluid 200 West Drill Supply H_2O
Other Split Spoon: during drive barrel sampling when possible

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Gamma Ray	243'-3'	11/10/89
Gamma Ray	242-1'	1-9-90
	-	
	N/A	
	-	

COMPLETION DATA
Drilled Depth 252.2'
Completed Depth 241.14'
Date Started 10/3/89
Date Completed 4/11/90
Static Water Level/Date 22.00' 11/9/89

AQUIFER TESTING
Type SLUG TEST
N/A
Length of Test N/A
Volume Pumped N/A
Drawdown N/A
Date of Test 3/1/90

INSPECTION RESULTS

CLEANING
Inspection Method visual
Acceptance Criteria Sect 7.6

	Accept	Reject	Date
Drilling Tools/Rig	BNB	N/A	10/3/89
Temporary Materials	BNB	N/A	11/9/89
Permanent Materials	AWP	N/A	12/15/89

MATERIAL STORAGE/PACKING
Inspection Method visual
Acceptance Criteria Sec. 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	AWP	N/A	12/15/89
Material Packing	AWP	N/A	12/15/89

SCREEN

Type	Length	Slot Size
Johnson Div. Type 304 Continuous Wrap Channel Pack 4" S.S.	20.8'	10
	—	—

Depth(s) 220.34' - 241.14'
Inspection Method verify using steel tape
Acceptance Criteria Sec. 4.2.3
Accept AWP Reject N/A Date 12/13/89

LUBRICANTS/ADDITIVES
Inspection Method visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	None	BNB	N/A	11/9/89
Lubricants	Food oil	BNB	N/A	11/9/89

STRAIGHTNESS TEST
Inspection Method 20' 5-5" ~~55~~ Casing Down Hole
Acceptance Criteria Sec. 5.3
Accept BNB Reject N/A Date 11/9/89

CASING (permanent)

Type	Size	Placement
Johnson Div. Type 304 Schedule 5 Stainless Steel	4"	220.34' + 1.02'
	N/A	

Inspection Method visual
Acceptance Criteria Sec. 4.2.4
Accept AWP Reject N/A Date 12/13/89

WELL PROTECTION
Inspection Method visual
Acceptance Criteria Sec. 4.2.9 - 4.2.10

	Accept	Reject	Date
Protective Posts	JD	N/A	3/2/90
Locks	JD	N/A	3/2/90

ANNULAR SEAL
Inspection Method verify using steel tape Acceptance Criteria Sec. 4.2.6-4.2.9

Type	Interval	Volume	Accept	Reject	Date
Volclay Tablets (1/4" dia)	248.4' - 242.8'	0.78 ft^3	AWP	N/A	12/13/89
Colorado Silica Sand (20-40 mesh)	242.8' - 214.3'	19.04 ft^3	AWP	N/A	12/14/89
Volclay Tablets (1/4" dia)	214.3' - 209.8	1.86 ft^3	AWP	N/A	12/14/89
Bentonite (8-20 mesh)	209.8' - 20.2'	211.64 ft^3	AWP	N/A	12/15/89

~~Continued on Page 2 of 2~~

OTHER (initial if performed)
N/A Well Abandonment
DRN Well Development
VXM Downhole TV Inspection
CROB Complete As-Built Diagram, Driller's/Geologist's Logs

Reviewed by J.L. McKhan 1-26-90

A-32 For all blanks mark N/A if not applicable.

9413205.0271

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO).

Well 299-W7-9 continued...

ANNULAR SEAL

Inspection Method verify using steel tape Acceptance Criteria Sec. 4.2.6-4.2.9

Type	Interval	Volume	Accept	Reject	Date
Portland Cement Type I & II Grout	20.2' - 2.5'	21.12 ft³	AWP		12/15/89
Concrete Pad	2.5' - +.5'	1 yd³	AWP		2/22/90
	-				
	-				

for all blanks mark N/A if not applicable.

Reviewed by V L McClam 1-26-90

9413205.0272

9413205.0273

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-9 Geologist B. Bjornstad, S. Goodwin, T. Gilmore, R. Biegen, M. Chamness, A. Pearson, S. Airhart, I. Kennedy Page 1 of 2

Reviewed by V.L. McGhan Date Well Started: 10/03/89 Well Completed: 04/11/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
Concrete Pad (+0.5' - 2.5')		5	▲	Gravelly Muddy Sand
Cement Grout - Portland cement Type I & II Grout (2.5' - 20.2')	SS	10	▲	Muddy Sandy Gravel
		15	○	▪ ▪ ▪
		20	○	Sandy Gravel
		25	○	Muddy Sandy Gravel
		30	○	▪ ▪ ▪
Casing Centralizer	DB	35	○	▪ ▪ ▪
		40	○	▪ ▪ ▪
		45	○	▪ ▪ ▪
Casing Joint		50	○	▪ ▪ ▪
		55	○	▪ ▪ ▪
		60	○	▪ ▪ ▪
10" dia. carbon steel casing (0' - 143.5') - removed		65	○	Slightly Gravelly Slightly Muddy Sand
8" dia. carbon steel casing (0' - 251.1') - removed		70	○	Muddy Sand
		75	○	Muddy Sandy Gravel
		80	○	▪ ▪ ▪
	SS	85	○	Sand
4" dia. stainless steel final casing (+ 1.02 ' - 220.34')		90	○	Gravelly Sand
		95	○	Slightly Gravelly Slightly Muddy Sand
		100	○	▪ ▪ ▪ ▪ ▪
		105	○	Sand
	DB	110	○	▪
8 - 20 mesh bentonite crumbles (20.2' - 209.8')		115	○	▪
	SS	120	○	▪
DB = Drive Barrel		125	○	▪
	DB	130	○	Gravelly Sand

A-1800-188

Battelle
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AS-BUILT DIAGRAM

Well Number 299-W7-9

Geologist B. Bjornstad, S. Goodwin, T. Gilmore, R. Biegen, M. Chamness, A. Pearson, S. Airhart, I. Kennedy

Page 2 of 2

Reviewed by

Date Well Started: 10/03/89
Well Completed: 04/1189

Construction Data

Description

10" dia. carbon steel casing (0' - 143.5') - removed

8" dia. carbon steel casing (0' - 251.1') - removed

4" dia. stainless steel final casing (+1.02' - 220.34')

8-20 mesh bentonite crumbles (20.2' - 209.8')

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

DB = Drive Barrel
HT = Hard Tool

1/4" Volclay Tablets (209.8 - 214.3')

20-40 mesh Colorado Silica Sand (214.3' - 242.8')

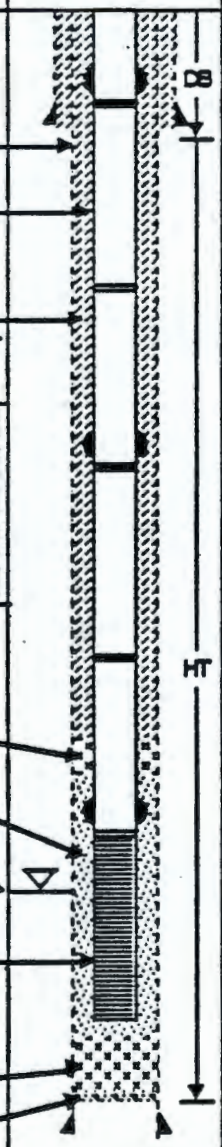
Static Water Table (227.0') - 11/09/89 -

4" dia. Johnson stainless steel 10 slot Channel Pack screen (220.34' - 241.14')

1/4" Volclay Tablets (242.8' - 248.6')

Backfill (248.6' - 252.2')

Diagram



Geologic/Hydrologic Data

Depth in Feet	Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
135	○	Sand
140	○	Slightly Muddy Sand
145	○	Sandy Gravel
150	●	Muddy Sandy Gravel
155	●	Gravelly Sand
160	●	Sandy Gravel
165	●	
170	●	
175	●	
180	●	
185	●	
190	●	
195	●	
200	●	Muddy Sandy Gravel
205	●	
210	●	
215	●	
220	●	
225	●	
230	●	
235	●	Sandy Gravel
240	●	Muddy Sandy Gravel
245		
250		No sample taken

TD= 252.2'

A-1800-186 (3/87)

9413205.0274

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, R0)

Specification No. WHC-S-0141 Rev. No. 2
Project W-017 LLBG
Location 200-W WMA-3, LLBG
Drilling Co. Basin and Range
Driller Lenny Cordon, LEN CORDAN Sr.
Other (companies) N/A
Geologist(s) S.S. Teel, C.D. Condit, AW Pearson, TJ Gilmore

Well No. 299-W7-10 Temp. Well No. W3-MW4
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD
Rotary Air N/A Mud N/A
Cable Tool D 0-10' H 10'-244'
Drilling Fluid Water From 200 West Raw Water Supply
Other

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NAT. GAMMA	4 - 141	1/6/90
NAT GAMMA	110' - 244'	1/25/90
	-	
N/A		

COMPLETION DATA
Drilled Depth 244.2'
Completed Depth 240.86
Date Started 12/18/89
Date Completed 4/17/90
Static Water Level/Date 225.42'/2/12/90

AQUIFER TESTING
Type SLUG TEST
N/A
Length of Test N/A
Volume Pumped N/A
Drawdown N/A
Date of Test 2/27/90

INSPECTION RESULTS

CLEANING
Inspection Method Visual
Acceptance Criteria Section 7.6

	Accept	Reject	Date
Drilling Tools/Rig	SST	N/A	12/18/89
Temporary Materials	CDC	N/A	1/24/90
Permanent Materials	AWP	N/A	2/5/90

MATERIAL STORAGE/PACKING
Inspection Method Visual
Acceptance Criteria Section 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	AWP	N/A	2/12/90
Material Packing	AWP	N/A	2/12/90

SCREEN

Type (304)	Length	Slot Size
(12) Johnson Division Stainless	10.35'	10
Steel Fabricated Channel Packs	10.00'	10

Depth(s) 240.96' - 230.51'
230.51' - 220.51'
Inspection Method Visual
Acceptance Criteria Section 4.2.3
Accept AWP Reject N/A Date 2/5/90

LUBRICANTS/ADDITIVES
Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	DRILLING WATER	CDC	N/A	1/24/90
Lubricants	CHEVRON PRO FLO	CDC	N/A	1/24/90

STRAIGHTNESS TEST
Inspection Method 20.8' Long 7" Dia Dart Bailer
Acceptance Criteria Section 8.3
Accept CDC Reject N/A Date 1/24/90

CASING (permanent)

Type	Size	Placement
Johnson Division	4"	220.51' - +1.16'
Stainless Steel Type 304		N/A

Inspection Method Visual
Acceptance Criteria Section 4.2.4
Accept AWP Reject N/A Date 2/5/90

WELL PROTECTION
Inspection Method Visual
Acceptance Criteria Section 4.2.9-4.2.10

	Accept	Reject	Date
Protective Posts	AWP		4/3/90
Locks	AWP		4/3/90

ANNULAR SEAL
Inspection Method Visual / Steel Tape
Acceptance Criteria Section 4.2.6.-4.2.9

Type	Interval	Volume	Accept	Reject	Date
CSSC 20-40 Mesh Sand	244.1' - 217.2'	11.34 ft³	AWP	N/A	2/6/90
3/8" Volclay Tablets	217.2' - 214.1'	1.24 ft³	AWP	N/A	2/6/90
8-20 Mesh Bentonite Crumbles	214.1' - 19.5'	103.66 ft³	AWP	N/A	2/9/90
Portland Cement Grout	19.5' - 2.4'	11.88 ft³	AWP	N/A	2/12/90
Cement Pad	2.4' - +0.5'	1.40 ft³		N/A	2/13/90

OTHER (initial if performed)
(Well Abandonment
AM Well Development
VKM Downhole TV Inspection
KRDB Complete As-Built Diagram, Driller's/Geologist's Logs

Reviewed by K R Oskam 5-16-90

For all blanks mark N/A if not applicable.

9413205.0275

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-10 Geologist A.W. Pearson, C.D. Condit, T.J. Gilmore, S.S. Teel Page 1 of 2

Reviewed by V. L. McGhan Date Well Started: 12/18/89 Well Completed: 04/17/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type: ○ Drive Barrel ● Hard Tool △ Split Spoon	Lithologic Description
Cement Pad (+0.5' - 2.4')	DB	5	○	Sandy Gravel
Cement Grout (2.4' - 18.5')		10	○	
		15	●	
12" dia. carbon steel casing (0' - 20.3')		20	●	Gravel
		25	●	Sandy Gravel
8-20 mesh bentonite crumbles (18.5' - 214.1')		30	●	Muddy Sandy Gravel
		35	●	
Casing Joint		40	●	Sandy Gravel
		45	●	
Casing Centralizer		50	●	
	HT	55	●	Muddy Gravel
		60	●	Muddy Sand
10" dia. carbon steel casing (0' - 143.0') - removed		65	●	
		70	●	Slightly Muddy Sand
		75	●	
8" dia. carbon steel casing (0' - 244.1') - removed		80	●	
		85	●	Muddy Sand
4" dia. stainless steel final casing (+1.16 - 220.51')		90	●	Slightly Muddy Sand
		95	●	Sandy Gravel
		100	●	
		105	●	
DB = Drive Barrel HT = Hard Tool		110	●	Muddy Sandy Gravel
		115	●	
		120	●	Sandy Gravel
		125	●	
		130	●	Muddy Sandy Gravel

A-1800-188 (3/87)

9413205.0279

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W7-10 Geologist T.J. Gilmore, A.W. Pearson, C.D. Condit, S.S. Teel Page 2 of 2

Reviewed by _____ Date Well Started: 12/18/89 Well Completed: 04/17/90

Construction Data

Description

10" dia. carbon steel casing (0' - 143.0') - removed

8" dia. carbon steel casing (0' - 244.1') - removed

4" dia. stainless steel final casing (+1.16' - 220.51')

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

8 - 20 mesh bentonite crumbles (18.5' - 214.1')

3/8" Volclay tablets (214.1' - 217.2')

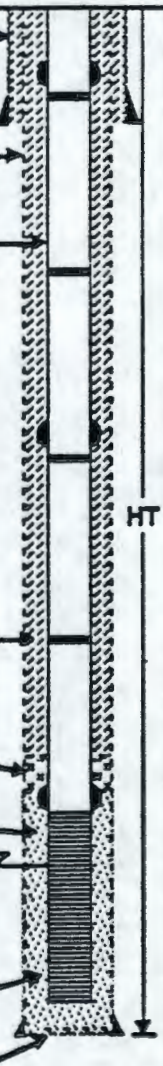
20-40 mesh silica sand (217.2' - 244.1')

Static Water Level 225.42' -2/12/90-

4" dia. Johnson stainless steel 10 slot Passivated Channel Pack Screen (220.51' - 240.86')

Backfill (244.1' - 244.2')

Diagram



Geologic/Hydrologic Data

Depth in Feet	Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
135	●	Sandy Gravel
140	●	
145	●	
150	●	Muddy Sandy Gravel
155	●	
160	●	
165	●	Sandy Gravel
170	●	Muddy Sandy Gravel
175	●	
180	●	
185	●	
190	●	Sandy Gravel
195	●	Muddy Sandy Gravel
200	●	
205	●	Sandy Gravel
210	●	
215	●	
220	●	
225	●	
230	●	
235	●	
240	●	
245	●	
250	TD= 244.2	
255		
260		

A-1800-186 (3/87)

9413205.0277

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project: 200 West RCRA Well Drilling
Location: Hanford Site 200 West Area
Driller: Lenny Bultena
Drilling Co.: Onwego Drilling
Geologist: GV Lost, EF Jenson, CW Bishop, SP Airhart, JS Wilbur

Well Number: 299-W8-1
Temporary Well Number: none
Coordinates: N.46,551 W.79,200
Casing Elevation: 701.33
Ground Elevation: 699.45

DRILLING METHOD

Rotary Air: — Mud: —
Cable Tool D: H: 0'-270.5'
Drilling Fluid: H_2O
Other:

COMPLETION DATA

Drilled Depth: 270.5'
Completion Depth: 256.5'
Date Started: 6/9/81 Completed: 7/23/87
Static Water Level/Date:

CASING DATA

Type	Size	
Type 304 Stainless Steel Casing	4" Diameter	to 236.2'
		to
		to

Approved By: _____ Date: _____

PERFORATIONS

Type: —

Depth	Schedule

App. By: _____ Date: _____

SCREEN

Telescoping

	8" dia type 304 S.S.	4" dia type 304 S.S.
Type	Continuous Wrap	Continuous Wrap
Length	10.8½'	20.3'
Slot Size	30	20
Depths	267' 8½"	256.5'
	257'	236.2'

App. By: _____ Date: _____

ANNULAR SEAL

Type	Interval	Volume
Sand	210.5'-270.5'	48.22 ft³
Volclay pellets	206'-210.5'	4.32 ft³
Volclay Grout	3'-206'	772.06 ft³
Concrete	0-3'	12 ft³

App. By: JSW Date: 12/31/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Neutron	0'-270.5'	7/1/87
Density	0'-270.5'	7/1/87
Natural Gamma	0'-270.5'	7/1/87

Approved By: JSWilbur Date: 7/1/87

AQUIFER TESTING

Type of Test: Constant Discharge Test
Length of Test: 6 hrs.
Volume Pumped: 3,100 gals
Drawdown: 24.14'

Approved By: JSWilbur Date: 7/1/87

OTHER APPLICABLE ITEMS

- (N/A) Steam Cleaning
- (N/A) Storage of Const. Material
- (N/A) Tool Lubricants
- (N/A) Concrete Pad
- (N/A) Protective Steel Posts
- (N/A) Safety Paint
- (N/A) Straightness Test
- (N/A) Well Development
- (N/A) Downhole TV Inspection
- (N/A) Well Abandonment
- (N/A) Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By: JSWilbur Date: 7/30/87

Reviewed By: D.L. McWhorter Date: 1-9-95

A-1800-187 (3/87)

9413205.0278

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W8-1 Geologist EJ Jensen Page 1 of 3

Reviewed by D.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete Surface Seal		5		Backfill
		10		Sandy Gravel
0'-62'8" 12" dia Carbon Steel Casing		15		" "
0'-156'9" 10" dia Carbon Steel Casing		20'		" "
0'-270'11½" 8" dia Carbon Steel Casing		25'		" "
		30'		" "
0'-230.2' 4" dia Stainless Steel Casing		35'		" "
		40'		" "
		45'		" "
		50'		" "
		55'		" "
		60'		" "
		65'		GRAVELY SAND
Volclay Grout (3'-200')		70'		
		75'		
		80'		GRAVELY SANDY SILT
		85'		
		90'		SILTY SANDY GRAVEL
		95'		SANDY GRAVEL
		100'		
		105'		SLIGHTLY SILTY GRAVELY SAND
		110'		SLIGHTLY GRAVELY SAND
		115'		SLIGHTLY GRAVELY SILTY SAND
		120'		
		125'		
		130'		

□ Caliche

A-1800-188 (3/

9413205.0279

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Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299- W8-1 Geologist C W Bishop Page 2 of 3

Reviewed by W.L. McKlem Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135'		SILTY SAND
		140'		
		145'		SLIGHTLY GRAVELY SILTY SAND
		150'		
		155'		SILTY GRAVELY SAND
		160'		
		165'		SILTY SANDY GRAVEL
		170'		
		175'		
		180'		SANDY GRAVEL
centralizer @ 296'		185'		
		190'		
D/T of volclay pellets @ 206'		195'		SILTY SANDY GRAVEL
		200'		SILTY/CLAYEY GRAVEL
		205'		GRAVELY SILTY SAND
D/T of 20-30 Colorado Silica Sand @ 210.5'		210'		SILTY SANDY GRAVEL
		215'		
		220'		
		225'		
		230'		
D/T 4" S.S. 20 slot screen @ 236.2'		235'		
		240'		
D/T of 4" SS 20 slot screen @ 256.5		245'		
		250'		
D/T of telescoping screen @ 257'		255'		
		260'		

□ Caliche

A-1800-186 (3/87)

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W8-1 Geologist C. W. Bishop Page 3 of 3

Reviewed by V. L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
1 bucket of bolclay pellets		265'		
D/B of telescoping screen		270'		
@ 267'8½"				
a sack of sand at				
the bottom of the well				

A-1800-186 (3/87)

9413205.0281

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project 200 West RCRA Well drilling
Location 200 West Area
Driller Darrel Ludtke
Drilling Co. Onwego Drilling Co
Geologist Tyler Gilmore

Well Number 299-W9-1
Temporary Well Number NA
Coordinates ~~Not available~~ N.44,508 W.79,507
Casing Elevation ~~Not available~~ 737.73
Ground Elevation ~~Not available~~ 735.36

DRILLING METHOD

Rotary Air NA Mud NA
Cable Tool D 10'-55' H 55'-295'
Drilling Fluid water
Other Backhoe 0-10'

COMPLETION DATA

Drilled Depth 295'
Completion Depth 286'
Date Started 9/3/87 Completed 10/22/87
Static Water Level/Date 269' 4" 10/11, 10/12

CASING DATA

Type	Size			
Telescoping Screen; 30 Slot	7 5/8 OD	292'	to	282'
4" Stainless Steel	4" OD	256'	to	Surface
			to	

Approved By TB Date 11/2/87

PERFORATIONS

Type NA

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

Type Stainless Steel
Length 30' 4"
Slot Size 20 (.02")
Depths 286' - 266'
App. By TB Date 10/13/87

ANNULAR SEAL

Type	Interval	Volume
10-20 Sand	292'-263.5'	240 lbs
Volclay Pellets	263.5'-259.5'	20 gal
Bentonite Grout	259.5'-70'	2600 lbs
Dry Bentonite	70'-35'	4200 lbs

App. By TB Date 10/22/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Nat Gamma	292' - Surface	10/12/87
Density	292' - Surface	10/12/87
Neutron	292' - Surface	10/12/87
	-	
	-	
	-	
	-	

Approved By TB Date 10/12/87

AQUIFER TESTING

Type of Test Slug Test
Length of Test 9hr
Volume Pumped NA
Drawdown NA

Slug test was performed because well did not produce enough water at 1.6 gal, for a constant drawdown aquifer test

Approved By TB Date 10/23/87

OTHER APPLICABLE ITEMS

- TB Steam Cleaning
- TB Storage of Const. Material
- TB Tool Lubricants
- TB Concrete Pad
- TB Protective Steel Posts
- TB Safety Paint
- TB Straightness Test
- TB Well Development
- ~~NA~~ ON Downhole TV Inspection
- NA Well Abandonment
- TB Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By T. Gilmore Date 11/2/87

Reviewed By W.L. McGhan Date 1-8-88

A-1800-187 (2/87)

9413205.0282

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W9-1 Geologist T. Gilmore Page 1 of 3

Reviewed by W.L. McKhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Cement Surface - 3.5'		5		SAND
16" Temporary Casing 15'		10		
12" Temporary Casing 51'		15		SILTY SAND
10" Temporary Casing 151' 3"		20		GRAVELY SAND
8" Temporary Casing 397' 8"		25		
		30		SAND
4" Stainless Steel Casing 396'		35		
		40		SILTY SAND
		45		SAND
		50		
		55		GRAVELY SAND
		60		SILTY GRAVELY SAND
Dry Bentonite 3.5'-70'		65		
		70		
Bentonite Grout 70'-359.5'		75		
		80		
		85		SILTY SAND
		90		SILTY GRAVELY SAND
		95		SAND
		100		
		105		GRAVELY SAND
		110		SAND
		115		
		120		
		125		
				GRAVELY SAND

A-1800-186 (3/87)

9413205.0283

Battelle
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AS-BUILT DIAGRAM

Well Number 299 - W9 - 1 Geologist T Gilmore Page 2 of 3

Reviewed by D.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		SANDY GRAVEL
		140		
		145		
		150		
		155		SILTY SANDY GRAVEL
		160		SLIGHTLY GRAVELY SILTY SAND
		165		
		170		
		175		
		180		SAND
		185		
		190		SLIGHTLY SILTY GRAVELY SAND
		195		
		200		
		205		
		210		SANDY GRAVEL
		215		
		220		
		225		GRAVELY SAND
		230		GRAVEL
		235		SANDY GRAVEL Cementized zone 235'
		240		Rinald Top ~238' Clay/silt ~238'
Centralizers 245'		245		incr in consolidation/stiffness
		250		SILTY/CLAYEY SANDY GRAVEL
		255		
Volcanic ash 257.5'-259.5'				SANDY GRAVEL

A-1800-188 (3/87)

9413205.0284

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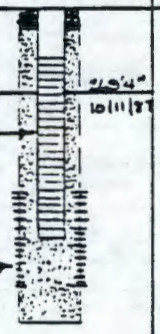
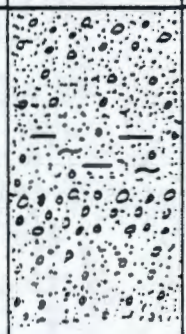
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299 - W9 - 1 Geologist T Gilmore Page 3 of 3

Reviewed by D.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Top of Sand 267.5'		165		
		170		GRAVELY SAND
4" Stainless Steel Screen 286'-266'		175		SILTY GRAVELY SAND To Clay
		180		SANDY GRAVEL
		185		GRAVELY SAND
Telescoping screen @ 202'-282'		190		
		195		TD 196

A-1800-186 (3/87)

9413205.0285

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Well Completion Report/Title III Inspection List

Project 200 West RCRA Well Drilling
Location 200 West
Driller Russ Vance
Drilling Co. Oswego
Geologist Tyler Gilmore

Well Number 299 W10 13
Temporary Well Number NA
Coordinates ~~[illegible]~~ N. 43,137 W 78,297
Casing Elevation ~~[illegible]~~ 699.04
Ground Elevation ~~[illegible]~~ 696.58

DRILLING METHOD

Rotary Air NA Mud NA
Cable Tool D 10'-80' H 80'-250'
Drilling Fluid Water
Other Backhoe 0-10'

COMPLETION DATA

Drilled Depth 250'
Completion Depth 247.5'
Date Started 8/11/87 Completed 9/25/87
Static Water Level/Date 227.9' 9/10/87

CASING DATA

Type	Size
6" 10 slot 304 Stainless Steel Telescoping Screen	247.5' to 237.5'
6" 40 slot 304 Stainless Steel Telescoping Screen	237.5' to 227.5'
6" 304 Stainless Steel Blank	227.5' to 222.2'
4" 304 Stainless Steel Casing	227' to Surface

Approved By TB Date 9/15/87

PERFORATIONS

Type NA

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

Type 4" 304 Stainless Steel
Length 20' 4"
Slot Size 30 slot
Depths 247' - 227'
App. By TB Date 9/15/87

ANNULAR SEAL

Type	Interval	Volume
10-20 Sand	247.5'-220.5'	1100 lbs
Volclay Pellets	220.5'-217.5'	15 gal
Enviroguel grout	217.5'-6'	2150 gal
Cement	6'-Surface	1100 lbs

App. By TB Date 8/26/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Not Genuine	0 - 247'	9/15/87
	0 - 246'	9/15/87
	0 - 246'	9/15/87
	-	
	-	
	-	
	-	

Approved By TB Date 9/15/87

AQUIFER TESTING

Type of Test Constant Discharge / Recharge
Length of Test 8 hr
Volume Pumped 44,400 gal
Drawdown 11.89'

Approved By TB Date 9/14/87

OTHER APPLICABLE ITEMS

- TB Steam Cleaning
- TB Storage of Const. Material
- TB Tool Lubricants
- TB Concrete Pad
- TB Protective Steel Posts
- TB Safety Paint
- TB Straightness Test
- TB Well Development
- ~~[illegible]~~ Downhole TV Inspection
- NA Well Abandonment
- TB Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By Tyler Gilmore Date 11/3/87

Reviewed By D.E. McGhee Date 1-8-88

A-1800-187 (3/87)

9413205.0286

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AS-BUILT DIAGRAM

Well Number 299 W10 13 Geologist T Gilmore Page 1 of 2

Reviewed by V.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete Surface Seal		5		SAND Core Barrel
		10		
		15		
		20		GRAVELY SAND
4" Stainless Steel casing 250'		25		
		30		
		35		SAND
Temporary Carbon Steel Casing 42' 3" to 12"		40		
		45		
		50		
Temporary Carbon Steel Casing 44' 3" to 10"		55		
		60		
		65		
Temporary Carbon Steel Casing 252' to 8"		70		GRAVELY SAND
		75		
		80		SANDY GRAVEL
Environ Seal Cement		85		Hard Tool
		90		SILTY GRAVELY SAND
		95		
		100		
		105		
		110		
		115		SILTY SAND
		120		(Caliche)
		125		SANDY SILT

A-1800-186 (3/87)

9413205.0287

5.

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299 W10 13 Geologist T Gilmore Page 2 of 2

Reviewed by W.E. Methan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		
		140		SILTY SANDY GRAVEL
		145		GRAVELY SAND
		150		
		155		
		160		SANDY GRAVEL
		165		GRAVELY SAND
		170		
		175		
		180		
		185		
		190		SILTY GRAVELY SAND Lith clasts of
		195		incr in Si & Silica-rich
		200		SANDY GRAVEL
		205		
		210		SILTY GRAVELY SAND Tr Clay
		215		
5gal Volclay pellets to 217'		220		
6" Stainless Blank 5'4"		225		
6" 40 slot screen 10'	77.9'	230		
10-20 Silica Sand to 220'		235		
4" 30 slot Stainless Screen 30'		240		SILTY SAND
6" 10 slot screen 10'		245		SAND
Formation Cave-in		250		TD 250'

A-1800-186 (3/87)

9413205.0288

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Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project KEH -1914
Location 200 WEST AREA - HANFORD
Driller RUSTY BOLEY
Drilling Co. ONWEGO DRILLING CO.
Geologist WILBUR; GLAMBEE; TEEL; AIRHART

Well Number 299-W10-14
Temporary Well Number —
Coordinates N. 43,137 W. 78,297
Casing Elevation 699.04
Ground Elevation 696.58

DRILLING METHOD

Rotary Air — Mud —
Cable Tool D 10'-20' H 20'-462'
Drilling Fluid WATER
Other 0'-10' W/ BACKHOE

COMPLETION DATA

Drilled Depth 462'
Completion Depth 447'
Date Started 7/29/87 Completed 11/18/87
Static Water Level/Date 229.5'/8/28/87

CASING DATA

Type	Size		
TYPE 304 STAINLESS STEEL CASING	4" dia.	+ 2.5'	to 427'
			to
			to

Approved By TB Date 10/30/87

PERFORATIONS

Type NA

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

	4" dia continuous wrap	6" dia continuous wrap
Type	stainless steel	stainless steel
Length	20'4"	10'
Slot Size	20	30
Depths	427'- 447'	437'- 447'

App. By TB Date 10/30/87

ANNULAR SEAL

Type	Interval	Volume
COLORADO SILICA SAND	416'-462'	12.45 ft³
VOLCLAY GROUT	210'-416'	203.83 ft³
BENTONITE SLURRY	6'-210'	949.20 ft³
DRY BENTONITE	3'-6'	6.78 ft³
CONCRETE	0'-3'	8.66 ft³

App. By SPA Date 11/18/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0'-462'	10/16/87
NEUTRON	0'-462'	10/16/87
DENSITY	0'-462'	10/16/87
	/	

Approved By TB Date 10/16/87

AQUIFER TESTING

Type of Test CONSTANT DISCHARGE
Length of Test 8 HRS.
Volume Pumped 14,400 GALS
Drawdown 27.55'

Approved By ASH Date 12/30/87

OTHER APPLICABLE ITEMS

- TB Steam Cleaning
- TB Storage of Const. Material
- TB Tool Lubricants
- — Concrete Pad
- ASH Protective Steel Posts
- ASH Safety Paint
- TB Straightness Test
- TB Well Development
- NA Downhole TV Inspection
- NA Well Abandonment
- ASH Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By ASH Date 12/30/87

Reviewed By D.E. McGhan Date 1-9-88

A-1800-187 (3/87)

9413205.0289

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-14 Geologist J.S. Wilbur Page 1 of 4

Reviewed by V.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
CONCRETE SURFACE SEAL (0'-3')		5'		SAND
DRY BENTONITE (3'-6')		10'		"
20" Temporary Casing 50'		15'		"
16" Temporary Casing 147'		20'		GRAVELLY SAND
12" Temporary Casing 251'		25'		SAND
10" Temporary Casing 351'		30'		"
8" Temporary Casing 455'		35'		"
		40'		"
		45'		"
4" stainless steel casing		50'		"
		55'		"
BENTONITE SLURRY (6'-210')		60'		"
		65'		"
		70'		"
		75'		
		80'		SLIGHTLY GRAVELLY SAND
		85'		SILTY SANDY GRAVEL
		90'		" " "
		95'		" " "
		100'		SANDY GRAVEL
		105'		SILTY SANDY GRAVEL
		110'		" " "
		115'		GRAVELLY SAND
		120'		
		125'		SLIGHTLY GRAVEL SLIGHTLY SILTY SAND
		130'		

A-1800-186 (3/87)

9413205.0291

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299 WD 14 Geologist T Gilmore Page 2 of 4

Reviewed by V.K. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		SILTY SAND (Caliche)
		140		Change @ 137'
		145		SANDY GRAVEL
		150		GRAVELY SAND
		155		SILTY SAND (154-155')
		160		SANDY GRAVEL
		165		SILTY SAND (164-165')
		170		SANDY GRAVEL
		175		SILTY SANDY GRAVEL
		180		
		185		SILTY GRAVELY SAND Chlorinated zone
		190		
		195		Ringold Top ~195'
		200		
		205		GRAVELY SAND
		210		
		215		SANDY GRAVEL
		220		GRAVELY SAND
VOLCLAY GROUT (210'-214')	228.5' #128187	225		Depth to water ~225'
		230		SILTY GRAVELY SAND (Clay)
		235		
		240		SILTY SAND
		245		SILTY SANDY GRAVEL
		250		
		255		GRAVELY SAND

A-1800-186 (3/87)

9413205.0290

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AS-BUILT DIAGRAM

Well Number 299 W10 14 Geologist T Gilmore Page 3 of 4

Reviewed by V.R. McKim Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		265		SILTY GRAVELY SAND
		270		SILTY SANDY GRAVEL
		275		
		280		SAND
		285		
		290		
		295		
		300		GRAVELY SAND
		305		SILTY SANDY GRAVEL
		310		SANDY GRAVEL
		315		
		320		
		325		SAND
		330		SILTY GRAVELY SAND
		335		
		340		GRAVELY SAND
		345		
		350		
		355		SAND
		360		GRAVELY SAND
		365		SAND
		370		SILTY SAND
		375		CLAYEY SAND Clay @ 371'
		380		
		385		SAND

A-1800-196 (3/87)

9413205.0292

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299 W10 14 Geologist T Gilmore Page 4 of 4

Reviewed by D.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		395		
		400		
		405		
Centralizers @ 412'		410		GRAVELY SAND
		415		Clay layer @ 415'
Sand to 416'		420		SAND
		425		CLAYEY GRAVELY SAND
		430		
		435		GRAVELY SAND
4" Stainless Steel screen 20 slot 447'-457'		440		SAND
8" Telescoping screen 437'-447'		445		SILTY GRAVELY SAND
		450		CLAYEY GRAVELY SAND @ 449'
		455		SANDY CLAY
		460		CLAY
Total Depth 462'		465		TD 462'

A-1800-186 (3/87)

9413205.0293

page 1 of 2

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, R0)

Specification No. WHC-S-~~[illegible]~~014 Rev. No. 3
Project W-017
Location Single Shell Tanks
Drilling Co. Kaiser Engineers Hanford
Driller Craig Wamsley
Other (companies) N/A
Geologist(s) Bruce Bjornstad, Tyler Gilmore, Steve Teel, Seth Brandenberger, Ian Kennedy, Steve Airhart, Eric Jensen, M. Chamness, S. Goodwin, Ron Bloem

Well No. 299-W10-15 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD

Rotary Air N/A Mud N/A
Cable Tool D 0'-96' H 96'-~~[illegible]~~ 222.34'
Drilling Fluid 200 E Raw Water Supply
Other N/A

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Nat Gamma	139' - 3'	10-~~2~~-89
Nat Gamma	221' - 110'	10-16-89
	-	
	-	
	-	

COMPLETION DATA

Drilled Depth 222.34'
Completed Depth 221.95'
Date Started 9-20-89
Date Completed 11-7-89
Static Water Level/Date 206.2' 11/7/89

AQUIFER TESTING

Type
Length of Test
Volume Pumped
Drawdown
Date of Test

INSPECTION RESULTS

CLEANING

Inspection Method Visual
Acceptance Criteria Section 7.6

	Accept	Reject	Date
Drilling Tools/Rig	BNB		9-20-89
Temporary Materials	BNB		9-20-89
Permanent Materials			

MATERIAL STORAGE/PACKING

Inspection Method Visual
Acceptance Criteria Section 4.2.2

	Accept	Reject	Date
Mtl. Handling/Storage			
Material Packing			

SCREEN

Type	Length	Slot Size
Continuous Wrap Stainless Steel Channel Pack	21'	10

Depth(s) 200.95' - 221.95'

Inspection Method Visual
Acceptance Criteria Section 4.2.9
Accept SPA Reject Date 10/27/89

LUBRICANTS/ADDITIVES

Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	None			10-16-89
Lubricants	Food Grade Oil	BNB		10-16-89

STRAIGHTNESS TEST

Inspection Method 20' Section of 6" SS casing down hole
Acceptance Criteria Section 8.3
Accept MAC Reject Date 10-16-89

CASING (permanent)

Type	Size	Placement
Johnson Division type 304 stainless steel casing	4"	+2.3' - 200.95'

Inspection Method Visual
Acceptance Criteria Section 4.2.4
Accept SPA Reject Date 10/27/89

WELL PROTECTION

Inspection Method Visual
Acceptance Criteria Section 4.2.10

	Accept	Reject	Date
Protective Posts			
Locks			

ANNULAR SEAL

Inspection Method Measured With Steel tape
Acceptance Criteria Section 4.2.6 to 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
20-40 ~~[illegible]~~ mesh Cola Silica Sand	197.1' - 222.3'	17.9 ft³	SPA		10-27-89
~~[illegible]~~ 3/8 Volclay Pellets	193.3' - 197.1'	1.9 ft³	SPA		10-30-89
8-20 Bentonite Crumbles	140.8' ~~[illegible]~~ - 193.3'	25.6 ft³	SPA		10-30-89
Volclay Pure Gold Slurry	72.3' - 140.8'	52.8 ft³	SPA		11-6-89

OTHER (initial if performed)

N/A Well Abandonment
Well Development
~~DLM~~ N/A Downhole TV Inspection
~~DLM~~ Complete As-Built Diagram, Driller's/Geologist's Logs

A-55 For all blanks mark N/A if not applicable.

PNL MA507 DO-1, rev.0

Reviewed by D. L. McGhan 12-7-89

9413205.0294

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, R0)

Well 299-W10-15 continued...

ANNULAR SEAL

Inspection Method Measured with Steel Tape Acceptance Criteria Sec. 4.2.6 to 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
8-20 Bentonite Crumbles	19.6' - 72.3'	35.5 ft³	SPL		11-6-89
Cement Grout	2' - 19.6'	9.2 ft³	SPL		11-7-89
	-				
	-				

Reference NCR # PNL-89-071 for more details on this completion.

for all blanks mark N/A if not applicable.

Reviewed by [illegible] 12-7-89

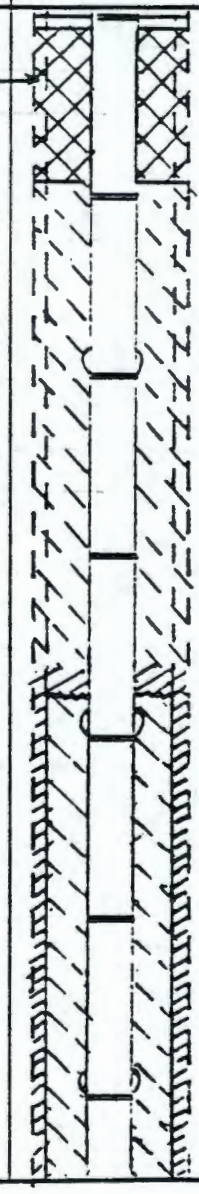
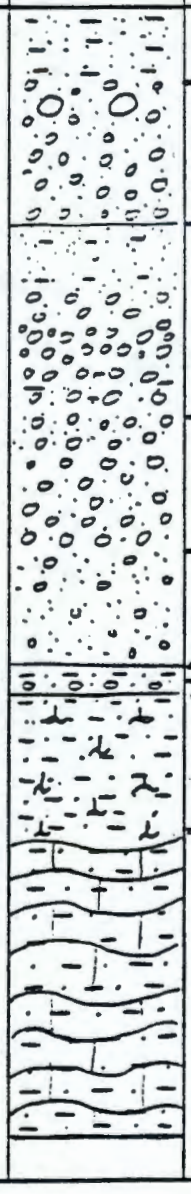
9413205.0295

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W 10-15 Geologist BJORNSTAD, GILMORE, TEEL, AIRHART, GOODWIN, ETC. Page 1 of 2

Reviewed by [illegible] Date 12-7-89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
10" temporary carbon-steel casing to 140'		5		Muddy sand D3 drilling
		10		
		15		
		20		Sandy gravel
		25		
		30		Sand w/mud layers
		35		Sandy gravel
		40		Gravel
		45		Muddy sandy gravel
		50		
		55		Sandy gravel
		60		
		65		
		70		Gravelly sand
		75		silty fn sand, laminated
		80		
		85		Muddy sand, calcareous dark brown
		90		
		95		96' switch to HT
		100		Caliche - calcareous cemented muddy sand
		105		
		110		
		115		
		120		
		125		

A-1800-186 (3/87)

9413205.0296

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W10-15 Geologist BJORNSTAD, GILMORE, TEEL, AMBERT, GOODWIN, ETC. Page 2 of 2

Reviewed by V.L. McGhan Date 12-7-89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
8" temporary carbon-steel casing to 222'		130		Caliche
				Δ gravels @ 132'
		150		Muddy Sandy Gravel
203.25' of type 304 4" stainless steel casing		175		Sandy [illegible] GRAVELLY SAND SANDY GRAVEL
21' of 10 SLOT CONTINUOUS WRAP STAINLESS STEEL CHANNEL PACK SCREEN		220		DRILL DEPTH = 222.34' COMPLETION DEPTH = 221.95'
16-20 Mesh Col. Silica Sand				
Volclay Pellets				
8-20 bentonite Crumbles				
Volclay Pure Gold Slurry				
Cement				

A-1800-186 (3/87)

9413205.0297

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, R0)

Specification No. WHC-S-014 Rev. No. 3
Project W-017
Location 200 West Single Shell Tanks
Drilling Co. Kaiser Engineers Hanford
Driller Dave Garcia, Gary Lylin
Other (companies) N/A
Geologist(s) Ron Bloxen, Mark Birch Bruce Bjornstad
Tyler Gilmore, Steve Teel, Steve Airhart
Eric Jensen, Shannon Goodwin, M. Chamness

Well No. 299-W10-16 Temp. Well No. N/A
Coordinates
Casing Elev. _____ Ground Elev. _____

DRILLING METHOD
Rotary - Air N/A Mud N/A
Cable Tool D 0.0'-43', 50'-120 H 43'-50', 120-219.04'
Drilling Fluid 200 E Raw Water Supply ~ 141 gal.
Other N/A

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Nat. Gamma	130.8'-3.8'	9-22-89
NAT. GAMMA	219'-100'	10-11-89
	-	
	-	
	-	

COMPLETION DATA
Drilled Depth 219.04'
Completed Depth 219.8'
Date Started 9-7-89
Date Completed 10-25-89
Static Water Level/Date 203.9'

AQUIFER TESTING
Type _____
Length of Test _____
Volume Pumped _____
Drawdown _____
Date of Test _____

INSPECTION RESULTS

CLEANING
Inspection Method Visual
Acceptance Criteria Section 7.6

	Accept	Reject	Date
Drilling Tools/Rig	BNB		9-7-89
Temporary Materials	BNB		9-7-89
Permanent Materials			

MATERIAL STORAGE/PACKING
Inspection Method Visual
Acceptance Criteria Section 4.2.2

	Accept	Reject	Date
Mtl. Handling/Storage	SWB		10/25/89
Material Packing	SWB		10/25/89

SCREEN

Type	Length	Slot Size
10 ft Johnson Division Wrap channel pack 4"	21.0'	10

Depth(s) 198.3' - 219.3'
Inspection Method Visual
Acceptance Criteria Section 4.2.3
Accept SWB Reject _____ Date 10/24/89

LUBRICANTS/ADDITIVES
Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	None	BNB		10-9-89
Lubricants	Food Grade Oil	BNB		10-9-89

STRAIGHTNESS TEST
Inspection Method 20' section of 6" SS casing downhole
Acceptance Criteria Section 8.3
Accept WAC Reject _____ Date 10-9-89

CASING (permanent)

Type	Size	Placement
304 Sch. 5 Stainless Steel casing	4"	+1.6' - 199.3'

Inspection Method Visual
Acceptance Criteria Section 4.2.4
Accept SWB Reject _____ Date 10/25/89

WELL PROTECTION
Inspection Method Visual
Acceptance Criteria Section 4.2.10

	Accept	Reject	Date
Protective Posts			
Locks			

ANNULAR SEAL
Inspection Method Measured with Steel tape Acceptance Criteria Section 4.2.6 to 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
20-40 mesh Colorado Silica Sand	195.45'-219.8'	16 bags = 17.9 ft³	SWB		10/24/89
3/8" - bentonite pellets	191.35'-195.45'	2 buckets = 1.34 ft³	SWB		10/24/89
8-20 granular bentonite crumbles	18.1'-191.35'	155 bags = 110.05 ft³	SWB		10/25/89
Portland Cement grout	2.1'-18.1'	11.88 ft³	SWB		10/25/89

OTHER (initial if performed)
____ Well Abandonment
____ Well Development
WKM Downhole TV Inspection
SWB Complete As-Built Diagram, Driller's/Geologist's Logs

A-59 For all blanks mark N/A if not applicable.

PNL MA567 DO-1, Rev. 0
Reviewed by D.L. Mathison 12-4-89

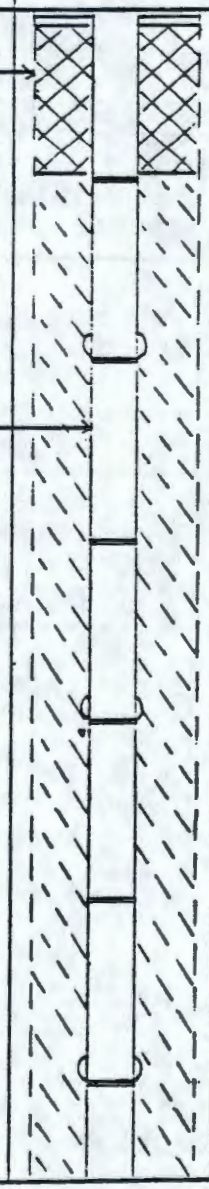
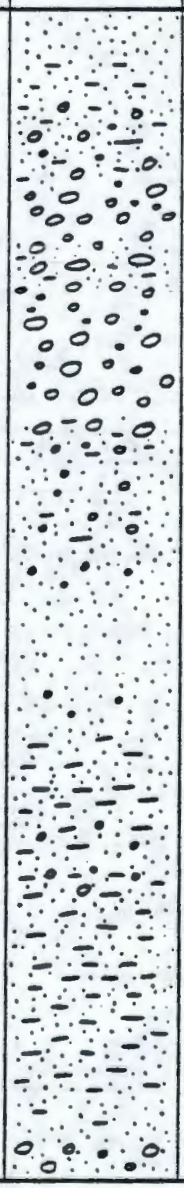
9413205.0298

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W10-16 Geologist BLEGEN, BIRCH, TEEL, BJORNSTAD, GILMORE, GOODWIN Page 1 of 2

Reviewed by [illegible] Date 12-4-89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
132'11" of 10" CARBON STEEL CASING		5		SAND
		10		MUDDY SAND
		15		MUDDY SANDY GRAVEL
		20		" " "
		25		GRAVEL
		30		MUDDY SANDY GRAVEL
		35		GRAVEL
		40		"
200.4' of 4" STAINLESS STEEL CASING		45		"
		50		MUDDY SANDY GRAVEL
		55		SLIGHTLY GRAVELLY SAND
		60		GRAVELLY MUDDY SAND
		65		SLIGHTLY GRAVELLY SAND
		70		SAND
		75		"
		80		SLIGHTLY GRAVELLY SAND
		85		MUDDY SAND
		90		SANDY MUD
		95		SLIGHTLY GRAVELLY MUDDY SAND
		100		GRAVELLY MUDDY SAND
		105		" " "
		110		SANDY MUD
		115		" "
		120		" "
		125		SLIGHTLY MUDDY SAND
		130		SANDY GRAVEL

A-1800-186 (3/87)

9413205.0299

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W10-16 Geologist BLEGEN, BIRCH, TEEL, BJORNSTAD, GILMORE, GOODWIN Page 2 of 2

Reviewed by D.L. McElroy Date 12-4-89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
132'11" OF 10" CARBON STEEL CASING		135		MUDDY SANDY GRAVEL
		140		SANDY GRAVEL
		145		MUDDY SANDY GRAVEL
225'0" OF 8" CARBON STEEL CASING		150		" " "
		155		" " "
		160		SANDY GRAVEL
200.4' OF 4" STAINLESS STEEL CASING		165		" "
		170		MUDDY SANDY GRAVEL
		175		SANDY GRAVEL
		180		" "
		185		" "
		190		MUDDY SANDY GRAVEL
		195		" " "
		200		SANDY GRAVEL
				D/W @ 202.9' 10/25/89
21' OF 10 SLOT CONTINUOUS WRAP STAINLESS STEEL CHANNEL PACK SCREEN		205		"
		210		" "
		215		" "
		219		" "
COMPLETION SYMBOLS:				DRILLED DEPTH = 219.4'
CEMENT GROUT				COMPLETION DEPTH = 219.3'
GRANULAR BENTONITE				
BENTONITE PELLETS				
SILICA SAND				
CASING JOINT				
CASING CENTRALIZER				

A-1800-196 (3/87)

9413205.0300

PAGE 1 OF 5

WHC-SD-EN-DP-029, Rev. 0
WELL CONSTRUCTION REPORT

EVALUATED
SIGNATURE/DATE 1/17/91

Specification No. 11AC-S-014 Rev No. 5

ECNs 144240, 144241

Project 111-012 SST

Location NW corner TY tank farm

Drilling Company KEH

Driller Daniel Ludtke

Other (Companies) N/A

Geologist(s) MA Chalmers, SS Teel, AW Dawson, NA Cadoret, C. Delaney, G. Kelty, K. Reynolds

Well No. 299-W10-17 Temp. Well No N/A

Coordinates N: 136 491.46; E: 566 775.74 (LAMBE

Casing Elev. 620.84 (K) Ground Elev. 667.91 BRASS CAP

Drilling Method

Verification Method Visual observation - WHC-S-014 R2 & 5

Criteria SPEC 5.2 6.2 7.5 ET 6.7 SEC. 6.2

			Initials	Date
Rotary	Air NA	Mud NA	N/A	N/A
Cable Tool	D 0'-137'	H 137-222.9'	SST	12/14/90
Drilling Fluid	Run water	311 Gal	KDR	12/11/90
Other	N/A			

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	124.7 - 4.2'	11/20/90
Gross Gamma	222' - 120'	12/13/90

Completion Data

Drilled Depth 222.85 12/14/90

Completed Depth 222.7

Date Started ~~11/16/90~~ AWP 11/26/90 11/16/90

Date Completed 1/17/91

Static Water Level/Date 202.6 12/13/90

Aquifer Testing

Type SLUG INJECTION / WITHDRAWAL

Flow Meter ID No N/A

Cal Due Date N/A

Length of Test 24 MIN. TOTAL

Volume Pumped N/A

Drawdown N/A

Date of Test 1/15/91

Completion Results

Cleaning

Verification Method Visual inspection & observation of rig cleaning

Criteria SPEC 2.6 4.2.2 WHC-S-014

	Initials	Date
Document Review Drilling Tools/Rig	KDK	11/21/90
Temporary Materials	AWF	11/26/90
Permanent Materials	SK	12/17/90

Material Storage/Packing

Verification Method Visual observation

Criteria SPEC 4.2.2, 7.2 WHC-S-014

	Initials	Date
Mtl. Handling/Storage	SK	12/17/90
Material Packing	SK	12/17/90

Screen

Type	Length	Slot Size
Johnson Channel	21.00'	10'

Depth(s) 222.7 - 201.4

Verification Method steel tape measurement

Criteria SPEC 4.2.1 4.2.2 4.2.5 4.2.1 WHC-S-014

Initials SK Date 12/17/90

Lubricants/Additives

Verification Method Visual observation

Criteria SPEC 7.2 WHC-S-014

	Identify	Initials	Date
Additives	DIE Run water	KDR	12/11/90
Lubricants	Well Guard	AWF	11/26/90

Straightness Test

Verification Method visual observation

Criteria SPEC 5.2 WHC-S-014

Initials SST Date 12/14/90

A-6000-436 (09/90)

9413205.0301

WELL CONSTRUCTION REPORT well # 299-W10-17
(continuation sheet)

W10-17

Casing (permanent)

Type	Size	Placement
Wesco, T-304 Sch 5.	4.5"	201.4 - +1'
		-
		-
		-

Verification Method Visually using steel tape WHC-S-014

Criteria Spec. 4.2.1 4.2.4 4.2.5 12.2.1 WHC-S-014

Initials SK Date 12/17/90

Well Protection

Verification Method visual measure w/ tape

Criteria ~~Spec~~ WHC-11/16/90 Spec 4.2.10 WHC-S-014

	Initials	Date
Protective Posts	[illegible]	12/18/91
Protective Casing	[illegible]	12/18/91
Site Restored	[illegible]	12/18/91
Cap, Hasp and Lock	[illegible]	12/18/91
Surface Pad	[illegible]	12/18/91

Annular Seal/Filter Pack

Verification Method measure using steel tape

Criteria Spec. 4.2.1, 4.2.3, 4.2.8, 4.2.9, 5.3.1, 5.3.2 WHC-S-014

Type	Interval	Volume	Initials	Date
8-12 Sand. mesh [illegible]	222.7 - 197.4	70 sacks 100#	SK	12/17/90
Bentonite Pellets	197.4 - 193.0'	5 buckets 50#	SK	12/17/90
C-2 12/17/90 Bentonite Crumbles	193.0' - 20'	139.5 sacks 50#	CDD	1/02/91
Type II Portland Cement	20 - 2.9'	31 sacks 50#	CDD	1/04/91

Well Survey/Labeling

Verification Method review of report (survey)

Criteria Spec. 3.4 WHC-S-014

	Initials	Date
Measurement Point/Surveyed	[illegible]	12/18/91
Protective Casing/Brass Cap Surveyed	[illegible]	12/18/91
Well Number Stenciled	[illegible]	12/18/91
Brass Cap Labeled	[illegible]	12/18/91

Pump Installation

Verification Method Visual observation WHC-S-014

Criteria Spec. 4.2.11 4.2.2

	Initials	Date
Pump Decon/Prep	[illegible]	12/20/91
Installed	[illegible]	12/20/91
Pump Tested	[illegible]	12/20/91

Other (initial if performed)

N/A Well Abandonment AWP Downhole TV Inspection [illegible] Complete As-Built Diagram, Driller's/Geologist's Logs

[illegible] Well Development

Comments/Remarks

A-63

Reviewed By (Sign/Print Name) [illegible] Date 12/20/91

A-6000-436 (09/90)

9413205.0302

PAGE 3 OF 5

KAISER ENGINEERS HANFORD

SURVEY DATA REPORT

Request No. —9121—0655

Project/W.O. No. W-017H

Title 200W WELLS

File No. WELL-11

KEH Job No. CR9114

Prepared By N. P. FASTABEND

Date 4/1/91

Reviewer QLH

1 2

DESCRIPTION OF WORK	ACCEPTABILITY (Within Plan Tolerance)	DISTRIBUTION	
Locate nine wells for horizontal and vertical position.	Yes ☐	Survey File	OR
Horz: Lambert (NAD'83) & Plant (200W)	No ☐	Field Project File	1
Vert: NGVD'29 & Plant (200W)	NA ☒	D. Foucault	1
	TBD by Requestor ☐	D. Weekes	1
		J. Rieger	1

SURVEY RESULTS AND COMMENTS

Control Monuments: 2W-30 N: 135,347.25 E: 566,365.20 2W-35 N: 135,351.96 E: 568,254.68

NOTE: A) Horizontal control points used to locate wells were part of a traverse with a linear closure of 1:40,000.

B) Vertical control used to locate wells were based on a 3.3 mile level loop with a closure of (-)0.037 FT. holding monument 2W-1 in the N.W. corner of 200W Area.

WELL NO.	COORDINATES (C/L CASING) PLANT 200W (FEET)	LAMBERT NAD'83 (METERS)	VERT. DATUM	ELEVATIONS (FEET) TOP BRASS CAP IN CONC.	TOP HYDRO-STAR BASE-PLATE, N. SIDE	TOP OUTER CASING, N. SIDE STAMPED "X"	TOP INNER CASING N SIDE
* 299-W10-17	N: 42,751 W: 75,844	N:136,491.46 E:566,775.74	PLANT (200W)	667.65	670.69	670.67	N/A
			NGVD'29	667.91	670.95	670.94	N/A
299-W10-18	N: 42,439 W: 75,870	N:136,396.62 E:566,847.18	PLANT (200W)	667.62	670.58	670.56	N/A
			NGVD'29	668.08	670.94	670.93	N/A
299-W15-22	N: 41,804 W: 76,150	N:136,111.19 E:566,683.32	PLANT (200W)	667.45	670.82	670.81	N/A
			NGVD'29	667.71	670.78	670.77	N/A
299-W18-25	N: 37,786 W: 76,034	N:134,978.22 W:566,721.48	PLANT (200W)	662.77	666.30	666.78	N/A
			NGVD'29	663.03	666.06	666.04	N/A

KEH-159.1 (6)

9413205.0303

WELL SUMMARY SHEET

Boring or Well No. 299-W10-12

Sheet 1 of 2

Location NW corner of TY tank farm

Project W-012 SST

Elevation 667.91 Brass Cap NGVD 29

Drilling Contractor KEH

Driller Daniel Little

Drilling Method and Equipment Cable tool

Prepared By MA Chamness JW Pearson (Sign/Print Name) JS Teal Date 11/7 - 12/7

Reviewed By [illegible] / DA Williams (Sign/Print Name) Date 8/[illegible]

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
		5		SILTY SAND
Temporary		10		SANDY GRAVEL
12" Carbon Steel casing		15		SILTY SANDY GRAVEL
at 20.69'		20		GRAVEL
		25		"
		30		"
Temporary		35		SANDY GRAVEL
8" Carbon Steel Casing		40		" "
(w/drive shoe) @ 123.67'		45		SAND
		50		"
		55		"
Permanent 4½" O.D.		60		"
Stainless steel casing		65		Gravelly SAND
		70		SAND
		75		"
		80		"
Granular Bentonite #5-2		85		"
USGH		90		SLIGHTLY SILTY SAND
		95		SILTY SAND
		100		" "
		105		" "
		110		GRAVELLY SILTY SAND
		115		SANDY SILT
		120		SAND
		125		SANDY SILT
		130		GRAVELLY SAND @ 128'. GRAVEL
Temporary		135		SILTY SANDY GRAVEL
2" Carbon Steel Casing		140		"
@ 222.9'		145		"
		150		"
		155		"
Permanent 4½" O.D.		160		"
Stainless Steel Casing		165		"

9413205.0304

A-6000-134 (04/90)

WELL SUMMARY SHEET

Boring or Well No. 299-W15-17

Sheet 2 of 2

Location NW Corner of TY Tank Farm

Elevation 667.91 Bragg Cap NGVD 29

Driller Darrel Luttke, Dave Garcia

Prepared By SS Teel (Sign/Print Name) Date

Project W-017 SST

Drilling Contractor KGH

Drilling Method and Equipment 35-22W Cable Tool

Reviewed By Ted/DA Williams (Sign/Print Name) Date 8/14/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
4" Carbon Steel Casing		170		SILTY SANDY GRAVEL
		175		" " "
4.5" O.D. STAINLESS STEEL		180		" " "
CASING		185		" " "
GRANULAR BENTONITE #5-MESH		190		" " "
		195		" " "
		200		" " "
Depth to water 202.6'		205		" " "
		210		SLIGHTLY SILTY GRAVELLY SAND
SILICA SAND PACK #5-12 MESH		215		"
		220		"
4" Ø STAINLESS STEEL .010"				Total depth 222.35'
SLOT CHANNEL PACK SCREEN				on 12/14/90

2-6000-384 (04/90)

9413205.0305

Incorporated into Rev. 5

WELL CONSTRUCTION REPORT

VALIDATED SIGNATURE/DATE

Specification No. WHC-S-014 Rev No. 4 or 5 (1/6/90)

ECNs 124393, 124425, 124427, 124223

Project W-017-SST

Location 200 W Area TY Tank Farm

Drilling Company KEH

Driller Gary Lydin, W. Peters

Other (Companies)

Geologist(s) AW Pearson, K.R.C. Barton, HA Clemmess, Ken Hoffmann, C. Delaney, Ss. Teel, N. Cadoret, D. Lanigan, S. Airhart, D.C. Weekes, K. Reynolds

Well No. 299-W10-18 Temp. Well No. N/A

Coordinates N: 136,396.52, E: 566,847.18 (Lambert)

Casing Elev. 670.93 (x) Ground Elev. 668.03 NGVD'29

Drilling Method

Verification Method Visual Observation

Criteria WHC-S-014 5.2, 5.3, 7.5 EE 6.7 sec 6.2

			Initials	Date
Rotary	Air N/A	Mud N/A	N/A	N/A
Cable Tool	D 0-43' (50'-162')	H 43-43' (118'-150', 162'-222')	MAC	12/11/90
Drilling Fluid	Raw H_2O	910 GAL	MAC	12/11/90
Other	N/A			

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	143.7' - 1.4'	11/30/90
Gross Gamma	221.6' - 140.0'	12/12/90

Completion Data

Drilled Depth 222.6'

Completed Depth 221.05

Date Started 11/1/90

Date Completed 12/12/90

Static Water Level/Date 202.15'/12/12/90

Aquifer Testing

Type Instantaneous Injection Withdrawal

Flow Meter I.D. No. NA

Cal. Due Date NA

Length of Test 21 min.

Volume Pumped NA

Drawdown NA

Date of Test 1/16/91 AWP 4/26/91

Completion Results

Cleaning

Verification Method Visual Inspection (and direct observation) of drilling cleaning

Criteria WHC-S-014 7.6, 4.2.2.1

	Initials	Date
Drilling Tools/Rig	K.H.	10/25/90
Temporary Materials	K.H.	10/30/90
Permanent Materials	DCW	12/17/90

Material Storage/Packing

Verification Method Visual Observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	DCW	12/12/90
Material Packing	DCW	12/12/90

Screen

Type	Length	Slot Size
1" Johnson continuous wire wrap channel pack	21.3'	0.010"

Depth(s) 221.05 - 199.75

Verification Method Verify Using Steel Tape

Criteria WHC-S-014 4.2.3, 4.2.5, 12.2.1, 4.2.1

Initials DCW Date 12/12/90

Lubricants/Additives

Verification Method Visual Observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Raw Water	MAC	12/11/90
Lubricants	WellGuard Jet Lube	MAC	12/11/90

Straightness Test

Verification Method Visual Observation

Criteria WHC-S-014 8.2

Initials MAC Date 12/11/90

A-6000-436 (09/90)

9413205.0306

WELL CONSTRUCTION REPORT
(continuation sheet) Well # 299-W10-18

Casing (permanent)

Type	Size	Placement
Type 304L SS Sch 5	4" ø	199.75 - 3.9
		-
		-
		-

Verification Method: Verify Using Steel Tape
Criteria: WHC-S-014 4.2.1, 4.2.4, 4.2.5, 12.2.1
Initials: [illegible] Date: 12/12/90

Well Protection

Verification Method: Visual / Measure w/ Tape
Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	[illegible]	12/18/91
Protective Casing	[illegible]	12/18/91
Site Restored	[illegible]	12/18/91
Cap, Hasp and Lock	[illegible]	12/18/91
Surface Pad	[illegible]	12/18/91

Annular Seal/Filter Pack

Verification Method: Measure with Steel Tape Criteria: WHC-S-014 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.3.1 or 5.3.2

Type	Interval	Volume		Initials	Date
8-12 mesh Colorado Silica Sand	222.1' - 197.3'	14½ - 100# buckets	(14.65 ft³)	[illegible]	12/14/90
Bentonite Pellets	197.3' - 193.5'	3 - 50# buckets	(1.86 ft³)	[illegible]	12/14/90
8-20 mesh Bentonite Crumbles	193.5' - 18.6	148 sks	(105.08 ft³)	KDR	1/10/91*
Portland Cement	18.6 - 2.0	21 bags		[illegible]	1/10/91

Well Survey/Labeling

Verification Method: Review of Survey Report
Criteria: WHC-S-014 3.4

	Initials	Date
Measurement Point/Surveyed	[illegible]	12/13/91
Protective Casing/Brass Cap Surveyed	[illegible]	12/19/91
Well Number Stenciled	[illegible]	12/18/91
Brass Cap Labeled	[illegible]	12/18/91

Pump Installation

Verification Method: Visual Observation
Criteria: WHC-S-014 4.2.11, 4.2.2

	Initials	Date
Pump Decon/Prep	[illegible]	12/20/91
Installed	[illegible]	12/20/91
Pump Tested	[illegible]	12/20/91

Other (initial if performed)

[illegible] Well Abandonment — DWP Downhole TV Inspection — [illegible] Complete As-Built Diagram, Driller's/Geologist's Logs
[illegible] Well Development

Comments/Remarks: * Signed after document review

Reviewed By (Sign/Print Name): [illegible] Date: 12/20/91

A-6000-436 (09/90)

9413205.0307

PAGE 3 OF 5

WELL SUMMARY SHEET

Boring or Well No. 299-W10-16

Sheet 1 of 2

Location: TY TANK FARM

Project: W-017-SST

Elevation: 668.08 Brass Cap NGVD29

Drilling Contractor: KEH

Driller: GARY LYDIN

Drilling Method and Equipment: Cable tool, Becker's Rig 22-mm

Prepared By: [illegible] (Sign/Print Name) Date: 12/1/91

Reviewed By: [illegible] (Sign/Print Name) Date: 3/1/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
		5'		Backfill
Dry Hand Grout				SILTY SANDY GRAVEL
1 from 18.6'-2.0'		10		" " "
2" C.S. Casing Set at		15'		" " "
20.25' (Temporary)		20		" " "
		25'		
		30		SANDY GRAVEL
		35'		" "
		40		SILTY SANDY GRAVEL (Caliche @ 42')
		45'		SLIGHTLY GRAVELLY SAND (@ 43')
		50		" " "
		55'		SAND
		60		"
		65'		GRAVELLY SAND
8-20 Mesh Bentonite		70		" "
Crumbles		75'		" "
		80		SLIGHTLY GRAVELLY SAND
		85'		" " "
		90		SAND
1" @ 55.30'		95'		SLIGHTLY SILTY SAND
		100		SILTY SANDY GRAVEL (CALICHE) (@ 102')
		105'		GRAVELLY SILTY SAND (Caliche @ 103-105')
		110'		" " " (GESA Caliche @ 111')
		115'		GRAVELLY SAND
		120		GRAVELLY SILTY SAND
		125'		SILTY SAND
		130'		SILTY SANDY GRAVEL (Caliche @ 129')
		135'		" " "
		140'		" " "
Temporary		145'		" " "
6" C.S. casing set at 146.32'		150'		" " "
Temporary		155'		
3" C.S. casing		160'		SAND
		165'		SILTY SANDY GRAVEL

A-6000-384 04/90

9413205.0308

PAGE 4 OF 5

WELL SUMMARY SHEET

Boring or Well No. 299-W10-18

Sheet 2 of 2

Location TY Tank Farm

Project W-017 SST

Elevation 668.08 Brass Cap NGVD'29

Drilling Contractor KEH

Driller Gary Ludin (KEH)

Drilling Method and Equipment Cable Tool / BE 320

Prepared By SP Linhart + MA Chamness (Sign/Print Name) Date 12/6/91

Reviewed By TA Williams / (Sign/Print Name) Date 8/1/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
5-20 Mesh Bentonite Crumbs		170		Silty Sandy Gravel
		175		Sandy Gravel
Top Bentonite 183.5 pellets		180		" "
~~Slurry Grout~~ 3/19/92		185		" "
Top Sand (in 3" screen)		190		(Silty, Clayey) Sandy Gravel
Top Screen at		195		" "
199.75'		200		Silty Sandy Gravel
Blank 202.1'		205		" "
1" ID 304 SS pipe		210		Silty Sandy Gravel
Continuous Wire Wrap Screen Deck		215		" "
2" Carbon steel		220		" "
Chain to 222.01' (Suspend)				
			TD 222.1	
Screen Set @ 221.05'				

A-6000-384 (04/90)

9413205.0309

WELL COMPLETION SUMMARY

Project USGS
Location [illegible]
Drilling Co.
Driller [illegible]
Other (companies)
Geologist(s)

Well No. [illegible] Temp. Well No. [illegible]
Coordinates PN43335 PW73772
Elevation: Casing 714.51 Brass Marker

DRILLING METHOD

Drilling Method(s) [illegible]
Drilling Fluid [illegible]
Other

COMPLETION DATA

Drilled Depth [illegible] (545'?)
Completed Depth [illegible]
Date Started [illegible]
Date Completed 11-15-50
Static Water Level/Date [illegible]

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations (11/15/50)	8"		4 holes/ft	275 - 325
" (10/30/50)	8"		5 holes/ft	250' - 275'
" (6/1/61)	8"		4 holes/ft	325 - 508'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
[illegible]	8"		[illegible] - 5[illegible]
			-

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	259' - 508'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type _____ Depth to Inlet _____ Date Set _____

ACCEPTANCE

Completed Well: Accept _____ Conditionally Accept _____
Reject _____

COMMENTS

[illegible]

Reviewed by _____ Date _____ Depths are below land surface unless noted.

9413205.0310

WELL COMPLETION SUMMARY

Project: USGS
Location: T-Plant, 200W
Drilling Co.:
Driller: Row
Other (companies):
Geologist(s):

Well No. 299-W11-2 "a" Temp. well No. 361-T
Coordinates: PN 43335 PW 73772
Elevation: Casing 714.75 Brass Marker:

DRILLING METHOD
Drilling Method(s): Cable Tool
Hard Tool, 0'-530'
Drilling Fluid: Water
Other:

COMPLETION DATA
Drilled Depth: 530' (545'?)
Completed Depth: 239'
Date Started: 9/18/50
Date Completed: 11/62
Static Water Level/Date:

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Unknown	1.5"		?	239 - 259'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unknown	1.5"		0 - 239'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
See well 299-W11-2	-		
	-		
	-		
	-		
	-		
	-		

PUMP
Type: Depth to Inlet: Date Set:

ACCEPTANCE
Completed Well: Accept: Conditionally Accept:
Reject:

COMMENTS
Piezometer tube within well 299-W11-2

Reviewed by: Date: Depths are below land surface unless noted.

9413205.0311

WELL COMPLETION SUMMARY

Project: USGS
Location: T-Plant, 200W
Drilling Co.:
Driller: Row
Other (companies):
Geologist(s):

Well No. 299-W11-2 "P" Temp. Well No. 361-T-14
Coordinates: PN 43335 PW 73772
Elevation: Casing 714.75 Brass Marker

DRILLING METHOD

Drilling Method(s): Cable Tool
Hard Tool, 0'-530'
Drilling Fluid: Water
Other:

COMPLETION DATA

Drilled Depth: 530' (545'?)
Completed Depth: 508'
Date Started: 9/18/50
Date Completed: 11/62
Static Water Level/Date:

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Unknown	1.5"		?	486 - 508'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unknown	1.5"		0 - 486'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
See well 299-W11-2	-		
	-		
	-		
	-		
	-		

PUMP

Type: Depth to Inlet: Date Set:

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometer tube within well 299-W11-2

Reviewed by Date Depths are below land surface unless noted.

9413205.0312

WELL COMPLETION SUMMARY

Project: USGS
Location: T-Plant, 200W
Drilling Co.:
Driller: Row
Other (companies):
Geologist(s):

Well No. 299-W11-2 "Q" Temp. Well No. 361-T
Coordinates: PN 43335 PW 73772
Elevation: Casing 714.75 Brass Marker:

DRILLING METHOD

Drilling Method(s): Cable Tool
Hard Tool, 0'-530'
Drilling Fluid: Water
Other:

COMPLETION DATA

Drilled Depth: 530' (545'?)
Completed Depth: 434'
Date Started: 9/18/50
Date Completed: 11/62
Static Water Level/Date:

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Unknown	1.5"		?	409 - 434'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unknown	1.5"		0 - 409'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
See well 299-W11-2	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type: Depth to Inlet: Date Set:

ACCEPTANCE

Completed Well: Accept: Conditionally Accept:
Reject:

COMMENTS

Piezometer tube within well 299-W11-2

Reviewed by: Date: Depths are below land surface unless noted.

9413205.0313

WELL COMPLETION SUMMARY

Project: USGS
Location: T-Plant, 200W
Drilling Co.:
Driller: Row
Other (companies):
Geologist(s):

Well No. 299-W11-2 "R" Temp. Well No. 361-T-14
Coordinates: PN 43335 PW 73772
Elevation: Casing 714.75 Brass Marker:

DRILLING METHOD

Drilling Method(s): Cable Tool
Hard Tool, 0'-530'
Drilling Fluid: Water
Other:

COMPLETION DATA

Drilled Depth: 530' (545'?)
Completed Depth: 380'
Date Started: 9/18/50
Date Completed: 11/62
Static Water Level/Date:

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Unknown	1.5"		?	358' - 380'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unknown	1.5"		0 - 358'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
See well 299-W11-2	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type: Depth to Inlet: Date Set:

ACCEPTANCE

Completed Well: Accept: Conditionally Accept:
Reject:

COMMENTS

Piezometer tube within well 299-W11-2

Reviewed by: Date: Depths are below land surface unless noted.

9413205.0314

WELL COMPLETION SUMMARY

Project: USGS
Location: T-Plant, 200W
Drilling Co.:
Driller: Row
Other (companies):
Geologist(s):

Well No. 299-W11-2 "S" Temp. Well No. 361-T-14
Coordinates: PN 43335 PW 73772
Elevation: Casing 714.75 Brass Marker:

DRILLING METHOD
Drilling Method(s): Cable Tool
Hard Tool, 0'-530'
Drilling Fluid: Water
Other:

COMPLETION DATA
Drilled Depth: 530' (545'?)
Completed Depth: 300'
Date Started: 9/18/50
Date Completed: 11/62
Static Water Level/Date:

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Unknown	1.5"		?	300' - 322'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unknown	1.5"		0 - 300'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
See well 299-W11-2	-		
	-		
	-		
	-		
	-		
	-		

PUMP
Type: Depth to Inlet: Date Set:

ACCEPTANCE
Completed Well: Accept: Conditionally Accept:
Reject:

COMMENTS
Piezometer tube within well 299-W11-2

Reviewed by: Date: Depths are below land surface unless noted.

9413205.0315

WELL COMPLETION SUMMARY

Project USGS
Location T-Plant, 200W
Drilling Co.
Driller Row
Other (companies)
Geologist(s)

Well No. 299-W11-2 "T" Temp. Well No. 361-T-14
Coordinates PN 43335 PW 73772
Elevation: Casing 714.75 Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool
Hard Tool, 0'-530'
Drilling Fluid Water
Other

COMPLETION DATA
Drilled Depth 530' (545'?)
Completed Depth 264'
Date Started 9/18/50
Date Completed 11/62
Static Water Level/Date

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Unknown	1.5"		?	242 - 264'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unknown	1.5"		0 - 242'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
See well 299-W11-2	-		
	-		
	-		
	-		
	-		

PUMP
Type _____ Depth to Inlet _____ Date Set _____

ACCEPTANCE
Completed Well: Accept _____ Conditionally Accept _____
Reject _____

COMMENTS
Piezometer tube within well 299-W11-2

Reviewed by _____ Date _____ Depths are below land surface unless noted.

9413205.0316

AS-BUILT DIAGRAM

Boring or Well Number 2699-W11-2 Sheet 1 of 4

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Construction Diagram		Lithologic Diagram	Lith from Geologist's Log Lithologic Description
		0		
		5		Silty Sandy Gravel
2" dia Carbon steel (?)		10		Gravelly Silty Sand
casing containing 6		15		Silty Sandy Gravel
1.5" dia piezometer		20		Sandy Gravel
tubes: ("O" "P" "Q"		25		" "
"R" "S" + "T")		30		" "
		35		" "
		40		Silty Sandy Gravel
		45		" " "
		50		" " "
		55		" " "
		60		" " "
		65		" " "
		70		" " " (some caliche)
		75		" " " "
		80		" " " "
		85		" " " "
		90		" " " "
		95		" " " "
		100		" " " "
		105		" " " "
		110		" " "
		115		111' Silty Clay, very calcareous 115' Sl. Gravelly Silty Clayey Sand w/ caliche
		120		" " " " "
		125		Sandy Sl. Clayey Silt + caliche
		130		Sl. Gravelly V. Silty Sand + caliche
		135		" " " "
		140		Caliche w/ some sand + basalt granules
		145		Sandy Gravel w/ caliche
		150		Silty Sandy Gravel, no caliche
		155		Sand
		160		Gravelly Silty Sand w/ caliche
		165		" " " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hand Tool ⊖ Split-Barrel

9413205.0317

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-2 Sheet 2 of 4

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data: Description	Construction Diagram (Drill Bit)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method)	Lithologic Description
This well contains 6, 1.5" dia		170		Silty Sandy Gravel
piezometer tubes. These		175		" " "
tubes are designated by letter		180		" " "
and have the following		185		" " "
monitoring intervals:		190		" " "
"O" 239-259'		195		" " "
"P" 486-508'		200		" " "
"Q" 409-434'		205		" " "
"R" 358-320'		210		" " "
"S" 300-322'		215		" " "
"T" 242-264'		220		" " "
These tubes were installed		225		" " "
11/62.		230		" " "
		235		" " "
		240		" " "
		245		" " " w/clay
		250		" " " (no clay)
8" Carbon steel casing, 0-509',		255		" " "
perforated 275-508' →		260		" " "
		265		" " " w/clay
		270		" " " "
		275		" " " "
Sand Pack 259'-508'		280		" " " "
		285		" " " "
		290		" " " "
		295		" " " (no clay)
		300		" " "
		305		" " "
		310		" " "
		315		Sandy Gravel
		320		" "
		325		" " (trace silt clay)
		330		" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0318

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-2 Sheet 2 of 4

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data: Description	Construction Diagram (Drill Bit)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method)	Lithologic Description
		335		Sandy Gravel
"P" tube monitoring		340		" "
interval 486-508'		345		" "
Cement grout 349 - 355.5'		350		" "
"Q" tube monitoring		355		" "
interval 409.434'		360		" "
		365		" "
"R" tube monitoring		370		" "
interval 368.390'		375		" "
		380		" "
Perforations in 8" casing		385		" "
(275-508')		390		" "
		395		Silty Sandy Gravel
		400		" " "
		405		" " "
		410		" " "
		415		" " "
		420		" " "
		425		" " "
		430		" " "
		435		" " " (slightly clay
Sand pack 508'-259'		440		" " " (no clay)
		445		" " "
		450		" " "
		455		" " "
		460		" " "
		465		" " "
		470		" " "
		475		" " "
		480		" " "
		485		" " "
		490		" " "
		495		" " "

Drill Bit/Sample Method Used: P Q R

☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ◆ Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0319

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-2 Sheet 4 of 4

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
Sack pack 508-259'			500			Silty Sandy Gravel
"P" tube monitoring interval,			505			" " " w/wood pieces
426-508'			510			Vessicular basalt, mud, ash (509-515')
			515			" " " "
508'-530' → hole filled with			520			Solid Basalt (515-520')
"silt" (bentonite?) →			525			Ground basalt w/silt, mud + qtz sand
2" Borehole (509-530') →			530			Ground basalt and qtz sand
						(Assume basalt starts at
						509'. Qtz sand seen from
						525' on navice carry-down)
						Drillers log 8/29/56 notes
						that P/Bottom is 545 instead
						of 534'. Not sure which
						is correct. Only have sample
						info to 530'.

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0320

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Row
Other (companies)
Geologist(s)

Well No. 299-W11-4 Temp. Well No. 361-T-11
Coordinates N43060 W73904
Elevation: Casing 713.37 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Hand Tool 0-310
Drilling Fluid water
Other

COMPLETION DATA

Drilled Depth 310'
Completed Depth 310'
Date Started 4/18/51
Date Completed 5/17/51
Static Water Level/Date 277 5/17/51

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	50'		250' - 300'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 250'
Carbon Steel	8"		300' - 303

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type _____ Depth to Inlet _____ Date Set _____

ACCEPTANCE

Completed Well: Accept _____ Conditionally Accept _____
Reject _____

COMMENTS

Reviewed by _____ Date _____ Depths are below land surface unless noted.

9413205.0321

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-4 Sheet 1 of 2
Location _____ Project _____

Logged by _____ Date Well Started 4/18/51
Reviewed by _____ Date _____ Date Well Completed 5/17/51

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Driller's Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing 0'-303'		●	5	●		Blow Sand & Top Soil
			10			Gravel & Sand
			15			" "
			20			" "
			25			Gravel
			30			"
			35			Gravel, Sand & Silt
			40			" " "
			45			" " "
			50			" " "
			55			" " "
			60			Sand & 10% Silt
			65			" " "
			70			" " "
			75			" " "
			80			" " "
			85			" " "
			90			" " "
			95			" " "
			100			" " "
			105			" " "
			110			" " "
			115			4 ft. Sand & 1 ft. Silt
			120			Heavy Silt Bed
			125			Heavy Silt Bed & Caliche'
			130			" " " "
			135			Fine White Sand, Silt & Caliche
			140			" " " " "
			145			" " " " "
			150			Gravel & Sand
			155			Sandy Clay
			160			" "
			165			" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0322

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-4 Sheet 2 of 2

Location _____ Project _____

Logged by _____ Date Well Started 4/18/51

Reviewed by _____ Date _____ Date Well Completed 5/17/51

Well Construction Data | Geologic/Hydrologic Data

Drill Bit | Sample Method | Data from Driller's Log

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
		170		Sandy Clay
8" Carbon Steel Casing		175		Gravel & Sand
0'-303'		180		" "
		185		" "
		190		" "
		195		" "
		200		" "
		205		Coarse Sand & Gravel
		210		Gravel & Silt
		215		" "
		220		" "
		225		Gravel, Fine Sand & 5% Silt
		230		" " " " "
		235		" " " " "
		240		Sand & Some Gravel
		245		Gravel & Sand
		250		Gravel, Sand & Some Silt
		255		" " " "
		260		" " " "
Perforations		265		" " " "
250'-300'		270		Gravel, Sand & Tan Silt
		275		" " " "
		280		Gravel, Sand & Silt
		285		" " "
		290		" " "
		295		" " "
		300		" " "
		305		" " "
		310		" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0323

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Jansen Drilling Co.
Driller Gaunt & Trantham
Other (companies)
Geologist(s)

Well No. 299-W11-13 Temp. Well No.
Coordinates N42629 W74781
Elevation: Casing 692.01 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Drive Barrel 0'-146', 240'-245' Hard Tool 146'-240', 245'-4
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 498'
Completed Depth 498'
Date Started 4/26/61
Date Completed 7/17/61
Static Water Level/Date 233/4/63

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	254'		218' - 472'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 218'
			-

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	297' - 468'		
Backfill/Slough	468' - 498'		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 4/63 & 5/65

Reviewed by Date Depths are below land surface unless noted.

9413205.0324

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Jansen Drilling Co.
Driller Gaunt & Trantham
Other (companies)
Geologist(s)

Well No. 299-W11-130 Temp. Well No.
Coordinates N42629 W74781
Elevation: Casing 692.01 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Drive Barrel 0'-146' 240'-245' Hard Tool 146'-240' 245'-498'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 498'
Completed Depth 250
Date Started 4/26/61
Date Completed 5/12/65
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	254'		218' - 472'
Plastic	1½"	10'	T	250' - 240'
Perforated Polyethelene	1½"	10'		240 - 230'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 218'
Polyethelene	1½"		0' - 230'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	297' - 468'		
Backfill/Slough	468' - 498'		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0325

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Jansen Drilling Co.
Driller Gaunt & Trantham
Other (companies)
Geologist(s)

Well No. 299-W11-13P Temp. Well No.
Coordinates N42529 W74781
Elevation: Casing 692.01 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Drive Barrel 0'-146', 240'-245' Hard Tool 146'-240', 245'-498'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 498'
Completed Depth 468
Date Started 4/26/61
Date Completed 4/63
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	254'		218' - 472'
Perforated Polyethelene	1½"	25'		443' - 468'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 218'
Polyethelene	1½"		0' - 443'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	297' - 468'		
Backfill/Slough	468' - 498'		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date

Depths are below land surface unless noted.

9413205.0326

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Jansen Drilling Co.
Driller Grant & Trantham
Other (companies)
Geologist(s)

Well No. 299-W11-13Q Temp. Well No.
Coordinates N42529 W74781
Elevation: Casing 692.01 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Drive Barrel 0'-146' 240'-245' Hard Tool 146'-240' 245'-401'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 498'
Completed Depth 401'
Date Started 4/26/61
Date Completed 4/63
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	254'		218' - 472'
Perforated Polyethelene	1½"	25'		376' - 401'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 218'
Polyethelene	1½"		0' - 376'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	297' - 468'		
Backfill / slough	468' - 498'		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date

Depths are below land surface unless noted.

9413205.0327

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-13 Sheet 1 of 4

Location _____ Project _____

Logged by _____ Date Well Started 4/26/61

Reviewed by _____ Date _____ Date Well Completed 5/12/65

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
	Drill Bit		Sample Method	Data from Driller's Log
Description	Construction Diagram		Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing		5		Sand & Gravel
0'-218'		10		" "
		15		Sand & Gravel to 3"
		20		" " " "
1½" Polyethelene		25		Sand & Gravel to 5"
O-Tube 0'-250'		30		" " " "
		35		Silty Sand
		40		" "
1½" Polyethelene		45		" "
Q-Tube 0'-401'		50		Brown Sand
		55		Brown Silty Sand
		60		" " "
1½" Polyethelene		65		" " "
P-Tube 0'-468'		70		" " "
		75		Silty Sand & Pea Gravel
		80		" " " "
		85		Brown Sand
		90		Coarse Sand
		95		" "
		100		" "
		105		Silty Sand
		110		90% Silt, 10% Sand
		115		" "
		120		Silt
		125		Silt, Sand & Gravel
		130		Brown Silt & Sand
		135		Interbedded Fine Sand & Silt
		140		Silt, Sand & Gravel to 6"
		145		Big Cobbles
		150		Sand, Gravel & Cobbles
		155		" " "
		160		Loose Sand, Gravel & Cobbles
		165		" " " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0328

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-13 Sheet 2 of 4

Location _____ Project _____

Logged by _____ Date Well Started 4/26/61

Reviewed by _____ Date _____ Date Well Completed 5/12/65

Well Construction Data — Geologic/Hydrologic Data

Drill Bit — Sample Method — Data from Drillers Logs

Description	Depth in Feet	Lithologic Description
8" Carbon Steel Casing 0'-218'	170	Loose Sand, Gravel & Cobbles
	175	Loose Sand & Gravel
	180	" " "
1½" Polyethelene Q-Tube 0'-401'	185	Cemented Gravel
	190	Silt, Sand, Gravel & Cobble to 5"
	195	Silt, Sand, Gravel & Cobbles
1½" Polyethelene P-Tube 0'-468'	200	Loose Silt, Sand & Gravel
	205	Cemented Gravel
	210	" "
	215	" "
	220	" "
	225	" "
Perforated 8" Carbon Steel Casing 218'-472'	230	" "
	235	Sand & Gravel
	240	Loose Sand & Gravel
O-Tube Perforated from 230'-240'	245	Sand, Silt & Gravel to 5
1½" Plastic Screen 240'-250'	250	Sand, Silt & Cobbles
	255	Sand, Gravel & Cobbles to 5"
	260	Sand, Gravel & Cobbles
	265	Sand, Silt, Gravel & Cobbles to 5"
	270	Sand & Gravel
	275	Sand, Gravel & Cobbles
	280	Cemented Gravel
	285	Cemented Gravel w/Cobbles
	290	Cemented Gravel
	295	" "
	300	" "
	305	" "
Sand Pack 297'-468'	310	" "
	315	" "
	320	" "
	325	" "
	330	" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0329

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-13 Sheet 3 of 4

Location _____ Project _____

Logged by _____ Date Well Started 4/26/61

Reviewed by _____ Date _____ Date Well Completed 5/2/65

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description (Data from Driller's Log)
	335	Cemented Gravel
	340	" "
	345	" "
	350	" "
	355	" "
	360	" "
	365	" "
	370	" "
Perforated 8" Carbon	375	" "
Steel Casing 218'-472'	380	" "
	385	" "
Q-Tube Perforated	390	" "
from 376'-401'	395	" "
	400	" "
	405	" "
	410	" "
	415	" "
Sand Pack	420	Silty Sand & Clay
297'-468'	425	Brown Silty Sandy Clay
	430	Brown Silty Clay
	435	Red Silty Clay
	440	Brown Silty Clay
	445	" " "
P-Tube Perforated	450	Cemented Gravel
from 443'-468'	455	" "
	460	" "
	465	" "
	470	Clay & Gravel
	475	" "
	480	Cemented Gravel
Backfill/Slough	485	" "
468'-498'	490	Basalt
	495	"

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0330

AS-BUILT DIAGRAM

Boring or Well Number 299-W11-13 Sheet 4 of 4

Location _____ Project _____

Logged by _____ Date Well Started 4/26/61

Reviewed by _____ Date _____ Date Well Completed 5/12/65

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Drillers Log
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
Backfill/Slough		●	500	●		Basalt
468'-498'						TD=498'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0331

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Row-Roberts
Other (companies)
Geologist(s)

Well No. 299-W15-5 Temp. Well No.
Coordinates N39537 W75984
Elevation: Casing 670.68 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Hard Tool 0'-599'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 599'
Completed Depth 599'
Date Started 2/21/57
Date Completed 4/12/57
Static Water Level/Date 199'/10/21/64

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

*See Back

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	44'		173' - 217'
Perforated Carbon Steel	8"	20'		230' - 250'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

*See Back

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 173'
Carbon Steel	8"		217' - 230'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	334' - 599'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 10/64

Reviewed by Date Depths are below land surface unless noted.

9413205.0332

299-W15-5 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	20'	—	385' - 405'
" " "	"	20'	—	445' - 465'
" " "	"	44'		480' - 524'
				-
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		250' - 385'
" "	"		405' - 445'
" "	"		465' - 480'
			-
			-
			-

9413205.0333

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller - Raw - Roberts
Other (companies)
Geologist(s)

Well No. 299-W15-5P Temp. Well No.
Coordinates N39537 W75984
Elevation: Casing 670.68 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Hard Tool 0'-599'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 599'
Completed Depth 594
Date Started 2/21/57
Date Completed 10/21/64
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN *See Back

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	44'		173' - 217'
Perforated Carbon Steel	8"	20'		230' - 250'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING *See Back

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 173'
Carbon Steel	8"		217' - 230'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	334' - 599'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 10/64

Reviewed by Date Depths are below land surface unless noted.

9413205.0334

299-W15-5 "P" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	20'	—	385' - 405'
" " "	"	20'	—	445' - 465'
" " "	"	44'		480' - 524'
Perforated Polyethylene (?)	1.5"	70'		524' - 594'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		250' - 385'
" "	"		405' - 445'
" "	"		465' - 480'
Polyethylene (?)	1.5"		0 - 524'
			-
			-

9413205.0335

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Row-Roberts
Other (companies)
Geologist(s)

Well No. 299-W15-5Q Temp. Well No.
Coordinates N39537 W75984
Elevation: Casing 670.68 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Hard Tool 0'-599'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 599'
Completed Depth 520'
Date Started 2/21/57
Date Completed 10/21/64
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

*See Back

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	44'		173' - 217'
Perforated Carbon Steel	8"	20'		230' - 250'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

*See Back

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 173'
Carbon Steel	8"		217' - 230'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	334' - 599'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 10/64

Reviewed by Date Depths are below land surface unless noted.

9413205.0336

299-W15-5 "a" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	20'	—	385' - 405'
" " "	"	20'	—	445' - 465'
" " "	"	44'		480' - 524'
Perforated Polyethylene (?)	1.5"	25'		495' - 520'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		250' - 385'
" "	"		405' - 445'
" "	"		465' - 480'
Polyethylene (?)	1.5"		0 - 495'
			-
			-

9413205.0337

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Row-Roberts
Other (companies)
Geologist(s)

Well No. 299-W15-5R Temp. Well No.
Coordinates N39537 W75984
Elevation: Casing 670.68 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Hard Tool 0'-599'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 599'
Completed Depth 460'
Date Started 2/21/57
Date Completed 10/21/64
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN *See Back

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	44'		173' - 217'
Perforated Carbon Steel	8"	20'		230' - 250'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING *See Back

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 173'
Carbon Steel	8"		217' - 230'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	334' - 599'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 10/64

Reviewed by Date Depths are below land surface unless noted.

9413205.0338

299-W15-5 "R" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	20'	—	385' - 405'
" " "	"	20'	—	445' - 465'
" " "	"	44'		480' - 524'
Perforated Polyethylene (?)	1.5"	25'		435' - 460'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		250' - 385'
" "	"		405' - 445'
" "	"		465' - 480'
Polyethylene (?)	1.5"		0 - 435'
			-
			-

9413205.0339

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Row - Roberts
Other (companies)
Geologist(s)

Well No. 299-W15-5S Temp. Well No.
Coordinates N39537 W75984
Elevation: Casing 670.68 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Hard Tool 0'-599'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 599'
Completed Depth 400'
Date Started 2/21/57
Date Completed 10/21/64
Static Water Level/Date

OTHER (check if performed)

	Well Abandonment		Downhole TV Inspection
	Well Development		Driller's Logs
	Aquifer Testing		Pad
	Geophysical Log(s)		Guardposts
	Lock and Cap		Protective Casing

*See Back

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	44'		173' - 217'
Perforated Carbon Steel	8"	20'		230' - 250'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

*See Back

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 173'
Carbon Steel	8"		217' - 230'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	334' - 599'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 10/64

Reviewed by Date Depths are below land surface unless noted.

9413205.0340

299-W15-5"S" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	20'	—	385' - 405'
" " "	"	20'	—	445' - 465'
" " "	"	44'		480' - 524'
Perforated Polyethylene (?)	1.5"	25'		375' - 400'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		250' - 385'
" "	"		405' - 445'
" "	"		465' - 480'
Polyethylene (?)	1.5"		0 - 375'
			-
			-

9413205.0341

AS-BUILT DIAGRAM

Boring or Well Number 299-W15-5 Sheet 1 of 4

Location _____ Project _____

Logged by _____

Reviewed by _____ Date _____

Date Well Started 2/21/57

Date Well Completed 10/64

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
	Drill Bit		Sample Method	Data from Driller's Log
Description	Construction Diagram		Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing		5		Sandy Top Soil
0'-173'		10		Sandy Silt
		15		" "
		20		" "
1½" Polyethelene		25		" "
S-Tube 0'-400'		30		Gravel & Sand
		35		Sand & Small Gravel
1½" Polyethelene		40		" " "
R-Tube 0'-460'		45		" " "
		50		" " "
1½" Polyethelene		55		Gravel & Loose Sand
Q-Tube 0'-520'		60		" " "
		65		Sandy Silt
1½" Polyethelene		70		" "
P-Tube 0'-594'		75		" "
		80		" "
		85		" "
		90		" "
		95		" "
		100		" "
		105		" "
		110		" "
		115		" "
		120		Heavy Silt & Sand
		125		" " "
		130		Caliche, Fine Gravel, Silt & Sand
		135		" " " " "
		140		Gravel & Less Silt
		145		" " "
		150		" " "
		155		Sand & Small Gravel
		160		Sand & Gravel
		165		" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0342

AS-BUILT DIAGRAM

Boring or Well Number 299-W15-5 Sheet 2 of 4

Location _____ Project _____

Logged by _____ Date Well Started 2/21/57

Reviewed by _____ Date _____ Date Well Completed 10/64

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
	Drill Bit		Sample Method	Data from Driller's Log
Description	Construction Diagram		Lithologic Diagram	Lithologic Description
		170		Gravel, Sand & Some Silt
		175		" " " "
Perforated 8" Carbon Steel Casing 173'-217'		180		" " " "
		185		" " " "
		190		" " " "
1½" Polyethelene S-Tube 0'-400'		195		" " " "
		200		" " " "
		205		" " " "
		210		Sand & Gravel
		215		Very Fine Sand & Gravel
8" Carbon Steel Casing 217'-230'		220		" " " "
		225		" " " "
		230		Fine Sand, Gravel & Some Silt
Perforated 8" Carbon Steel Casing 230'-250'		235		Sand, Gravel & Some Silt
		240		" " " "
		245		" " " "
1½" Polyethelene R-Tube 0'-460'		250		" " " "
		255		" " " "
		260		" " " "
1½" Polyethelene Q-Tube 0'-520'		265		Sand & Muck (Mud)
		270		" " "
		275		" " "
8" Carbon Steel Casing 250'-385'		280		Sand, Fine Gravel & Muck (Mud)
		285		Gravel, Sand & Less Silt
		290		Sand, Gravel & Muck (Mud)
1½" Polyethelene P-Tube 0'-594'		295		" " " "
		300		Gravel, Sand & Less Silt
		305		" " " "
		310		Gravel, Sand & Muck (Mud)
		315		" " " "
		320		Sand, Gravel & Muck (Mud)
		325		" " " "
		330		" " " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0343

AS-BUILT DIAGRAM

Boring or Well Number 299-W15-5 Sheet 3 of 4

Location _____ Project _____

Logged by _____ Date Well Started 2/21/57

Reviewed by _____ Date _____ Date Well Completed 10/64

Well Construction Data — Geologic/Hydrologic Data

Drill Bit — Sample Method — Data from Drillers Log

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing 250'-385'		335		Sand, Gravel & Muck (Mud)
		340		" " " "
		345		" " " "
		350		" " " "
Sand Pack 334'-599'		355		" " " "
		360		" " " "
		365		Sand, Gravel, Muck, Conglomerate
		370		" " " "
S-Tube Perforated from 400'-375'		375		" " " "
		380		Sand & Gravel Conglomerate
		385		" " "
Perforated 8" Carbon Steel Casing 385'-405'		390		" " "
		395		" " "
		400		Gravel, Sand & White-Gray Silt
		405		Gravel, Sand & Less Silt
		410		Gravel & Sand Conglomerate
		415		Sand & Gravel Conglomerate
8" Carbon Steel Casing 405'-445'		420		" " "
		425		" " "
		430		Heavy White-Gray Silt, Gravel
R-Tube Perforated from 460'-435'		435		" " " " "
		440		" " " " "
		445		Shale, Volcanic Ash w/Small Gravel
Perforated 8" Carbon Steel Casing 445'-465'		450		Rotten Sand, Gravel, Silt & Gas
		455		White-Gray-Green & Black Mud Shale
		460		White-Gray Shale & Clay w/Gravel
		465		" " " " "
		470		Shale, Clay, White Ash, Gravel Conglom.
8" Carbon Steel Casing 465'-480'		475		Blue Silt, Shale, Basalt Mud, Gravel, Sand
		480		" " " " " " "
		485		Sand, Gravel & Some Silt
		490		Sand, Gravel, Green Silt, Black Mud
		495		Sand, Gravel, Sandstone, Ash

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0344

AS-BUILT DIAGRAM

Boring or Well Number 299-W15-5 Sheet 4 of 4

Location _____ Project _____

Logged by _____ Date Well Started 2/21/91

Reviewed by _____ Date _____ Date Well Completed 10/64

Well Construction Data			Depth in Feet		Geologic/Hydrologic Data	
		Drill Bit		Sample Method		Data from Driller's Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Perforated 8" Carbon Steel Casing 480'-524'		●	500	●		Sand, Gravel, Green & Black Silt
			505			" " " " "
			510			Sand, Gravel & Gray-Black Silt
Q-Tube Perforated from 520'-495'			515			" " " " "
			520			Sand, More Gravel & Gray-Green Silt
			525			Sand Gravel & Black Mud
			530			Honey Combed Rotten Basalt
			535			Basalt (More Dense)
P-Tube Perforated from 594'-524'			540			"
			545			Basalt (Soft)
			550			" "
Sand Pack 334'-599'			555			Basalt (Dense)
			560			Basalt (Soft)
			565			Basalt (Layers of Soft & D
Open Hole 526'-599'			570			" " " " "
			575			Basalt w/ Sand Gravel & Mud
			580			Sand, Pea Gravel & Volcanic Mud
			585			Layers of Basalt & Gravel
			590			" " "
			595			Rotten Basalt & Some Sand
						Basalt
						TD=599'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0345

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project: 200 West RCRA Well Drilling KEH 1914
Location: Hanford Site 200 West Area
Driller: Blane Bayley
Drilling Co.: Onwego Drilling
Geologist: SS Teel, JS Wilbur, T Gilmore, SP Airhart

Well Number: 299-W15-15
Temporary Well Number: none
Coordinates: N. 40,330 W. 78,103
Casing Elevation: 697.96
Ground Elevation: 695.74

DRILLING METHOD

Rotary Air: — Mud: —
Cable Tool: D 0'-30' H 30'-255'
Drilling Fluid: Water
Other:

COMPLETION DATA

Drilled Depth: 255'
Completion Depth: 253'
Date Started: 7/14/87 Completed: 9/2/87
Static Water Level/Date: 226' 8/18/87

CASING DATA

Type	Size	
Type 304 Stainless Steel Casing	4" diameter	to
		to
		to

Approved By: _____ Date: _____

PERFORATIONS

Type: —

Depth	Schedule

App. By: _____ Date: _____

SCREEN

	8" dia. Type 304 S.S.	4" dia. Type 304 SS
Type	Continuous Wrap	Continuous Wrap
Length	10'	30'
Slot Size	30'	20'
Depths	255'-245'	253'-223'

App. By: ASW Date: 12/31/87

ANNULAR SEAL

Type	Interval	Volume
sand	213.7'-255	15.56 ft³
Vol/Clay Pellets	208'-213.7	2.88 ft³
Vol/Clay Grout	208'-4'	528 ft³
Concrete	4'-0'	12 ft³

App. By: ASW Date: 12/31/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Neutron	0'-255'	8/18/87
Density	0'-255'	8/18/87
Natural Gamma	0'-255'	8/18/87

Approved By: ASWilb Date: 8/18/87

AQUIFER TESTING

Type of Test: Constant Discharge Test
Length of Test: 6 hrs.
Volume Pumped: 7,200 gals
Drawdown: 18.7'

Approved By: ASWilb Date: 8/21/87

OTHER APPLICABLE ITEMS

- ASW Steam Cleaning
- ASW Storage of Const. Material
- ASW Tool Lubricants
- ASW Concrete Pad
- ASW Protective Steel Posts
- ASW Safety Paint
- ASW Straightness Test
- ASW Well Development
- EM Downhole TV Inspection
- Well Abandonment
- ASW Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By: ASWilb Date: 9/4/87

Reviewed By: D.L. McKelvey Date: 1-5-88

A-1800-187 (3/87)

9413205.0346

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-K115-15 Geologist _____ Page 1 of 2

Reviewed by W.K. McGhan Date 1-8-87

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		5		SILT/CLAY
		10		SAND
52'1½" of 12" casing		15		SANDY GRAVEL
		20		GRAVELLY SAND
		25		SAND
		30		
		35		
		40		GRAVELLY SAND
		45		SILTY SAND
		50		SAND
165'1" of 10" casing		55		SLIGHTLY GRAVELLY SAND
		60		SILTY SANDY GRAVEL
		65		GRAVELLY SAND
		70		SILTY SANDY GRAVEL
255' of 8" casing		75		
		80		
		85		
		90		GRAVELLY SILTY SAND
		95		SL. GRAVELLY SL. SILTY SAND
		100		
		105		SILTY SAND
		110		SLIGHTY SILTY SAND
		115		SILTY SAND
		120		SAND
		125		SILTY SAND
		130		

9413205.0347

A-1800-186 (3/87)

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-15 Geologist J.S. Wilbur Page 2 of 2

Reviewed by V.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		SLIGHTLY SILTY SAND
165' 1" of 10" casing		140		
		145		SANDY SILT
		150		SILTY CLAY
		155		GRAVELLY SANDY SILT
		160		
		165		
255' of 8" casing		170		
		175		SL. GRAVELLY SILTY SAND
		180		SANDY GRAVEL
		185		SILTY SANDY GRAVEL
		190		
		195		
		200		
D/T of bentonite pellets @ 208'		205		SANDY GRAVEL
		210		SILTY SANDY GRAVEL
D/T of 10-12 sand @ 213.7'		215		
D/B of 10-12 sand @ 255'		220		
		225		SANDY GRAVEL
D/T of 4" stainless screen 223'	226	230		
D/B of 4" stainless screen 253'		235		SILTY SANDY GRAVEL
		240		
		245		
D/T of telescoping screen 243'		250		SANDY GRAVEL
D/B of telescoping screen @ 253' depth		255		

note: telescoping screen settled to 255'4" after the aquifer test.

A-1800-188 (3/87)

9413205.0348

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project KEH-1914
Location 200 WEST AREA
Driller DORREL LUDTKE
Drilling Co. ONNWEGO
Geologist AIRHART, TEEL, WILBUR, GILMORE

Well Number 299-W15-16
Temporary Well Number —
Coordinates N.40,269 W.77,387
Casing Elevation 684.89
Ground Elevation 682.62

DRILLING METHOD

Rotary Air _____ Mud _____
Cable Tool D 13'-110' H 110'-243.5'
Drilling Fluid _____
Other BACKHOE 0'-13'

COMPLETION DATA

Drilled Depth 243.5'
Completion Depth 238'
Date Started 7/29/87 Completed 9/2/87
Static Water Level/Date 214.51

CASING DATA

Type	Size	
TYPE 304 STAINLESS STEEL CASING	4" DIAMETER	to 238'
		to
		to

Approved By S.P. Airhart Date 8/25/87

PERFORATIONS

Type —

Depth	Schedule
-	
-	
-	

App. By _____ Date _____

SCREEN

	4" dia. Type 304	8" dia. Type 304 SS
Type	S.S. CONTINUOUS WRAP	CONTINUOUS WRAP
Length	30'	10'
Slot Size	20-SLOT	30-SLOT
Depths	208' to 238'	227.5' to 237.5'

App. By S.P. Airhart Date 8/25/87

ANNULAR SEAL

Type	Interval	Volume
COLORADO SILICA SAND	243.5'-202'	21.39 ft³
YELLOW PEBBLES	202'-196.5'	2.88 ft³
BENTONITE	196.5'-2'	1194.20 ft³
PREMIX CONCRETE	0'-2'	18 ft³

App. By S.P. Airhart Date 11/3/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0' - 243.5'	8/18/87
DENSITY	0' - 243.5'	8/18/87
NEUTRON	0' - 243.5	8/18/87
	-	
	-	
	-	
	-	

Approved By S.P. Airhart Date 8/18/87

AQUIFER TESTING

Type of Test Constant Discharge Test
Length of Test 7 hrs
Volume Pumped 33,600 gals
Drawdown 12.77

Approved By A.S. Will Date 8/20/87

OTHER APPLICABLE ITEMS

SPA Steam Cleaning
SPA Storage of Const. Material
SPA Tool Lubricants
SPA Concrete Pad
SPA Protective Steel Posts
SPA Safety Paint
SPA Straightness Test
SPA Well Development
Downhole TV Inspection
Well Abandonment
Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By A.S. Will Date 9/4/87

Reviewed By D.L. McGhan Date 1-8-88

A-1800-187 (3/87)

9413205.0349

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-16 Geologist ~~AKHART, TEEL, WILBUR, GILMORE~~ Page 1 of 2

Reviewed by J.L. McShane Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete Surface Seal		5		SLIGHTLY SILTY SAND
12" casing to 62'7"		10		SAND
		15		SAND GRAVEL
10" casing to 154'9"		20		SAND
		25		SANDY GRAVEL
		30		
		35		SAND
		40		
		45		
		50		
		55		
		60		
		65		
		70		
8" casing to 243.5'		75		SANDY GRAVEL
		80		GRAVELLY SAND
		85		SANDY GRAVEL
		90		
		95		
		100		
		105		
		110		GRAVELLY SAND
		115		SAND
		120		SANDY GRAVEL
		125		
		130		

A-1800-186 (3/87)

9413205.0350

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-16 Geologist AIRHART, TEEL, WILBUR, GILMORE Page 2 of 2

Reviewed by V.T. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
10" casing to 154'9"		135		SANDY CLAYEY GRAVEL
		140		SLIGHTY GRAVELLEY SANDY SILT
		145		GRAVELLEY SILTY SAND w/ CALICHE
		150		
		155		
8" casing to 242.5'		160		GRAVELLEY SILTY SAND
		165		SILTY SAND
centralizers @ 168'		170		SLIGHTY GRAVELLEY SILTY SAND
		175		SILTY SANDY GRAVEL
Volclay pellets from 202'		180		SLIGHTY GRAVELLEY SAND
to 196.5' depths		185		SILTY SAND GRAVEL
D/T of at 196.5'		190		
Sand pack of 10-20		195		
Colorado Silica Sand from		200		SANDY GRAVEL
238.5' to 202' - D/T of sand		205		SILTY SANDY GRAVEL
20 slot screen @ 238.5' to		210		
208.5' depths; D/T of screen		215		
	214.51	220		
D/T telescoping screen @		225		SANDY GRAVEL
227.5'		230		
D/B inside the telescoping		235		SLIGHTY SANDY GRAVEL
screen of 237.5'		240		SANDY GRAVEL
After pump test D/B of				
telescoping @ 238.5'				
below ground surface:				

Bentonite to the surface
Sand pack 10-20 Colorado Silica Sand

A-1800-186 (3/87)

9413205.0351

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project KEH-1914
Location 200 WEST AREA
Driller DAVE GARCIA
Drilling Co. ONWEGO
Geologist ~~GUNCRE, TEEL, BISHOP, WILBUR, AIRHART~~

Well Number 299-W15-17
Temporary Well Number —
Coordinates N. 40,227 W. 77,387
Casing Elevation 684.64
Ground Elevation 682.85

DRILLING METHOD

Rotary Air _____ Mud _____
Cable Tool D _____ H 0'-450'
Drilling Fluid _____
Other _____

COMPLETION DATA

Drilled Depth 450'
Completion Depth 432.5'
Date Started 7/8/87 Completed 10/28/87
Static Water Level/Date 211.58' below land surface 8/20/87

CASING DATA

Type	Size	
TYPE 304 STAINLESS STEEL CASING	4" DIAMETER +2'	to 432.5'
		to
		to

Approved By S.P. Airhart Date 10/12/87

PERFORATIONS

Type —

Depth	Schedule
-	
-	
-	

App. By _____ Date _____

SCREEN

	4" dia. Type 304 S.S.	5" dia. Type 304 S.S.
Type	CONTINUOUS WRAP	CONTINUOUS WRAP
Length	10'	10'
Slot Size	20-SLOT	30-SLOT
Depths	422.5' to 432.5'	422.5' to 432.5'

App. By S.P. Airhart Date 10/12/87

ANNULAR SEAL

Type	Interval	Volume
COLORADO SILICA SAND	410.5'-450'	91.60 ft³
VOLCLAY GROUT	190'-410.5'	360 ft³
BENTONITE	3'-190'	
CONCRETE	0'-3'	18

App. By S.P. Airhart Date 11/3/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0'-447'	9/17/87
NEUTRON	0'-447'	9/17/87
DENSITY	0'-447'	9/17/87
	-	
	-	
	-	
	-	

Approved By J.S. Hill Date 9/17/87

AQUIFER TESTING

Type of Test CONSTANT DISCHARGE
Length of Test 5 HOURS
Volume Pumped 1800 GALLONS
Drawdown 19.23 FEET

Approved By J.S. Hill Date 5/28/87

OTHER APPLICABLE ITEMS

SPA Steam Cleaning
SPA Storage of Const. Material
SPA Tool Lubricants
JSH Concrete Pad
JSH Protective Steel Posts
JSH Safety Paint
SPA Straightness Test
SPA Well Development
~~SPA~~ Downhole TV Inspection
Well Abandonment
JSH Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By J.S. Hill Date 11/3

Reviewed By W.L. McGhee Date 1-8-88

A-1800-187 (3/87)

9413205.0352

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-17 Geologist T Gilmore Page 1 of 4

Reviewed by D.E. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Premix Concrete Surface Seal	3'	5		GRAVELY SAND (Hand Tool •)
	7'	10		SAND
		15		GRAVELY SAND
		20		SAND
		25		
(0-47') 20" CARBON STEEL CASING		30		SANDY GRAVEL
(0'-140'6") 16" CARBON STEEL CASING		35		SAND
(0'-220'10") 12" CARBON STEEL CASING		40		
(0'-323') 10" CARBON STEEL CASING		45		
(0'-435'11") 8" CARBON STEEL CASING		50		
		55		
4" STAINLESS STEEL CASING (42'-432.5')		60		
		65		
		70		
Bentonite Slurry		75		
		80		SANDY GRAVEL
		85		
	87'	90		
		95		
		100		SILTY SANDY GRAVEL
Dry Bentonite		105		SANDY GRAVEL
		110		
		115		
		120		GRAVEL
	125'	125		SANDY GRAVEL
		130		

A-1800-186 (3/87)

9413205.0353

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-17 Geologist T Gilmore Page 2 of 4

Reviewed by H.R. McGlam Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		
	130'	140		SILT @ 136'
8-mesh Enviro gel Bentonite (dry)		145		SILTY SAND
		150		Caliche & Clay
		155		
		160		
		165		
	170'	170		SILTY CLAYEY SAND
		175		
200 mesh Big Horn Bentonite & -10+100 mesh Big Horn Bentonite mixed w/ water to form slurry (100 lbs Bent : 100 gals H_2O)		180		SILTY GRAVELY SAND
		185		SANDY GRAVEL
	190'	190		GRAVELY SAND
		200		
		205		
		210		
		215		
		220		
		225		SILTY GRAVELY SAND
		230		
		235		
Volclay Grout		240		
		245		
		250		
		255		
		260		

A-1800-186 (3/87)

9413205.0354

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299 - W15 - 17 Geologist T Gilmore Page 3 of 4

Reviewed by [illegible] Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		265		SILTY GRAVELY SAND Cont.
		270		
		275		
		280		
		285		
		290		
		295		
		300		
		305		
		310		
		315		
Volclay Grout		320		
		325		
		330		
		335		
		340		
		345		SILTY SAND
		350		SILTY GRAVELY SAND
		355		
		360		
		365		
		370		
		375		GRAVELY SILTY SAND
		380		
		385		GRAVELY CLAYEY SAND
		390		(CLAY LAYER)
		395		SILTY GRAVELY SAND
		400		

A-1800-186 (3/87)

9413205.0355

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AS-BUILT DIAGRAM

Well Number 299-W15-17 Geologist _____ Page 4 of 4

Reviewed by V. L. McGlam Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		405		
		410		SILTY/CLAYEY SANDY GRAVEL
1 bag 20-30 mesh Colorado Silica Sand		415		SILTY GRAVELY SAND
		420		
10' section of 4" 20-slot stainless steel screen	422.5'	425		
10' section of 8" stainless steel telescoping screen	432.5'	430		
		435		
10-20 mesh Colorado Silica Sand		440		SANDY CLAY
		445		
SPLIT-TUBE SAMPLE TAKEN @ 448-450' INTERVAL	450'	450		CLAY TD 450'
		455		
		460		

A-1800-198 (3/87)

9413205.0356

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Well Completion Report/Title III Inspection List

Project KEH-1914 200 west RCRA Drilling
Location 200 West
Driller Bill Moran / Homer Jay
Drilling Co. Onwego Drilling Co
Geologist RA Hagen / T Gilmore

Well Number 299-W15-19
Temporary Well Number None
Coordinates ~~not available~~ N.39,705 W. 77,383
Casing Elevation ~~not available~~ 685.71
Ground Elevation ~~not available~~ 683.55

DRILLING METHOD

Rotary Air NA Mud NA
Cable Tool D 0-126' H 126'-242.5'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 242'6"
Completion Depth 238'
Date Started 5/27/87 Completed 8/4/87
Static Water Level/Date 212'3" 7/6 ; 212'6" 7/9

CASING DATA

Type	Size	
30 slot 304 8" Stainless Steel Telescoping Screen	242' 2" to 232' 2"	
304 4" Stainless Steel Casing	238' to Surface	
	to	

Approved By YB Date 7/22/87

PERFORATIONS

Type NA

Depth	Schedule
-	
-	
-	

App. By Date

SCREEN

Type 4" 304 Stainless Steel

Length	30' 4"	10' 8" Telescoping
Slot Size	20 slot	30 slot
Depths	238'	~~242'~~ 240'
	208'	230'

App. By YB Date 7/22/87

ANNULAR SEAL

Type	Interval	Volume
20-30 Sand	242'-205'	4 cu/ft
Volclay Pellets	205'-202'9"	30 gal
Volclay Grout	202'9"-4'	44.5 .5 lbs
Cement	4'-Surface	4 cu/ft

App. By YB Date 7/24/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Nat Gamma	0 - 242'	7/8/87
Neutron	0 - 242'	7/8/87
Density	0 - 242'	7/8/87
	-	
	-	
	-	
	-	

Approved By YB Date 7/8/87

AQUIFER TESTING

Type of Test Continuous Drawdown / Recovery
Length of Test 7 1/2 Hrs
Volume Pumped 39,300 gal
Drawdown 7.05'

Approved By YB Date 7/21/87

OTHER APPLICABLE ITEMS

RAH Steam Cleaning
YB Storage of Const. Material
YB Tool Lubricants
YB Concrete Pad
YB Protective Steel Posts
YB Safety Paint
YB Straightness Test
YB Well Development
~~RAH~~ Downhole TV Inspection
NA Well Abandonment
YB Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By YB Date 11/2/87

Reviewed By D.L. McMillan Date 1-8-88

A-1800-187 (2/87)

9413205.0357

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-18 Geologist R.A. Hagen Page 1 of 2

Reviewed by W.L. McGhan Date 1-8-88

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description	(ft) Dri sat
16" (O.D.) TEMPORARY SURFACE CASING (CARBON STEEL)		5	NO DATA	Slightly silty (10) sand (90)	50
		10		gravelly (15) sand (80) (≤ ¼ silt)	3
12" (I.D.) TEMPORARY CASING (63' 1/2" of 12" diam carbon steel casing)		15		Slightly silty (10) slight. gravelly (5) sand (85)	
		20		Slightly silty (10) sand (90)	1
		25		Sand (95) (5 silt)	1
		30		Sand (95) (≤5 silt ≤5 gravel)	5
		35		gravelly (20) sand (80)	11
4" Stainless Steel casing		40		silty (20) sand (80)	7.5
Bentonite Grout		45		silty (20) sand (80)	11.
		50		silty (20) sand (80)	8.
10" diam. carbon steel temporary casing (160' 9 1/2" long).		55		Sand (95) (5 silt)	17.
		60		Sand (95) (5 silt)	9
		65		Slightly silty (15) sand (85)	17.
		70		Sand (95) (5 silt)	1
		75		Slightly silty (10) sand (90)	16
		80		Sand (95) (5 silt)	15
8" diam carbon steel temporary casing		85		silty (25) sand (75)	10
		90		Slightly silty (10) sand (90)	15
		95		Sand (95) (5 silt)	15
		100		Sand (95) (5 silt)	12
		105		gravelly (20) sand (80) (≤5 silt)	20
		110		gravelly (15) sand (85)	6
		115		gravelly (15) sand (80) (≤5 silt)	~2
		120		slightly gravelly (7) sand (88) (5 silt)	?
Change to hard tool @ 126'		125		slightly sandy (15) gravel (85)	8.
		130		gravelly (20) silty (15) sand (65)	?

A-1800-186 (3/87)

9413205.0358

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-18 Geologist R. A. Hagen Page 2 of 2

Reviewed by V.L. McGhan Date 1-8-88

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description	d.i. at 4th
		135		slightly (2) gravelly (43) sandy (55) silt	15
		140		gravelly (10) silty (20) clayey (60) sand	?
		145		silty (21) sandy (45) gravel (35)	5
Temporary 8" Casing		150		slightly (10) silty (25) gravelly (65) sand	?
		155		slightly (2) gravelly (18) silty (75) sand	10
		160		slightly (7) gravelly (18) silty (75) sand	1.7
		165		slightly (10) silty (20) gravelly (70) sand	?
4" Stainless Steel Casing		170		slightly (10) silty (20) gravelly (70) sand	6
		175		silty (25) sandy (20) gravel (55)	?
		180		silty (10) sandy (40) gravel (50)	?
		185		silty (10) sandy (60) gravel (30)	?
		190		silty (10) sandy (60) gravel (30)	2
Volclay Grout		195		Silty Sandy Gravel	
Top Volclay Seal 202'		200			
Top of Sand 204'		205		Silty Sandy layer @ 202'	
		210		Sandy Gravel	
	2 1/2" 1/4	215		Gravely Silty Sand	
20 slot 4" Stainless Steel Screen		220			
		225		Gravely Sand	
		230		Sand	
30 slot 8" Telescoping Screen		235			
2' of 20-30 Sand		240		Silty Gravelly Sand	
Total Depth 242' 6"		245			

A-1800-186 (3/8)

9413205.0359

Page 1 of 2

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, R0)

Specification No. WHC-S-014 Rev. No. 3
Project W-017 LOW LEVEL BURIAL GROUNDS
Location 200 WEST AREA
Drilling Co. KAISER ENGINEERS / HANFORD
Driller DAVE GARCIA
Other (companies) NONE
Geologist(s) R. BUGEN, M. LUBRECHT, S. AHAMAT, S. GOODWIN

Well No. 299-W15-19 Temp. Well No. 699-MW1
Coordinates N: 41,041.4 W: 77,771.8
Casing Elev. 691.60' ~~Ground~~ BRASS CAP Elev. 688.48'

DRILLING METHOD:
Rotary Air N/A Mud N/A
Cable Tool D 0-71' 110'-135' H 71'-110' 135'-245'
Drilling Fluid 200 W DRILL SUPPLY H_2O
Other NONE

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NAT. GAMMA	144'-4'	8/21/89
" "	244'-115'	9/5/89
	-	
	-	
	-	
	-	

COMPLETION DATA
Drilled Depth 245.69'
Completed Depth 234.83'
Date Started 8/9/89
Date Completed 11/10/89
Static Water Level/Date 219.65' (10/10/89)

AQUIFER TESTING
Type SLUG WITHDRAWAL
Length of Test
Volume Pumped
Drawdown
Date of Test 10/30/89

INSPECTION RESULTS

CLEANING
Inspection Method VISUAL
Acceptance Criteria SECT. 7.6

	Accept	Reject	Date
Drilling Tools/Rig	BNB		8/9/89
Temporary Materials	BNB		9/1/89
Permanent Materials	GNL		10/20/89

MATERIAL STORAGE/PACKING
Inspection Method VISUAL
Acceptance Criteria SECT. 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	GNL		10/20/89
Material Packing	GNL		10/20/89

SCREEN

Type	Length	Slot Size
JOHNSON DIV. TYPE 304 CONT-	21'	10
INUOUS WRAP CHANNEL PACK 4"	—	—

Depth(s) 234.83' - 213.83'
— - —
Inspection Method VISUAL
Acceptance Criteria SECT. 4.2.3
Accept GNL Reject Date 10/18/89

LUBRICANTS/ADDITIVES
Inspection Method VISUAL
Acceptance Criteria SEC 7.2

	Identify	Accept	Reject	Date
Additives	NONE	BNB		9/1/89
Lubricants	FOOD OIL	BNB		9/1/89

STRAIGHTNESS TEST
Inspection Method 20' of 6" S.S. CASING DOWN HOLE
Acceptance Criteria SECT. 8.3
Accept BNB Reject Date 9/1/89

CASING (permanent)

Type	Size	Placement
JOHNSON DIV. TYPE 304	4"	213.83 - +1.57'
STAINLESS STEEL	—	— - —

Inspection Method VISUAL
Acceptance Criteria SECT. 4.2.4
Accept GNL Reject Date 10/19/89

WELL PROTECTION
Inspection Method VISUAL
Acceptance Criteria SECT. 4.2.9 - 4.2.10

	Accept	Reject	Date
Protective Posts	BNB		1/24/90
Locks			

ANNULAR SEAL
Inspection Method MEASURED W/ STEEL TAPE Acceptance Criteria SECT. 4.2.6 - 4.2.9

Type	Interval	Volume	Accept	Reject	Date
20-40 COLORADO SILICA SAND	236.5' - 211.15'	11.48 ft³	GNL		10/18/89
3/8" VOLCLAY TABLETS	211.15' - 207.5'	1.24 ft³	SPA		10/19/89
8-20 BENTONITE CRUMBLES	207.5' - 19.0'	123.54 ft³	GNL		10/20/89
CEMENT GROUT	19.0' - 2.0'	7.92 ft³	GNL		10/20/89
~~CEMENT PAD~~	~~2.0' - +0.5'~~	~~1.20 ft³~~	BNB		1/24/90

OTHER (initial if performed)
JA Well Abandonment
DZM Well Development
DZM Downhole TV Inspection
____ Complete As-Built Diagram, Driller's/Geologist's Logs

Reviewed by D. L. McKenna 1-25-90

A-121 For all blanks mark N/A if not applicable.

9413205.0360

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Well 299-W15-19 continued...

ANNULAR SEAL

Inspection Method Measured w/Steel Tape Acceptance Criteria Sect. 4.2.6 - 4.2.9

Type	Interval	Volume	Accept	Reject	Date
Volclay Tablets (1/4"-3/8" dia) (2 buckets each size)	245.0' - 236.5'	2.48 ft³	✓		10/18/89
	-				
	-				
	-				

for all blanks mark N/A if not applicable.

9413205.0361

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AS-BUILT DIAGRAM

Well Number 299-W15-19 Geologist R. Biegen, M. Lubrecht, S. Airhart S. Goodwin, B. Biornstad Page 1 of 2

Reviewed by V. L. McGhan Date Well Started: 08/09/89 Well Completed: 11/10/89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type: ○ Drive Barrel ● Hard Tool ▲ Split Spoon	Lithologic Description
Cement Grout (+0.5' - 2.0')		5	○	Sand (backfill)
10" dia. carbon steel casing (0' - 144.5') - removed		10	○	" "
		15	○	" "
Cement Grout (2.0' - 19.0')		20	○	" "
		25	○	" "
		30	○	Gravelly Sand
		35	○	Sandy Gravel
8" dia. carbon steel casing (0' - 247.2') - removed	DB	40	○	Gravelly Sand
		45	○	Slightly Muddy Sand
Casing Centralizer		50	○	" " "
Casing Joint		55	○	Slightly Gravelly Sand
		60	○	" " "
4" dia. stainless steel final casing (+1.57' - 213.83')		65	○	Sandy Gravel
		70	○	" "
		75	●	Muddy Sandy Gravel
		80	●	Gravelly Sand
8 - 20 mesh bentonite crumbles (19.0' - 207.8')		85	●	" "
	HT	90	●	" "
		95	●	" "
		100	●	Slightly Gravelly Sand
		105	●	" " "
DB = Drive Barrel HT = Hard Tool		110	●	" " "
		115	○	Sand
	DB	120	○	"
		125	○	"
		130	○	"

A-1800-186 (3/87)

9413205.0362

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AS-BUILT DIAGRAM

Well Number 299-W15-19 Geologist R. Biegen, M. Lubrecht, S. Airhart S. Goodwin, B. Biornstad Page 2 of 2

Reviewed by V. L. McGhan Date Well Started: 08/09/89 Well Completed: 11/10/89

Construction Data

Description

10" dia. carbon steel casing (0' - 144.5') - removed

8" dia. carbon steel casing (0' - 247.2') - removed

4" dia. stainless steel final casing (+1.57' - 213.83')

8 - 20 mesh bentonite crumbles (19.0' - 207.8')

DB = Drive Barrel
HT = Hard Tool

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

3/8" Volclay tablets (207.8 - 211.15')

Static Water Table (219.68') - 10/18/89 -

20 - 40 mesh Silica sand (211.15 - 236.5')

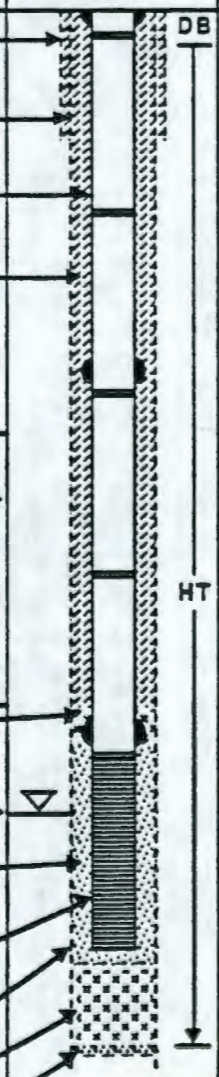
4" dia. stainless steel Johnson Channel Pack screen (213.83 - 234.83')

Bottom of well = 234.83'

3/8" Volclay Tablets (236.5 - 245.0')

Backfill (245.0' - 245.69')

Diagram



Geologic/Hydrologic Data

Depth in Feet	Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
135	○	Sandy Mud
140	●	" "
145	●	Sandy Mud w/caliche @ ~143'
150	●	Muddy Sandy Gravel w/caliche
155	●	" " "
160	●	" " "
165	●	Slightly Muddy Gravelly Sand
170	●	Muddy Sandy Gravel
175	●	" " "
180	●	" " "
185	●	Sandy Gravel
190	●	" "
195	●	Gravelly Sand
200	●	Slightly Gravelly Sand
205	●	" " "
210	●	Muddy Sandy Gravel
215	●	" " "
220	●	Sandy Gravel
225	●	Gravelly Sand
230	●	" "
235	●	Muddy Sandy Gravel
240	●	" " "
245	●	" " "
		TD=245.69'

A-1800-186 (3

9413205.0363

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, R0)

Specification No. 11WHC-S-014 Rev. No. 3
Project LLBG
Location 200 WEST AREA
Drilling Co. BASIN & RANGE
Driller LENNY CORDON
Other (companies) N/A
Geologist(s) S. BRANDENBERGER, R BLEGEN, B BJORNSTAD, M. CHAMNESS, T. GILMORE

Well No. 299-W15-20 Temp. Well No. W4-MW2
Coordinates N 41,027.5' W 78,120.2'
Casing Elev. 698.36' Ground Elev. 695.43' BRASS CAP

DRILLING METHOD
Rotary - Air N/A Mud N/A
Cable Tool D 0'-70', 80'-138' H 70'-80', 138'-245'
Drilling Fluid 200 WEST WATER SUPPLY
Other N/A

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NAT. GAMMA	241 - 4.5'	10-12-89
	-	
	-	
	-	
	-	

COMPLETION DATA
Drilled Depth 245.0'
Completed Depth 241.1'
Date Started 9/27/89
Date Completed 11/13/89
Static Water Level/Date 227.9' (1/24/90)

AQUIFER TESTING
Type SLUG WITHDRAWAL
Length of Test
Volume Pumped
Drawdown
Date of Test 11/3/89

INSPECTION RESULTS

CLEANING
Inspection Method VISUAL
Acceptance Criteria SECTION 7.6

	Accept	Reject	Date
Drilling Tools/Rig	✓		9/27/89
Temporary Materials	✓		10/12/89
Permanent Materials	✓		11/3/89

SCREEN

Type	Length	Slot Size
Type 304 stainless channel pack	21.0'	10

Depth(s) 241.1 - 220.1

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.3
Accept MAC Reject Date 10/16/89

CASING (permanent)

Type	Size	Placement
TYPE 304 STAINLESS STEEL	4"	220.1 - +3.1

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.4
Accept MAC Reject Date 10/16/89

MATERIAL STORAGE/PACKING
Inspection Method VISUAL
Acceptance Criteria SECTION 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	SPA		11/3/89
Material Packing	SPA		11/3/89

LUBRICANTS/ADDITIVES
Inspection Method VISUAL
Acceptance Criteria SECTION 7.2

	Identify	Accept	Reject	Date
Additives	N/A			
Lubricants	CHEVRON POLY FM-2	BNB		9/27/89

STRAIGHTNESS TEST
Inspection Method
Acceptance Criteria SECTION 8.3
Accept BNB Reject Date 10/12/89

WELL PROTECTION
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.9 - 4.2.10

	Accept	Reject	Date
Protective Posts	✓		11/3/89
Locks	✓		11/3/89

ANNULAR SEAL
Inspection Method VISUAL / STEEL TAPE Acceptance Criteria SECTION 4.2.6 - 4.2.9

Type	Interval	Volume	Accept	Reject	Date
20-40 COLORADO SILICA SAND	241.3' - 216.5	16.8 ft³	SPA		10/17/89
1/4" 3/8" VOLCLAY TABLETS	216.5 - 211.9	1.86 ft³	SPA		10/17/89
3-20 BENTONITE CHUNKS	211.9 - 18.2	95.85 ft³	SPA		10/18/89
PORTLAND CEMENT & GYPSUM GROUT	18.2 - 2.0	9.57 ft³	✓		10/20/89
~~CEMENT PAD~~	~~2.0' - +0.5'~~	~~1 yd³~~			~~11/3/89~~

OTHER (initial if performed)
NA Well Abandonment
NA Well Development
DPM Downhole TV Inspection
____ Complete As-Built Diagram, Driller's/Geologist's Logs

Reviewed by J. McPhee 1-23-90

A-125 For all blanks mark N/A if not applicable.

9413205.0364

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-20 Geologist S. Brandenberger, R. Biegen, B. Biornstad, M. Chamness, T. Gilmore Page 1 of 2

Reviewed by V. L. McGhan Date Well Started: 09/27/89 Well Completed: 11/13/89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type: ○ Drive Barrel ● Hard Tool ▲ Split Spoon	Lithologic Description
Cement Pad (+0.5 - 2.0)		5	○	Sand
		10	○	"
12" dia. carbon steel casing (0' - 20') - removed		15	○	Slightly Gravelly Sand
		20	○	Sand
Cement Grout (2.0' - 18.2')		25	○	Slightly Muddy Sand
		30	○	Slightly Gravelly Sand
8" dia. carbon steel casing (0' - 244.3') - removed		35	○	" " "
	DB	40	○	Gravelly Sand
		45	○	Sand
		50	○	" (with laminated silt lenses)
		55	○	Muddy Sandy Gravel
~2' of 8" casing and drive shoe @~60'		60	○	Sandy Gravel
		65	○	Muddy Sandy Gravel
		70	○	" " "
4" dia. stainless steel final casing (+3.1' - 220.1')	HT	75	●	" " " (to 77')
		80	●	Slightly Muddy Sand
		85	○	" " "
8-20 mesh bentonite crumbles (18.2' - 211.9')		90	○	Sand
		95	○	"
Casing Centralizer		100	○	"
Casing Joint	DB	105	○	"
		110	○	"
		115	○	"
		120	○	"
DB = Drive Barrel HT = Hard Tool		125	○	Slightly Gravelly Sand
		130	○	Slightly Gravelly Slightly Muddy Sand

A-1800-186 (3/87)

9413205.0365

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Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-20 Geologist S. Brandenberger, R. Biegen, B. Bjornstad, M. Chamness, T. Gilmore Page 2 of 2

Reviewed by V. L. McGhan Date Well Started: 09/27/89 Well Completed: 11/13/89

Construction Data

Description

8" dia. carbon steel casing (0' - 244.3') - removed

4" dia. stainless steel final casing (+3.1' - 220.1')

8-20 mesh bentonite crumbles (18.2' - 211.9')

DB = Drive Barrel
HT = Hard Tool

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

1/4"-3/8" Volclay Tablets (211.9 - 216.5')

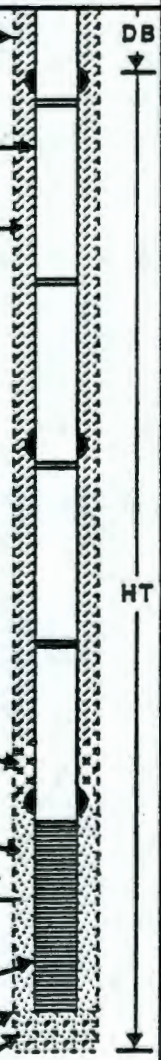
20 - 40 mesh Colorado silica sand (216.5' - 241.3')

Static Water Table (227.9') - 01/24/90 -

4" dia. stainless steel Johnson Channel Pack screen (220.1' - 241.1')

Bottom of well = 241.1'
Backfill (241.3' - 245.0')

Diagram



Geologic/Hydrologic Data

Depth in Feet	Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
135	○	Slightly Gravelly Muddy Sand
140	●	Muddy Sand [possibly caliche @ 138']
145	●	" "
150	●	" "
155	●	Slightly Gravelly Muddy Sand
160	●	Muddy Sand
165	●	" "
170	●	Slightly Gravelly Muddy Sand
175	●	Muddy Sandy Gravel
180	●	" " "
185	●	" " "
190	●	" " "
195	●	" " "
200	●	" " "
205	●	Sandy Gravel
210	●	" "
215	●	" "
220	●	" "
225	●	" "
230	●	Muddy Sandy Gravel
235	●	" " "
240	●	" " "
245	●	" " "
		TD=245.0'

A-1800-168 (3/87)

VALIDATED
SIGNATURE/DATE

WELL CONSTRUCTION REPORT

Specification No. WHC-S-014 Rev No. 5

ECNs 144240, 144241

Project W017-SST

Location 200 West TY Tank Farm

Drilling Company Kaiser

Driller B Strode, Louis Watkins, G. Thomas, C. Wamsky

Other (Companies) N/A

Geologist(s) AW Pearson, Karen R.C. Barton, LA Doremus, ST Aiken, R.D. Miller, G. Kelty, B. Bjornstad, C. Delaney, D.C. Weekes

Well No. 299-W15-22 Temp. Well No. N/A

Coordinates N 136,111.19m, E 556,683.32m NAD 83

Casing Elev. 670.51 Ground Elev. 667.71 NGVD 29

Drilling Method

Verification Method Visual Observation

Criteria WHC-S-014 5.2, 5.3, 7.5 EI 6.7 [illegible]

			Initials	Date
Rotary	Air N/A	Mud N/A	N/A	N/A
Cable Tool	D 0'-137'	H 137'-221.9' @ 1/6/92	KDR	1/6/92*
Drilling Fluid	Raw H_2O	725 GAL	AWP	12-1-90
Other	N/A			

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	152.7'-3.5'	12/5/90
Gross Gamma	221.5'-3.4	12/17/90

Completion Data

Drilled Depth 221.9'

Completed Depth 221.6' GWL 4/23/91

Date Started 11/15/90

Date Completed 1/16/91 GWL 4/23/91

Static Water Level/Date 193.1 12/17/90

Aquifer Testing

Type SLUG WITHDRAWAL / INJECTION

Flow Meter I.D. No. N/A

Cal. Due Date N/A

Length of Test 24 MIN. TOTAL

Volume Pumped N/A

Drawdown N/A

Date of Test 1/15/91 GWL 4/23/91

Completion Results

Cleaning

Verification Method visual inspection

Criteria WHC-S-014 7.6 4.2.2

	Initials	Date
Drilling Tools/Rig	AWP	11/15/90
Temporary Materials	AWP	12/3/90
Permanent Materials	KDR	1/6/92*

Material Storage/Packing

Verification Method Visual observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	[illegible]	12/13/91
Material Packing	[illegible]	12/13/91

Screen

Type	Length	Slot Size
4" dia stainless steel	10.52	.10 channel pack
4" dia stainless steel	10.50	.40 channel pack

Depth(s) 219.4 - ~~197.5~~ 199.5 KDR 1/11/91

Note: Includes 0.30 [illegible] SS cap

Verification Method Steel Tape

Criteria WHC-S-014 4.2.2, 4.2.5, 12.2.1, 4.2.1

Initials [illegible] Date 12-19-90

Lubricants/Additives

Verification Method Visual Observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Raw Water	AWP	12-1-90
Lubricants	Well Guard	LAD	11-16-90

Straightness Test

Verification Method Visual Observation

Criteria WHC-S-014 5.2

Initials [illegible] Date 12/15/90

SA (acceptance) 12/15/90

A-6000-435 (09/90)

9413205.0366

WELL CONSTRUCTION REPORT
(continuation sheet)

WAI # 299-W15-22

Page 2 of 2

Casing (permanent)

Type	Size	Placement
T-304 4" dia stainless	199.98	198.5 - 1985

Verification Method: Verify using steel tape

Criteria: WHC-S-014 4.2.4.2.4.4.2.5 12.2.1

Initials: N/A Date: 12/13/91

Well Protection

Verification Method: VISUAL / MEASURE w/ TAPE

Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts		12/13/91
Protective Casing		12/13/91
Site Restored		12/13/91
Cap, Hasp and Lock		12/13/91
Surface Pad		12/13/91

Annular Seal/Filter Pack

Verification Method: Measure with steel tape Criteria: WHC-S-014 5.3.1 or 5.3.2 4.2.6, 4.2.7, 4.2.8, 4.2.9,

Type	Interval	Volume	Initials	Date
8-12 silica sand	221.6 - 192.3	17 sacks, 100#		12/21/90
bentonite pellets	192.3 - 186.1'	8 bkts	RDM	12/31/90
#3-20 bentonite crumbles	186.1 - 19.0'	N/A		1/9/91
Portland cement	19.0 - 2.9	42 sacks, 100#		1/9/91

Well Survey/Labeling

Verification Method: REVIEW OF SURVEY / VISUAL

Criteria: WHC-S-014 3.4

	Initials	Date
Measurement Point/Surveyed		12/18/91
Protective Casing/Brass Cap Surveyed		12/18/91
Well Number Stenciled		12/18/91
Brass Cap Labeled		12/18/91

Pump Installation

Verification Method: VISUAL OBSERVATION

Criteria: WHC-S-014 4.2.11, 4.22

	Initials	Date
Pump Decon/Prep		12/20/91
Installed		12/20/91
Pump Tested		12/20/91

Other (initial if performed)

N/A Well Abandonment AWP Downhole TV Inspection Complete As-Built Diagram, Driller's/Geologist's Logs

Well Development

Comments/Remarks: * Signed after document review

Reviewed By (Sign/Print Name) Date 12/23/91

A-6000-435 (09/90)

9413205.0368

WELL SUMMARY SHEET

Boring or Well No. 299-W15-22

Sheet 1 of 2

Location 200 West Area TY Tank Farm
Project W1-017-SST
Elevation 667.71 Brass Cap NGVD'29
Drilling Contractor KEH
Driller L. WATKINS
Drilling Method and Equipment Cable Tool
Prepared By AW Pearson (Sign/Print Name) Date 12/10/00
Reviewed By (Sign/Print Name) Date 3/2/01

CONSTRUCTION DATA: Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Graphic Log	Lithologic Description
15.7' of 12" carbon steel Casing		5		SILTY SANDY GRAVEL
151.3' of 10" Carbon Steel Casing		10		" " "
of 8" Carbon Steel Casing		15		" " "
3" stick-up 0.85'; Set @ 1.31'		20		" " "
CEMENT GROUT		25		" " "
All 12", 10" and 8" temporary		30		SANDY GRAVEL
casings removed from		35		" "
borehole by 1/9/91 except		40		" "
8" temporary set at 2.5' bgs.		45		" " SGAS @ 42'
		50		SAND
		55		"
		60		"
		65		"
4" Ø STAINLESS STEEL CASING		70		" 8" screen @ ≈ 69.5'-70'
		75		"
		80		"
		85		"
		90		"
GRANULAR BENTONITE #5-20 USA		95		"
		100		" SAESE @ 98.5'
		105		SILT
		110		GRAVELLY SILTY SAND w/ cobbles
		115		" " " "
		120		SILTY SAND w/ cobbles ESAESE @ 122'
		125		" " SEA & ESE @ 124.5'
		130		SILTY SANDY GRAVEL ESA ESG @ 126'
		135		" " "
		140		" " " Cemented @ 137'
		145		" " "
10" stick-up = 1.3'; Set @ 150.01'		150		" " "
		155		" " "
		160		" " "
		165		" " "

A-6000-384 (04/90)

9413205.0369

WELL SUMMARY SHEET

Boring or Well No. 299-W15-22

Sheet 2 of 2

Location 200 West Area TY Tank Farm

Project W-017-SST

Elevation 667.71 Brass Cap NGVD '29

Drilling Contractor KEH

Driller Louis Watkins

Drilling Method and Equipment Cable Tool

Prepared By Alan Pearson/Alan Pearson (Sign/Print Name) Date 12/12/90

Reviewed By RW / BA Williams (Sign/Print Name) Date 8/21/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
Granular Bentonite #8-20 mesh		170'		SILTY SANDY GRAVEL
		175'		" " "
3" dia. carbon steel casing (temporary) 226.8'		180'		" " "
		185'		" " "
Bentonite Pellets		190'		" " "
4" stainless steel casing		195'		" " "
		200		" " "
		205'		" " "
		210'		" " "
Silica Sand Pack #8-12 mesh		215'		" " "
		220'		" " "
			TD: 221.9'	
4" stainless steel screen (0.010-in channel pack) 219.8'-198.5'				
8-12 sand 221.6'-192.3'				
Bentonite pellets 192.3'-186.1'				
8-20 mesh Bentonite crumbles from 186.1'-19.0'				
Portland cement 19.0'-2.9'				

2-5000-184 04/90

9413205.0370

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, RO)

Specification No. UHC-S-014 Rev. No. 3
Project W-017-LLBG
Location 200 WEST
Drilling Co. BASIN AND RANGE
Driller LENI CORSON Jr.
Other (companies) N/A
Geologist(s) T. GILMORE, J.V. WOJNIEWICZ, D. CRAWFORD, P. INNIS, C. CONDIT, AW Pearson.

Well No. 299-W15-23 Temp. Well No. W4-MW3
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD

Rotary Air N/A Mud N/A
Cable Tool D 0-42', 95'-125' H 42'-95', 125'-240'
Drilling Fluid WATER FROM 200 WEST RAW WATER SUPPLY
Other N/A

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Natural Gamma	237' - 3'	12/22/89
NATURAL GAMMA	229.5 3'	1-16-90
	N/A	

COMPLETION DATA

Drilled Depth 240'
Completed Depth 239.4'
Date Started 11/21/89
Date Completed 4/11/90
Static Water Level/Date 223.55' 1/2/90

AQUIFER TESTING

Type SLUG TEST
N/A
Length of Test N/A
Volume Pumped N/A
Drawdown N/A
Date of Test 3/1/90

INSPECTION RESULTS

CLEANING

Inspection Method Visual
Acceptance Criteria Section 7.2

	Accept	Reject	Date
Drilling Tools/Rig	✓	N/A	1/2/90
Temporary Materials	✓	N/A	1/2/90
Permanent Materials	✓	N/A	1/2/90

MATERIAL STORAGE/PACKING

Inspection Method Visual
Acceptance Criteria Section 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	✓	N/A	1/2/90
Material Packing	✓	N/A	1/2/90

SCREEN

Type	Length	Slot Size
Johnson Channel Pipe Stainless Steel	(2) 10 ft	10 Slot
4" DIA non-passivated	N/A	N/A

Depth(s) 220.4' - 219.66'
N/A - N/A
Inspection Method Visual
Acceptance Criteria Section 4.2.3
Accept ✓ Reject N/A Date 1/2/90

LUBRICANTS/ADDITIVES

Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	Drill water	✓	N/A	1/2/90
Lubricants	Chevron Dri F	✓	N/A	1/2/90

STRAIGHTNESS TEST

Inspection Method 20' LONG 7" DIA TRAILER
Acceptance Criteria Pass [illegible] No Sags Sec. 8.3
Accept ✓ Reject N/A Date 1/2/90

CASING (permanent)

Type	Size	Placement
Stainless Steel Type 304	4" dia	219.66' - +4.67'
(non-passivated)	N/A	N/A - N/A

Inspection Method Visual
Acceptance Criteria Section 4.2.4
Accept ✓ Reject N/A Date 1/2/90

WELL PROTECTION

Inspection Method Visual
Acceptance Criteria Section 4.2.9 - 4.2.10

	Accept	Reject	Date
Protective Posts	✓	N/A	2/13/90
Locks	AWP	N/A	4/3/90

ANNULAR SEAL

Inspection Method Visual Cross Tape
Acceptance Criteria Section 4.2.6 - 4.2.9

Type	Interval	Volume	Accept	Reject	Date
20-40 Columbia Silica Sand	239.7' - 214.4'	7.56 ft³	✓	N/A	1/4/90
3/8" Volclay Tablets	214.4 - 208.0'	1.56 ft³	✓	N/A	1/4/90
8-20 Bentonite crumbles	208.0' - 10.0'	102.92 ft³	SST	N/A	1/5/90
Cement Grout Seal	10.0' - 2.0'	10.56 ft³	SST	N/A	1/5/90
~~Cement Pad~~	~~2.0' - +0.5'~~	~~1.96 ft³~~	✓	N/A	2/13/90

OTHER (initial if performed)

N/A Well Abandonment
VLM Downhole TV Inspection
CRDR Complete As-Built Diagram, Driller's/Geologist's Logs
VLM Well Development

Reviewed by V. Lincoln 5-16-90

For all blanks mark N/A if not applicable.

9413205.0371

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-23

Geologist A.W. Pearson, C.D. Condit, T.J. Gilmore, J.V. Wozniewicz, P. Innis, D. Crawford

Page 1 of 2

Reviewed by V. L. McGhan

Date Well Started: 11/21/89
Well Completed: 04/11/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type: ○ Drive Barrel ● Hard Tool ▲ Split Spoon	Lithologic Description
Cement Pad (+0.5' - 2.0')		5	○	Sand
Cement Grout (2.0' - 19.0')		10	○	
		15	○	SlightlyGravelly Sand
12" dia. carbon steel casing (0' - 19.58') - removed		20	○	
	DB	25	○	
		30	○	
10" dia. carbon steel casing (0' - 152.5') - removed		35	○	Sand (clay lens @ 33')
		40	○	Sandy Gravel
8" dia. carbon steel casing (0' - 239.78') - removed		45	●	
		50	●	Slightly Gravelly Sand
4' dia. stainless steel final casing (+4.67 - 218.66')	HT	55	●	Gravelly Sand
		60	●	Sandy Gravel
		65	●	
8-20 mesh bentonite crumbles (19.0' - 208.0')		70	●	Muddy Sandy Gravel
		75	●	Sandy Gravel
		80	●	
Casing Joint		85	●	Gravelly Sand
		90	●	
Casing Centralizer		95	●	Slightly Gravelly Sand
		100	○	Sand
		105	○	
DB = Drive Barrel	DB	110	○	
HT = Hard Tool		115	○	
		120	○	Slightly Muddy Sand
		125	○	
		130	○	

A-1800-188 (3/87)

9413205.0372

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AS-BUILT DIAGRAM

Well Number 299-W15-23 Geologist T.J. Gilmore, A.W. Pearson, C.D. Condit, J.V. Wozniewicz, P. Innis, D. Crawford Page 2 of 2

Reviewed by V.L. McGhan Date Well Started: 11/21/89 Well Completed: 04/11/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type: ○ Drive Barrel ● Hard Tool ▲ Split Spoon	Lithologic Description
10" dia. carbon steel casing (0' - 152.5') - removed	DB	135	○	Slightly Muddy Sand
		140	●	
8" dia. carbon steel casing (0' - 241.1') - removed		145	●	
		150	●	Muddy Sand
4" dia. stainless steel final casing (+4.67' - 218.66')		155	●	
		160	●	Slightly Gravelly Muddy Sand (contains Caliche)
		165	●	
		170	●	Gravelly Muddy Sand
		175	●	Slightly Muddy Sand
		180	●	Sandy Gravel
		185	●	
	HT	190	●	
		195	●	
8 - 20 mesh bentonite crumbles (19.0' - 208.0')		200	●	
		205	●	
3/8" Volclay tablets (208.0' - 214.4')		210	●	Muddy Sandy Gravel
		215	●	
20--40 mesh silica sand (214.4' - 239.7')		220	●	Sandy Gravel
		225	●	Muddy Sandy Gravel
static water level 227.55' -1/3/90-		230	●	Sandy Gravel
		235	●	
4" dia.Johnson stainless steel 10 slot channel pack screen (218.66' - 239.4')		240	●	
		245	TD= 240	
		250		
backfill (239.7' - 240')		255		
		260		

A-1800-188 (3/87)

9413205.0373

WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Specification No. WHC-S-014 Rev. No. 3
Project W-017-LLBG
Location 200 West
Drilling Co. Basin & Range
Driller Lenny Cordon
Other (companies)
Geologist(s) AW Pearson, Tyler Gilmore, Steve Airhart, John Wozniewicz, Eric Jensen, Steve Teed, C.D. Condit.

Well No. 299-W15-24 Temp. Well No. W4-MW4A
Coordinates N 39,851.3' W 78,096.1'
Casing Elev. 699.37' ~~Ground~~ Brass Cap Elev. 696.25'

DRILLING METHOD

Rotary Air N/A Mud N/A
Cable Tool D 0-55' H 56'-241.8'
Drilling Fluid H_2O from 200 West Raw Water Supply
Other None

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Int. Gamma	2' - 237	12-2-89
	-	
	-	
	-	
	-	

COMPLETION DATA

Drilled Depth 241.8
Completed Depth 241'
Date Started 11/21/89
Date Completed 1/9/90
Static Water Level/Date 221.3' 12/5/89

AQUIFER TESTING

Type Slug Withdrawal
Length of Test
Volume Pumped
Drawdown
Date of Test 12/13/89

INSPECTION RESULTS

CLEANING

Inspection Method Visual
Acceptance Criteria Section 7.6

	Accept	Reject	Date
Drilling Tools/Rig	BNB		11/21/89
Temporary Materials	[illegible]		12/13/89
Permanent Materials	[illegible]		12/14/89

MATERIAL STORAGE/PACKING

Inspection Method Visual
Acceptance Criteria Section 7.2

	Accept	Reject	Date
Mtl. Handling/Storage	[illegible]		12/14/89
Material Packing	[illegible]		12/14/89

SCREEN

Type	Length	Slot Size
Johnson Div Type 304 Continuous	21'	10
Trac Channel Pack 4" S.S.	—	—

Depth(s) 220.0' - 241.0'

Inspection Method Visual
Acceptance Criteria Section 4.2.3
Accept [illegible] Reject Date 12/12/89

LUBRICANTS/ADDITIVES

Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	N/A	BNB		12/13/89
Lubricants	Chevron Poly FM-7	BNB		12/13/89

STRAIGHTNESS TEST

Inspection Method 21' long 7" dia. hoiler
Acceptance Criteria Section 8.3
Accept [illegible] Reject Date 12/15/89

CASING (permanent)

Type	Size	Placement,
Johnson Div. Type 304	4"	220.0-+3.3
Stainless Steel	—	—

Inspection Method Visual
Acceptance Criteria Section 4.2.4
Accept [illegible] Reject Date 12/13/89

WELL PROTECTION

Inspection Method Visual
Acceptance Criteria Section 4.2.9-4.2.10

	Accept	Reject	Date
Protective Posts	BNB		1/24/90
Locks			

ANNULAR SEAL

Inspection Method Visual / Steel Tape
Acceptance Criteria Section 4.2.6-4.2.9

Type	Interval	Volume	Accept	Reject	Date
Colorado Silica Sand (8-12 mesh)	241.8' - 216.7'	25.25 ft³	SPA		12/13/89
Volclay Tablets (1/4" and 3/8" dia)	216.7' - 212.5'	2.48 ft³	SPA		12/13/89
Dry Bentonite (8-30 mesh)	212.5' - 19'	132.77 ft³	[illegible]		12/14/89
Cement w/Gypsum	19' - 2'	12.54 ft³	[illegible]		12/14/89
Cement Pad	2' - 13.5'	1 yd³	[illegible]		1/7/90

OTHER (initial if performed)

N/A Well Abandonment
DRR Well Development
DRR Downhole TV Inspection
____ Complete As-Built Diagram, Driller's/Geologist's Logs

 For all blanks mark N/A if not applicable.

9413205.0374

9413205.0375

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-24

Geologist A. Pearson, T. Gilmore, S. Airhart, J. Woziewiez, E. Jensen, S. Teel, C. Condit, B. Bjornstad

Page 1 of 2

Reviewed by V. L. McGhan

Date Well Started: 11/21/89
Well Completed: 01/09/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
Cement Pad (+0.5'- 2.0')		5	○	(Samples not taken)
		10	○	(" " ")
12" dia. carbon steel casing (0' - 20.08') - removed		15	○	Gravelly Sand
		20	○	" "
Cement Grout (2.0' - 19.0')		25	○	Sand
		30	○	"
10" dia. carbon steel casing (0' - 156.08 ') - removed	DB	35	○	" (Silt Interbeds)
		40	○	" (Silt/Clay Interbeds)
8" dia. carbon steel casing (0' - 241.2') - removed		45	○	Slightly Gravelly Sand (Silt/Clay Interbeds)
		50	○	Gravelly Sand
Casing Centralizer		55	○	Muddy Sandy Gravel
Casing Joint		60	●	Sandy Gravel (trace Caliche)
		65	●	" "
4" dia. stainless steel final casing (+3.3' - 223.3')		70	●	" "
		75	●	" "
		80	●	" "
8-20 mesh Dry Bentonite (19.0' - 212.5')		85	●	" "
	HT	90	●	" "
		95	●	" "
		100	●	" "
		105	●	Muddy Sandy Gravel
DB = Drive Barrel		110	●	Slightly Muddy Sand
HT = Hard Tool		115	●	" " "
		120	●	" " "
		125	●	" " "
		130	●	Muddy Sand

A-1800-186 (3/87)

9413205.0376

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W15-24 Geologist A. Pearson, T. Gilmore, S. Airhart, J. Woziewiez, E. Jensen, S. Teel, C. Condit, B. Bjornstad Page 2 of 2

Reviewed by V. L. McGhan Date Well Started: 11/21/89 Well Completed: 01/09/90

Construction Data

Description

10" dia. carbon steel casing (0' - 156.08') - removed

8" dia. carbon steel casing (0' - 240.8') - removed

4" dia. stainless steel final casing (+3.3' - 223.3')

8-20 mesh Dry Bentonite (19.0' - 212.5')

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

DB = Drive Barrel
HT = Hard Tool

1/4"-3/8" Volclay Tablets (212.5 - 216.7')

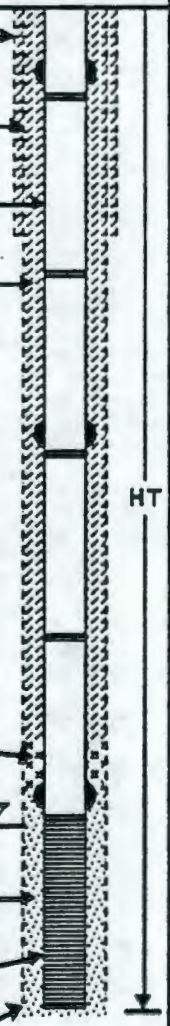
Static Water Table (221.3') - 12/05/89 -

8-12 mesh Colorado Silica Sand (216.7' - 241.8')

4" dia. stainless steel Johnson Channel Pack screen (220.0' - 241.0')

Bottom of well = 241.0'

Diagram



Geologic/Hydrologic Data

Depth in Feet	Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
135	●	Muddy Sand
140	●	" "
145	●	" "
150	●	Sandy Mud
155	●	" "
160	●	" "
165	●	" " (Contacted top of caliche' @ 165')
170	●	Muddy Sand
175	●	" "
180	●	" "
185	●	Gravelly Sand
190	●	Sandy Gravel
195	●	" "
200	●	" "
205	●	Slightly Gravelly Sand
210	●	Sandy Gravel
215	●	" "
220	●	Gravelly Sand
225	●	" "
230	●	Muddy Sandy Gravel
235	●	Gravelly Sand
240	●	Sandy Gravel
		TD= 241.8'

A-1800-186 (3/

WELL COMPLETION SUMMARY

Project CAC -798 AT (45-1) 1406 Midland
Location
Drilling Co.
Driller H.E. Osborn; Foreman, C.F. Davis
Other (companies)
Geologist(s)

Well No. 299-W18-2 Temp. Well No.
Coordinates
Elevation: Casing Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool
probably hard tool, 0-280
Drilling Fluid WATER
Other

COMPLETION DATA
Drilled Depth 280
Completed Depth 280
Date Started 10-16-58
Date Completed 11-14-58
Static Water Level/Date 210' / 11-13-58

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated	8'	78'	6 holes/ft	200' - 278'
6" SCREEN	6"	50'		205 - 255

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0 - 280'
			-

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
	-		
	-		
	-		
	-		

PUMP
Type Depth to Inlet Date Set

ACCEPTANCE
Completed Well: Accept Conditionally Accept
Reject

COMMENTS
Total 8" casing = 283', bottom set at 280'

Reviewed by Date Depths are below land surface unless noted.

9413205.0377

AS-BUILT DIAGRAM

Boring or Well Number 299-W18-2 Sheet 1 of 2
Location _____ Project _____

Logged by _____ Date Well Started 10-16-58
Reviewed by _____ Date _____ Date Well Completed 11-14-58

Well Construction Data — Description: CaCO3 data ✓; 12" casing, carbon steel, 0'-10' (?); 8" carbon steel casing 0'-280'

Geologic/Hydrologic Data — Drill Bit; Sample Method: Lithologs from Rockson

Depth in Feet	Lithologic Description
0	
5	Sand
10	"
15	Sandy Gravel
20	slightly gravelly, Sand
25	"
30	Sand
35	muddy, sandy Gravel
40	"
45	"
50	"
55	muddy Sand
60	
65	slightly muddy, gravelly, Sand
70	muddy, sandy Gravel
75	muddy Sand
80	"
85	"
90	slightly muddy Sand
95	"
100	"
105	muddy, Sandy Gravel
110	"
115	sandy Gravel
120	muddy, sandy Gravel
125	"
130	muddy Sand
135	sandy Mud
140	muddy, Sandy Gravel
145	"
150	"
155	Sand
160	slightly muddy Sand
165	Sand

Drill Bit/Sample Method Used: ☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive-Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0378

AS-BUILT DIAGRAM

Boring or Well Number 299-W18-2 Sheet 2 of 2
Location _____ Project _____

Logged by _____
Reviewed by _____ Date _____

Date Well Started 10-16-58
Date Well Completed 11-14-58

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description (Sample Method: Lithology from Erickson)
	165	
	170	slightly muddy gravelly Sand
8" Carbon steel casing (0-280')	175	muddy, Sandy Gravel
	180	"
	185	"
	190	"
	195	muddy Sand
	200	muddy, sandy Gravel
Lead Packer	205	"
	207	Slightly muddy Sand
	210	muddy, sandy Gravel
Static Water Table 210' (11/13/58)	215	"
	220	"
6" "Johnson" Screen (205-255')	225	"
	230	"
	235	"
	240	"
	245	driller's log: clay sand + gravel
	250	" "
Cement Plug	255	" "
	260	" : Gravel & Sand
Perforations in 8" casing 200-278'	265	muddy, sandy Gravel
	270	driller's log: clay, sand, boulders, gra
	275	" "
Sluff 255-280'	280	" Boulders, gravel, sand & cla
	285	
	290	
	295	
	300	
	305	
	310	
	315	
	320	
	325	
	330	

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0379

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Midland Drilling Co.
Driller K.G. Smith
Other (companies)
Geologist(s)

Well No. 299-W18-4 Temp. Well No.
Coordinates
Elevation: Casing Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Drive Barrel 0-145', Hand Tool 145'-280'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 280'
Completed Depth 280'
Date Started 1/13/59
Date Completed 2/9/59
Static Water Level/Date 211'/2/2/59

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	78'		200' - 278'
Johnson Screen w/ Packer (lead)	6"	57'		197' - 254'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	10"		0' - 47'
Carbon Steel	8"		0' - 200'
" "	8"		278' - 280'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement Grout	252' - 254'		
Wood Plug	252' - 254'		
Backfill / Slough	254' - 280'		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

6" Screen w/ Lead Packer, Cement Grout & Wood Plug set 6/10/67

Reviewed by Date Depths are below land surface unless noted.

9413205.0380

AS-BUILT DIAGRAM

Boring or Well Number 299-W18-4 Sheet 1 of 2

Location _____ Project _____

Logged by _____

Reviewed by _____ Date _____

Date Well Started 1/13/59

Date Well Completed 2/9/59

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Drillers Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
10" Carbon Steel Casing			5			Sand
0'-43'			10			"
			15			"
			20			"
			25			"
			30			"
			35			Gravel & Sand
			40			" "
			45			" "
			50			Sand
8" Carbon Steel Casing			55			"
0'-200'			60			"
			65			"
			70			"
			75			"
			80			"
			85			"
			90			"
			95			"
			100			"
			105			Sandy Silt
			110			" "
			115			Silt
			120			Sand & Gravel
			125			" "
			130			Sand
			135			Sandy Silt
			140			" "
			145			Gravel & Sand
			150			" "
			155			" "
			160			" "
			165			" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0381

AS-BUILT DIAGRAM

Boring or Well Number 299-W18-4 Sheet 2 of 2

Location _____ Project _____

Logged by _____ Date Well Started 1/13/59

Reviewed by _____ Date _____ Date Well Completed 2/9/59

Well Construction Data — Geologic/Hydrologic Data

Drill Bit — Sample Method — Data from Drillers Log

Description	Depth in Feet	Lithologic Description
8" Carbon Steel Casing 0'-200'	170	Sand
	175	Silt
	180	Sand
	185	Gravel & Sand
	190	Cobbles, Gravels & Sand
	195	" " "
Lead Packer	200	" " "
	205	" " "
	210	Sand
	215	"
Perforated 8" Carbon Steel Casing 200'-278'	220	Gravel & Sand
	225	Cobbles, Gravel & Sand
	230	" " "
6" Johnson Screen 197'-254'	235	" " "
	240	" " "
	245	Cobbles, Clay, Gravel & Sand
Wood Plug & Cement Grout 252'-254'	250	" " " "
	255	" " " "
Backfill/Slough 254'-280'	260	Cobbles, Gravel & Sand
	265	Clay, Cobbles, Gravel, & Sand
	270	" " " "
	275	" " " "
8" Carbon Steel Casing 278'-280'	280	" " " "
		TD=280'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0382

WELL COMPLETION SUMMARY

Project CT-1809, JAJ1349
Location 216-Z-12
Drilling Co.
Driller John G., L. Bultena
Other (companies)
Geologist(s)

Well No. 299-W18-18 Temp. Well No.
Coordinates N 38903 W 76270
Elevation: Casing Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool Rig
Hard Tool 0'-265'
Drilling Fluid
Other

COMPLETION DATA
Drilled Depth 265'
Completed Depth 204'
Date Started 8/3/81
Date Completed 9/11/81
Static Water Level/Date 205 / 9/28/81
1661 2/14/84

OTHER (check if performed)
- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ✓ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations 2cuts/ft	8"	10'	—	215' - 225'
Perforations 4cuts/round/ft	8"	35'		165' - 210'
~~Telescoping stainless steel screen~~	~~3"~~	~~30'10"~~	~~10~~	~~133' 164'~~

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	12"		0' - 20'

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 265'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement Grout	0' - 20'	6 sacks	35 gals
Cement Grout	262' - 265'	2 sacks	15 gals
Backfill (Sand)	204' - 262'		

PUMP
Type submersible 3/4 hp Depth to Inlet 201' Date Set 2/15/84

ACCEPTANCE
Completed Well: Accept ___ Conditionally Accept ___
Reject ___

COMMENTS
Lost Dart Bailer in Well 245'-260'

Reviewed by ___ Date ___ Depths are below land surface unless noted.

9413205.0383

AS-BUILT DIAGRAM

Boring or Well Number 299-W18-18 Sheet 1 of 2
Location 216-Z-12 Project CT-1809 . JAJ1349

Logged by Driller: John G., L. Bultena
Reviewed by _____ Date _____

Date Well Started 8/3/81 | Modified 2/10/84
Date Well Completed 9/11/81 2/15/84

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Drillers Logs
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
20' of 12" Carbon Steel			0			
Casing (0'-20') temporary			5			Sand + Gravel
Cement Grout Surface Seal			10			" "
(0'-20')			15			" "
265' of 8" Carbon Steel			20			Loose Gravel (@ 17')
Casing (0'-265')			25			" "
			30			" "
			35			" "
			40			" "
			45			" " (Green)
			50			Sand (45'-48') Gravel (Greenish Gray + Brown)
			55			" " "
			60			Sandstone + Gravel
			65			" "
			70			" "
			75			Sand (@ 73')
			80			"
			85			"
			90			"
			95			"
			100			"
			105			"
			110			"
			115			"
			120			"
			125			"
			130			"
			135			"
			140			Clay (Brown)
			145			" (White)
			150			Rinsold (@ 46')
			155			"
			160			"
			165			Sand (heaving @ 163')

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ·O Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0384

AS-BUILT DIAGRAM

Boring or Well Number 299-W18-18 Sheet 2 of 2
Location 216-Z-12 Project CT-1809 JAJ 1349

Logged by Driller: John G., L. Bultena
Reviewed by _____ Date _____

Date Well Started 8/3/81 Modified 2/10/84
Date Well Completed 9/12/81 2/15/84

Well Construction Data: Description	Construction Diagram	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram	Lithologic Description
265' of 8" Carbon Steel Casing (0'-265')		165		
		170		Sand & Gravel (heaving)
		175		Ringold
		180		"
		185		"
20'10" Telescoping Stainless Steel 10 slot Screen (153'-204')		190		Sand - gravel mix
		195		Ringold
		200		"
		205		" (f. sand)
Perforations 4 holes/rd/ft (185'-210')		210		" & f. Sand layer
		215		Ringold Sand mix (coarse)
Perforations 2 holes/ft (215'-225')		220		Sand & sm gravel (heaving)
		225		Gravel (1½" minus)
Backfill (Sand) (204'-262')		230		Sand (fine grained)
		235		" " "
		240		" " "
		245		" " "
4.5" x 15' Dart Bailer (lost in well) (245'-260')		250		"
		255		"
		260		Cobbles & Gravel
Cement Grout (262'-265')		265		" "
		270		Final Drilled Depth = 265'
		275		
Final Completion Depth = 204'		280		
		285		
		290		
		295		
		300		
		305		
		310		
		315		
		320		
		325		
		330		

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0385

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project: 200 West Area RCRA Well Drilling
Location: Hanford Site 200 West Area
Driller: Darrel Ludtke (Ludtke)
Drilling Co.: Onwego Drilling
Geologist: K Oster, SP Airhart, T Gilmore, SS Teel, JS Wilbur, GV Last

Well Number: 299-W18-21
Temporary Well Number: none
Coordinates: N. 37,794 W. 78,080
Casing Elevation: 668.62
Ground Elevation: 666.50

DRILLING METHOD

Rotary. Air ____ Mud ____
Cable Tool D 0'-40' H 40'-227'
Drilling Fluid: Water
Other ____

COMPLETION DATA

Drilled Depth: 227'
Completion Depth: 226.3'
Date Started: 6/2/87 Completed: 7/29/87
Static Water Level/Date: 197'6" 7/7/87

CASING DATA

Type	Size	
Type 304 Stainless Steel Casing	4" diameter	to 195.5'
		to
		to

Approved By: S.P. Airhart Date: 1/5/88

PERFORATIONS

Type: —

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

Telescoping

	8" dia. type 304SS	4" dia. type 304SS
Type	continuous Wrap	continuous Wrap
Length	10'	30'
Slot Size	30	20
Depths	215.5'- 225.5'	195.5'- 225.5'

App. By: S.P. Airhart Date: 1/5/88

ANNULAR SEAL

Type	Interval	Volume
Sand	187'4"-227'8"	11.86 ft³
Volclay pellets	185'8"-187'4"	1.44 ft³
Volclay grout	3'-185'8"	153.74 ft³
Concrete	0'-3'	4.08 ft³

App. By: S.P. Airhart Date: 1/5/88

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Neutron	0'-227'	7/8/87
Density	0'-227'	7/8/87
Natural Gamma	0'-227'	7/8/87
	-	
	-	
	-	
	-	

Approved By: J.S. Wilbur Date: 7/8/87

AQUIFER TESTING

Type of Test: Constant Discharge Test
Length of Test: 8 hrs
Volume Pumped: 27,000 gals
Drawdown: ~~205'~~ 17.89

Approved By: J.S. Wilbur Date: 7/14/87

OTHER APPLICABLE ITEMS

- (N/A) Steam Cleaning
- (N/A) Storage of Const. Material
- (N/A) Tool Lubricants
- (N/A) Concrete Pad
- (N/A) Protective Steel Posts
- (N/A) Safety Paint
- (N/A) Straightness Test
- (N/A) Well Development
- (N/A) Downhole TV Inspection
- (N/A) Well Abandonment
- (N/A) Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By: J.S. Wilbur Date: ____

Reviewed By: D.L. McBlum Date: 1-8-88

A-1800-187 (3/87)

9413205.0386

9413205.0387

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-21 Geologist OSTER; AIRHART; GILMORE TEEL; WILBUR; LAST Page 1 of 2

Reviewed by [illegible] Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
16" Temporary Carbon Steel Casing	19'3"	5		SAND
12" Temporary Carbon Steel Casing		10		SANDY SILT AND CLAY LENS @ 9' SAND
10" Temporary Carbon Steel Casing		15		(Wood sample taken @ 15.5')
8" Temporary Carbon Steel Casing		20		GRAVELLY SAND (Silty sand lense @ 22')
4" Stainless Steel Casing		25	C.S. F.S.	SAND contact between C.S and F.S.
		30		
		35		GRAVELLY SAND
		40		SLIGHTLY GRAVELLY SAND (contact @ 42')
		45		SANDY GRAVEL
		50		SILTY SANDY GRAVEL
		55		GRAVEL
		60		SILTY SANDY GRAVEL
		65		(contact @ 68')
		70		SILTY SAND
		75		
		80		
	85'4"	85		
		90		
		95		
		100		
		105		CLAYEY SILTY SAND
		110		
		115		SILTY SAND
		120		SLIGHTLY SILTY SAND
		125		CLAYEY SILTY SAND
		130		

A-1800-186 (3/87)

□ - caliche
● - gravel w/ weathering rind

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-21 Geologist OSTER; AIRHART; GILMORE ~~TEEL~~; WILBUR; ~~LAST~~ Page 2 of 2

Reviewed by V.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		CLAYEY SILTY SAND
		140		
		145		SILTY SANDY GRAVEL
		150		
		155		
		160		
	164'10"	165		SANDY GRAVEL
		170		SILTY SANDY GRAVEL
Top of volclay pellets 185'9"		175		SANDY GRAVEL
		180		
Top of 20/30 sand pack 187'4"		185		
		190		
	195.5' 188.5'	195		GRAVELLY SILTY SAND
		200		
30' of 4" 20-slot s.s.		205		SANDY GRAVEL
screen (195.5'-225.5')		210		GRAVELLY SAND
		215		SILTY GRAVELLY SAND
		220		
10' of 8" telescoping screen	225.5'	225		
		230		

A-1800-186 (3/1)

9413205.0388

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project: 200 West RCRA Well Drilling
Location: Hanford Site 200 West
Driller: Kelly Olsen
Drilling Co.: Onweso Drilling
Geologist: K Oster, SP Airhart, SS Teel, K Bishop, T Gilmore, JS Wilbur

Well Number: 299-W18-22
Temporary Well Number: none
Coordinates: ~~W.38~~, N. 37,837 W. 78,109
Casing Elevation: 668.49
Ground Elevation: 666.49

DRILLING METHOD

Rotary Air ____ Mud ____
Cable Tool D ____ H 0'-455'
Drilling Fluid: Water
Other ____

COMPLETION DATA

Drilled Depth: 455
Completion Depth: 447'
Date Started: 6/12/87 Completed: 9/25/87
Static Water Level/Date: 198.99 8/27/87

CASING DATA

Type	Size	
Type 304 Stainless Steel Casing	4" diameter +2.01'	to 416.5'
		to
		to

Approved By: S.P. Airhart Date: 10/1/87

PERFORATIONS

Type: —

Depth	Schedule
-	
-	
-	

App. By ____ Date ____

SCREEN

	Telescoping 8" diameter type 304SS	4" dia. type 304SS
Type	Continuous Wrap	Continuous Wrap
Length	10'	31'
Slot Size	30	20
Depths	437.5'-	416.5'-
	447.5'	447.5'

App. By: S.P. Airhart Date: 10/1/87

ANNULAR SEAL

Type	Interval	Volume
COARSE SAND ~~FILTER SAND~~	410'-455'	15.84 ft³
VOLCLAY PELLETS	404'-410'	2.05 ft³
VOLCLAY GROUT	189'-404'	294.11 ft³
BENTONITE DRY + BENTONITE SLURRY	3'-189'	879.47 ~~788.74~~ ft³ SPA
CONCRETE	0'-3'	

App. By: S.P. Airhart Date: 10/1/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Neutron	0'-455'	8/12/87
Density	0'-455'	"
Natural Gamma	0'-455'	"
	-	
	-	
	-	
	-	

Approved By: JS Wilbur Date: 8/12/87

AQUIFER TESTING

Type of Test: Constant Discharge Test
Length of Test: 8 hrs.
Volume Pumped: 24,500 gal
Drawdown: 74.62

Approved By: JS Wilbur Date: 8/26/87

OTHER APPLICABLE ITEMS

- (N/A) Steam Cleaning
- (N/A) Storage of Const. Material
- (N/A) Tool Lubricants
- (N/A) Concrete Pad
- (N/A) Protective Steel Posts
- (N/A) Safety Paint
- (N/A) Straightness Test
- (N/A) Well Development
- (N/A) Downhole TV Inspection
- (N/A) Well Abandonment
- (N/A) Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By: JS Wilbur Date: 9/5/87

Reviewed By: D.L. McKenna Date: 1-8-88

A-1800-187 (3/87)

9413205.0389

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-22 Geologist K. Oster, S. Archart, T. Gilmore, S. Teel, S. Wilbur Page 1 of 4

Reviewed by T.L. McKlem Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete surface seal (0'-3')		5'		Sand
Dry bentonite (3'-15')		10'		Sand
(0'-50'6") 20" dia. Carbon Steel Casing		15'		Sand
(0'-150'1") 16" dia. Carbon Steel Casing		20'		
(0'-250'11") 12" dia. Carbon Steel Casing		25'		Sandy Gravel
(0'-342'6") 10" dia. Carbon Steel Casing		30'		Slightly Silty Sand
(0'-453'1½") 8" dia. Carbon Steel Casing		35'		
NOTE: All Carbon Steel		40'		Slightly Gravelly Sand
Casing removed.		45'		Sandy Gravel
		50'		Silty Sandy Gravel
4" dia. Stainless Steel Casing		55'		Sandy Gravel
		60'		Gravel
		65'		Sandy Gravel
		70'		Slightly Silty Gravel
		75'		
		80'		Silty Sand
Bentonite Slurry (15'-105')		85		
		90'		
		95'		Sandy Silt
		100'		Sandy Silt/clay
		105'		
		110'		
		115'		Silty/Clayey Sand
		120'		Sandy Silt
		125'		
		130		

A-1800-188 (3/87)

9413205.0390

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-22 Geologist K. Oster, S. Airhart, T. Gilmore, S. Teel, S. Wilbur Page 2 of 4

Reviewed by D. L. McElhaney Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135'		Silt
		140'		Gravelly Sandy Silt/Clay
		145'		
		150'		Silty Sandy Gravel
		155'		Sandy Gravel
		160'		Silty Sandy Gravel
		165'		
		170'		
		175'		
		180'		Sandy Gravel
		185'		
		190'		
		195'		Gravelly Silty Sand
Volclay Grout		200'		Silty Sandy Gravel
(183'-404')	198.28 4/12/87	205'		Silty (Clayey) Sandy Gravel
		210'		Silty Sandy Gravel
		215'		
		220'		
		225'		
		230'		
		235'		
		240'		silty Gravelly Sand
		245'		
		250'		Gravelly Sand
		255'		Slightly Silty Gravelly Sand
		260'		slightly Gravelly Silty Sand

A-1800-186 (3/87)

9413205.0391

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AS-BUILT DIAGRAM

Well Number 299-W18-22 Geologist K. Oster, S. Airhard, T. Gilmore, S. Teel, J.S. Wilbur Page 3 of 4

Reviewed by D.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		265'		Slightly Gravelly Silty Sand
		270'		Slightly gravelly slightly silty sand
		275'		
		280'		Slightly Gravelly Sand
		285'		Gravelly Sand
		290'		Slightly Gravelly Silty Sand
		295'		Gravelly Silty/Clayey Sand
		300'		Silty Gravelly Sand
		305'		
		310'		Silty/Clayey Gravelly Sand
		315'		
		320'		
		325'		
		330'		
		335'		Gravelly Silty Sand
		340'		Gravelly Sand
		345'		Silty Gravelly Sand
		350'		
		355'		
		360'		Gravelly Silty Sand
		365'		
		370'		
		375'		
		380'		
		385'		
		390'		Silty Sand

A-1800-186 (3/87)

9413205.0392

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-22 Geologist K. Oster, S. Airhart, T. Gilmore, S. Teel, J.S. Wilbur Page 4 of 4

Reviewed by W.L. McKhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		395'		Silty Sand
		400'		
		405'		
Volclay Pellets (400'-410')		410'		
		415'		
10-20 mesh Colorado Silica Sand (410'-455')		420'		Slightly Gravelly Silty Sand
		425'		
4" 20 slot S.S. screen (416.5-447.5)		430'		
		435'		Silty Gravelly Sand
		440'		
8" S.S. telescoping screen (437.5-447.5')		445'		Silty Gravelly Sand
		447'		Brownish/Gray Clay
		450'		Slightly Gravelly Sand Clay
Back filled w/ sand		455'		Clay
Depth to bottom of hole @ 455'				

A-1800-186 (3/87)

9413205.0393

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project KEH-1914
Location 200 WEST AREA
Driller DAVE GARCIA
Drilling Co. ONWEGO
Geologist S.P. AIRHART

Well Number 299-W18-23
Temporary Well Number NA
Coordinates N. 38,987 W. 78,120
Casing Elevation 696.81
Ground Elevation 694.75

DRILLING METHOD

Rotary Air NA Mud NA
Cable Tool D 0'-63' H 63'-255'
Drilling Fluid H_2O
Other ——

COMPLETION DATA

Drilled Depth 255'
Completion Depth 251'
Date Started 5-20-87 Completed 7-1-87
Static Water Level/Date 224' / 6-12-87

CASING DATA

Type	Size		
Schedule 40 Carbon Steel	12" diameter	to	62'4"
Schedule 40 Carbon Steel	10" diameter	to	145'6"
Schedule 40 Carbon Steel	8" diameter	to	255'
Schedule 5 Stainless Steel 4" diameter +2.1' - 220'4"	Approved By G.S.W	Date	12/30/87

PERFORATIONS

Type NA

Depth	Schedule
— - —	—
— - —	—
— - —	—

App. By ____ Date ____

SCREEN

Type	8" Continuous wrap Telescoping	4" continuous wrap
Length	10'3"	30'8½"
Slot Size	~~40~~ 30	20
Depths	241'-251'	220'4"-251'
	—	—

App. By G.S.W Date 12/30/87

ANNULAR SEAL

Type	Interval	Volume
20-30 silica sand	255'-255'	15 ft³
Volclay Tablets	210'-215'9"	4 ft³
Volclay Grout	3'-210'	185 ft³
Pre-mix Concrete	0'-3'	123 ft³

App. By G.S.W Date 12/30/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Nat Gamma	— - —	6-15-87
gamma-gamma	— - —	6-15-87
neutron	— - —	6-15-87
	— - —	
	— - —	
	— - —	
	— - —	

Approved By G.S.W Date 6/15/87

AQUIFER TESTING

Type of Test Continuous drawdown / recovery
Length of Test 5 hr. drawdown / 1 hr. recovery
Volume Pumped 52,800 gals
Drawdown 2.62'

Approved By G.S.W Date 12/30/87

OTHER APPLICABLE ITEMS

- ✓ Steam Cleaning
- ✓ Storage of Const. Material
- ✓ Tool Lubricants
- ✓ Concrete Pad
- ✓ Protective Steel Posts
- — Safety Paint
- ✓ Straightness Test
- ✓ Well Development
- ✓ Downhole TV Inspection
- NA Well Abandonment
- ✓ Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By G.S. Wil Date ____

Reviewed By W.R. McGhan Date 1-8-88

A-1800-187 (2/87)

9413205.0394

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-23 Geologist S.P. AIRHART Page 1 of 2

Reviewed by [illegible] Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
2.1' STICKUP ABOVE PAD				
Concrete Surface Seal 0'-3'		5		SILTY GRAVELLY SAND
		10		
12" Temporary Carbon Steel Casing		15		GRAVELLY SAND
10" Temporary Carbon Steel Casing		20		SLIGHTLY SILTY SAND
8" Temporary Carbon Steel Casing		25		SILTY SAND
4" Stainless Steel Casing		30		
		35		SLIGHTLY GRAVELLY SILTY SAND
		40		SILTY SAND
		45		SLIGHTLY GRAVELLY SILTY SAND
		50		SILTY SAND
		55		SILTY SANDY GRAVEL
		60		SILTY GRAVELLY SAND
62'4"		65		SILTY SANDY GRAVEL
		70		
		75		
Volclay Grout		80		
		85		
		90		
		95		
		100		
		105		
		110		GRAVELLY SILTY SAND
		115		
		120		SLIGHTLY GRAVELLY SILTY SAND
		125		
		130		SILTY SAND

A-1800-198 (3/87)

9413205.0395

9413205.0396

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Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-23 Geologist S. P. AIRHART Page 2 of 2

Reviewed by V. E. McKlem Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		135		SILTY SAND
		140		
		145		
145' 6"		150		SANDY SILT / CLAY
		155		
		160		SILT/CLAY W/ SAND
		165		SLIGHTLY GRAVELLY SILT/CLAY
		170		SLIGHTLY GRAVELLY SILTY/CLAYEY SAND
		175		SILTY SAND
		180		
		185		SILTY SANDY GRAVEL
Volclay Grout		190		SANDY GRAVEL
		195		
		200		
		205		
	210'	210		
Volclay Tablets	215'	215		
Centralizers	220'4"	220		
6-12-87 ▽		225		
20'8" of 9" 20-slot stainless steel screen		230		
		235		SILTY GRAVELLY SAND
		240		SILTY/CLAYEY SANDY GRAVEL
		245		SANDY GRAVEL
10'3" of 8" 40-slot stainless steel telescoping screen	251'	250		SILTY SANDY GRAVEL
	255'	255		SILTY GRAVELLY SAND
20-30 mesh Colorado Silica Sand		260		

□ → CALICHE

A-1800-186 (3/87)

Battelle
Pacific Northwest Laboratories

Well Completion Report/Title III Inspection List

Project: Low Level Burial Ground RCRA Wells
Location: 200 West Area
Driller: Russ Vance
Drilling Co.: Onaveco Drilling
Geologist: J.S. Wilbur

Well Number: 299-W18-24
Temporary Well Number: NA
Coordinates: N38,998 W77,180
Casing Elevation: 684.35
Ground Elevation: 682.18

DRILLING METHOD

Rotary Air: NA Mud: NA
Cable Tool: D 0'-40'; 75'-112' H 45'-70'; 175'-240'
Drilling Fluid: H_2O
Other: —

COMPLETION DATA

Drilled Depth: 239' 11"
Completion Depth: 235.5'
Date Started: 5/20/87 Completed: 8/11/87
Static Water Level/Date: 211.8' 7/9/87

CASING DATA

Type	Size		
Schedule 40 Carbon Steel	16"	to	0-10.5'
Schedule 40 Carbon Steel	12"	to	0-70.2'
Schedule 40 Carbon Steel	10"	to	0-153.2'
Schedule 40 Carbon Steel	8"		0-240'

Approved By: _____ Date: _____

PERFORATIONS

Type: NA

Depth	Schedule
—	—
—	—
—	—

App. By: — Date: —

SCREEN

	4" diameter continuous wrap	8" dia. continuous wrap
Type	Stainless Steel	Stainless Steel
Length	30'	10'
Slot Size	20	30
Depths	205.5'	~~240~~ 230'
	235.5	~~235~~ 240'

App. By: J.S.W. Date: 8/11/87

ANNULAR SEAL

Type	Interval	Volume
Sand	198.-240'.	13.5 ft³
Volclay pellets	198'-191	4.5 ft³
Volclay grout	5'-191'	288.75 ft³
Cement seal	0-5'	15.0 ft³

App. By: J.S.W. Date: 8/11/87

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Neutron	0'-240'	7/9/87
Gamma-Gamma	0'-240'	7/9/87
Natural Gamma	0'-240'	7/9/87
	—	
	—	
	—	
	—	

Approved By: J.S.W. Date: 7/9/87

AQUIFER TESTING

Type of Test: Constant Discharge
Length of Test: 7.5 hr
Volume Pumped: * 45,000 gals. □ 48,300 gals.
Drawdown: 1.68 ft'

* test discharge volume
□ total volume discharge test + development

Approved By: J.S.W. Date: 7/17/87

OTHER APPLICABLE ITEMS

- ✓ Steam Cleaning
- ✓ Storage of Const. Material
- ✓ Tool Lubricants
- ✓ Concrete Pad
- ✓ Protective Steel Posts
- ✓ Safety Paint
- ✓ Straightness Test
- ✓ Well Development
- ~~✓~~ Downhole TV Inspection
- NA Well Abandonment
- ✓ Complete As-Built Diagram, Driller's and Geologist's Logs

Approved By: J.S.W. Date: 8/15/87

Reviewed By: D.L. McKhann Date: 1-8-88

A-1800-187 (3/87)

9413205.0397

9413205.0398

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-24 Geologist J.S. Wilbur Page 1 of 2

Reviewed by D.L. McGhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Starter casing 10.5' Section of 16" carbon steel pipe		5		SLIGHTLY SILTY SAND
		10		SLIGHTLY SILTY SAND
		15		SLIGHTLY SILTY SAND
		17		SLIGHTLY GRAVELY SAND
		20		SAND
		25		SAND
		30		SAND
		35		SAND
		38		GRAVELY SAND
		40		GRAVELY SAND
		45		SLIGHTLY GRAVELY SAND
		50		SLIGHTLY SILTY SLIGHTY GRAVELY SAND
		55		SLIGHTLY SILTY GRAVELY SAND
		60		SLIGHTLY SILTY GRAVELY SAND
		65		SAND
70.2' of 12" carbon steel casing		70'		SAND
		75'		SAND
		80'		SLIGHT SILTY GRAVELLY SAND
		85'		SLIGHT SILTY SAND
		90'		SILTY SAND
		95'		SILTY SAND
		100'		SILTY SAND
		110'		SILTY SAND
		112'		SANDY GRAVEL
		115'		SANDY GRAVEL
		120'		GRAVEL

A-1800-168 (3/8)

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-24 Geologist J.S. Wilbur Page 2 of 2

Reviewed by W.L. McKhan Date 1-8-88

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		125'		SANDY GRAVEL
		130'		SANDY GRAVEL
		135'		SILTY SAND
		140'		SILTY SAND
		145'		SILTY SAND
		150'		SANDY GRAVEL
T/D of 10" - 153' 10"		155'		SANDY GRAVEL
		160'		SAND
		165'		SAND
		170'		SANDY GRAVEL
		175'		SLIGHTLY SILTY SANDY GRAVEL
		180'		SLIGHTLY SILTY SANDY GRAVEL
		185'		SLIGHTLY SILTY SANDY GRAVEL
		190'		SANDY GRAVEL
Top of bolclay pellets 191.6'	191.6'	195'		SILTY SANDY GRAVEL
Top of sand @ 198.2'	198.2'	200'		SILTY SANDY GRAVEL
Top of 4" SS screen @ 205.5'		205'		SANDY GRAVEL
H2O Level @ 211.8' from		210'		GRAVELLY SILTY SAND
ground surface		215'		SLIGHTLY SANDY GRAVEL
		220'		SANDY GRAVEL
B/B of 4" SS casing @ 235.5'		225'		SANDY GRAVEL
8" telescoping screen 240'-230'		230'		SANDY GRAVEL
		235'		SANDY GRAVEL
T/B 240' of 8" Carbon Steel		240'		SANDY GRAVEL
casing				

A-1800-186 (3/87)

9413205.0399

Incorporated into Rev. 5 12/13/90

WELL CONSTRUCTION REPORT

VALIDATED 1/17/92 SIGNATURE/DATE

Specification No. WHC-S-014 Rev No. ~~3~~ 4 5

ECNs 146188 144233 146189 144236 144234 144231 144230 124343 144435 144232 123261 124427 113823, 144229, 144241, 144242

Project W-017 SST

Location U tank farm, 200-W Area

Drilling Company KEH

Driller Gary Lydin, William Peters, Louis Watkins, Mel Thoresen, Gene Thomas

Other (Companies) N/A

Geologist(s) SP Airhart, AW Pearson, SS Teal, GRC Barton, MA Chimness, TJ Gilmore, CD Delaney, DC Weekes, JA Lomes

Well No. 299-W15-20 Temp. Well No. N/A

Coordinates N: 154,976.32 W: 566,721.49

Casing Elev. 666.04 Ground Elev. 667.02

Drilling Method

Verification Method Visual observation

Criteria WHC-S-014 5.2, 5.3, 7.5 ETF 7 sec. 6.2

		Initials	Date
Rotary	Air N/A Mud N/A		
Cable Tool	D 0-1373' HT 1373-2415'	KR	12/5/90
Drilling Fluid	Raw water from 200 E	KR	12/5/90
Other	N/A		

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	136.0'-3.4'	10/29/90
Gross Gamma	214.6-130.0'	11/29/90

Completion Data

Drilled Depth 215.35'

Completed Depth 214.8'

Date Started 11/5/90

Date Completed 12/11/90

Static Water Level/Date Preconstruction: 193.37

193.79' 12/12/90

Aquifer Testing

Type SLUG INJECTION & WITHDRAWAL

Flow Meter I.D. No. N/A

Cal. Due Date N/A

Length of Test 21 min TOTAL

Volume Pumped N/A

Drawdown N/A

Date of Test 12/12/90

Completion Results

Cleaning

Verification Method visual - direct observ. of drill rig cleaning

Criteria WHC-S-014 7.6 ETF 7.1

	Initials	Date
Drilling Tools/Rig	RCM	11/7/89, 10/10/90
Temporary Materials	RCM	11/7/89, 10/10/-
Permanent Materials		12/1/90

Screen

Type	Length	Slot Size
4" Johnson Continuous	21.50	0.010 in.

Depth(s) 214.8' - 193.5'

Verification Method Verify using steel tape

Criteria WHC-S-014 ETF 7.2

Initials Date 12/1/90

Material Storage/Packing

Verification Method Visual observation

Criteria WHC-S-014: 4.2.2 2.3

	Initials	Date
Mtl. Handling/Storage		12/1/90
Material Packing		12/1/90

Lubricants/Additives

Verification Method Visual observation

Criteria WHC-S-014: ETF 7.2

	Identify	Initials	Date
Additives	Raw water	KDR	12/5/90
Lubricants	Nail Grease	DWP	10/30/90

Straightness Test

Verification Method Visual observation

Criteria WHC-S-014: ETF 7.2 11/16/90

Initials WCE Date 11/16/90

A-6000-435 (09/90)

9413205.0400

WELL CONSTRUCTION REPORT
(continuation sheet)

Well # 299-W18-25

Casing (permanent)

Type	Size	Placement
Ss 304 Sch 5 ATTG	4"	193.5' - TAGS

Verification Method: verify using steel tape

Criteria: WHC-S-014: 4.2.1, 4.2.4, 4.2.5

Initials: [illegible] Date: 12/1/90

Well Protection

Verification Method: visual observation

Criteria: WHC-S-014: ~~[illegible]~~ 4.2.10 CJ 11/10/90

	Initials	Date
Protective Posts	[illegible]	12/13/91
Protective Casing	[illegible]	12/13/91
Site Restored	[illegible]	12/13/91
Cap, Hasp and Lock	[illegible]	12/13/91
Surface Pad	[illegible]	12/18/91

Annular Seal/Filter Pack

Verification Method: Steel tape

Criteria: WHC-S-014: ~~[illegible]~~ 4.2.6, 4.2.7, 4.2.8, 4.2.9 CJ 11/10/90

Type	Interval	Volume	Initials	Date
8-12 mesh Colorado Silica Sand	214.5' - 189.6'	8.5 (100# sacks of sand) 8.71 ft³	[illegible]	12/7/90
Bentonite Pellets (1/4" to 1/2" dia.)	189.6' - 185.8'	19 (50# buckets) 11.79 ft³	KDR 1/16/91 [illegible]	12/7/90
*8-20 mesh Bentonite Crumbles	185.8' - 143.4'	55 (50# sacks) 39.052 ft³	[illegible]	12/11/90
Pre Cold Bentonite Grout	143.4' - 143.0'	2.2 sacks - 23 gallons of water	[illegible]	12/11/90

Well Survey/Labeling

Verification Method: records inspection

Criteria: WHC-S-014: 3.4

	Initials	Date
Measurement Point/Surveyed	[illegible]	12/13/91
Protective Casing/Brass Cap Surveyed	[illegible]	12/13/91
Well Number Stenciled	[illegible]	12/13/91
Brass Cap Labeled	[illegible]	12/13/91

Pump Installation

Verification Method: VISUAL OBSERVATION

Criteria: WHC-S-014: 4.2.11, 5.3.1

	Initials	Date
Pump Decon/Prep	[illegible]	12/20/91
Installed	[illegible]	12/20/91
Pump Tested	[illegible]	12/20/91

Other (initial if performed)

N/A Well Abandonment — N/A Downhole TV Inspection — [illegible] Complete As-Built Diagram, Driller's/Geologist's Logs

[illegible] Well Development

Comments/Remarks:

**Tile Plug Bentonite Chunks	143'-127.9'	10 (50# sacks)	[illegible] 12/11/90
8-20 mesh Bentonite Crumbles	127.9'-19.9'	97 (50# sacks)	[illegible] 12/11/90
Portland cement	19.9'-2.2'	23.9 ft³ (sacks)	[illegible] 12/11/90

Reviewed By (Sign/Print Name): [illegible] Date: 12/13/91

A-6000-436 (09/90)

9413205.0401

WELL SUMMARY SHEET

Boring or Well No. 299-W18-25

Sheet 1 of 5

Location 299-W18-25, U Tank Farm
Project W-017 SST
Elevation 663.03 BASIS GLP (NAVD'29)
Drilling Contractor KGH
Driller Gary Lydin Louis Hutchins
Drilling Method and Equipment Cable Tool
Prepared By M.A. Chamness K.D. Barton AW Pearson C.D. (Sign/Print Name) Date 11/10/90
Reviewed By [illegible] (Sign/Print Name) Date 11/21/90

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
		2.0		Sand
		5		
10" Carbon Steel Casing		10		Si. Gravelly Sand
136.96' - +1.7' (TEMPORARY)		15		Sandy Gravel
CEMENT GROUT		19.9 20		" "
		25		Sand
GRANULAR BENTONITE #9-20 MESH		30		"
		35		Sand
		40		"
		45		"
		50		"
		55		"
4" Ø STAINLESS STEEL CASING		60		"
		65		"
		70		"
		75		"
		80		"
		85		"
		90		"
		95		"
		100		"
		105		"
		110		"
		115		"
		120		SILTY SAND
		125		" "
10" Ø CS CSG		129.9 130		SANDY SILT
HOLE PLUG BENTONITE CHUNKS		135		SILT TO SANDY SILT [illegible]
PURE GOLD BENTONITE GROUT		140		SILTY SANDY GRAVEL
2" carbon steel casing		145		" " "
2:5.01 - +3.0		150		" " "
(TEMPORARY)		155		" " "
		160		" " "
GRANULAR BENTONITE #9-20 MESH		SST		

2-6000-384 (04/90)

9413205.0402

WELL SUMMARY SHEET

Boring or Well No. 299-W18-25

Sheet 2 of 2

Location West side of 11 Tank Farm

Project 11-017 SST

Elevation 1663.03 BRASS CAP (NGVD '29)

Drilling Contractor KEH

Driller Gary Luden, Louie Watkins

Drilling Method and Equipment Cable tool

Prepared By NA Chamness KB Burton AW Pearson (Sign/Print Name) Date 11/16/90

Reviewed By [illegible] (Sign/Print Name) Date 11/20/90

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
8" Ø TEMPORARY CASING STEEL		170		SILTY SANDY GRAVEL
CASING [illegible] 215.01' -				" " "
77.0' BLS		175		SILTY SANDY GRAVEL
BENTONITE PELLETS 1/4" TO 1/2"		180		" " "
		185		SANDY GRAVEL
		190		
8-12 MESH SILICA SAND PACK	195.39 WL	195		" "
		200		SILTY SANDY GRAVEL
		205		Silty sandy gravel
4" I.D. TYPE 304 STAINLESS		210		
STEEL CHANNEL PACK SCREEN		215		Silty sandy gravel
	TD 214.85' 11/16/90			

2-6000-184 04-90

9413205.0403

Page 1 of 2

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, R0)

Specification No. WHC-S-014 Rev. No. 3
Project W-017 LLBG
Location 200 West Area
Drilling Co. Basin and Range
Driller Len Cordon
Other (companies) N/A
Geologist(s) S. Teel, M. Birch, B. Borlestad, T. Gilmore, E. Jensen, C. Chamness, S. Brandenberger, S. Airhart

Well No. 299-W18-26 Temp. Well No. W4-MW5
Coordinates N 39,477.1' W 78,096.6'
Casing Elev. 699.05' ~~Ground~~ Brass Cap Elev. 696.03'

DRILLING METHOD
Rotary - Air N/A Mud N/A
Cable Tool D 0-57' 112'-155', H 57-112', 155'-250'
Drilling Fluid 200 West Water Supply
Other N/A

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Gamma Ray	245 - 2'	9-27-89
Caliper	232.7 - 1.9'	10/23/89
	-	
	-	
	-	

COMPLETION DATA
Drilled Depth 249.9'
Completed Depth 243.3'
Date Started 9/17/89
Date Completed 12/3/89
Static Water Level/Date 227.1' 12/1/89

AQUIFER TESTING
Type Slug Withdrawal
Length of Test
Volume Pumped
Drawdown
Date of Test 11/22/89

INSPECTION RESULTS

CLEANING
Inspection Method Visual
Acceptance Criteria Section 7.6

	Accept	Reject	Date
Drilling Tools/Rig	SST		9/11/89
Temporary Materials	BNB		9/25/89
Permanent Materials	BNB		11/13/89

MATERIAL STORAGE/PACKING
Inspection Method Visual
Acceptance Criteria Section 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	BNB		11/13/89
Material Packing	BNB		11/13/89

SCREEN

Type	Length	Slot Size
Type 304 Stainless Steel	10.7	10-Slot
Channel Pack	10.4	10-Slot

Depth(s) 243.3' - 222.2
Inspection Method Visual
Acceptance Criteria Section 4.2.3
Accept BNB Reject Date 11/8/89

LUBRICANTS/ADDITIVES
Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	N/A	BNB		
Lubricants	Chevron Polyem-7	BNB		9/25/89

STRAIGHTNESS TEST
Inspection Method 7" Dia. Bailer
Acceptance Criteria Section 8.3
Accept [illegible] Reject Date 9/26/89

CASING (permanent)

Type	Size	Placement
Stainless Steel	4"	222.2' - +1.4'
Type 304		-

Inspection Method Visual
Acceptance Criteria Section 4.2.4
Accept BNB Reject Date 11/8/89

WELL PROTECTION
Inspection Method Visual
Acceptance Criteria Section 4.2.9 - 4.2.10

	Accept	Reject	Date
Protective Posts	BNB		1/24/90
Locks			

ANNULAR SEAL
Inspection Method Measured w/Steel Tape Acceptance Criteria Section 4.2.6 - 4.2.9

Type	Interval	Volume	Accept	Reject	Date
Volclay Tablets	249.2 - 247.2	0.8 ft^3	BNB		11/8/89
20-40 Colorado Silica Sand	247.2 - 218.3	35.84 ft^3	[illegible]		11/10/89
3/8" Volclay Tablets	218.3 - 213.8	1.24 ft^3	[illegible]		11/10/89
8-20 Bentonite Chunkies	213.8 - 17.2	71.71 ft^3	BNB		11/13/89

OTHER (initial if performed)
N/A Well Abandonment
N.R.R. Well Development
DXM Downhole TV Inspection
____ Complete As-Built Diagram, Driller's/Geologist's Logs

Reviewed by V.L. McGhan 1-26-90

A-166 For all blanks mark N/A if not applicable.

9413205.0404

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Well 299-W18-26 continued...

ANNULAR SEAL

Inspection Method Measured w/steel Tape Acceptance Criteria Sect. 4.2.6-4.2.9

Type	Interval	Volume	Accept	Reject	Date
Portland Cement+Gypsum	17.2' - 2.0'	8.58 ft³	BNB		11/13/89
Cement Pad	2.0' - +0.5'	1yd³	BNB		1/24/90
	-				
	-				

for all blanks mark N/A if not applicable.

9413205.0405

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-26 Geologist S. Teel, M. Birch, B. Bjornstad, T. Gilmore, E. Jensen, S. Airhart, S. Brandenberger, M. Chamness Page 1 of 2

Reviewed by V. L. McGhan Date Well Started: 09/11/89 Well Completed: 12/13/89

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Sample Type (○ Drive Barrel, ● Hard Tool, ▲ Split Spoon)	Lithologic Description
Cement Pad (0.5' - 2.0')		5	○	Sand
		10	○	Gravelly Sand
12" dia. carbon steel casing (0' - 20.0') - removed		15	○	Sand
		20	○	Slightly Gravelly Sand
Portland Cement & Gypsum (2.0' - 17.2')		25	○	Gravelly Sand
		30	○	Slightly Gravelly Sand
8" dia. carbon steel casing (0' - 246.0') - removed	DB	35	○	" " " (w/layers of FS-VFS)
		40	○	Sand
		45	○	" (trace cobbles @ 43')
4" dia. stainless steel final casing (+1.4' - 222.0')		50	○	Sandy Gravel
		55	○	Muddy Sandy Gravel
Casing Centralizer		60	●	Sandy Gravel
Casing Joint		65	●	" "
		70	●	" "
		75	●	" "
		80	●	" "
		85	●	" "
8-20 mesh Bentonite Crumbles (17.2' - 213.8')		90	●	Muddy Sandy Gravel
	HT	95	●	" " "
		100	●	" "
		105	●	Slightly Gravelly Sand
		110	●	Slightly Muddy Sand
DB = Drive Barrel HT = Hard Tool		115	○	Sand
	DB	120	○	"
		125	○	"
		130	○	"

A-1800-186 (3/87)

9413205.0406

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W18-26

Geologist S. Teel, M. Birch, B. Bjornstad, T. Gilmore, E. Jensen, S. Airhart, S. Brandenberger, M. Chamness

Page 2 of 2

Reviewed by V. L. McGhan

Date Well Started: 09/11/89
Well Completed: 12/13/89

Construction Data

Description

8" dia. carbon steel casing (0' - 250') - removed

4" dia. stainless steel final casing (+1.4' - 222.2')

8-20 mesh Bentonite Crumbles (17.2' - 213.8')

Well Completion Symbols (as per PNL-6392)

- Cement Grout
- Granular Bentonite
- Bentonite Pellets
- Sand Pack
- Backfill

DB = Drive Barrel
HT = Hard Tool

3/8" Voiclay Tablets (213.8 - 218.3')

8" Drive Shoe Broken off @222'

Static Water Table (227.1') - 11/01/89 -

20-40 mesh Colorado Silica Sand (218.3' - 247.2')

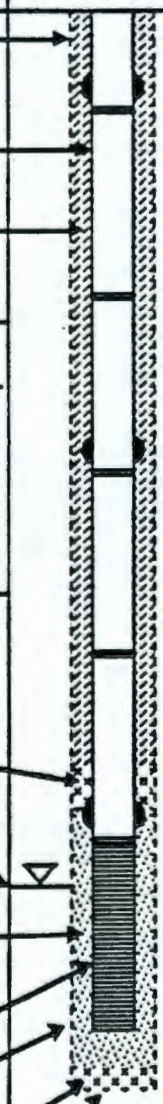
4" dia. stainless steel Johnson Channel Pack screen (222.2' - 243.3')

Bottom of well = 243.3'

Voiclay Tablets (247.2' - 249.2')

Backfill (249.2'-249.9')

Diagram



Depth in Feet

135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250

Geologic/Hydrologic Data

Sample Type: ○ Drive Barrel ● Hard Tool ▲ Split Spoon

Lithologic Description

Sand

Slightly Muddy Sand

Slightly Gravelly Muddy Sand

Gravelly Muddy Sand (caliche')

Slightly Muddy Sand

Muddy Sandy Gravel

Sandy Gravel

Gravelly Sand

Sandy Gravel

Muddy Sandy Gravel

A-1800-186 (3/87)

9413205.0407

WELL COMPLETION SUMMARY

Project "Reverse Well"
Location
Drilling Co. Not Specified
Driller Not specified
Other (companies)
Geologist(s)

Well No. 299-W19-9 Temp. Well No. 241-U-361
Coordinates PN 37895 PW 74225
Elevation: Casing 693.77 Brass Marker

DRILLING METHOD

Drilling Method(s) Not specified - assume cable tool
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 302'
Completed Depth 302'
Date Started 7/19/44
Date Completed 8/26/44
Static Water Level/Date 218' (5/8/85)

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Stainless Steel (Johnson)	7"	30'	20	214' - 244'
Perforations in 6" casing	6"	39'		263 - 302'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	16"		0 - 10'
" "	8"		0 - 205'
Carbon steel (installed 8/44)	6"		0 - 254'

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
See back page			

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement	302' -	"1/2 sack"	
Cement grout (pressure grout in annulus)	0 - 208?	1630 gal	
Gravel (outside 6" casing)	210 - 208?	"5 gal"	

PUMP

Type SPB-21 Grunfos pump 7 1/2 HP Hitachi motor Depth to Inlet 245' Date Set 5/27/85

ACCEPTANCE

Completed Well: Accept ___ Conditionally Accept ___
Reject ___

COMMENTS

Injection inlets removed (cut off) 12/15/49 ; 20 slot screen added 5/24/85

Reviewed by ___ Date ___ Depths are below land surface unless noted.

9413205.0408

299-W19-9 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Carbon Steel	10"	28'	6 cuts/6"	175' - 203'
" "	"	35'	"	50' - 85'
" "	8"	25'	4 cuts/6"	215' - 240'
" "	6"	39'	*	263' - 302'
				-
				-

* 1/2 x 4" slots, 4 around on 6" centers

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval	
Carbon Steel	12"		0 - 45'	
" "	10"		0 - 211'	
" "	8"		205 - 262'	
" "	6"		0 - 214'	(added 5/85)
" "	"		244' - 254'	
" "	"		254 - 302'	

9413205.0409

AS-BUILT DIAGRAM

Boring or Well Number 299-W19-9 Sheet 1 of 2
Location _____ Project "Reverse Well"

Logged by _____
Reviewed by _____ Date _____

Date Well Started 7/19/44
Date Well Completed 8/26/44

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description (Sample Method: Lith from Drill Log)
	5	Sand + Basalt Gravel (0-18')
12" Carbon steel casing (0-45')	10	" " "
	15	" " "
	20	Fine Sand (18-32')
	25	" "
	30	" "
	35	Qtz, Basalt, + Sand (32-45')
	40	" " "
	45	" " "
Perforations in 10" casing	50	Sand (45-79')
50-85' (6 cuts/6")	55	"
	60	"
Cement grout in annulus between	65	"
12" + 10" + 6" casing	70	"
	75	"
8" carbon steel casing from	80	Sand + Gravel (79-103')
0 to 205' was removed	85	" "
	90	" "
10" Carbon steel casing	95	" "
(0-211')	100	" "
	105	Sand (103-111')
6" Carbon steel casing +	110	"
screen, 0-302'	115	Yellow clay + Sand (111-117')
	120	Sand + Clay (117-150')
	125	" "
	130	" "
	135	" "
	140	" "
	145	" "
	150	" "
	155	Yellow clay (150-158')
	160	Sandy clay (158-184')
	165	" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0410

AS-BUILT DIAGRAM

Boring or Well Number 299-W19-9 Sheet 2 of 2
Location Project "Reverse Well"

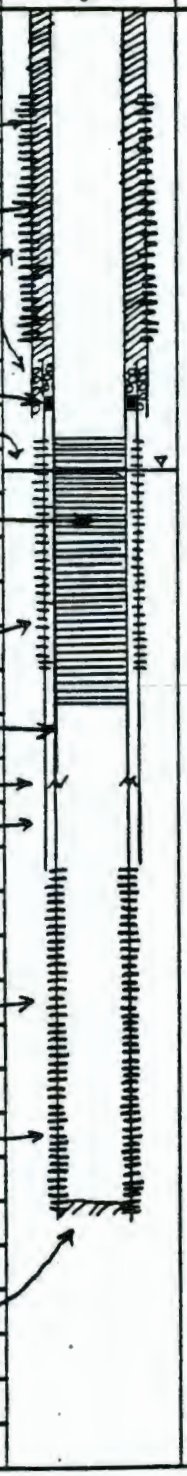
Logged by
Reviewed by Date
Date Well Started 7/5/44
Date Well Completed 8/26/44

Well Construction Data — Drill Bit

Geologic/Hydrologic Data — Sample Method Lith. from Drill Log

Description	Depth in Feet	Lithologic Description
6" Carbon steel casing (welded to top of screen) 0-214'	170	Sandy Clay
	175	" "
10" Carbon steel casing (0-211')	180	" "
(between 6" + 10" casing)	185	Very Coarse Gravel (184-189')
Cement grout (pressure grout)	190	Qtz + Basalt (189-195')
5 gal gravel on top of packer	195	" "
Perforations in 10" casing (175-203')	200	Coarse Gravel (195-216')
Packer between 6" and 8"	205	Gravel (216-224')
Carbon steel casing at 210'	210	"
Static water level (218', 5/55)	215	"
Johnson, 7" dia, stainless	220	"
steel screen, 20 slot,	225	Sand & Gravel (224-250')
214-244'	230	" "
Perforations in 8" casing	235	" "
(240-215')	240	" "
6" carbon steel casing (welded	245	" "
to bottom of screen) 244-254'	250	" "
6" casing cut @ 254'	255	Gravel (250-268')
8" Carbon steel casing	260	"
(205-262'; 0 to 205' was	265	"
removed)	270	Coarse Gravel & Boulders (268-27[illegible]
	275	Sand & Gravel (273-299')
Perforations in 6" casing	280	" "
(263-302')	285	" "
	290	" "
6" Carbon steel casing (254-302')	295	" "
(cut off @ 254' - removed	300	Sand (299-302')
original 6" casing 0-254')	305	"
Cement ("1/2 sack")		

Construction Diagram



Lithologic Diagram

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0411

ECNs incorporated into Rev. 5

WELL CONSTRUCTION REPORT

VALIDATED

Page 1 of 2

Specification No. IN HC-S-014 Rev No. 4 5

ECNs 146189-124393-124394-146133-144223-144224-144240, 144241

Project W-017, SST Milestone 1990 RCRA

Location East of Camden - NE corner of U tank Farm

Drilling Company KGN

Driller A. Thomas / B. Strode

Other (Companies)

Geologist(s) Dave Weeks, Kent Reynolds, G. Kelty, C. Delaney, A. Pearson, J.A. Coates

Well No. Temp. Well No. N/A

Coordinates N: 135,127.48', E: 566,377.00' (LAMBERT)

Casing Elev. 674.19' (NGVD'29) Ground Elev. 671.16 (NGVD'29)

Drilling Method

Verification Method Visual observation

Criteria WHC-S-014 5.3, 7.5 ETI 6.7 Sec 6.2

		Initials	Date
Rotary	Air N/A Mud N/A	—	—
Cable Tool	D 0-139' H 142'	KDR	12/6/90
Drilling Fluid	Raw water 30 gal	KDR	11/19/90
Other	N/A		

Geophysical Logging

Sondes	Interval	Date
Gross gamma	0 - 139'	10/22/90
Gross gamma	130 - 225'	12/6/90

Completion Data

Drilled Depth 225.05' KDR

Completed Depth 222.6' AWP 4/22/91

Date Started 11/9/90 10/3/91 (RW 12/30/91)

Date Completed 11/19/90 12/18/91 (RW 12/30/91)

Static Water Level/Date 202.3/12/6/90 KDR

Aquifer Testing

Type Slug Test Injection Withdrawal

Flow Meter I.D. No. N/A

Cal. Due Date N/A

Length of Test 20 min

Volume Pumped N/A

Drawdown N/A

Date of Test 11/17/91 AWP

Completion Results

Cleaning

Verification Method Visual and Document BC-6000-292

Criteria WHC-S-014 Sec 7.6, WHC-CM-7-7 ETI 5.4

	Initials	Date
Drilling Tools/Rig	NCW	10/5/90
Temporary Materials	KDR	10/5/90
Permanent Materials	KDR	12/7/90

Material Storage/Packing

Verification Method Visual observation

Criteria WHC-S-014 4.2, 7.3

	Initials	Date
Mtl. Handling/Storage	KDR	11/19/90
Material Packing	KDR	11/19/90

Screen

Type	Length	Slot Size
Johnson channel pack	21.3'	10 slot

Depth(s) 222.6 - 201.3'

Verification Method Verify using steel tape

Criteria WHC-S-014 4.2.3, 4.2.5, 7.2.1, 4.2.1

Initials SK Date 12/10/90

Lubricants/Additives

Verification Method Visual observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Raw water	KDR	10/2/90
Lubricants	Jet Lube	KDR	10/2/90

Straightness Test

Verification Method Visual observation

Criteria WHC-S-014 2.2

Initials Pt Robert Sanders Date 12/6/90

A-6000-435 (09/90)

9413205.0412

WELL CONSTRUCTION REPORT
(continuation sheet)

W19-31

Casing (permanent)

Type	Size	Placement
Stainless Steel, 304, SS	4.5	20.13 - 1' AGS
		-
		-
		-

Verification Method: Visual, measurement

Criteria: 4.21, 4.24, 4.25, WHC-S-014

Initials: [illegible] Date: 12/11/90

Well Protection

Verification Method: Visual, Measure w/Tape

Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	[illegible]	12/13/91
Protective Casing	[illegible]	12/18/91
Site Restored	[illegible]	12/18/91
Cap, Hasp and Lock	[illegible]	12/18/91
Surface Pad	[illegible]	12/13/91

Annular Seal/Filter Pack

Verification Method: Measurement w/Steel Tape Criteria: WHC-S-014 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.8, and 5.8.2

Type	Interval	Volume	Initials	Date
Bentonite pellets	196.1 - 191.2	6 buckets 50#	[illegible]	12/11/90
Bentonite crumbles	191.3 - 183.6	10 50# bags	CDD	12/15/90
Bentonite ~~pellets~~ crumbles 4/23/91	183.7 - 19.9'	139 50# bags	CDD	12/17/90
Portland Type II Cement	19.8' - 2.1'	20.5 50# bags	CDD	12/17/90

Well Survey/Labeling

Verification Method: Review of Survey Report

Criteria: WHC-S-014 3.4

	Initials	Date
Measurement Point/Surveyed	[illegible]	12/18/91
Protective Casing/Brass Cap Surveyed	[illegible]	12/18/91
Well Number Stenciled	[illegible]	12/18/91
Brass Cap Labeled	[illegible]	12/18/91

Pump Installation

Verification Method: Visual Observation

Criteria: WHC-S-014 4.2.11, 4.2.2

	Initials	Date
Pump Decon/Prep	[illegible]	12/20/91
Installed	[illegible]	12/20/91
Pump Tested	[illegible]	12/20/91

Other (initial if performed)

NA Well Abandonment AWD Downhole TV Inspection [illegible] Complete As-Built Diagram, Driller's/Geologist's Logs

[illegible] Well Development

Comments/Remarks

Reviewed By (Sign/Print Name) [illegible] Date 12/13/91

A-6000-436 (09/90)

9413205.0413

WELL SUMMARY SHEET

Boring or Well No. 299-W19-31

Sheet 1 of 2

Location 200W / SST / 241-U Tank Farm

Project W-017

Elevation 671.16 BRASS CAP (NGVD '29)

Drilling Contractor Kelt

Driller G. Thomas / B. Strode

Drilling Method and Equipment Cable Tool

Prepared By R.D. Miller (Sign/Print Name) Date 12/27/00

Reviewed By [illegible] / B.A. Williams (Sign/Print Name) Date 2/21/01

CONSTRUCTION DATA: Description	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Lithologic Description
10"Ø temporary carbon	21	Gravelly SAND
steel casing to 135.92' bls		" "
Cement grout	10	Sandy GRAVEL
8"Ø temporary carbon steel	19.4'	" "
casing to 224.95' bls	20	" "
		Slightly Sandy GRAVEL
Granular bentonite #8-20 mesh	30	" Gravelly SAND
		" " "
	40	" " "
4"Ø stainless steel casing		" Silty SAND
	50	" Gravelly SAND
		" " "
	60	" Silty SAND
		SAND
	70	Slightly Gravelly Slightly Silty SAND
		Slightly Silty SAND
	80	Slightly Gravelly Slightly Silty SAND
		Slightly Silty SAND
	90	" " "
		" " "
	100	" " "
		Slightly Gravelly Slightly Silty SAND
	110	" " SAND
		" Silty SAND
	120	Silty SAND
		Sandy SILT
	130	" "
	135.92'	
	138	Gravelly SAND - Caliche zone
	140	" "
		" "
	150	" "
		Slightly Silty Gravelly SAND
	160	" " " "

9413205.0414

A-6000-134 (04/93)

WELL SUMMARY SHEET

Boring or Well No. 299-W19-31

Sheet 2 of 2

Location 200W / SST / 241-U Tank farm

Project W-017

Elevation 671.16 BRASS CAP (NGVD'29)

Drilling Contractor KEH

Driller G. Thomas / B. Strode

Drilling Method and Equipment Cable Tool

Prepared By R.D. Hillis (Sign/Print Name) Date 12/6/90

Reviewed By / RA Williams (Sign/Print Name) Date 5/21/91

CONSTRUCTION DATA: Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Graphic Log	Lithologic Description
6"Ø temporary carbon steel casing to 224.95' bls		170		Slightly Silty Sandy GRAVEL
				"
		180		"
				"
Bentonite pellets, 1/4"		190		Sandy GRAVEL
		191.1		SAND
		196.1		Gravelly Silty SAND
WATER LEVEL ~ 202.3		200		
		201.3		Slightly Silty Sandy GRAVEL
4"Ø stainless steel .010 slot (wire wound) screen		210		Sandy GRAVEL
				Slightly Silty Sandy GRAVEL
Channel pak (Johnson)		220		" " " "
		222.6		
		224.9		" " " "
Sand pack - Silica Sand #20-40		230		T.D. 225.3' bls
		240		

9413205.0419

WELL CONSTRUCTION REPORT (2 of 6)

Specification No. WHC-S-014 Rev No. 5

ECNs 144240, 144241

Project W-017-SST

Location 200 W Area

Drilling Company Kaiser Engineers Hanford

Driller Darrel Luttke, Mel Thoresen Jr., L. Bottma, B. Strode.

Other (Companies)

Geologist(s) Dave Weekes, James Connell, Steve Airhart, Steve Teel, George Kelty, NA Cadoret

Well No. 299-W19-32 Temp. Well No N/A

Coordinates N: 135,009.29, E: 566,996.55 (LAMBERT)

Casing Elev. 674.90 Ground Elev. 671.92 BRASS CAP

Drilling Method

Verification Method Visual observation

Criteria WHC-S-014 5.2, 5.3, 7.5 EII 6.7 sec. 6.2

			Initials	Date
Rotary	Air N/A	Mud N/A 210.5-220'	N/A	N/A
Cable Tool	D 0'-152'	H 152-206.9'	SST	11/13/90
Drilling Fluid	Raw water	280 GAL	SST	11/13/90
Other	split spoon	206.9 - 210.5	SST	11/13/90

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	143.1'-3.8'	10/17/90
Gross Gamma	216.6'-130.0'	10/17/90

Completion Data

Drilled Depth 220.35 / 222.05 (Redrill) 222.1

Completed Depth 222.35 12/27/90

Date Started 11/8/89

Date Completed 1/3/91

Static Water Level/Date 202.4 11/13/90

Aquifer Testing

Type SLUG INJECTION / WITHDRAWAL

Flow Meter I.D. No N/A

Cal Due Date N/A

Length of Test 20 MIN. TOTAL

Volume Pumped N/A

Drawdown N/A

Date of Test 1/14/91 4/21/91

Completion Results

Cleaning

Verification Method Visual inspection / direct observation of rig cleaning

Criteria WHC-S-014 sec. 4.2.2, 7.6

	Initials	Date
Drilling Tools/Rig	KDR 1/6/92 See other page	10/3/90 *
Temporary Materials	KDR 1/6/92	10/30/90
Permanent Materials	KDR	12/17/90

Material Storage/Packing

Verification Method visual observation

Criteria WHC-S-014 sec 4.2.2 7.3

	Initials	Date
Mtl. Handling/Storage	JCW	11/28/90
Material Packing	JCW	11/28/90

Screen

Type	Length	Slot Size
4" ø 304ss continuous wire wrap	20.62 2033' JCW 12/17/90	0.010"

Depth(s) 222.35 - 201.73 SST 12/27/90

Verification Method visual / depth using s-tape

Criteria WHC-S-014 sec 4.2.1, 4.2.3 4.2.5, 12.2.1

Initials JCW (redrill) JCW Date 11/28/90 (redrill) 12/17/90

Lubricants/Additives

Verification Method visual observation

Criteria WHC-S-014 sec. 7.2

	Identify	Initials	Date
Additives	Raw water	SDA	10/22/90
Lubricants	Well Guard	SDA	10/22/90
	Well Guard	JCW	11/28/90

Straightness Test

Verification Method visual observation

Criteria WHC-S-014 sec. 8.2

Initials SST (redrill) SST Date 11/13/90 12/17/90

A-6000-435 (09/90)

9413205.0415

WELL CONSTRUCTION REPORT
(continuation sheet) (3 of 6) well # 299-W19-32

Casing (permanent)

Type	Size	Placement
* Type 304 ss sch 5	4"Ø	201.73 - 1' ALS
		-
		-
		-

Verification Method visual / depth using s-tape
Criteria WHC-S-014 sec. 4.2.1, 4.2.5, 4.2.4, 12.2.1
Initials DCM Date 11/28/90
(re-date) DCM 12/17/90

Well Protection

Verification Method visual, measure w/ tape
Criteria WHC-S-014 sec. 4.2.10

	Initials	Date
Protective Posts		12/18/91
Protective Casing		12/18/91
Site Restored		12/18/91
Cap, Hasp and Lock		12/18/91
Surface Pad		12/18/91

Annular Seal/Filter Pack

Verification Method steel tape
Criteria WHC-S-014 4.2.6 4.2.7 4.2.8, 4.2.9, 5.3.1 or 5.3.2

Type	Interval	Volume	Initials	Date
20-40 Colo. Silica Sand	221.7 - 195.4	9 - 50 lb bags	SST	12/27/90
3/8", 1/2" Bentonite Pellets (2 - 3/8" size, 1 - 1/2" size)	195.4 - 190.0	3 buckets	SST	12/27/90
8-20 mesh bentonite crumbles	190.0 - 20.3	163 - 50# bags	DCL	01/03/91
Type II Portland Cement	20.3 - 3.1	14 50# bags	DCL	01/03/91

Well Survey/Labeling

Verification Method ~~steel tape~~ SPA 01/31/90 Review survey report
Criteria WHC-S-014 sec. 5.4

	Initials	Date
Measurement Point/Surveyed		12/18/91
Protective Casing/Brass Cap Surveyed		12/18/91
Well Number Stenciled		12/18/91
Brass Cap Labeled		12/18/91

Pump Installation

Verification Method visual observation
Criteria WHC-S-014 sec. 4.2.2, 4.2.11

	Initials	Date
Pump Decon/Prep		12/20/91
Installed		12/20/91
Pump Tested		12/20/91

Other (initial if performed)

N/A Well Abandonment AWP Downhole TV Inspection Complete As-Built Diagram, Driller's/Geologist's Logs
Well Development

Comments/Remarks * Initially installed screen & permanent casing. Removed & signed & dated after document review.

Reviewed By (Sign/Print Name) Date 12/18/91

A-6000-436 (09/90)

9413205.0417

12434, 12261, 14233, 14231, 14232, 14230
12393, 12435 **WELL CONSTRUCTION REPORT** (6 of 6)
ECN # 12, 12, 69, 14, 18, 12, 12, 12, 14, 23, 6

Specification No. WHC-S-014 Rev No. 4
Project W-017 SST MILESTONE 1990 2024
Location 200 W
Drilling Company KEH
Driller Dave Lewis
Other (Comoanies)
Geologist(s) DAVE WEEKES, Tuner Consult.
STEVE ALBRIGHT, Steve Tool

Well No. 299-W19-32 Temp. Well No.
Coordinates N: 135 009.29 E: 566,576.55 (Lambert)
Casing Elev. 674.90 Ground Elev. ~ 671.92 ± 0.25 GS

Drilling Method
Rotary Air Mud
Cable Tool D H
Drilling Fluid
Other

Geophysical Logging

Sondes	Interval	Date
	-	
	-	
	-	
	-	
	-	

Completion Data
Drilled Depth
Completed Depth
Date Started
Date Completed
Static Water Level/Date

Aquifer Testing
Type
Length of Test
Volume Pumped
Drawdown
Date of Test

Completion Results

Cleaning
Verification Method VISUAL & DOCUMENT ± TF-6000-291
Criteria WHC-S-014 SEC 7.3 WHC-CM-2-7 ETI 5.4

		Date
Drilling Tools/Rig	KEW	10/5/90
Temporary Materials	KE	10/5/90
Permanent Materials		

Material Storage/Packing
Verification Method
Criteria

		Date
Mtl. Handling/Storage		
Material Packing		

Screen

Type	Length	Slot Size

Depth(s) -
-
Verification Method
Criteria
Date

Lubricants/Additives
Verification Method
Criteria

	Identify	Date
Additives		
Lubricants		

Straightness Test
Verification Method
Criteria
Date

Casing (permanent)

Type	Size	Placement
		-
		-

Verification Method
Criteria
Date

Well Protection
Verification Method
Criteria

		Date
Protective Posts		
Locks		

Annular Seal
Verification Method Criteria

Type	Interval	Volume	Date
	-		
	-		
	-		
	-		

Other (initial if performed)
Well Abandonment RW Downhole TV Inspection RW Complete As-Built Diagram, Driller & Geologist Logs
RW Well Development

Reviewed by (sign/print name) RW Date 12/18/91

A-6000-436 (10/89)

9413205.0418

WELL SUMMARY SHEET (4 of 6)

Boring or Well No. 299-W19-32

Sheet 1 of ~~2~~ 3 1-6-92

Location 200W/SST/241-U Tank farm

Project W-017

Elevation 671.02 Brass Cap NGVD'29

Drilling Contractor KEH

Driller D. Ludtke

Drilling Method and Equipment Cable Tool

Prepared By R.D. Miller (Sign/Print Name) Date 12/27/91

Reviewed By [illegible] / 3A Drilling (Sign/Print Name) Date 5/21/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
10"ø temporary carbon				Sandy GRAVEL
steel casing to 140.3' bls				" "
		10		
Cement grout				" "
8"ø temporary carbon		20		Gravelly SAND
steel casing to 223.1' bls		20.5'		Sandy GRAVEL - Silt 22.5-23.0'
				" "
		30		
Granular bentonite #8-20				Gravelly SAND
mesh		40		Sandy GRAVEL
				" "
4"ø stainless steel casing		50		Slightly Gravelly SAND
				" " "
				" " "
		60		SAND
				"
		70		"
				Slightly Gravelly SAND
		80		SAND
				Slightly Silty SAND
		90		" Gravelly SAND
				" " "
		100		
				" " "
		110		SAND
				"
				"
		120		
				"
		130		
				Sandy SILT
				SAND
		140		
		140.3'		Slightly Silty SAND - Caliche 140'
				Silty Sandy GRAVEL
		150		" " "
				" " "
		160		" " "

A-6000-334 (4-90)

9413205.0419

WELL SUMMARY SHEET (5 of 6)

Boring or Well No. 299-W19-32

Sheet 2 of 23

Location 200W / SST / 241-U Tank Farm

Project W-017

Elevation 671.92 Brass Cap NGVD29

Drilling Contractor KEH

Driller D. Ludtke

Drilling Method and Equipment Cable Tool

Prepared By R.D. Miller (Sign/Print Name) Date 12/27/90

Reviewed By B.A. Williams (Sign/Print Name) Date 5/21/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
8"ø temporary carbon steel casing to 223.1' bls		170		Silty Sandy GRAVEL
				" " "
		180		" " "
				" " "
		190.0		" " "
Bentonite pellets 1/4"		195.4		" " "
		200		" " "
4"ø stainless steel	202.4' 8/15/90	201.75		Sandy GRAVEL
.010 slot (wire wound) screen		210		Silty Sandy GRAVEL
				" " "
Sand pack - Silica Sand #20-40		220		" " "
		222.35 223.1		
		230		

A-6000-384 (04/90)

9413205.0420

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Hatch
Driller Hatch
Other (companies)
Geologist(s)

Well No. 299-W21-1 Temp. Well No.
Coordinates PN 35868 PW 71382
Elevation: Casing 699.26 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable tool - assume hard tool bit
Drilling Fluid Water, bentonite
Other

COMPLETION DATA

Drilled Depth 352'
Completed Depth 352'
Date Started 8/21/57
Date Completed 9/6/57
Static Water Level/Date 241' (Hanford wells)

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations	8"			220 - 290'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	8"		0 - 352'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
None	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0421

AS-BUILT DIAGRAM

Boring or Well Number 299-W21-1 Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 8/21/57

Reviewed by _____ Date _____ Date Well Completed 9/6/57

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
		Assume Hard tool	5	Assume hard tool		Sand - silt
			10			Coarse sand + gravel
8" dia carbon steel			15			" " "
casing (0-352') →			20			Coarse sand
			25			Coarse sand + silt
			30			" " "
			35			" " "
			40			" " "
			45			" " "
			50			" " "
			55			" " "
			60			" " "
			65			" " "
			70			Coarse sand + silt, 1/2" gra
			75			Coarse sand + silt
			80			" " "
			85			" " "
			90			" " "
			95			" " "
			100			" " "
			105			Fine sand + silt
			110			" " "
			115			" " "
			120			" " "
			125			" " "
			130			" " "
			135			" " "
			140			" " "
			145			" " "
			150			" " "
			155			" " "
			160			" " "
			165			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0422

AS-BUILT DIAGRAM

Boring or Well Number 299-W21-1 Sheet 2 of 3
Location _____ Project _____

Logged by _____ Date Well Started 8/21/57
Reviewed by _____ Date _____ Date Well Completed 9/6/57

Well Construction Data: Description	Construction Diagram (Drill Bit)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method)	Lithologic Description
		170	Assume hard tool	Fine sand + silt
		175		Sand - silt
8" dia carbon steel		180		" "
casing (0-352') →		185		" "
		190		Sand - silt - clay
		195		" " " (gravel layer
		200		Sand - silt - gravel 1/2" dia
		205		" " " "
		210		" " " "
		215		" " " "
		220		" " " "
		225		Yellow clay + gravel, 1 1/2" dia
Perforations in 8" casing		230		" " " "
(220-290') →		235		" " " "
		240		Yellow clay + gravel - real hard
		245		" " " "
		250		" " " "
		255		Gray sand + gravel, 1" dia
		260		" " " "
		265		Gravel, 1 1/2" dia
		270		Gravel, 4" dia
		275		Gravel, 3" dia
		280		Small gravel + sand
		285		Sand, Gravel 3" dia
		290		Clean gravel
		295		Cemented gravel
		300		Sand and gravel lenses
		305		Cemented Sand
		310		" "
		315		Cemented sand + gravel 1 1/2"
		320		Cemented sand + gravel
		325		Cemented sand + gravel
		330		Gravel

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0423

AS-BUILT DIAGRAM

Boring or Well Number 299-W21-1 Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started 8/21/57

Reviewed by _____ Date _____ Date Well Completed 9/6/57

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
		Assume Hard Tool	335	Assume Top Hard		Hard and soft streaks of sand & gr
8" dia carbon steel casing			340			Gravel
(0-352') →			345			Sand - gravel
			350			Sand - gravel

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barr...

A-1800-186 (05/90)

9413205.0424

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Chausse
Other (companies)
Geologist(s)

Well No. 299-W22-14 Temp. Well No. 216-S-7 #3
Coordinates N35120 W74513
Elevation: Casing 675.97 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
Hard Tool 0'-342'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 342'
Completed Depth 247
Date Started 2/15/56
Date Completed 2/26/79
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	125'		213' - 338'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 213'
Liner w/ Packer on Bottom	4"		0' - 204

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement Grout	0' - 199'		
Sand	199' - 202'	5 gal.	
Cement Plug	246' - 247'	1/2 sack	
Backfill	247' - 342'		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers removed from borehole 2/21/79

Reviewed by Date Depths are below land surface unless noted.

9413205.0425

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-14 Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 2/15/56

Reviewed by _____ Date _____ Date Well Completed 2/26/79

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Drill Bit			Sample Method	Data from Driller's Log
Description	Construction Diagram		Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing 0'-199' (Perforated)		5		Sand & Gravel
		10		" "
		15		" "
		20		" "
Cement Grout 0'-199'		25		Sand & Silt
		30		" "
		35		" "
4" Liner 0'-205'		40		" "
		45		" "
		50		Sand & Gravel
		55		Gravel, Sand & Silt
		60		" " "
		65		Sand & Silt
		70		" "
		75		" "
		80		" "
		85		" "
		90		" "
		95		" "
		100		" "
		105		" "
		110		" "
		115		" "
		120		" "
		125		" "
		130		" "
		135		" "
		140		" "
		145		" "
		150		" "
		155		" "
		160		" "
		165		" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0426

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-14 Sheet 2 of 3
Location _____ Project _____

Logged by _____ Date Well Started 2/15/56
Reviewed by _____ Date _____ Date Well Completed 2/26/79

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description (Data from Driller's Log)
Carbon Steel Casing 0'-199' (Perforated	170	Sand & Silt
	175	Sand, Silt & Gravel
4" Liner 205'-0'	180	Sand & Gravel
	185	" "
Cement Grout 0'-199'	190	" "
	195	" "
Sand 199'-202'	200	" "
Carbon Steel Casing 8" 199'-213'	205	" "
	210	" "
Packer	215	" "
	220	" "
Perforated 8" Carbon Steel Casing 213'-338'	225	" "
	230	" "
	235	Sand, Silt & Gravel
	240	" " "
	245	" " "
Cement Plug 246'-247'	250	" " "
	255	" " "
	260	" " "
	265	" " "
	270	" " "
	275	" " "
Back fill 247'-342'	280	" " "
	285	" " "
	290	" " "
	295	" " "
	300	" " "
	305	" " "
	310	" " "
	315	" " "
	320	" " "
	325	" " "
	330	" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0427

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-14 Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started 2/15/56

Reviewed by _____ Date _____ Date Well Completed 2/26/79

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Drillers Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Backfill 247'-342'			335			Sand, Silt & Gravel
			340			" " "
						TD=342'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0428

WELL COMPLETION SUMMARY REPORT

Project OAC 843
Location
Drilling Co.
Driller McDonald / Swain
Other (companies)
Geologist(s)

Well No. 299-W22-24 Temp. Well No.
Coordinates N35917 W72997
Elevation: Casing 692.61 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D30'-68'-74'-141' H0-30'-68'-74'-141'-575'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 575'
Completed Depth 564'
Date Started 8/11/60
Date Completed 9/8/60
Static Water Level/Date 236' 4/62

OTHER (check if performed)

___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ As-Built, Driller's/ Geologist's Logs
___ Guardposts
___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	340'		560' - 220'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		220' - 0'
Carbon Steel	8"		563' - 560'

ANNULAR SEAL/FILL

*See Back

Type	Interval	Quantity	Volume
Silt / Slough	226.5' - 265'		
Cement Grout	265' - 288'		
Silica Sand	288' - 298'		
Silt/Slough	298' - 325'		
Cement Grout	325' - 338'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added to borehole 8/62

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0429

299-W22-24

ANNUALR SEAL/FILL

Type	Interval
Silica Sand	338' - 365'
Cement Grout	365' - 412'
Silica Sand	412' - 420'
Silt / Slough	420' - 437'
Cement Grout	437' - 454'
Silt / Slough	454' - 505'
Cement Grout	505' - 536'
Silica Sand	536' - 564'
Silt / Slough	564' - 575'
	-
	-
	-

9413205.0430

WELL COMPLETION SUMMARY REPORT

Project: OAC 843
Location:
Drilling Co.:
Driller: McDonald / Swain
Other (companies):
Geologist(s):

Well No. 299-W22-24P Temp. Well No.:
Coordinates: N35917 W72997
Elevation: Casing 692.61 Brass Marker:

DRILLING METHOD

Rotary Air: Mud:
Cable Tool: D 30'-68'-74'-141' H 0-30'-68'-74'-141'-575'
Drilling Fluid: Water
Other:

COMPLETION DATA

Drilled Depth: 575'
Completed Depth: 567'
Date Started: 8/11/60
Date Completed: 8/62
Static Water Level/Date: 236' 4/62

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	340'		560' - 220'
Perforated Polyethelene	1½"	30'		567' - 537'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		220' - 0'
Carbon Steel	8"		537' - 560'
Polyethelene	1½"		

ANNULAR SEAL/FILL *See Back

Type	Interval	Quantity	Volume
Silt / Slough	226.5' - 265'		
Cement Grout	265' - 288'		
Silica Sand	288' - 298'		
Silt/Slough	298' - 325'		
Cement Grout	325' - 338'		

PUMP

Type: Depth to Inlet: Date Set:

ACCEPTANCE

Completed Well: Accept: Conditionally Accept:
Reject:

COMMENTS

Piezometers added to borehole 8/62

Reviewed by: Date: For all blanks mark N/A if not applicable.

9413205.0431

299-W22-24 "P"

ANNUALR SEAL/FILL

Type	Interval
Silica Sand	338' - 365'
Cement Grout	365' - 412'
Silica Sand	412' - 420'
Silt / Slough	420' - 437'
Cement Grout	437' - 454'
Silt / Slough	454' - 505'
Cement Grout	505' - 536'
Silica Sand	536' - 564'
Silt / Slough	564' - 575'
	-
	-
	-

9413205.0432

WELL COMPLETION SUMMARY REPORT

Project OAC 843
Location
Drilling Co.
Driller McDonald / Swain
Other (companies)
Geologist(s)

Well No. 299-W22-24Q Temp. Well No.
Coordinates N35917 W72997
Elevation: Casing 692.61 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D30'-68'-74'-141' H0-30'-68'-74'-141'-575'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 575'
Completed Depth 497'
Date Started 8/11/60
Date Completed 8/62
Static Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	340'		560' - 220'
Perforated Polyethelene	1½"	22'		497' - 475'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		220' - 0'
Carbon Steel	8"		563' - 560'
Polyethelene	1½"		475' 0'

ANNULAR SEAL/FILL

*See Back

Type	Interval	Quantity	Volume
Silt / Slough	226.5' - 265'		
Cement Grout	265' - 288'		
Silica Sand	288' - 298'		
Silt/Slough	298' - 325'		
Cement Grout	325' - 338'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added to borehole 8/62

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0433

299-W22-24 "Q"

ANNUALR SEAL/FILL

Type	Interval
Silica Sand	338' - 365'
Cement Grout	365' - 412'
Silica Sand	412' - 420'
Silt / Slough	420' - 437'
Cement Grout	437' - 454'
Silt / Slough	454' - 505'
Cement Grout	505' - 536'
Silica Sand	536' - 564'
Silt / Slough	564' - 575'
	-
	-
	-

9413205.0413

WELL COMPLETION SUMMARY REPORT

Project OAC 843
Location
Drilling Co.
Driller McDonald / Swain
Other (companies)
Geologist(s)

Well No. 299-W22-24R Temp. Well No.
Coordinates N35917 W72997
Elevation: Casing 692.61 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D30'-68'-74'-141' H0-30'-68'-74'-141'-575'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 575'
Completed Depth 437'
Date Started 8/11/60
Date Completed 8/62
Static Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	340'		560' - 220'
Perforated Polyethelene	1½"	25'		437' - 412'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		220' - 0'
Carbon Steel	8"		563' - 560'
Polyethelene	1½"		412' - 0'

ANNULAR SEAL/FILL

* See Back

Type	Interval	Quantity	Volume
Silt / Slough	226.5' - 265'		
Cement Grout	265' - 288'		
Silica Sand	288' - 298'		
Silt/Slough	298' - 325'		
Cement Grout	325' - 338'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added to borehole 8/62

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0435

299-W22-24 "R"

ANNUALR SEAL/FILL

Type	Interval
Silica Sand	338' - 365'
Cement Grout	365' - 412'
Silica Sand	412' - 420'
Silt / Slough	420' - 437'
Cement Grout	437' - 454'
Silt / Slough	454' - 505'
Cement Grout	505' - 536'
Silica Sand	536' - 564'
Silt / Slough	564' - 575'
	-
	-
	-

9413205.0436

WELL COMPLETION SUMMARY REPORT

Project OAC 843
Location
Drilling Co.
Driller McDonald / Swain
Other (companies)
Geologist(s)

Well No. 299-W22-245 Temp. Well No.
Coordinates N35917 W72997
Elevation: Casing 692.61 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D30'-68'-74'-141' H0-30'-68'-74'-141'-575'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 575'
Completed Depth 377
Date Started 8/11/60
Date Completed 8/62
Static Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	340'		560' - 220'
Perforated Polyethelene	1½"	25'		377' - 352'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		220' - 0'
Carbon Steel	8"		563' - 560'
Polyethelene	1½"		352' - 0'

ANNULAR SEAL/FILL

*See Back

Type	Interval	Quantity	Volume
Silt / Slough	226.5' - 265'		
Cement Grout	265' - 288'		
Silica Sand	288' - 298'		
Silt/Slough	298' - 325'		
Cement Grout	325' - 338'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added to borehole 8/62

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0437

299-W22-24 "S"

ANNUALR SEAL/FILL

Type	Interval
Silica Sand	338' - 365'
Cement Grout	365' - 412'
Silica Sand	412' - 420'
Silt / Slough	420' - 437'
Cement Grout	437' - 454'
Silt / Slough	454' - 505'
Cement Grout	505' - 536'
Silica Sand	536' - 564'
Silt / Slough	564' - 575'
	-
	-
	-

9413205.0438

WELL COMPLETION SUMMARY REPORT

Project: OAC 843
Location:
Drilling Co.:
Driller: McDonald / Swain
Other (companies):
Geologist(s):

Well No. 299-W22-241 Temp. Well No.:
Coordinates: N35917 W72997
Elevation: Casing 692.61 Brass Marker:

DRILLING METHOD

Rotary Air: Mud:
Cable Tool: D 30'-68', 74'-141' H 0-30', 68'-74', 141'-575'
Drilling Fluid: Water
Other:

COMPLETION DATA

Drilled Depth: 575'
Completed Depth: 317'
Date Started: 8/11/60
Date Completed: 8/62
Static Water Level/Date:

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated	8"	340'		560' - 220'
Perforated Polyethylene	1½"			317' - 292'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		220' - 0'
Carbon Steel	8"		563' - 560'
Polyethylene	1½"		292' - 0'

ANNULAR SEAL/FILL

* See Back

Type	Interval	Quantity	Volume
Silt / Slough	226.5' - 265'		
Cement Grout	265' - 288'		
Silica Sand	288' - 298'		
Silt/Slough	298' - 325'		
Cement Grout	325' - 338'		

PUMP

Type: Depth to Inlet: Date Set:

ACCEPTANCE

Completed Well: Accept: Conditionally Accept:
Reject:

COMMENTS

Piezometers added to borehole 8/62

Reviewed by: Date: For all blanks mark N/A if not applicable.

9413205.0439

299-W22-24 "T"

ANNUALR SEAL/FILL

Type	Interval
Silica Sand	338' - 365'
Cement Grout	365' - 412'
Silica Sand	412' - 420'
Silt / Slough	420' - 437'
Cement Grout	437' - 454'
Silt / Slough	454' - 505'
Cement Grout	505' - 536'
Silica Sand	536' - 564'
Silt / Slough	564' - 575'
	-
	-
	-

9413205.0440

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-24 Sheet 1 of 4

Location _____ Project _____

Logged by _____ Date Well Started 8/11/60

Reviewed by _____ Date _____ Date Well Completed 8/62

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Driller's Logs
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing		●	5	●		Brown Sand & Large Cobbles
			10			Brown Sand
1½" Polyethelene			15			" "
T-Tube 0'-317'			20			" "
			25			" "
1½" Polyethelene			30			" "
S-Tube 0'-377'		○	35	○		" "
			40			Fine Brown Sand & Silt
1½" Polyethelene			45			Fine Brown Sand & Gravel
R-Tube 0'-437'			50			Fine Brown Sand & Silt
			55			" " " "
1½" Polyethelene			60			" " " "
Q-Tube 0'-497'			65			" " " "
		●	70	●		Fine Brown Sand & Gravel
1½" Polyethelene		○	75	○		Fine Brown Sand & Silt
P-Tube 0'-567'			80			" " " "
			85			" " " "
			90			" " " "
			95			" " " "
			100			" " " "
			105			" " " "
			110			" " " "
			115			" " " "
			120			" " " "
			125			" " " "
			130			" " " "
			135			" " " "
			140			Sandy Brown Clay
		●	145	●		Fine Brown Sand & Silt
			150			" " " "
			155			" " " "
			160			Sandy Brown Clay
			165			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0441

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-24 Sheet 2 of 4

Location _____ Project _____

Logged by _____

Reviewed by _____ Date _____

Date Well Started 8/11/60

Date Well Completed 8/62

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Driller's Logs
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing		●	170	●		Sandy Brown Clay
			175			" " "
			180			" " "
			185			" " "
			190			Sandy Brown Clay w/Gravels & Caliche'
			195			Sandy Brown Clay w/Gravels
			200			Soft Brown Clay & Sand
			205			Brown Clay & Gravel
			210			" " "
			215			" " "
			220			Soft Brown Sandy Clay
			225			" " " "
			230			" " " "
			235			" " " "
Perforations 220'-560'			240			Small Gravels
			245			Sand & Gravel
Silt/Slough			250			" "
226.5'-265'			255			" "
			260			" "
			265			" "
			270			" "
Cement Grout			275			" "
265'-288'			280			" "
			285			" "
			290			" "
Silica Sand			295			" "
288'-298'			300			" "
			305			" "
T-Tube Perforated			310			" "
from 317'-292'			315			" "
			320			" "
Silt/Slough			325			" "
298'-325'			330			Sand & Small Gravels

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0442

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-24 Sheet 3 of 4

Location _____ Project _____

Logged by _____ Date Well Started 8/11/60

Reviewed by _____ Date _____ Date Well Completed 8/62

Well Construction Data — Geologic/Hydrologic Data

Drill Bit — Sample Method — Data from Driller's Logs

Description	Construction Diagram	Drill Bit	Depth in Feet	Sample Method	Lithologic Diagram	Lithologic Description
Cement Grout 325'-338'		●	335	●		Sand & Small Gravels
			340			" " "
			345			Fine Sand & Gravel
Silica Sand 338'-365'			350			" " "
			355			" " "
			360			" " "
S-Tube Perforated from 377'-352'			365			Sand & Fine Gravel
			370			" " "
			375			" " "
			380			" " "
Cement Grout 365'-412'			385			" " "
			390			" " "
			395			" " "
			400			Coarse Grey Sand & Silt
			405			" " " "
			410			Sand & Gravel
R-Tube Perforated 437'-412'			415			Sand & Silt (Soft)
			420			" " "
Silica Sand 412'-420'			425			Fine Sand & Silt
			430			Fine Brown Sand w/ Fine Gravel
Silt / Slough 420'-437'			435			" " " " "
			440			" " " " "
Cement Grout 437'-454'			445			Clean Coarse Sand
			450			" " "
			455			" " "
			460			Coarse Sand & Silt
			465			Tan Clay w/ Small Gravel
Silt / Slough 454'-505'			470			" " " "
			475			" " " "
			480			Sandy Tan Clay w/ Small Gravel
Q-Tube Perforated 497'-475'			485			" " " " "
			490			" " " " "
			495			" " " " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0443

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-24 Sheet 4 of 4

Location _____ Project _____

Logged by _____ Date Well Started 8/11/60

Reviewed by _____ Date _____ Date Well Completed 8/62

Well Construction Data			Depth in Feet		Geologic/Hydrologic Data	
		Drill Bit		Sample Method		Data from Drillers Logs
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Silt / Slough 454'-505'			500			Clean Fine Blue-Black Sand
			505			Clean Coarse Blue-Black Sand
			510			Fine Blue Sand
Cement Grout			515			Blue Sandy Clay & Small Gravel
505'-536'			520			" " " " "
			525			" " " " "
Perforated 8" Carbon			530			Fine Blue Sand & Silt
Steel Casing 220'-560'			535			" " " "
			540			Fine Blue Sand & Silt w/Small Gravel
Silica Sand			545			" " " " " "
536'-564'			550			Fine Blue Sand & Silt
P-Tube Perforated			555			" " " "
567'-537'			560			" " " "
			565			" " " "
Silt / Slough			570			Basalt
564-575'			575			Basalt
						TD=575'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0444

WELL COMPLETION SUMMARY REPORT

Project CAC-101
Location
Drilling Co. Bach Drilling Co.
Driller W.J. Rodda
Other (companies)
Geologist(s)

Well No. 299-W22-27 Temp. Well No.
Coordinates N36203 W74627
Elevation: Casing 680.66 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D 78'-95' H 0-78'95'-572'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 572'
Completed Depth 570'
Date Started 2/4/64
Date Completed 4/9/64
Static Water Level/Date 212'/4/9/64

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN

*See Back

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	100'		190' - 290'
Perforated Carbon Steel	8"	30'		325' - 355'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement

PERMANENT CASING

*See Back

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		0' - 190'
Carbon Steel	8"		290' - 325'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	303' - 545'		
Silt/Slough	545' - 572'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers set in well 4/9/64

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0445

299-W22-27 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	30'	–	395' - 425'
" " "	"	"	–	460' - 490'
" " "	"	20'	–	530' - 550'
				-
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		355' - 395'
" "	"		425' - 460'
" "	"		490' - 530'
" "	"		550' - 556'
			-
			-

9413205.0446

WELL COMPLETION SUMMARY REPORT

Project CAC-101
Location
Drilling Co. Bach Drilling Co.
Driller W.J. Rodda
Other (companies)
Geologist(s)

Well No. 299-W22-27P Temp. Well No.
Coordinates N36203 W74627
Elevation: Casing 680.66 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D 78'-95' H 0-78'95'-572'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 572'
Completed Depth 570
Date Started 2/4/64
Date Completed 4/9/64
Static Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN *See Back

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	100'		190' - 290'
Perforated Carbon Steel	8"	30'		325' - 355'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement

PERMANENT CASING *See Back

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		0' - 190'
Carbon Steel	8"		290' - 325'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	303' - 545'		
Silt / Slough	545' - 572'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers set in well 4/9/64

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0447

"P"
299-W22-27 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	30'	–	395' - 425'
" " "	"	"	–	460' - 490'
" " "	"	20'	–	530' - 550'
Perforated Polyethylene (?)	1.5"	20'		550' - 570'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		355' - 395'
" "	"		425' - 460'
" "	"		490' - 530'
" "	"		550' - 556'
Polyethylene (?)	1.5"		0 - 550'
			-

9413205.0448

WELL COMPLETION SUMMARY REPORT

oject CAC-101
cation
illing Co. Bach Drilling Co.
iller W.J. Rodda
her (companies)
ologist(s)

Well No. 299-W22-270 Temp. Well No.
Coordinates N36203 W74627
Elevation: Casing 680.66 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D 78'-95' H 0-78'95'-572'
Drilling Fluid Water
Other

COMPLETION DATA

illed Depth 572'
ompleted Depth 490'
ate Started 2/4/64
ate Completed 4/9/64
atic Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SCREEN

*See Back

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	100'		190' - 290'
Perforated Carbon Steel	8"	30'		325' - 355'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement

PERMANENT CASING

*See Back

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		0' - 190'
Carbon Steel	8"		290' - 325'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	303' - 545'		
Silt / Slough	545' - 572'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers set in well 4/9/64

eviewed by Date For all blanks mark N/A if not applicable.

9413205.0449

"Q"
299-W22-27 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	30'	—	395' - 425'
" " "	"	"	—	460' - 490'
" " "	"	20'	—	530' - 550'
Perforated Polyethylene (?)	1.5"	20'		470' - 490'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		355' - 395'
" "	"		425' - 460'
" "	"		490' - 530'
" "	"		550' - 556'
Polyethylene	1.5"		0' - 470'
			-

9413205.0450

WELL COMPLETION SUMMARY REPORT

oject CAC-101
cation
illing Co. Bach Drilling Co.
iller W.J. Rodda
her (companies)
ologist(s)

Well No. 299-W22-27 Temp. Well No.
Coordinates N36203 W74627
Elevation: Casing 680.66 Brass Marker

DRILLING METHOD
Rotary Air Mud
Cable Tool D 78'-95' H 0-78', 95-572'
Drilling Fluid Water
Other

COMPLETION DATA
rilled Depth 572'
ompleted Depth 420'
ate Started 2/4/64
ate Completed 4/9/64
atic Water Level/Date

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ As-Built, Driller's/ Geologist's Logs
___ Guardposts
___ Protective Casing

*See Back

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	100'		190' - 290'
Perforated Carbon Steel	8"	30'		325' - 355'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement

*See Back

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		0' - 190'
Carbon Steel	8"		290' - 325'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	303' - 545'		
Silt / Slough	545' - 572'		

PUMP
Type Depth to Inlet Date Set

ACCEPTANCE
Completed Well: Accept Conditionally Accept
Reject

COMMENTS
Piezometers set in well 4/9/64

eviewed by Date For all blanks mark N/A if not applicable.

9413205.0451

"R"

299-W22-27 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	30'	–	395' - 425'
" " "	"	"	–	460' - 490'
" " "	"	20'	–	530' - 550'
Perforated Polyethylene	1.5"	20'		400' - 420'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		355' - 395'
" "	"		425' - 460'
" "	"		490' - 530'
" "	"		550' - 556'
Polyethylene (?)	1.5"		0 - 400'
			-

9413205.0452

WELL COMPLETION SUMMARY REPORT

oject CAC-101
cation
illing Co. Bach Drilling Co.
iller W.J. Rodda
her (companies)
ologist(s)

Well No. 299-W22-275 Temp. Well No.
Coordinates N36203 W74627
Elevation: Casing 680.66 Brass Marker

DRILLING METHOD
Rotary Air Mud
Cable Tool D 78'-95' H 0-78'95-572'
Drilling Fluid Water
Other

COMPLETION DATA
illed Depth 572'
mpleted Depth 350'
te Started 2/4/64
te Completed 4/9/64
atic Water Level/Date

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ As-Built, Driller's/ Geologist's Logs
___ Guardposts
___ Protective Casing

*See Back

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated Carbon Steel	8"	100'		190' - 290'
Perforated Carbon Steel	8"	30'		325' - 355'

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement

*See Back

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		0' - 190'
Carbon Steel	8"		290' - 325'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	303' - 545'		
Silt / Slough	545' - 572'		

PUMP
ype Depth to Inlet Date Set

ACCEPTANCE
Completed Well: Accept Conditionally Accept
Reject

COMMENTS
Piezometers set in well 4/9/64

eviewed by Date For all blanks mark N/A if not applicable.

9413205.0453

299-W22-27 "S" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	30'	—	395' - 425'
" " "	"	"	—	460' - 490'
" " "	"	20'	—	530' - 550'
Perforated Polyethylene (?)	1.5"	20'		330' - 350'
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		355' - 395'
" "	"		425' - 460'
" "	"		490' - 530'
" "	"		550' - 556'
Polyethylene	1.5"		0' - 330'
			-

9413205.0454

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-27 Sheet 1 of 4

Location _____ Project _____

Logged by _____ Date Well Started 2/4/64

Reviewed by _____ Date _____ Date Well Completed 4/9/64

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description (Data from Driller's Log)
	5	Sand & Gravel
	10	" "
	15	Coarse Sand & Fine Gravel
8" Carbon Steel Casing 0'-190'	20	Coarse Sand
	25	" "
	30	" "
1½" Polyethelene S-Tube 0'-350'	35	" "
	40	" "
	45	Coarse Sand & Gravel
1½" Polyethelene R-Tube 0'-420'	50	Gravel
	55	Sand & Gravel
	60	" "
1½" Polyethelene Q-Tube 0'-490'	65	Coarse Sand & Gravel
	70	" " "
	75	" " "
1½" Polyethelene P-Tube 0'-570'	80	Sand & Silt
	85	" "
	90	" "
	95	Coarse Sand & Clay
	100	Sand & Clay
	105	" "
	110	Fine Sand & Clay
	115	" " "
	120	" " "
	125	" " "
	130	" " "
	135	" " "
	140	Clay
	145	"
	150	Sand & Gravel
	155	Sand, Gravel & Silt
	160	Sand & Silt
	165	" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0455

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-27 Sheet 2 of 4
Location _____ Project _____

Logged by _____ Date Well Started 2/4/64
Reviewed by _____ Date _____ Date Well Completed 4/9/64

Well Construction Data — Geologic/Hydrologic Data

Drill Bit — Sample Method — Data from Driller's Log

Description	Depth in Feet	Lithologic Description
8" Carbon Steel Casing 0'-190'	170	Sand & Silt
	175	" "
	180	Sand & Clay
	185	Sand & Silt
	190	" "
Perforated 8" Carbon Steel Casing 190'-290'	195	Gravel & Sand
	200	" "
	205	Sand & Gravel to 3"
1½" Polyethelene S-Tube 0-350'	210	" " " "
	215	Sand, Gravel & Cobbles
	220	" " "
1½" Polyethelene R-Tube 0'-420'	225	" " "
	230	" " "
	235	Sand & Gravel
1½" Polyethelene Q-Tube 0'-490'	240	" "
	245	Sand & Very few Gravels
	250	Sand & few Gravels to 2"
1½" Polyethelene P-Tube 0'-570'	255	" " " " "
	260	Sand & Pea Gravel
	265	" " "
	270	" " "
	275	Coase Sand & Brown Clay
	280	" " " "
	285	Sand & Gravel
	290	" "
	295	" "
8" Carbon Steel Casing 290'-325'	300	" "
	305	Sand & Very Little Gravel
	310	" " " "
Sand Pack 303'-545'	315	Sand & Gravel
	320	Cemented Sand & Gravel
	325	" " "
	330	Cemented Gravel & Sand

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0456

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-27 Sheet 3 of 4
Location _____ Project _____

Logged by _____ Date Well Started 2/4/64
Reviewed by _____ Date _____ Date Well Completed 4/9/64

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		Data from Driller's Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Perforated 8" Carbon Steel Casing 325'-355'		●	335	●		Cemented Sand & Gravel
			340			" " "
			345			" " "
S-Tube Perforated from 350'-330'			350			Cemented Sand
			355			" "
			360			Sand & Gravel
8" Carbon Steel Casing 355'-395'			365			" "
			370			" "
			375			" "
Sand Pack 303'-545'			380			" "
			385			" "
			390			" "
			395			" "
Perforated 8" Carbon Steel Casing 395'-425'			400			" "
			405			" "
			410			Brown Sand & Gravel
R-Tube Perforated from 420'-400'			415			Sand & Clay
			420			Sand, Clay & Gravel
			425			Sand & Gravel
			430			" "
			435			" "
8" Carbon Steel Casing 425'-460'			440			" "
			445			" "
			450			Sand, Gravel & Clay
			455			Clay
			460			"
Perforated 8" Carbon Steel Casing 460'-490'			465			"
			470			"
			475			"
Q-Tube Perforated from 490'-470'			480			"
			485			"
			490			"
			495			"

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0457

AS-BUILT DIAGRAM

Boring or Well Number 299-W22-27 Sheet 4 of 4

Location _____ Project _____

Logged by _____ Date Well Started 2/4/64

Reviewed by _____ Date _____ Date Well Completed 4/9/64

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		Data from Driller's Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing 490'-530'			500			Clay
			505			Clay & Sand
			510			Blue Sand
Sand Pack 303'-545'			515			Blue Sand & Gravel
			520			" " "
			525			" " "
Perforated Carbon Steel Casing 530'-550'			530			" " "
			535			" " "
			540			" " "
			545			Gray Clay, Sand & Gravel
			550			" " " "
8" Carbon Steel Casing 550'-556'			555			Dark Gray Clay
			560			Basalt @559'
			565			"
P-Tube Perforated from 570'-550'			570			"
						TD = 572'
Silt / Slough 545'-572'						

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0458

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, RO)

Specification No. WHC-S-014* Rev. No. 4
Project W-017 216-U-12 CRIB
Location 200 WEST
Drilling Co. KAISER ENGINEERING HANFORD
Driller LOUIS WATKINS
Other (companies) N/A
Geologist(s) P.S. INNIS (GOLDER ASSOCIATES)
C.D. CONDIT (GOLDER ASSOCIATES)
L.A. DOREMUS S.M. GOODWIN
M.A. STOMNESS

Well No. 299-W22-40 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD

Rotary Air N/A Mud N/A
Cable Tool D 0-160' H 160'-245'
Drilling Fluid WATER - 200 EAST POWER HOUSE SUPPLY
Other NONE

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NATURAL GAMMA	0-143'	3/12/90
NAT. GAMMA	110-243	3/30/90

COMPLETION DATA

Drilled Depth 245.0
Completed Depth 244.49
Date Started 2/28/90
Date Completed 5/15/90
Static Water Level/Date 228.07' 4/23/90

AQUIFER TESTING

Type SLUG TEST
Length of Test
Volume Pumped
Drawdown
Date of Test 4/23/90

INSPECTION RESULTS

CLEANING

Inspection Method VISUAL
Acceptance Criteria SECTION 7.6, SECTION 4.2.2

	Accept	Reject	Date
Drilling Tools/Rig	PJD	N/A	3/20/90
Temporary Materials	PJD	N/A	3/20/90
Permanent Materials	SMW	N/A	4/5/90

MATERIAL STORAGE/PACKING

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.2, 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	SMW	N/A	4/5/90
Material Packing	SMW	N/A	4/5/90

SCREEN

Type	Length	Slot Size
JOHNSON DIV. TYPE 304 STAINLESS	10.33	10
STEEL CHANGEL PACK	10.02	10

Depth(s) 244.49 - 234.16
234.16 - 224.14
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.3.5
Accept SMW Reject N/A Date 4/5/90

LUBRICANTS/ADDITIVES

Inspection Method VISUAL
Acceptance Criteria SECTION 7.2

	Identify	Accept	Reject	Date
Additives	DRILL H_2O	SMW	N/A	4/11/90
Lubricants	FOOD GRADE VEG. OIL	PJD	N/A	2/28/90

CASING (permanent)

Type	Size	Placement
JOHNSON DIV. TYPE 304	4"	224.14 - +0.23
SCH. 5 STAINLESS STEEL	-	- -

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.1, 4.2.5
Accept SMW Reject N/A Date 4/5/90

STRAIGHTNESS TEST

Inspection Method VISUAL 21.56 - 0.50 TESTING PIPE
Acceptance Criteria SECTION 8.2
Accept PJD Reject N/A Date 3/20/90

WELL PROTECTION

Inspection Method VISUAL - 21.56 - 0.50
Acceptance Criteria SECTION 4.2.10

	Accept	Reject	Date
Protective Posts	MAC SMW	N/A	5/15/90
Locks	MAC	N/A	5/15/90

ANNULAR SEAL

Inspection Method MEASURED W/STEEL TAPE
Acceptance Criteria SECTION 4.2.6 - 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
60 mesh silica sand	218.1 - 243.2	[illegible]	LAD	N/A	[illegible]
3/8" x 1/2" [illegible]	211.1 - 218.1	[illegible]	LAD	N/A	4/10/90
6-20 mesh Bentonite chunks	206.5 - 211.1	[illegible]	LAD	N/A	[illegible]
[illegible]	[illegible] - 206.5	[illegible]	LAD	N/A	4/11/90

OTHER (initial if performed)

N/A Well Abandonment
PJD Well Development
PJD Downhole TV Inspection
SMW Complete As-Built Diagram, Driller's/Geologist's Logs

* ECN 146189 ECN 124393 146188 For all blanks mark N/A if not applicable.
ECN 124394 ECN 124427 124435

9413205.0459

WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Well 299-W22-40 continued...

ANNULAR SEAL

Inspection Method PHYSICAL MEASUREMENT Acceptance Criteria SECTION 4.2.6 - 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
CONCRETE PAD	3.0' - +0.5'	1 YARD³	MRU	N/A	5/1/92

for all blanks mark N/A if not applicable.

9413205.0460

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W22-40 Geologist P.S. INNIS C.D. CONDIT Page 1 of 2

Reviewed by H.L. McKeen Date 4-24-90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
CONCRETE PAD		5		SAND
CEMENT GROUT		10		SL. GRAVELLY SL. MUDDY SAND
143.5 OF 10" CARBON STEEL		15		SL. MUDDY SAND
CASING (TEMPORARY)		20		MUDDY SAND
(1.4' STICK-UP)		25		SL. GRAVELLY SAND
		30		" " "
247.94' OF 8" CARBON STEEL		35		SAND
CASING (TEMPORARY)		40		SAND
		45		SAND (MUDDY [illegible])
		50		SAND
224.97' OF 4" THIN SCH.		55		SAND
SCH. 5 STAINLESS STEEL		60		SL. GRAVELLY SAND
CASING		65		SL. MUDDY SAND [illegible] GRAVELLY SAND
		70		SAND
		75		SAND
		80		SAND
		85		SAND
		90		SL. MUDDY SAND 87-88 SAND
		95		SL. MUDDY SAND 92-93, 94-94.5 SAND
CASING CENTRALIZER		100		MUDDY SAND (CHANGE -97')
		105		SAND (CHANGE - 102')
8-20 MESH BENTONITE PELLETS		110		SL. MUDDY SAND (CHANGE - 105)
		115		" " "
		120		SAND
CASING JOINT		125		SAND
		130		SAND

SL. - SLIGHTLY

A-1800-186 (3/87)

9413205.0461

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W22-40 Geologist P.S. INNIS, C.D. CONDIT Page 2 of 2

Reviewed by D.L. McElhaney Date 4-24-90

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description
143.5' OF 10" CARBON		135		SAND
STEEL CASING (TEMPORARY)		140		SAND
		145		SAND
247.94' OF 8" CARBON		150		SAND
STEEL CASING (TEMPORARY)		155		SAND
3.1' STICK-UP		160		SL. MUDDY SAND BEGINNING 157'
		165		SL. MUDDY SAND
8-20 MESH BENTONITE CHUNKS		170		" " "
		175		MUDDY SAND
CASING CENTRALIZER		180		SL. MUDDY SAND
CASING JOINT		185		MUDDY SAND
		190		187' SL. GRAVELLY SL. MUDDY SAND
224.97' OF 4" TYPE 304		195		SL. MUDDY GRAVELLY SAND
GRADE 5 STAINLESS STEEL		200		SL. MUDDY SAND
CASING		205		SL. GRAVELLY SL. MUDDY SAND
		210		MUDDY SAND
1/2-3/8" BENTONITE PELLETS		215		" "
		220		" "
		225		SL. MUDDY SAND
40 MESH CLASS SILICA SAND		230		9/w = 228.97' 4/23/90 MUDDY SAND
		235		MUDDY SANDY GRAVEL
20.35' OF 10 SLOT TYPE		240		" " "
304 STAINLESS STEEL CHANNEL		245		" " "
PACE SCREEN				

SL. - SLIGHTLY

A-1800-100 (3/8)

9413205.0462

WELL COMPLETION/INSPECTION REPORT

Specification No. WHC-S-014 Rev. No. 3+4
Project 41017
Location 200 WEST AREA, 216-U-12 CRIB
Drilling Co. KEH
Driller Steam Winnie
Other (companies) NONE
Geologist(s) R.C. Miller (GAI), A.W. PEARSON, C.D. CONDIT (GAI), LA DOREMUS, SM GOODWIN, MA CHAMNESS

Well No. 299-W22-41 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD

Rotary Air N/A Mud N/A
Cable Tool D 0-160' H 160-245.7'
Drilling Fluid 200E Raw Water Supply
Other N/A

GEOPHYSICAL LOGGING

Sondes	Interval	Date
NAT. GAMMA	237' - 2.5'	3/5/90
	-	
	-	
	-	
	-	

COMPLETION DATA

Drilled Depth 245.7' ±
Completed Depth 245.33'
Date Started 2/7/90
Date Completed 5/15/90
Static Water Level/Date 227.96 4/5/90

AQUIFER TESTING

Type SLUG TEST
Length of Test
Volume Pumped
Drawdown
Date of Test 4/23/90

INSPECTION RESULTS

CLEANING

Inspection Method Visual
Acceptance Criteria Section 7.6

	Accept	Reject	Date
Drilling Tools/Rig	[illegible]	N/A	2/6/90
Temporary Materials	[illegible]	N/A	2/7/90
Permanent Materials	[illegible]	N/A	4/5/90

MATERIAL STORAGE/PACKING

Inspection Method Visual
Acceptance Criteria Section 4.2.2, 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	[illegible]	N/A	4/5/90
Material Packing	[illegible]	N/A	4/5/90

SCREEN

Type	Length	Slot Size
JOHNSON DIV. TYPE 304 CONTINUOUS	21.24'	5
W.P.A.? STAINLESS STEEL	—	—

Depth(s) 245.33' - 224.09'

Inspection Method Visual
Acceptance Criteria Section 4.2.5
Accept LAD Reject N/A Date 3/29/90

LUBRICANTS/ADDITIVES

Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	DRILL WATER	[illegible]	N/A	4/5/90
Lubricants	Vegetable Oil	[illegible]	N/A	2/7/90

STRAIGHTNESS TEST

Inspection Method Run straightness tool to bottom
Acceptance Criteria Section 8.2
Accept [illegible] Reject N/A Date [illegible]

CASING (permanent)

Type	Size	Placement
JOHNSON DIV TYPE 304	4"	224.09' - +1.03'
SCH. 5 STAINLESS STEEL	—	— - —

Inspection Method Visual
Acceptance Criteria Section 4.2.1, 4.2.5
Accept LAD Reject N/A Date 3/29/90

WELL PROTECTION

Inspection Method Visual
Acceptance Criteria Section 4.2.10

	Accept	Reject	Date
Protective Posts	[illegible]	N/A	5/15/90
Locks	MAC	N/A	5/1/90

ANNULAR SEAL

Inspection Method Physical Measurement
Acceptance Criteria Section 4.2.1, - 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
40-100 MESH CSSI SILICA SAND	243.4 - 226.7	9.32 FT³ ~~8.70 FT³~~	[illegible]	N/A	4/3/90
3/8" VOLCLAY TABLETS	226.7 - 215.4	1.24 FT³	[illegible]	N/A	4/3/90
8-20 MESH BENTONITE CRUMBLES	215.4 - 18.4	99.4 FT³	[illegible]	N/A	4/4/90
CEMENT GROUT	18.4 - 2.5	5.94 FT³	[illegible]	N/A	4/4/90

OTHER (initial if performed)

N/A Well Abandonment
JTS Well Development
[illegible] Downhole TV Inspection
[illegible] Complete As-Built Diagram, Driller's/Geologist's Logs

Rev. 4 ECN #'s:
146169 124427 146155
124393 124394 124435

A-225 For all blanks mark N/A if not applicable.

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Well 299-W22-41 continued...

ANNULAR SEAL

Inspection Method PHYSICAL MEASUREMENT Acceptance Criteria SECT. 4.2.6 - 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
CONCRETE PAD	2.5' - +0.5'	1 YMD^3	MAL.	N/A	5/1/90
	-				
	-				
	-				

for all blanks mark N/A if not applicable.

9413205.0464

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W22-41 Geologist R. Miller (GAI), AW Pearson Page 1 of 2

Reviewed by VC McGhee Date 4-24-90

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description
CONCRETE PAD		5		Slightly Muddy SAND DB
10"Ø carbon steel casing -		10		SAND - trace of gravels "
temporary w/drive shoe		15		" - f. micaceous "
from 4.0' to 122.1' bls		20		" - " "
CEMENT GROUT		25		" - " "
8"Ø carbon steel casing -		30		" - coarser "
temporary w/drive shoe		35		" - f. micaceous to gravel "
from + 2.2 to 244.4'		40		" - " " "
		45		" - coarser - increase in gravel "
8-20 MESH CRUMBLES		50		Slightly Gravelly SILT "
		55		SAND - to gravels "
CASING CENTRALIZERS		60		" - " " "
CASING JOINT		65		" - " " "
		70		" - " " "
		75		" "
225.12' of 4" DIA. TYPE		80		" - f. sands to gravel "
304 S.S. STAINLESS STEEL		85		" - f. micaceous "
SCREEN		90		" - to gravels "
		95		" - f. micaceous "
		100		SAND
		105		" w/slightly cemented layer @ 104'
		110		MUDDY SAND "
		115		SAND "
		120		" "
		125		" "
		130		" "

A-1800-196 (3/87)

9413205.0465

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W22-41 Geologist R Miller (GAI), AW Pearson Page 2 of 2

Reviewed by [illegible] Date 4-24-90

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description
12" carbon steel casing		125		SAND LC
temporary with drive shoe		130		" "
from +1.0' to 132.1' BLS		135		" "
		140		" "
8" carbon steel casing		145		" - f mica grads to mud sand
temporary with drive shoe		150		Muddy SAND - gradational "
from +2.2 to 224.4'		155		Sandy MUD LT
		160		" "
8-10 MESH BENTONITE		165		" "
CRUMBLES		170		" "
		175		" "
225.12' OF 4" DIA. TYPE 304		180		Muddy Sandy GRAVEL tr c mica
SCH. 5 STAINLESS STEEL		185		" "
CASING		190		" "
		195		" "
CASING JOINT		200		Sandy MUD "
		205		" "
3/8" VOLCLAY TABLETS		210		" "
		215		" "
40 MESH CSS: SILICA SAND		220		" D/W = 227.96' 4/5/90 "
		225		Muddy Sandy GRAVEL "
21.24' OF TYPE 304		230		" " " "
CONTINUOUS WRAP STAINLESS		235		" " "
STEEL CASING				

A-1800-186 (3/87)

9413205.0466

WELL COMPLETION/INSPECTION REPORT

Specification No. [illegible] Rev. No. [illegible]
Project [illegible]
Location [illegible]
Drilling Co. [illegible]
Driller GARY LTDIN
Other (companies) NONE
Geologist(s) [illegible] AW FRENTON, [illegible] M.A. CHARNESS, S.M. GOODWIN, L.A. DOREMUS

Well No. 299-W22-42 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD

Rotary Air N/A Mud N/A
Cable Tool D [illegible]-150' H 150'-244.0'
Drilling Fluid [illegible]
Other NONE

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Gamma	[illegible] - 137.7	2/12/90
" "	100.0' - 242.8'	2/15/90

COMPLETION DATA

Drilled Depth 244.0'
Completed Depth 243.39
Date Started 2/12/90
Date Completed 5/15/90
Static Water Level/Date 226.99' (4/23/90)

AQUIFER TESTING

Type SLUG TEST
Length of Test
Volume Pumped
Drawdown
Date of Test 4/30/90

INSPECTION RESULTS

CLEANING

Inspection Method [illegible]
Acceptance Criteria [illegible]

	Accept	Reject	Date
Drilling Tools/Rig	CLC	N/A	2/12/90
Temporary Materials	[illegible]	N/A	2/15/90
Permanent Materials	SMC	N/A	4/23/90

MATERIAL STORAGE/PACKING

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.2 7.3 (REV 4)

	Accept	Reject	Date
Mtl. Handling/Storage	SMC	N/A	4/23/90
Material Packing	SMC	N/A	4/23/90

SCREEN

Type	Length	Slot Size
Johnson Div. Type 304 Stainless	10.30	10
Steel Channel Pack	10.01	10

Depth(s) 243.39 - 233.09
233.09 - 223.08
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.5 (REV.4)
Accept SMC Reject N/A Date 4/15/90

LUBRICANTS/ADDITIVES

Inspection Method VISUAL
Acceptance Criteria SECTION 7.2

	Identify	Accept	Reject	Date
Additives	DRILL WATER	SMC	N/A	4/23/90
Lubricants	FOOD OIL	SMC	N/A	4/23/90

STRAIGHTNESS TEST

Inspection Method 21.6' LONG 7" O.D. 1.65
Acceptance Criteria SECTION 5.2 (REV 4)
Accept [illegible] Reject N/A Date [illegible]

CASING (permanent)

Type	Size	Placement
Johnson Div. Type 304	4"	223.08 - 71.92
Sch 5 Stainless Steel	-	- -

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.1, 4.2.3 (REV.4)
Accept SMC Reject N/A Date 4/15/90

WELL PROTECTION

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.10

	Accept	Reject	Date
Protective Posts	SMC	N/A	5/15/90
Locks	MHC	N/A	5/15/90

ANNULAR SEAL

Inspection Method PHYSICAL MEASUREMENT
Acceptance Criteria SECTION 4.2.6 TO 4.2.9

Type	Interval	Volume	Accept	Reject	Date
40 Mesh Ccsi Silica Sand	243.2 - 219.7	7.63 ft³	SMC	N/A	4/19/90
1/2" Volclay Tablets	219.7 - 215.25	1.24 ft³	SMC	N/A	4/19/90
8-20 Mesh Bentonite Chunks	215.25 - 18.8	49.4 ft³	LAD	N/A	4/20/90
Cement Grout	18.8 - 2.5	7.92 ft³	SMC	N/A	4/23/90

OTHER (initial if performed)

Well Abandonment
Well Development
[illegible] Downhole TV Inspection
SMC Complete As-Built Diagram, Driller's/Geologist's Logs

REV 4 ECN'S: 146189 124394 124393 146188 124427 124435

A-229 For all blanks mark N/A if not applicable.

9413205.0467

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Well 299-W22-42 continued...

ANNULAR SEAL

Inspection Method PHYSICAL MEASUREMENT Acceptance Criteria SECT. 4.2.6 - 4.2.9.

Type	Interval	Volume	Accept	Reject	Date
CONCRETE PAD	2.5' - +0.5'	14 M³	MAC	N/A	5/1/90

— for all blanks mark N/A if not applicable.

9413205.0468

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number [illegible] Geologist R.L. Mitchell (PNL) / C.D. Conner (WCC) Page 1 of 2

Reviewed by [illegible] Date 4-24-90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Concrete Pad				
260.9 ft. of Temporary 10"		0'		SAND
Thermal steel casing		10'		"
Cement Grout		15'		"
265.4 ft. of Temporary 9"		20'		"
Carbon steel casing		25'		"
[illegible] to 2[illegible]		30'		"
		35'		Silty [illegible] SAND
225.0 ft of 4" dia well screen		40'		SAND
304.5 Stainless Steel		45'		"
Screen		50'		Gravelly SAND
		55'		SAND
Casing Centralizer		60'		"
Casing Joint		65'		"
		70'		"
		75'		"
		80'		"
8-20 Bentonite Crumbles		85'		"
		90'		"
		95'		"
		100'		"
		105'		"
		110'		"
		115'		"
		120'		"
		[illegible]		"
		[illegible]		"

A-1800-186 (3/87)

9413205.0469

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number #200-W22-42 Geologist S.D. Condit (GAI) AW Pearson R.L. Miller (GAI) Page 2 of 2

Reviewed by [illegible] Date 4-24-90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
Telescoped 10" carbon		135'		SAND
steel casing		140'		"
		145'		"
Telescoped 8" carbon		150'		"
steel casing		155'		SLIGHTLY MUDDY SAND
from 11.4' to 244.0' bls		160'		MUDDY SAND
		165'		SANDY MUD
8-20 mesh Bentonite pellets		170'		" " "
		175'		Mottled SILT
Casing centralizer		180'		" " "
Casing joint		185'		" " "
		190'		Greenish Mottled SILT
		195'		" " " "
225.0' of 4" dia. Type 304		200'		Mottled SAND "
Cor 5 stainless steel		205'		" " "
casing		210'		Slightly greenish Sandy MUD "
		215'		" " " " "
1/2" dia. Volclay pellets		220'		Sandy MUD "
		225'		" 0/w = 224.00' 4/23/90 "
40 mesh Ottawa Silica Sand		230		Mottled SAND "
		235		Mottled Sandy GRAVEL "
20.31' of 10 slot Type 304		240		" " " "
Stainless steel screen		245		" " " "
Pack Screen				Total Depth - 244.0' bls

A-1800-189 (2/8)

9413205.0470

WELL COMPLETION/INSPECTION REPORT (governing procedure DO-1, RO)

Specification No. NHC-C-014 Rev. No. 3
Project WOT
Location 200-UR-2 OU
Drilling Co. KEH
Driller D. LUCHE
Other (companies) NONE
Geologist(s) C.D. Cover, Alu Pearson, R.O. Niles (GAI), S.M. Goodwin, L.A. Dodenus, M.A. Chambers

Well No. 299-W22-43 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

DRILLING METHOD
Rotary Air N/A Mud N/A
Cable Tool D 0.0' - 146.0' H 146.0' - 244.0'
Drilling Fluid raw water supply - 200E
Other NONE

GEOPHYSICAL LOGGING

Sondes	Interval	Date
Induction	20' - 135'	3/5/90
Nat Gamma	135' - 242'	3-30-90

COMPLETION DATA
Drilled Depth 244.0'
Completed Depth 244.01'
Date Started 2/22/90
Date Completed 3/15/90
Static Water Level/Date 226.19' 4-17-90

AQUIFER TESTING
Type SLUG TEST
Length of Test
Volume Pumped
Drawdown
Date of Test 4/23/90

INSPECTION RESULTS

CLEANING
Inspection Method VISUAL
Acceptance Criteria SECTION 7.6

	Accept	Reject	Date
Drilling Tools/Rig	CDC	N/A	2/23/90
Temporary Materials	[illegible]	N/A	3/7/90
Permanent Materials	[illegible]	N/A	4/17/90

MATERIAL STORAGE/PACKING
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.2 7.3

	Accept	Reject	Date
Mtl. Handling/Storage	[illegible]	N/A	4/17/90
Material Packing	[illegible]	N/A	4/17/90

SCREEN

Type	Length	Slot Size
Johnson Div. Type 304 Stainless	10.33'	10
Stainless Channel Pack	10.01'	10

Depth(s) 244.01' - 233.65'
233.65' - 223.67'
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.5
Accept [illegible] Reject N/A Date 4/17/90

LUBRICANTS/ADDITIVES
Inspection Method VISUAL
Acceptance Criteria SECTION 7.2

	Identify	Accept	Reject	Date
Additives	DRILL WATER	[illegible]	N/A	4/17/90
Lubricants	[illegible]	[illegible]	N/A	3/8/90

STRAIGHTNESS TEST
Inspection Method 20' of 6" SS CASING TO BOTTOM OF HOLE
Acceptance Criteria SECTION 4.2
Accept [illegible] Reject N/A Date 3/16/90

CASING (permanent)

Type	Size	Placement
Johnson Div. Type 304	4"	223.67 - +1.45'
Con. S Stainless Steel		

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.1 4.2.5
Accept [illegible] Reject N/A Date 4/12/90

WELL PROTECTION
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.10

	Accept	Reject	Date
Protective Posts	[illegible]	N/A	3/15/90
Locks	MAC	N/A	5/1/90

ANNULAR SEAL
Inspection Method PHYSICAL MEASUREMENT
Acceptance Criteria SECTION 4.2.6 TO 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
40 Mesh CCSI Silica Sand	242.9' - 219.4'	8.19 ft³	[illegible]	N/A	4/13/90
1/2" Volclay Tablets	219.4' - 215.95'	1.24 ft³	[illegible]	N/A	4/17/90
8-20 Mesh Portland Chippings	215.95' - 15.0'	107.21 ft³	[illegible]	N/A	4/17/90
Portland Grout	15.0' - 7.5'	7.42 ft³	[illegible]	N/A	4/17/90

OTHER (initial if performed)
N/A Well Abandonment
[illegible] Downhole TV Inspection
[illegible] Complete As-Built Diagram, Driller's/Geologist's Logs
[illegible] Well Development

ECN #'s: 146189 124427 146195 A-233 124393 124394 124435

For all blanks mark N/A if not applicable.

9413205.0472

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Well 244-W22-43 continued...

ANNULAR SEAL

Inspection Method PHYSICAL MEASUREMENT Acceptance Criteria SECT 4.2.6 - 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
CONCRETE PAD	2.5' - 0.5'	1 YARD³	MAC	N/A	5/1/90

for all blanks mark N/A if not applicable.

9413205.0471

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W22-43 Geologist C.D. Conert, AW Poston Page 1 of 2

Reviewed by V.C. McGhan Date 4-25-90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
CONCRETE PAD				
157.7 FT. OF TEMPORARY 12"		5'		SLIGHTLY MUDDY SAND
STEEL CASING		10'		SLIGHTLY GRAVELLY SAND
CEMENT GROUT		15'		SAND
246.1 FT OF TEMPORARY 8"		20'		"
STEEL CASING		25'		"
		30'		"
225.12' OF 4" DIA. TYPE		35'		"
304 SCH. 5 STAINLESS STEEL		40'		SLIGHTLY GRAVELLY SAND
CASING		45'		GRAVELLY SAND
		50'		SLIGHTLY GRAVELLY SAND
		55'		SAND
CASING CENTRALIZER		60'		"
CASING JOINT		65'		"
		70'		"
		75'		"
		80'		"
		85'		"
		90'		"
		95'		"
		100'		SLIGHTLY MUDDY SAND
		105'		" " "
		110'		" " "
		115'		MUD LEASES 111'-114' SAND
8'-20 MESH BENTONITE		120'		"
PELLETS		125'		"
		130'		"

A-1800-186 (3/87)

9413205.0473

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W22-43 Geologist AW Pearson / [illegible] Page 2 of 2

Reviewed by [illegible] Date 4-25-90

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description
11" ø temporary carbon steel		135'		SAND DC
casing w/drive shoe from		140'		slightly Muddy SAND "
0.2' to 134.9' bls		145'		" " " - 5' [illegible]
8" ø temporary carbon steel		150'		Muddy SAND - from 150' [illegible]
casing w/drive shoe from		155'		" " rock intervals "
0.35' to 244.75' bls		160'		Sandy MUD - occasional "
		165'		" "
225.12' of 4" DIA. TYPE		170'		" "
304 SCH. 5 STAINLESS		175'		" "
STEEL CASING		180'		" "
		185'		" - bowlder - cobble "
CASING CENTRALIZER		190'		Muddy Sandy GRAVEL - cobble
		195'		slightly Cement Muddy SAND
		200'		" " " "
CASING JOINT		205'		Sandy MUD "
		210'		" " "
		215'		"
1/2" VOLCLAY TABLETS		220'		Muddy SAND "
		225		" " "
		230		D/[illegible] 4-19-90 "
40 MESH CSSI SILICA SAND		235		" " "
		240		SAND - [illegible] "
20.34' of TYPE 304		245		MUDDY SANDY GRAVEL "
STAINLESS STEEL CHANNEL				
PACK SCREEN				

A-1800-188 (3/87)

9413205.0474

WELL CONSTRUCTION REPORT

VALIDATED

Page 1 of 2

Specification No. WHC-S-014 Rev No. 4 5 (Rev.5 as of 11/9/90)

ECNs 122223 122261 124393 124394 124427 124435 144230, 144231 144232, 144233, 194236, 196189 144239, 144237, 144240

Project W-017-SST

Location 200 W, west side of S Tank Farm

Drilling Company KEH

Driller Rob Jones Louis Watkins, Gene Thomas

Other (Drillers Assistants) Brett Strode

Geologist(s) WA Chamness, AW Pearson, K.R.D. Barton, Tyler Gilmore, L.D Walker, LA Doremus, S.P. Aizlart, N.A. Cabaret, SJ Teel, G.G. Kelly, N.A. Ballantyne (Zausco)

Well No. 2-14 (Original 138E/Temp Well No. N/A

Coordinates N: 134,445.93 E: 566,712.50

Casing Elev. 666.33 (Outer Casing) Ground Elev. 663.34 Basis Cap

Drilling Method

Verification Method Visual

Criteria SD, SD, SD, EII 6.7 Sec 6.2 WHC-S-014

			Initials	Date
Rotary	Air N/A	Mud N/A	N/A	N/A
Cable Tool	D 0'-155'	H 155-232.0	EDM	12/4/90
Drilling Fluid	Raw H2O	360 gal	RDM	10/10/90
Other	N/A			

Geophysical Logging

Sondes	Interval	Date
Natural gamma	0'-145'	11/5/90
" "	140'-215	11/30/90
	-	
	-	
	-	

Completion Data

Drilled Depth 218.15

Completed Depth 217.17

Date Started 10/17/90

Date Completed 12/4/90

Static Water Level/Date 197.4 11/30/90

198.1 1/15/91

Aquifer Testing

Type Slug Test (Bouwer & Rice)

Flow Meter I.D. No. NA

Cal. Due Date NA

Length of Test 22 min.

Volume Pumped NA

Drawdown NA

Date of Test 12/12/90

Completion Results

Cleaning

Verification Method visual

Criteria WHC-S-014 Section 4.2.2.7.6 (EII 5.4)

	Initials	Date
Drilling Tools/Rig	RDM	10/10/90
Temporary Materials	RDM	10/16/90
Permanent Materials	GK	12/4/90

Screen

Type	Length	Slot Size
Johnson Channel 1" ID	2 x 10.5'	10 slot

Depth(s) 217.17' - 195.9'

Verification Method Visual and measurement

Criteria WHC-S-014 Sec 4.2.3

Initials G.G.K Date 12/4/90

Material Storage/Packing

Verification Method visual

Criteria Sec 4.2.2.7.3 (WHC-S-014)

	Initials	Date
Mtl. Handling/Storage	GK	12/4/90
Material Packing	GK	12/4/90

Lubricants/Additives

Verification Method visual

Criteria Sec 7.3 (WHC-S-014)

	Identify	Initials	Date
Additives	N/A		
Lubricants	Lt Lube Will Grad	AWP	10/25/90

Straightness Test

Verification Method Visual

Criteria WHC-S-014 Section 9.2

Initials SST Date 11/30/90

A-6000-436 (09/90)

9413205.0475

WELL CONSTRUCTION REPORT
(continuation sheet)

well # 299.W3-13

Casing (permanent)

Type	Size	Placement
stainless steel 304	4.5"	195.9' ~~125.5~~ + 4.2' NG level

Verification Method measurement + visual

Criteria WHC-S-014, Section 4.2.4 + 4.2.5

Initials CCK Date 12/6/90

Well Protection

Verification Method visual

Criteria WHC-S-014 Section

	Initials	Date
Protective Posts	[illegible]	12/20/91
Protective Casing	[illegible]	12/20/91
Site Restored	[illegible]	12/20/91
Cap, Hasp and Lock	[illegible]	12/20/91
Surface Pad	[illegible]	12/20/91

Annular Seal/Filter Pack

Verification Method visual + measurement Criteria WHC-S-014 Section 4.2.6, 4.2.8, 4.2.9 + 5.3

Type	Interval	Volume	Initials	Date
4-12 sand	217.17 - 190.4	10.7 BAGS @ 100# ea	GGC	12/5/90
Bentonite Pellets 1/2"	190.4 - 186.6	3 buckets 50#	CCK	12/6/90
Bentonite Granules	186.6' - 18.5'	112 bags	CCK	12/7/90
Cement	18.5 - 2.7	45 bags	CCK	12/5/90

Well Survey/Labeling

Verification Method REVIEW OF SURVEY REPORT

Criteria WHC-S-014 3.4

	Initials	Date
Measurement Point/Surveyed	[illegible]	12/19/91
Protective Casing/Brass Cap Surveyed	[illegible]	12/19/91
Well Number Stenciled	[illegible]	12/19/91
Brass Cap Labeled	[illegible]	12/19/91

Pump Installation

Verification Method VISUAL OBSERVATION

Criteria WHC-S-014 4.2.11, 4.2.2

	Initials	Date
Pump Decon/Prep	[illegible]	12/20/91
Installed	[illegible]	12/20/91
Pump Tested	[illegible]	12/20/91

Other (initial if performed)

N/A Well Abandonment AWP Downhole TV Inspection [illegible] Complete As-Built Diagram, Driller's/Geologist's Logs

[illegible] Well Development

Comments/Remarks

Reviewed By (Sign/Print Name) [illegible] Date 12/20/91

A-6000-435 (09/90)

9413205.0476

VALIDATED 1/12/92

WELL SUMMARY SHEET

Boring or Well No. 299-W23-12

Sheet 1 of 2

Location 200 W. West side of 5 Trunk Line SIGNATURE/DATE

Elevation 663.34 Brass Cap (NGVD '29)

Drilling Contractor KEH

Driller Rob Jones, Louis Watkins, Gene Thomas

Drilling Method and Equipment Cable Tool

Prepared By AW Pearson (299 Barton) (Sign/Print Name) Date 10/17/90

Reviewed By DA Williams (Sign/Print Name) Date 1/2/91

CONSTRUCTION DATA Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA Graphic Log	Lithologic Description
		5		SLIGHTLY SILTY SAND
Temporary 12" casing 30.03' bls 3.3' stickup		10		GRAVELLY SAND
Portland Cement		15		SLIGHTLY SILTY SAND
2" Temporary Carbon Steel		20		SANDY GRAVEL
Casing		25		SANDY GRAVEL
Cuttings to 18.5'		30		SANDY GRAVEL
10" Temporary Carbon Steel		35		STUDY GRAVEL
Casing, set at 154.5		40		SLIGHTLY ~~SILTY GRAVEL~~ GRAVELLY SAND MAC 101281
		45		SAND
		50		SAND
		55		SAND
		60		SAND
		65		SAND
		70		SAND
		75		SANDY SILT (71-73') SAND @ 75'
Bentonite Grouts		80'		SLIGHTLY GRAVELLY SILTY SAND
		85'		SILTY SANDY GRAVEL
		90'		GRAVELLY SILTY SAND
		95'		SLIGHTLY GRAVELLY SLIGHTLY SILTY SAND
		100'		SAND
		105'		SLIGHTLY SILTY SAND
		110'		Slightly Silty Sand
		115'		" " "
		120'		" " "
		125		
		130'		SILT
		135'		MAC 117/90 ~~SILTY SAND~~ SANDY SILT
		140'		" "
		145'		SLIGHTLY SILTY SAND
		150'		SILTY SAND
		155'		GRAVELLY SAND ~~SAMPLE~~ 2 v 155.5'
		160'		(no sample)
		165'		164 Silty Sandy Grave

9413205.0478

WELL SUMMARY SHEET

Boring or Well No. 299-W23-13

Sheet 2 of 2

Location 200 West S Tank Farm

Project W-017 SST

Elevation 663.34 Brass Cap (NGVD'29)

Drilling Contractor KEH

Driller Gene Thomas

Drilling Method and Equipment Cable Tool

Prepared By L.J. Duncan (Sign/Print Name) Date 12/1/90

Reviewed By D. B. Williams (Sign/Print Name) Date 12/5/90

CONSTRUCTION DATA: Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Graphic Log	Lithologic Description
Bentonite Grouting		170		SILTY SANDY GRAVEL
		175		" " "
		180		" " "
Top Bentonite Pellets 184.6		185		GRAVELLY SANDY MUD
5" Temporary Carbon Steel		190		GRAVELLY MUDDY SAND
Casing: Top Sand (3-12) 190.4'		195		" " H2O table ~197'
Top Screen 195.4		200		Muddy Sandy Gravel
Johnson 10 slot		205		" " " "
Stainless steel Screen 4" φ		210		CLAYEY / SILTY SANDY GRAVEL
5" Set to 217.83'		215		" " " "
TD 11/30/90		220		SAND
Measured depth to		225		TD 218.15'
bottom = 218.15' RGS		230		
		235		
		240		
Screen Set at 217.17		245		

A-6000-384 (04/90)

9413205.0477

WELL CONSTRUCTION REPORT

Specification No. WHC-S-014 Rev No. 5

ECNs 144240, 144241

Project W-012 SST

Location NW CORNER 299-4x TANK FARM

Drilling Company KEH

Driller L.D. BULTENA

Other (Companies) N/A

Geologist(s) N.A. CADORET A.W. SPEARMAN
LA DOVEMUS, K.R. BURTON
MA CHAMBERS, J.A. COATES

Well No. 299-W23-14 Temp. Well No. N/A

Coordinates N: 134,290.17 E: 566,708.67

Casing Elev. 664.00 outer casing Ground Elev. 661.00 Brass Cap

Drilling Method

Verification Method VISUAL OBSERVATION

Criteria WHC-S-014 5.2, 5.3, 7.5, E.I.I. 6.3 SECT 62

			Initials	Date
Rotary	Air N/A	Mud N/A	NA	NA
Cable Tool	D 0-172'	H 172'-324'	AWP	1/29/91
Drilling Fluid	RAW WATER	1777 GAL @ 1/16/92	AWP	1/29/91
Other	NA	NA	NA	NA

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	164.3'-4.4'	1/15/91
Gross(Y)Gamma	223.6'-120'	1/21/91
	-	
	-	
	-	

Completion Data

Drilled Depth 224.4'

Completed Depth 223.7'

Date Started 1/22/91

Date Completed 4/16/91 12/6/91

Static Water Level/Date 204' KRCB 1/21/91 / 1/21/91

196.95/1-22-91 | 195.63 1/31/91

Aquifer Testing

Type INSTANTANEOUS SLUG

Flow Meter I.D. No. NA

Cal. Due Date NA

Length of Test 46 min

Volume Pumped NA

Drawdown NA

Date of Test 4-12-91

Completion Results

Cleaning

Verification Method VISUAL INSPECTION

Criteria WHC-S-014 7.6 4.2.2

	Initials	Date
Drilling Tools/Rig	NJC	1/15/91
Temporary Materials	KDR	1/11/91
Permanent Materials	AWP	1/29/91

Screen

Type	Length	Slot Size
Stainless Steel	~~20.28'~~ 21.28' AWP 2/4/91	10

Depth(s) 215.26' - 193.98'

Verification Method Verify using Steel Tape

Criteria WHC-S-014 4.2.3, 4.2.5, 12.2.1, 4.2.1

Initials AWP Date 2/1/91

Material Storage/Packing

Verification Method Visual observation

Criteria WHC-S-014 4.2.2 7.3

	Initials	Date
Mtl. Handling/Storage	AWP	2/4/91
Material Packing	AWP	2/4/91

Lubricants/Additives

Verification Method VISUAL OBSERVATION

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Raw Water	AWP	1/29/91
Lubricants	WELL GUARD	AWP	1/25/91

Straightness Test

Verification Method Visual observation

Criteria WHC-S-014 9.3

Initials KRCB AWP Date 1/21/91 1/29/91

A-6000-436 (09/90)

9413205.0479

WELL CONSTRUCTION REPORT
(continuation sheet)

Well # 299-W23-14

Casing (permanent)

Type	Size	Placement
Type 304 SS sch 5 (Non-Passivated)	4"	~~216.26~~ +1.0' - 193.98 AWP 2/4/91
		-
		-
		-

Verification Method: Verify using Steel Tape

Criteria: WHC-S-014 4.2.1, 4.2.4, 4.2.5, 12.3.1

Initials: AWP Date: 2/1/91

Well Protection

Verification Method: Visual Measure w/Tape

Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	[illegible]	12/18/91
Protective Casing	[illegible]	12/18/91
Site Restored	[illegible]	12/18/91
Cap, Hasp and Lock	[illegible]	12/18/91
Surface Pad	[illegible]	12/18/91

Annular Seal/Filter Pack

Verification Method: Measure with Steel Tape Criteria: WHC-S-014 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.2.1 or 5.2.2

Type	Interval	Volume	Initials	Date
Filter Pack 8-12 silica sand	223.7' - 190.4'	14.65 ft³	AWP	1/31/91
Bentonite Pellets 1/2"	190.4' - 187.0'	2.48 ft³	AWP	1/31/91
8-20 Mesh Bentonite Crumbles	187.0' - 20.4'	104.37 ft³	AWP	2/4/91
Cement Grout	20.4' - 3.0'	22.0 ft³	AWP	2/4/91

Well Survey/Labeling

Verification Method: Review of Survey Report

Criteria: WHC-S-014 3.1

	Initials	Date
Measurement Point/Surveyed	[illegible]	12/18/91
Protective Casing/Brass Cap Surveyed	[illegible]	12/18/91
Well Number Stenciled	[illegible]	12/18/91
Brass Cap Labeled	[illegible]	12/18/91

Pump Installation

Verification Method: Visual Observation

Criteria: WHC-S-014 4.2.11, 4.2.2

	Initials	Date
Pump Decon/Prep	J.A.C.	4-16-91
Installed	J.A.C.	4-16-91
Pump Tested	[illegible]	12/20/91

Other (initial if performed)

N/A Well Abandonment; N/A Downhole TV Inspection; [illegible] Complete As-Built Diagram, Driller's/Geologist's Logs

12/2/91 JAC Well Development

Comments/Remarks

Reviewed By (Sign/Print Name): [illegible] Date: 12/18/91

A-6000-436 (09/90)

9113205.0480

WELL SUMMARY SHEET

Boring or Well No. 299-W23-14

Sheet 1 of 2

Location 200W/SST/299-SX Tank Farm
Project W-017
Elevation 661.00 ~~Bldg~~ CAP (NGVD'29)
Drilling Contractor KEH
Driller L. Bultena
Drilling Method and Equipment Cable Tool
Prepared By Alan Pearson/Alan Pearson (Sign/Print Name) Date 2/5/91
Reviewed By [illegible]/BA Williams (Sign/Print Name) Date 3/21/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
12" Ø temporary carbon		3.0'		SAND
steel casing to 19.33' bls		10		SLIGHTLY GRAVELLY SAND
Cement Grout				SAND
		19.33'		"
		20 / 20.4'		
10" Ø temporary carbon				SLIGHTLY GRAVELLY SAND
steel casing to 163.89' bls		30		SANDY GRAVEL
				SILTY SANDY GRAVEL
Granular bentonite #8-20 mesh		40		SLIGHTLY SILTY SAND
				SILTY SAND
8" Ø temporary carbon		50		SLIGHTLY SILTY SAND
steel casing to 224.4' bls				" " "
				" " "
		60		SILTY SAND
4" Ø stainless steel casing				" "
		70		SLIGHTLY SILTY SAND
		80		SILTY SAND w/ SILTY & CLAY LENSES
				SLIGHTLY GRAVELLY SLIGHTLY SILTY SAND
		90		SANDY GRAVEL
				" "
		100		SLIGHTLY SILTY SAND
				SILTY SAND to SANDY SILT
		110		SILTY SAND
				" "
				" "
		120		SILT
				"
		130		SILTY SAND
				SANDY SILT
		140		" "
				" "
		150		SLIGHTLY SILTY SAND
				SILTY SANDY GRAVEL
		160		SAND
		163.89'		

A-6000-134 04/90

9413205.0481

WELL SUMMARY SHEET

Boring or Well No. 299-W23-14

Sheet 2 of 2

Location 200W/SST/299-SX Tank Farm

Project W-017

Elevation 661.00 ~~Brass Cap~~ (NGVD'29)

Drilling Contractor KEH

Driller L. Bultena

Drilling Method and Equipment Cable Tool

Prepared By Alan Pearson/Alan Pearson (Sign/Print Name) Date 2/5/91

Reviewed By [illegible] / [illegible] (Sign/Print Name) Date 8/21/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
8" Ø temporary carbon steel casing to 224.4' bls		170		SLIGHTLY GRAVELLY SAND
				" " "
		180		SLIGHTLY SILTY GRAVELLY SAND
				" " " "
		187.0		
Bentonite pellets 1/2"		190		" " " "
		190.4		
185.6		193.98		GRAVELLY SILTY SAND
4" Ø stainless steel .010 slot (wire wound) screen channel pak (Johnson)		200		GRAVELLY SANDY MUD
				" " "
				" " "
		210		
		215.26		" " "
Sand Pack - Silica Sand #8-12				" " "
		220		
		223.7		" " "
		224.4		
		230		T.D. 224.4' bls

A-6000-384 (04/90)

9413205.0482

WELL COMPLETION/INSPECTION REPORT

Specification No. WHC-S-014 Rev No. 4
Project W017 ECN's: 146189, 146188, 124393
Location 216-S-10 124394, 124427
Drilling Company KEH
Driller CRAIG WAMSLEY
Other (Companies) NONE
Geologist(s) C.D. CONDIT (GRI), A.W. PEARSON, L.A. DOREMUS, R.R.O. BURTON
Technical Procedure No. DO-1 Rev No. Ø

Well No. 299-W26-8 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

Drilling Method
Rotary Air N/A Mud N/A
Cable Tool D 0'-136.2' H 136.2'-216.29'
Drilling Fluid 200 E H2O STAND PIPE
Other NONE

Geophysical Logging

Sondes	Interval	Date
NATURAL GAMMA	2'-214.8'	4/5/90
" "	21'-216'	5/29/90
	-	
	-	
	-	

Completion Data
Drilled Depth 216.29'
Completed Depth 215.7'
Date Started 3/6/90
Date Completed 5/22/90
Static Water Level/Date 200.3'/4-2-90

Aquifer Testing
Type SLUG WITHDRAWAL
Length of Test 1.5 hrs.
Volume Pumped N/A
Drawdown N/A
Date of Test 5/31/90

Inspection Results

Cleaning
Inspection Method VISUAL
Acceptance Criteria SECTION 7.6, 4.2.2

	Accept	Reject	Date
Drilling Tools/Rig	CDC	N/A	3/6/90
Temporary Materials	CDC	N/A	3/30/90
Permanent Materials	AWP	N/A	5/8/90

Material Storage/Packing
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.2, 7.3 ECN 124427 146189

	Accept	Reject	Date
Mtl. Handling/Storage	LAD	N/A	5-17-90
Material Packing	LAD	N/A	5-17-90

Screen

Type	Length	Slot Size
Stainless Steel Channel Pack	10.33'	10
"	10.02'	10

Depth(s) 195.35' - 215.7'
— - —
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.3
Accept AWP Reject N/A Date 5/8/90

Lubricants/Additives
Inspection Method VISUAL
Acceptance Criteria SECTION 7.2

	Identify	Accept	Reject	Date
Additives	N/A	N/A	N/A	
Lubricants	FOOD GRADE VEG. OIL	CDC	N/A	3/7/90

Straightness Test
Inspection Method RUN PIPE TO BOTTOM
Acceptance Criteria SECTION 8.2
Accept AWP Reject N/A Date 4/3/90

Casing (permanent)

Type	Size	Placement
Johnson Division Type 304 Stainless Steel	4" (200.01')	-7.0' - 195.35'
	—	— - —

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.4
Accept AWP Reject N/A Date 5/8/90

Well Protection
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.10

	Accept	Reject	Date
Well Pad and Protective Posts	KROB (See NCR PNL-90-035)		5/22/90
Locks	KROB	N/A	5/22/90
Well Number			

Annular Seal
Inspection Method Steel Tape #L300-17 Acceptance Criteria SECTION 4.2.6 TO 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
CSSI 20-40 mesh Silica Sand	~~215.4~~ 214.8' AWP WITNESS - 192.0	~~2.114 ft³~~ AWP WITNESS 2.32 ft³	LAD	N/A	5-16-90
3/8" Volclay Tablets	192.0 - 188.4	1.96 ft³	LAD	N/A	5-16-90
8-20 mesh Bentonite Crumbles	188.4 - 19.9	93.72 ft³	LAD	N/A	5-17-90
Cement Grout	19.9 - 2.4	13.2 ft³	LAD	N/A	5-17-90

Other (initial if performed)
N/A Well Abandonment AWP Downhole TV Inspection ~~SPA~~ Complete As-Built Diagram, Driller's/Geologist's Logs
AWP Well Development

For all blanks mark N/A if not applicable.

A-1800-002 (10/89)

REVIEWED BY S.M. GOODWIN 6/12/90
A. [illegible]

ECN#s 124393, 146188, 124427, 146189, 124394

9413205.0483

S-10

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W26-9 Geologist C.D. Condit (GAI), K. Barton, A.W. Pearson (PNL), LA Dovemus Page 1 of 2

Reviewed by S. M. Joseph Date 6/12/90

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description
CEMENT GROUT (2.4'-19.9')		5'		MUDDY SANDY GRAVEL
137.18 FT. OF 10" TEMPORARY		10'		SAND
CARBON STEEL CASING		15'		"
Concrete Pad (+0.5'-2.4')		20'		"
216.29 FT. OF 8" TEMPORARY		25'		"
CARBON STEEL CASING		30'		"
		35'		"
8-20 MESH DRY BENTONITE		40'		"
(19.9'-188.4')		45'		"
		50'		"
TYPE 304, SCH.5, 4" DIA.		55'		"
STAINLESS STEEL		60'		"
CASING		65'		"
		70'		"
		75'	TRACE OF COARSE PEBBLE AT 71' TO 72'	"
		80'		"
		85'		"
		90'		"
		95'		"
		100'		"
		105'		"
		110'		SLIGHTLY MUDDY SAND
CENTRALIZERS		115'		SAND
		120'		"
		125'		SLIGHTLY MUDDY SAND
		130'		" " "

A-1800-188 (3/8)

A.1

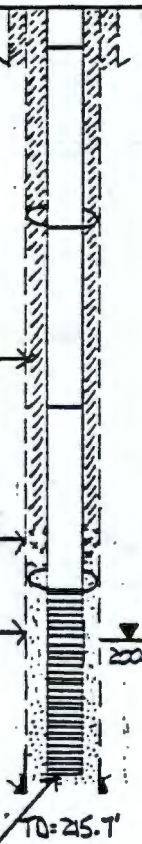
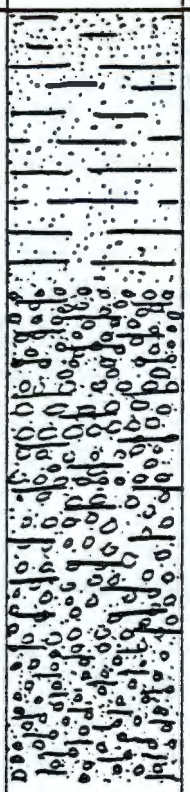
9413205.0484

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W26-3 Geologist C.D. CONDIT (GAS), AW PARSON, L.A. DOREMUS, K.E.L. BARNA Page 2 of 2

Reviewed by [illegible] Date 6/12/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
10" TEMPORARY CARBON STEEL CASING (0'-137.18')		125'		SLIGHTLY MUDDY SAND
		140'		SWITCHED TO HARD TOOL AT 136.2 FT. MUDDY SAND
		145'		" "
8" TEMPORARY CARBON STEEL CASING 216.29' Total		150'		" "
		155'		" "
		160'		" "
		165'		ENCOUNTERED AT 162 FT. MUDDY SANDY GRAVEL
8-20 MESH DRY BENTONITE (19.9'-188.4')		170'		" " "
		175'		" " "
		180'		" " "
		185'		" " "
3/8" Volclay Tablets (188.4'-192.0')		190'		" " "
static H2O level 200.3'		195'		" " "
20-40 mesh silica sand (192.0'-215.4')	200.3'	200'		" " "
		205'		" " "
		210'		" " "
		215'		" " "
	TD=215.7'			
TYPE 304, 4" DIA. STAINLESS STEEL 10 SLOT CHANNEL PACK SCREEN (195.35'-215.7') W/BOTTOM CAP				

A-1800-186 (3/87)

A.2

9413205.0485

WELL COMPLETION/INSPECTION REPORT

Specification No. WHC-S-014 Rev No. 4*
Project W-017
Location 216-S-10
Drilling Company KAISER ENGINEERING HANFORD
Driller LOUIS WATKINS
Other (Companies) N/A
Geologist(s) P.S. INNIS (G.A.I), A.W. PEARSON, L.A. DOZEMUS, S.P. AIRHART
Technical Procedure No. D.O. 1 Rev No. Ø

Well No. 299-W26-9 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

Drilling Method
Rotary Air N/A Mud N/A
Cable Tool D 0-176.5' H 176.5'-206.25
Drilling Fluid WATER - 200E STAND PIPE
Other NONE

Geophysical Logging

Sondes	Interval	Date
NATURAL GAMMA	Ø - 145'	4/2/90
" "	104' - 204'	4/12/90
" "	21' - 204.7	5/29/90

Completion Data
Drilled Depth 206.25
Completed Depth 204.88'
Date Started 3/21/90
Date Completed 5/4/90
Static Water Level/Date 190.1'/4/11/90

Aquifer Testing
Type SLUG WITHDRAWAL
Length of Test 1.3 hrs.
Volume Pumped N/A
Drawdown N/A
Date of Test 5/31/90

Inspection Results

Cleaning
Inspection Method VISUAL
Acceptance Criteria SECTION 7.6

	Accept	Reject	Date
Drilling Tools/Rig	PSI	N/A	4/10/90
Temporary Materials	PSI	N/A	4/10/90
Permanent Materials	LAD	N/A	5-2-90

Material Storage/Packing
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.2, 7.3, ECN 124427 146189

	Accept	Reject	Date
Mtl. Handling/Storage	SPA	N/A	5/4/90
Material Packing	SPA	N/A	5/4/90

Screen

Type	Length	Slot Size
Johnson Type 304 Stainless Steel	20.34	10 channel pack

Depth(s) ~~176.0~~ 184.6' - ~~204.5~~ 204.9'
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.3
Accept LAD Reject N/A Date 5-2-90

Lubricants/Additives
Inspection Method VISUAL
Acceptance Criteria SECTION 7.2

	Identify	Accept	Reject	Date
Additives	N/A	PJS	N/A	3/23/90
Lubricants	FOOD GRADE VEG OIL	PJS	N/A	3/23/90

Straightness Test
Inspection Method VISUAL RAN AT 6.55'00 x 21.56L PIPE TO BOTTOM
Acceptance Criteria SECTION 8.2
Accept PJS Reject N/A Date 4/11/90

Casing (permanent)

Type	Size	Placement
Johnson Type 304 Stainless	4" dia, 184.99'	10.4 - 184.6

Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.4
Accept LAD Reject N/A Date 5-2-90

Well Protection
Inspection Method VISUAL
Acceptance Criteria SECTION 4.2.10

	Accept	Reject	Date
Well Pad and Protective Posts	KROB (See NCR PNL-90-035)		5/22/90
Locks	KROB	N/A	5/22/90
Well Number			

Annular Seal
Inspection Method VISUAL, STEEL TAPE Acceptance Criteria SECTION 4.2.6 TO 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
20-40 Mesh Silica Sand	181.8' - 204.7	16.0 ft³	LAD	N/A	5-3-90
3/8", 1/2" Volclay Tablets	178.4' - 181.8'	1.9 ft³	LAD	N/A	5-3-90
8-20 Mesh Dry Bentonite	18.5' - 178.4'	91.6 ft³	SPA	N/A	5/4/90
Cement Surface Seal	2' - 18.5'	6.9 ft³	SPA	N/A	5/4/90

Other (initial if performed)
N/A Well Abandonment AWP Downhole TV Inspection SPA Complete As-Built Diagram, Driller's/Geologist's Logs
JTB Well Development REVIEWED BY S. GOODWIN 6/10/90

For all blanks mark N/A if not applicable.

A-1800-002 (10/89)

* ECN #'s 146189, 146188, 124393, 124427, 124394

9413205.0486

9413205.0487

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W26-9 Geologist P.S. INNIS, A.W. PEARSON S.P. AIRHART, L.A. DOREMUS Page 1 of 2

Reviewed by D. M. Mont- Date 6/10/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
		5		SLIGHTLY MUDDY SAND
CEMENT SURFACE SEAL		10		SAND
(20' - 18.5')		15		SAND
		20		SAND
10" CARBON STEEL CASING		25		SAND
(0'-143.7') - REMOVED		30		SLIGHTLY MUDDY SAND
		35		SLIGHTLY MUDDY GRAVELLY SAND
8" CARBON STEEL CASING		40		MUDDY SANDY GRAVEL
(0'-206.5') - REMOVED		45		SAND (AT 44')
		50		SAND
8-20 MESH DRY BENTONITE		55		SLIGHTLY MUDDY SAND
(18.5'-178.4')		60		SAND
		65		SAND
TYPE 304, SCH 5, 4" DIA.		70		SAND
STAINLESS STEEL CASING		75		SAND
		80		SLIGHTLY MUDDY SAND
		85		SAND
		90		SAND
		95		SAND
		100		SAND
CENTRALIZERS		105		SAND
		110		SLIGHTLY MUDDY SAND SAND 114-115
		115		SANDY MUD 113-114, 115-116.5
		120		SLIGHTLY MUDDY SAND
		125		SLIGHTLY MUDDY SAND
		130		SANDY MUD (AT 129')

A-1800-186 (3/87)

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W26-9 Geologist P.S. INNIS AND PEARSON, S.P. AHRNBRT, L.A. DOREMUS Page 2 of 2

Reviewed by A. M. Mark Date 6/10/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
10" CARBON STEEL CASING (0'-142.7') - REMOVED		135		SLIGHTLY MUDDY GRAVELLY SAND (SEE LITHO) ~~SLIGHTLY MUDDY SAND (133')~~
		140		MUDDY SANDY GRAVEL (138')
CENTRALIZERS		145		GRAVELLY SAND (143')
8" CARBON STEEL CASING (0'-206.5')		150		MUDDY SANDY GRAVEL
		155		" " "
		160		SLIGHTLY MUDDY GRAVELLY SAND
		165		MUDDY SANDY GRAVEL
8-20 MESH DRY BENTONITE (18.5'-178.4')		170		" " "
		175		" " "
		180		" " "
VOLCLAY TABLETS (178.4'-181.8')		185		" " "
		190		" " "
D/W = 190.1' (41.1.190)		195		" " "
20-40 MESH COLORADO SILICA SAND. (181.8'-204.2')		200		SL. GRAVELLY SL. MUDDY SAND
		205		MUDDY SANDY GRAVEL
	TD = 206.25'			
TYPE 304, 4" DIA. STAINLESS STEEL 10-SLOT CHANNEL DACK SCREEN (194.9'-204.9') W/ BOTTOM CAP				

SL. - SLIGHTLY

A-1800-188 (3/87)

9413205.0488

WELL COMPLETION/INSPECTION REPORT

Specification No. WHC-S-014 Rev No. 4*
Project W017
Location 200W S-10 trench
Drilling Company Kaiser Engineers Hanford
Driller Darrel Ludtke
Other (Companies) NONE
Geologist(s) R. Miller (GAI), A Parsons, S. Airhart, L. Doremus, S. Goodwin
Technical Procedure No. DO-1 Rev No. 0

Well No. 299-W26-11 Temp. Well No. N/A
Coordinates
Casing Elev. Ground Elev.

Drilling Method

Rotary Air N/A Mud N/A
Cable Tool D 0.0-169.01' H N/A
Drilling Fluid 200E Raw Water Supply
Other NONE

Geophysical Logging

Sondes	Interval	Date
spectral gamma	41.82 - 143.10'	4/4/90
natural gamma	43.30 - 144.0'	4/5/90
natural gamma	109.0 - 167.0'	4/13/90
natural gamma	22.7 - 135.6'	5/29/90

Completion Data

Drilled Depth 169.01' b/s
Completed Depth AWP w/6/90 ~~135.46~~ 135.3'
Date Started 3/19/90
Date Completed 5/22/90
Static Water Level/Date 124.77'/5/17/90

Aquifer Testing

Type SLUG WITHDRAWAL
Length of Test 19 hrs.
Volume Pumped N/A
Drawdown N/A
Date of Test 5/31 - 6/1/90

Inspection Results

Cleaning

Inspection Method Visual
Acceptance Criteria Section 7.6

	Accept	Reject	Date
Drilling Tools/Rig	Olan	N/A	3/19/90
Temporary Materials	Olan	N/A	3/26/90
Permanent Materials	SPA	N/A	4/25/90

Screen

Type	Length	Slot Size
304 stainless steel channel-pack	— 20.34'	— 10-slot

Depth(s) ~~115.46~~ 115.0' - ~~135.46~~ 135.3' AWP w/6/90 - AWP 6/6/90

Inspection Method Visual
Acceptance Criteria Section 4.2.3
Accept GW Reject N/A Date 4/26/90

Material Storage/Packing

Inspection Method Visual
Acceptance Criteria Sections 4.2.1, 4.2.2, 7.3 ECN 124427, N6189

	Accept	Reject	Date
Mtl. Handling/Storage	SPA	N/A	4/25/90
Material Packing	SPA	N/A	4/25/90

Lubricants/Additives

Inspection Method Visual
Acceptance Criteria Section 7.2

	Identify	Accept	Reject	Date
Additives	N/A	N/A	N/A	N/A
Lubricants	vegetable oil	Olan	N/A	3/19/90

Straightness Test SEE NCR & PNL-90-041

Inspection Method Run device to bottom
Acceptance Criteria Section 8.2
Accept N/A Reject N/A Date NOT PERFORMED

Casing (permanent)

Type	Size	Placement
304 stainless steel	4" dia.	~~+1.0' - 115.0'~~ +1.0' - 116.0' AWP 6/6/90

Inspection Method Visual
Acceptance Criteria ~~Vendor~~ Section 4.2.4
Accept GW Reject N/A Date 4/26/90

Well Protection

Inspection Method Visual
Acceptance Criteria Section 4.2.10

	Accept	Reject	Date
Well Pad and Protective Posts	KROB (SEE NCR PNL-90-035)	N/A	5/22/90
Locks	KROB	N/A	5/22/90
Well Number		N/A	

Annular Seal

Inspection Method Visual, Steel tape Acceptance Criteria Section 4.2.6 to 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
Volclay Pure Gold Slurry	157.4' ~~156.9'~~ - 167.3'	23.1 ft³	GW	N/A	4/26/90
40-100 Mesh Colorado Silica Sand	133.3' - 137.4' ~~136.9'~~	3.5 ft³	SPA	N/A	4/27/90
20-40 Mesh Colorado Silica Sand	109.5' - 133.3'	21.3 ft³	SPA	N/A	4/27/90
1" dia. Volclay Tablets	105.8' - 109.5'	1.72 ft³	LAD	N/A	4/30/90

Other (initial if performed)

N/A Well Abandonment AWP Downhole TV Inspection SPA Complete As-Built Diagram, Driller's/Geologist's Logs
Well Development

REVIEWED BY S.M. GOODWIN 6/10/90

For all blanks mark N/A if not applicable.

A-1800-002 (10/89)

* ECN #'s, 146180 146188, 124393, 124427, 124394

9413205.0489

 WELL COMPLETION/INSPECTION REPORT(governing procedure DO-1, RO)

Well Z99-W26-11 continued...

ANNULAR SEAL

Inspection Method Visual, Steel Tape Acceptance Criteria Section 4.2.6 to 4.2.9.1

Type	Interval	Volume	Accept	Reject	Date
8-20 MESH DRY BENTONITE	105.8' - 21.4'	52.54 ft³	JAD	N/A	4/30/90
~~Concrete Surface Seal~~ CEMENT GROUT	21.4' - 2.0'	9.24 ft³	JAD	N/A	4/30/90
AWP 6/1/90 AWP 6/6/90	~~2.0'~~ → - ~~+0.5'~~	~~+.3 yd³~~	—	—	—
—	— - —	—	—	—	—

RENEWED BY S.M. GOODWIN [signature] 6/6/90 for all blanks mark N/A if not applicable.

9413205.0490

A.16

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W26-11 Geologist R. Miller (GAI), AW Parson, LA Doremus, S.P. Airhart, S.M. Goodwin Page 1 of 2

Reviewed by [illegible] Date 6/10/90

Construction Data: Description	Construction Data: Diagram	Depth in Feet	Geologic/Hydrologic Data: Diagram Litho.	Geologic/Hydrologic Data: Lithologic Description
10"Ø temporary carbon steel casing, w/drive shoe (0'-145.3') - removed		5		SAND - trace f gravel CB
		10		SAND "
		15		" - c. sand "
		20		sl. Gravelly SAND - c sand "
		25		SAND - f sand "
		30		" - c sand "
		35		" - f. sand "
Cement Grout 2.0'-21.4'		40		" - " "
		45		" - " "
		50		" - " "
8" dia temporary carbon steel casing, w/drive shoe (0'-164.9') - removed		55		" - ", tr mud lenses "
		60		" - " "
		65		" - m sand - tr concretions "
		70		" - f sand "
		75		" - " "
8-20 Mesh Dry bentonite (21.4'-105.8')		80		Sandy GRAVEL - 76.5-78.0' CLAY @ 76.0' SAND - f sand 78.00' "
		85		SAND "
		90		" "
		95		" "
½" Volclay Tablets (105.8'-109.5')		100		" "
		105		" "
10-slot type 304 stainless steel channel-pack screen 4" dia. (115.0'-135.3')		110		" "
		115		" "
20-40 Colorado Silica Sand (109.5'-133.3')		120		" - f micaceous "
		125		" - " - wet "
40-100 Colorado Silica Sand (133.3'-137.35')		130		" - " "

A-1800-188 (3/87)

9413205.0491

1.13

Battelle
Pacific Northwest Laboratories

AS-BUILT DIAGRAM

Well Number 299-W26-11 Geologist R. Miller (GAI) DW Pearson, LA Dovemus Page 2 of 2

Reviewed by [illegible] Date 6/10/90

Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Diagram		Diagram Litho.	Lithologic Description
10" temporary carbon steel		135		sl Muddy SAND - at 135.3'-1 OB
casing w/drive shoe from		140		Sandy MUD - 139.5-140.5'
(0'-145.3') - removed				SAND & 140.5-143.5'
		145		Sandy MUD 143.5-147.2'
		150		Muddy SAND 147.2-155.5'
8" temporary carbon steel		155		MUD - some f sand 153-155.5'
casing w/drive shoe from		160		Muddy SAND 155.5-160.'
(0'-164.9') - removed				MUD 160-161.8' & 162.5-163.0'
		165		sl. Muddy SAND 161.8'-162.5' & 163.0'-165 * BLACK SANDS
		170		Muddy SAND to 169.0' TD
Volclay Pure Gold Slurry	TD = 169.01'			
(137.35' - 167.3')				

A-1800-188 (3/87)

9413205.0492

A-1

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Haden
Driller E. Wilcox
Other (companies)
Geologist(s)

Well No. 699-26-89 Temp. Well No.
Coordinates PN26000 PW89000
Elevation: Casing 653.08 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool : Drive barrel 0-45', Hard Tool 45-500'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 500'
Completed Depth 250'
Date Started 11/19/62
Date Completed 12/11/62
Static Water Level/Date 180' (9/18/89)

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations in 8" casing				488 - 165'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		+2 - 490'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement Plug	250' - 252'?		
Heaving sand (sluff)	252? - 500'		
	-		
	-		
	-		

PUMP

Type Submersible Depth to Inlet Date Set 9/18/89

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Sandfilled in well to ~250'. Cement plug set at 250' (3/26/80)

Reviewed by Date Depths are below land surface unless noted.

9413205.0493

AS-BUILT DIAGRAM

Boring or Well Number 699-26-89 Sheet 1 of 3
Location N26000 W89000 Project

Logged by
Reviewed by Date

Date Well Started 11/19/62
Date Well Completed 12/11/62

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
Description	Construction Diagram	Drill Bit		Sample Method	Lithologic Diagram	Lithologic Description *
Casing Elev. = 653.08			0			
8" carbon-steel casing						Muddy sand
			25			Calcareous
			50			Gravel basaltic Muddy sandy gravel Basaltic
			75			
			100			Slightly gravelly muddy sand
			125			Muddy sand
			150			Slightly muddy gravelly sand
						Sandy gravel

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

* Lithology based on ROCSAN and Bjornstad (1984)

A-1800-186 (05/90)

9413205.0494

AS-BUILT DIAGRAM

Boring or Well Number 699-26-E9 Sheet 2 of 3

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Perforations: 165 - 488 ft			165			Muddy sandy gravel
			175			Slightly muddy gravelly sand
Water level (1989) = 180 ft						
						Muddy sandy gravel
			200			
8" carbon-steel casing						
						Sandy gravel
			225			
						Muddy sandy gravel
Cement plug at 250 ft			250			
			275			
						Gravelly sand
						Muddy sandy gravel
			300			
						Mud, lt. gray to olive gray, laminated
			325			

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0495

AS-BUILT DIAGRAM

Boring or Well Number 699-26-89 Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data	
	Drill Bit			Sample Method	
Description	Construction Diagram			Lithologic Diagram	Lithologic Description
			330		Mud
8" carbon-steel casing					
			350		Mud, paleosol, calcareous
					(Caliche)
			375		Muddy sandy gravel
					Sandy gravel
					Muddy sandy gravel
			400		
			425		Gravelly muddy sand (yellow)
					(fine clay)
					Muddy sand (black silt)
					(Black silty clay)
			450		
					Gravelly sand
					(Black silty clay w/ sand and gravel)
			475		
					Gravelly sand (blue/black)
Perforations: 165-488 ft					Basalt, upper part weathered
TD = 500 ft.					

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

( ) drillers log description

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A-1800-186 (05/90)

9413205.0496

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. HATCH DRILLING
Driller HATCH
Other (companies)
Geologist(s)

Well No. 699-31-65 Temp. Well No.
Coordinates N30536 W65357
Elevation: Casing 683.09 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
HT-0'-450'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 450'
Completed Depth 450'
Date Started 6/14/1957
Date Completed 8/20/1957
Static Water Level/Date 245.6'/4/2/65

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

*See Back

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	90'		240' - 330'
Perforated Carbon Steel	8"	20'		365' - 385'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

*See Back

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 240'
Carbon Steel	8"		330' - 365'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	310' - 450'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers set 5/64

Reviewed by Date Depths are below land surface unless noted.

9413205.0497

699-31-65 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Casing Perforations	7 1/8"	26'		424' - 450'
				-
				-
				-
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		385' - 424'
			-
			-
			-
			-
			-

9413205.0498

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. HATCH DRILLING
Driller HATCH
Other (companies)
Geologist(s)

Well No. 699-31-650 Temp. Well No.
Coordinates N30536 W65357
Elevation: Casing 683.09 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
HT-0'-450'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 450'
Completed Depth 260'
Date Started 6/4/1957
Date Completed 4/2/65
Static Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN *See Back

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	90'		240' - 330'
Perforated Carbon Steel	8"	20'		365' - 385'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING *See Back

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 240'
Carbon Steel	8"		330' - 365'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	310' - 450'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 4/2/65

Reviewed by Date Depths are below land surface unless noted.

9413205.0499

699-31-65 "0" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Casing Perforations	7 1/8"	26'		424' - 450'
Perforated Polyethylene (?)	1.5"	20'		240' - 260'
				-
				-
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		385' - 424'
Polyethylene (?)	1.5"		0 - 240'
			-
			-
			-
			-

9413205.0506

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. HATCH DRILLING
Driller HATCH
Other (companies)
Geologist(s)

Well No. 699-31-65P Temp. Well No.
Coordinates N30536 W65357
Elevation: Casing 683.09 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
HT-0'-450'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 450'
Completed Depth 430'
Date Started 6/14/1957
Date Completed 4/2/65
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

*See Back

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	90'		240' - 330'
Perforated Carbon Steel	8"	20'		365' - 385'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

*See Back

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 240'
Carbon Steel	8"		330' - 365'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	310' - 450'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers added 4/2/65

Reviewed by Date Depths are below land surface unless noted.

9413205.0501

699-31-65 "P" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Casing Perforations	7 1/8"	26'		424' - 450'
Perforated Polyethylene (?)	1.5"	20'		410' - 430'
				-
				-
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		385' - 424'
Polyethylene (?)	1.5"		0 - 410'
			-
			-
			-
			-

9413205.0502

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. HATCH DRILLING
Driller HATCH
Other (companies)
Geologist(s)

Well No. 699-31-65Q Temp. Well No.
Coordinates N30536 W65357
Elevation: Casing 683.09 Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool
HT-0-450'
Drilling Fluid Water
Other

COMPLETION DATA
Drilled Depth 450'
Completed Depth 390'
Date Started 6/14/1957
Date Completed 4/2/65
Static Water Level/Date

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

*See Back

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	90'		240' - 330'
Perforated Carbon Steel	8"	20'		365' - 385'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

*See Back

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 240'
Carbon Steel	8"		330' - 365'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	310' - 450'		
	-		
	-		
	-		
	-		
	-		

PUMP
Type Depth to Inlet Date Set

ACCEPTANCE
Completed Well: Accept Conditionally Accept
Reject

COMMENTS
Piezometers add 4/2/65

Reviewed by Date Depths are below land surface unless noted.

9413205.0503

699-31-65 "a" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Casing Perforations	7 1/8"	26'		424' - 450'
Perforated Polyethylene (?)	1.5"	20'		370' - 390'
				-
				-
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		385' - 424'
Polyethylene	1.5"		0 - 370'
			-
			-
			-
			-

9413205.0504

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. HATCH DRILLING
Driller HATCH
Other (companies)
Geologist(s)

Well No. 699-31-65R Temp. Well No.
Coordinates N30536 W65357
Elevation: Casing 683.09 Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool
HT-0'-450'
Drilling Fluid Water
Other

COMPLETION DATA
Drilled Depth 450'
Completed Depth 330'
Date Started 6/4/1957
Date Completed 4/2/65
Static Water Level/Date

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

*See Back

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	90'		240' - 330'
Perforated Carbon Steel	8"	20'		365' - 385'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

*See Back

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 240'
Carbon Steel	8"		330' - 365'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	310' - 450'		
	-		
	-		
	-		
	-		
	-		

PUMP
Type Depth to Inlet Date Set

ACCEPTANCE
Completed Well: Accept Conditionally Accept
Reject

COMMENTS
Piezometers added 4/2/65

Reviewed by Date Depths are below land surface unless noted.

9413205.0505

699-31-65"R" WELL COMPLETION SUMMARY (CONTINUED)

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated	7 1/8"	26'		424 - 450'
Perforated Polyethylene (?)	1.5"	20'		310' - 330'
				-
				-
				-
				-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		385' - 424'
Polyethylene (?)	1.5"		0 - 310'
			-
			-
			-
			-

9413205.0506

AS-BUILT DIAGRAM

Boring or Well Number 699-31-65 Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 6/14/57

Reviewed by _____ Date _____ Date Well Completed 4/2/65

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method	Data from Driller's Log	
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing 0'-240'		●	5	●		Sand
			10			Sand & Silt
			15			" "
			20			" "
			25			" "
1½" Polyethelene O-Tube 0'-260'			30			" "
			35			" "
			40			" "
			45			" "
1½" Polyethelene R-Tube 0'-330'			50			" "
			55			" "
			60			" "
			65			" "
1½" Polyethelene Q-Tube 0'-390'			70			" "
			75			" "
			80			" "
			85			" "
1½" Polyethelene P-Tube 0'-430'			90			" "
			95			" "
			100			" "
			105			" "
			110			" "
			115			" "
			120			" "
			125			" "
			130			" "
			135			" "
			140			" "
			145			" "
			150			" "
			155			" "
			160			" "
			165			" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ◧ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0507

AS-BUILT DIAGRAM

Boring or Well Number 699-31-65 Sheet 2 of 3

Location _____ Project _____

Logged by _____ Date Well Started 6/14/57

Reviewed by _____ Date _____ Date Well Completed 4/2/65

Drill Bit ▼ | Sample Method ▼ | Data from Driller's Log

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description
1½" Polyethelene R-Tube 0'-330'	170	Sand & Silt
	175	" "
	180	" "
1½" Polyethelene Q-Tube 0'-390'	185	" "
	190	" "
	195	Coarse Sand & Little Silt
1½" Polyethelene P-Tub 0'-430'	200	" " " "
	205	" " " "
	210	Fine Sand & Little Silt
	215	Sand & Gravel to ½"
	220	" " " "
	225	Sand, Clay & Fine Gravel
	230	" " " "
	235	Sand & Silt
	240	Coarse Sand & Gravel
O-Tube Perforated from 240'-260'	245	Sand & Silt
	250	Clean Coarse Sand & Gravel
	255	" " " "
	260	Clean Gravel ¼" to 1½"
	265	" " " " "
	270	" " " " "
	275	Clean Gravel ½" to 1¼"
Perforated Carbon Steel Casing 240'-330'	280	" " " " "
	285	" " " " "
	290	Clean Gravel ¼" to 3"
	295	Cemented Gravel ¼" to 1½"
	300	" " " " "
	305	" " " " "
	310	" " " " "
R-Tube Perforated from 310'-330'	315	Gravel, Sand & Silt
	320	" " "
	325	Sand, Silt & Gravel to 3"
Sand Pack 310'-450'	330	" " " " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0508

AS-BUILT DIAGRAM

Boring or Well Number 699-31-65 Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started 6/14/57

Reviewed by _____ Date _____ Date Well Completed 4/2/65

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
	Drill Bit		Sample Method	Data from Drillers Log
Description	Construction Diagram		Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing 330'-365'		335		Sand, Silt & Gravel to 3"
		340		Sand, Silt & Fine Gravel
		345		" " " "
		350		" " " "
Sand Pack 310'-450'		355		" " " "
		360		Cemented Gravel
		365		Sand, Silt & Gravel
Perforated 8" Carbon Steel Casing 365'-385'		370		" " "
		375		" " "
		380		" " "
Q-Tube Perforated from 370'-390'		385		" " "
		390		" " "
		395		Sand & Silt
8" Carbon Steel Casing 385'-424'		400		Yellow Clay
		405		Yellow Clay w/ Gravel
		410		" " "
P-Tube Perforated from 410'-430'		415		" " "
		420		" " "
		425		" " "
Perforated 7⅛" Casing 414'-450'		430		Cemented Sand
		435		" "
		440		Cemented Sand & Gravel
		445		Sandy Clay
		450		Sandy Clay & Gravel
				TD = 450.0'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0509

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Swain
Other (companies)
Geologist(s)

Well No. 699-32-70B Temp. Well No. 699-32-[illegible]
Coordinates PN 32077 PW 70338
Elevation: Casing 666.68 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool - Assume Hard Tool Bit
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 350'
Completed Depth 246'
Date Started 7/15/57
Date Completed 3/25/80
Static Water Level/Date 211' (6/20/85

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations	8"			207 - 222'
Perforations	8"			230 - 330'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
Carbon Steel	8"		0 - 332'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
Cement Plug	246 - 250'		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0510

AS-BUILT DIAGRAM

Boring or Well Number 699-32-70 B Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 7/15/57

Reviewed by _____ Date _____ Date Well Completed 3/25/80

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method	Litl. from Drill Log	
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			5			Sand
			10			Gravel
			15			Sand + Gravel
8" Carbon Steel Casing			20			" "
(0 - 332')			25			" "
			30			Sand + silt w/ streaks of small gravel
			35			" " "
			40			" " "
			45			" " "
			50			" " "
			55			" " "
			60			" " "
			65			" " "
			70			" " "
			75			Fine Sand and Silt
			80			" " "
			85			" " "
			90			" " "
			95			" " "
			100			" " "
			105			" " "
			110			" " "
			115			" " "
			120			" " "
			125			" " "
			130			" " "
			135			" " "
			140			" " "
			145			" " "
			150			" " "
			155			" " "
			160			" " "
			165			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0511

AS-BUILT DIAGRAM

Boring or Well Number 699-32-70B Sheet 2 of 3

Location _____ Project _____

Logged by _____ Date Well Started 7/15/57

Reviewed by _____ Date _____ Date Well Completed 3/25/80

Well Construction Data: Description	Construction Diagram (Drill Bit)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method)	Lithologic Description
		170		Fine Sand + Silt
		175		" " "
		180		" " "
		185		" " "
		190		" " "
		195		" " "
Perforations (207-222')		200		Cemented sand + small gravel (starts
4 cuts/ft		205		Sand, silt, + clay (starts @ 202')
		210		" " "
Water level (6/20/85)		215		" " "
		220		Cemented sand, silt, + gravel (starts @ 219
		225		" " " " "
		230		" " " "
		235		Cemented sand and gravel with layers of large gravel (4")
		240		" " "
		245		" " "
Cement Plug (246-250')		250		(no information)
(set 3/25/80)		255		" "
Perforations in 8" Casing		260		" "
(230-330') 3 cuts/ft		265		Cemented Sand
		270		" "
		275		" "
		280		Cemented sand and small gravel
		285		" " " "
		290		" " " "
		295		" " " "
		300		" " " "
8" Carbon Steel Casing		305		Sand and Gravel
(0-332')		310		" " "
		315		Sand + large gravel (3")
		320		Sand and silt
		325		Cemented Sand and Silt
		330		" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0512

AS-BUILT DIAGRAM

Boring or Well Number 699-32-70B Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started 7/15/57

Reviewed by _____ Date _____ Date Well Completed 3/25/80

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			335			cemented sand + gravel (small)
8" Borehole to 350'			340			" " "
			345			Sand + silt, small gravel
			350			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0513

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller
Other (companies)
Geologist(s)

Well No. 699-32-72"P" Temp. Well No. N/A
Coordinates
Elevation: Casing Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool. Bit not specified - assume Hard Tool bit
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 580'
Completed Depth 470'
Date Started 6/19/57
Date Completed 6/28/77
Static Water Level/Date N/A

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Screen	1.5"	5 ft	60	465 - 470'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
1.5" dia. Piezometer tube	1.5"		0 - 465'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Pea gravel	? - ?	?	?
Sand	? - ?	?	?
Cement plug (between 1.5' + 8" casing)	415 - 420	?	?
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometer tube "P" completed within well 699-32-72

Reviewed by Date Depths are below land surface unless noted.

9413205.0514

AS-BUILT DIAGRAM

Boring or Well Number: 699-32-72 Sheet: 1 of 4
Location: Project:

Logged by:
Reviewed by: Date:
Date Well Started: 6/19/57
Date Well Completed: 6/28/77

Well Construction Data — Drill Bit

Geologic/Hydrologic Data — Sample Method

Lith from sieve data - 0-35', 245-580
" " drill log - 35-245'

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
		5		Muddy Sand
8" Carbon Steel Casing		10		" "
(0-571')		15		" "
		20		" "
		25		Sl. Muddy Sand
		30		" "
		35		" "
		40		(No sample)
		45		Sand
1.5" dia. piezometer tube		50		(Sand + silt @ 48')
"P" (0-470')		55		Sand - little silt
		60		(no sample)
		65		Sand - little silt
		70		(no sample)
		75		Sand - little silt
		80		(no sample)
		85		Sand - little silt
		90		(no sample)
		95		Sand - little silt
		100		(no sample)
		105		Sand - little silt
		110		Sand - little silt
		115		(no sample)
		120		Sand - little silt
		125		(no sample)
		130		50% sand, 50% silt
		135		(no sample)
		140		"
		145		"
		150		50% sand, 50% silt
		155		Sand - very little silt
		160		(no sample)
		165		"

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0515

AS-BUILT DIAGRAM

Boring or Well Number 699-32-72 Sheet 2 of 4
Location
Project

Logged by
Reviewed by Date
Date Well Started 6/19/57
Date Well Completed 6/28/

Well Construction Data: Description	Construction Diagram (Drill Bit ▼)	Depth in Feet	Geologic/Hydrologic Data: Sample Method ▼	Lithologic Diagram	Lithologic Description
		170			50% silt, 50% sand
		175			(no sample)
		180			" "
		185			50% silt, 50% sand
		190			Sand and small gravel (starts @
		195			Sand and coarse gravel
		200			Sand, silt + gravel
8" Carbon Steel Casing →		205			(no sample)
(0-571')		210			Sand + silt
		215			(no sample)
Perforations in 8" casing:		220			Sand + silt
210-240' 6 cuts/ft	6/57 ▽	225			Sand - silt
240-275' 2 cuts/ft		230			(no sample)
275-280' 6 cuts/ft		235			Sand - silt
280-370' 1 cut/ft →		240			Sand - silt
370-380 6 cuts/ft		245			Muddy Sandy Gravel (start @ 242
380-410 1 cut/ft		250			Sandy Gravel
415-420 6 cuts/ft		255			" "
465-485'		260			" "
1.5" dia. piezometer tube →		265			Gravel
"P" (0-470')		270			Sandy Gravel
		275			Muddy Sandy Gravel
		280			Sandy Gravel
		285			" "
		290			Gravelly Sand
		295			Sandy Gravel
		300			Gravelly Sand
		305			Sandy Gravel
		310			Gravelly Sand
		315			Sandy Gravel
		320			Muddy Sandy Gravel
		325			Sl. Muddy Gravelly Sand
		330			Sand

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/

9413205.0516

AS-BUILT DIAGRAM

Boring or Well Number 699-32-72 Sheet 3 of 4
Location
Project

Logged by
Reviewed by Date
Date Well Started 6/19/57
Date Well Completed 6/28/77

Well Construction Data: Description	Construction Diagram (Drill Bit)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method)	Lithologic Description
		335		Gravelly Sand
8" Carbon Steel Casing (0-471')		340		Sandy Gravel
		345		Sl. gravelly, sl. muddy sand
		350		sl. muddy gravelly sand
1.5" dia piezometer tube (0-470') "P"		355		sl. gravelly, sl. muddy sand
		360		" " "
		365		sl. muddy gravelly sand
		370		" " "
		375		" " "
		380		sl. gravelly sand
		385		Sand
		390		Sl. gravelly sand
		395		Sandy Gravel
		400		Gravelly Sand
		405		Sandy Gravel
		410		Gravel
		415		Sl. Muddy Sand
Cement Plug (415-420')		420		Muddy Sandy Gravel
		425		(no sample)
Sand Pack (depth not specified)		430		Gravelly Muddy Sand
		435		Muddy Sand
		440		" "
		445		" "
		450		" "
60-slot screen (465-470')		455		Sl. gravelly muddy sand
		460		Muddy Sandy Gravel
		465		" " "
"Pea Gravel" (depth not specified)		470		" " "
(hole was redrilled to 475') (6/77)		475		Sl. Muddy gravelly sand
		480		Muddy Sandy Gravel
Perforations in 8" casing 465-485'		485		Sl. Muddy Gravelly Sand
		490		Sl. gravelly, sl. muddy sand
Sluff?		495		Sl. muddy gravelly sand

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0517

AS-BUILT DIAGRAM

Boring or Well Number 699-32-72 Sheet 4 of 4

Location

Project

Logged by

Reviewed by Date

Date Well Started 6/19/5

Date Well Completed 6/28/

Well Construction Data: Description	Construction Diagram (Drill Bit)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method)	Lithologic Description
		500		Muddy Sandy Gravel
		505		Sl. Muddy Gravelly Sand
Borehole originally contained		510		Sl. Gravelly, Sl. Muddy Sand
5 piezometer tubes.		515		Sl. gravelly muddy sand
These were removed - no		520		Sl. gravelly, sl. muddy sand
information on what		525		Sl. muddy sand
material is in well between		530		Sl. gravelly, sl. muddy sand
475' and 580'. Assume		535		" " "
it contains sluff		540		Sl. Muddy Sand
		545		Sandy Gravel
8" Carbon steel casing		550		Sl. gravelly Muddy Sand
(0-471')		555		Sl gravelly, Sl. muddy sand
		560		Sand
		565		"
		570		"
		575		Basalt (starts @ 573')
Original TD = 580'		580		

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/5

9413205.0518

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Ford
Other (companies)
Geologist(s)

Well No. 699-32-77 Temp. Well No.
Coordinates PN 31812 PW 77032
Elevation: Casing 653.74 Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool: Hard Tool 0-29
Drilling Fluid
Other

COMPLETION DATA
Drilled Depth 290'
Completed Depth 220'
Date Started 4/17/51
Date Completed 5/15/51
Static Water Level/Date 190' (8/17/87)

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations in 8" casing	8"			175' - 290'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0 - 290'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
Cement Plug	220' - ~~222'~~ 290'?		
	-		
	-		
	-		

PUMP
Type Submersible Depth to Inlet Date Set

ACCEPTANCE
Completed Well: Accept Conditionally Accept
Reject

COMMENTS
Cement plug set 4/17/78

Reviewed by Date Depths are below land surface unless noted.

9413205.0519

AS-BUILT DIAGRAM

Boring or Well Number 699-32-77 Sheet 1 of 2
Location N31812 W77032 Project

Logged by
Reviewed by Date

Date Well Started 4/17/51
Date Well Completed 5/15/51

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Construction Diagram		Lithologic Diagram	Lithologic Description *
Casing Elev. = 653.74'		0		Slightly muddy sand
				" "
8" carbon-steel casing				Sand
				Slightly gravelly muddy sand
		25		Slightly muddy sand
				" "
				Sand
				Slightly muddy sand, ye
				" "
		50		"
				Slightly muddy gravelly sand
				Slightly gravelly muddy sand
				Sand, white
				Slightly muddy sand
		75		"
				Muddy sand micaceous
				" "
				Slightly muddy sand
				" "
		100		Muddy sand
				Slightly muddy sand
				Muddy sand, calcareous, pale
				"
				"
		125		"
				Gravelly muddy sand, v. calca
				" "
				"
				Slightly muddy gravelly sand
		150		Muddy sandy gravel
				Slightly muddy gravelly sand
				Muddy sandy gravel
				" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

* Based on RICSAN and Bjornstad (1984)

A-1800-186 (05/90)

A-282

9413205.0520

AS-BUILT DIAGRAM

Boring or Well Number 699-32-77 Sheet 2 of 2
Location N31812 W77032 Project

Logged by
Reviewed by Date
Date Well Started 4/17/51
Date Well Completed 5/15/51

Well Construction Data: Description	Construction Diagram (Drill Bit ▼)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method ▼)	Lithologic Description
8" carbon-steel casing		165		Gravelly muddy sand
		175		"
Perforated casing from				"
175-290'				Muddy sandy gravel
1987 water level @ 190 ft	▽			Slightly muddy gravelly sand
				Muddy sandy gravel
		200		Slightly muddy gravelly sand
				Muddy sandy gravel
				Slightly muddy gravelly sand
				Muddy sandy gravel
D/B (1987) = 220 ft				Gravelly sand
Submersible cement plug		225		Gravelly muddy sand
from 222 ft to TD				Muddy sandy gravel
				"
				"
				"
		250		Slightly muddy gravelly sand
				Muddy sandy gravel
				Gravelly sand
				Muddy sandy gravel
				Slightly muddy gravelly sand
		275		Muddy sandy gravel
				"
				"
TD = 290 ft	TD			Sandy gravel
		300		

Basaltic →

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0521

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Chausse
Other (companies)
Geologist(s)

Well No. 699-34-88 Temp. well No. 34-88.5
Coordinates
Elevation: Casing Brass Marker

DRILLING METHOD
Drilling Method(s)
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 688'
Completed Depth 210'
Date Started 8/28/48
Date Completed 3/12/76
Static Water Level/Date 162' (3/13/87)

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations (12/20/48)	8"			? - ?
" (10/16/56)	8"			180 - 220
" (4/20/78)	8"			~~156 - 178'~~

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
Carbon Steel	8"		0 - 647.5

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
Gravel pack + piezometer tubes	380' - 688'		
Cement plug	? - 210'		
	-		
	-		
	-		

PUMP

Type None Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noti

9413205.0522

AS-BUILT DIAGRAM

Boring or Well Number: 699-34-88 Sheet: 1 of 5
Location: Project:

Logged by: Date Well Started: 8/28/48
Reviewed by: Date: Date Well Completed: 3/12/76

Drill Bit: Sample Method: Lith. from Drill Log, Sieve data, + Geol.

Well Construction Data: Description	Construction Diagram	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram	Lithologic Description
		0		
		5		Sandy Loam
8" dia. Carbon Steel		10		Sl. Muddy Sand
Casing (0-647.5')		15		" "
		20		" "
		25		Muddy Sand
		30		" "
		35		" "
		40		Sl. Muddy Sand
		45		" "
		50		" "
		55		Muddy Sand
		60		" "
		65		" " (@ 67')
		70		Sandy Mud
		75		" "
		80		Sand, Gravel, Boulders, + clay
		85		" " "
		90		" " "
		95		Clay, boulders, and silt
		100		" " "
		105		" " "
		110		Clay + boulders
		115		" "
		120		Sl. Muddy Sand (sieve data)
		125		Sand, silt, clay, gravel + boulders
		130		" " "
Perforations in 8" casing		135		" " "
(156-170')		140		Sl. Muddy gravelly sand (sieve data)
		145		Gravel, boulders, + silt
		150		" " "
		155		Gravel, silt, boulders, + clay
Water level 162' (3/13/87)		160		" " " "
		165		" " " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0523

AS-BUILT DIAGRAM

Boring or Well Number 699-34-88 Sheet 2 of 5

Location _____ Project _____

Logged by _____ Date Well Started 8/28/48

Reviewed by _____ Date _____ Date Well Completed 3/12/76

Well Construction Data: Description	Construction Diagram (Drill Bit)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method)	Lithologic Description
		170		Gravelly Muddy Sand
		175		Sand, gravel, + some silt
		180		Muddy Sandy Gravel
Perforations in 8" casing (10/11/56)		185		" " "
180-200' 6 cuts/ft		190		" " "
200-220 3 cuts/ft		195		" " "
(4/20/78) 156-170 4 cuts/ft		200		" " "
		205		" " "
Cement plug @ 210'		210		" " "
		215		" " "
		220		" " "
		225		" " "
		230		" " "
		235		" " "
		240		" " "
		245		" " "
		250		" " "
		255		" " "
		260		" " "
		265		" " "
		270		" " "
		275		" " "
		280		" " "
		285		" " "
		290		" " "
		295		" " "
		300		" " "
		305		" " "
		310		" " "
		315		" " "
		320		" " "
		325		" " "
		330		" " "

Drill Bit/Sample Method Used: ☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0524

AS-BUILT DIAGRAM

Boring or Well Number 699-34-88 Sheet 3 of 5
Location Project

Logged by
Reviewed by Date

Date Well Started 8/28/48
Date Well Completed 3/12/76

Well Construction Data: Description	Construction Diagram (Drill Bit ▼)	Depth in Feet	Geologic/Hydrologic Data: Lithologic Diagram (Sample Method ▼)	Lithologic Description
Well originally contained 6 1.5"		335		Muddy Sandy Gravel
plastic piezometer tubes. The		340		
monitoring intervals of these tubes		345		
was: "O" (160-180'), "P" (668-688)		350		
"Q" (590-600), "R" (510-520),		355		
"S" (430-440), + "T" (350-360)		360		
These tubes were "gravel packed"		365		
in place (no seal between tubes)		370		
Remaining 1.5" Plastic piezometer		375		
tubes. Well was later drilled	S R Q P	380		
out to 378' (3/11/76)		385		
"O" + "T" were removed with		390		
380' of "S".		395		
		400		
Gravel pack between tubes		405		
		410		
		415		
		420		90% clay, 10% gravel (422-42
		425		Clay
		430		"
		435		" (Blue clay 433-476')
		440		" , blue
		445		" "
		450		" "
8" Carbon Steel Casing		455		" "
(0-647.5)		460		" "
		465		" "
8" casing is probably		470		" "
perforated but don't know		475		Slightly silty, sandy clay (476-
exact depths		480		" " " "
		485		Basalt sand, trace of clay, calcareous
		490		Very clayey coarse black sand w/caliche
		495		" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0525

AS-BUILT DIAGRAM

Boring or Well Number 699-34-88 Sheet 4 of 5

Location _____ Project _____

Logged by _____ Date Well Started 8/28/48

Reviewed by _____ Date _____ Date Well Completed 3/12/76

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
			500			Sandy, slightly gravelly, clay w/caliche
			505			" " " "
			510			Brown ash or clay w/ small gravel
			515			Brown ash, sand, clay, & small gravel
			520			Silty + clayey qtz sand w/ black sandstone
			525			" " " "
			530			Slightly silty qtz sand
			535			" " "
			540			Sand & granule - size gravel
			545			Silty sand + fine gravel w/cobbles + bx
			550			Qtz sand + pebble - cobble gravel
"Gravel pack" between			555			Sand + a few granule size gravel
piezometer tubes →			560			" " "
			565			Clay and Sand
			570			Tan Sandstone
			575			" "
			580			" "
			585			Sand and Gravel
			590			Silty Sand
			595			" "
			600			" "
			605			" "
			610			" "
			615			" "
			620			" " w/ some gravel
			625			" " w/wood fragments
8" Carbon Steel Casing			630			Silty sand
(0-647.5') →			635			" " w/wood fragments
			640			Slightly silty sand
			645			Silty sand, some gravel
			650			sand w/ basaltic gravels
			655			Basalt ?
			660			Rotten basalt + sand lag

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0526

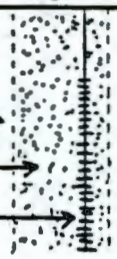
AS-BUILT DIAGRAM

Boring or Well Number 699-34-88 Sheet 5 of 5

Location _____ Project _____

Logged by _____ Date Well Started 8/28/48

Reviewed by _____ Date _____ Date Well Completed 3/12/76

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
			665			Slightly silty chopped basalt
			670			Hard black basalt
8" Borehole			675			" " "
Gravel Pack			680			" " "
"P" piezometer tube			685			" " "
			690			
						(Driller says basalt starts @ 650')
						TD = 688'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0527

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Row
Other (companies)
Geologist(s) Randy Brown

Well No. 699-36-61A Temp. Well No. 36.5-61 c
Coordinates PN 36365 PW 60704
Elevation: Casing 748.11 Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool - Assume Hard Tool bit
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 390'
Completed Depth 363' or 365'
Date Started 7/21/48
Date Completed 8/12/48
Static Water Level/Date 339.5 (6/28/85)

OTHER (check if performed)

	Well Abandonment		Downhole TV Inspection
	Well Development	✓	Driller's Logs
	Aquifer Testing		Pad
	Geophysical Log(s)		Guardposts
	Lock and Cap		Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations in 8" Casing	8"			330' - 389'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		+0.75 - 390'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
Cement plug (8/20/75)	? - 363' or 365'		
	-		
	-		
	-		

PUMP

Type Submersible Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0528

AS-BUILT DIAGRAM

Boring or Well Number 699-36-61A Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 7/21/48

Reviewed by _____ Date _____ Date Well Completed 8/12/48

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method	Lith from Geologist Log	
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
		Assume Hard Tool	5	Assume Hard Tool		Silty Sand
			10			Sandy Gravel (pebble size)
			15			" " "
8" Carbon Steel Casing			20			Silty Sandy Gravel
(+0.75 - 390')			25			" " "
			30			" " "
			35			Sl. Gravelly Silty Sand, some calich
			40			" " "
			45			" " "
			50			" " "
			55			Gravelly Silty Sand
			60			" " "
			65			" " "
			70			" " "
			75			" " "
			80			Sl. Silty Sand
			85			" "
			90			" "
			95			Sl. Silty, Sl. Gravelly Sand, some calic
			100			Sand
			105			"
			110			" w/ caliche chunks
			115			Sl. gravelly sand with caliche chunk
			120			" " "
			125			Sl. Gravelly, silty sand, w/calich
			130			Sl. Gravelly Sand, some caliche
			135			Sand
			140			Sl. Silty, Sl Gravelly Sand
			145			" " "
			150			" " "
			155			Sl. Gravelly, Silty Sand
			160			" " "
			165			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0529

AS-BUILT DIAGRAM

Boring or Well Number 699-36-61A Sheet 2 of 3

Location _____ Project _____

Logged by _____ Date Well Started 7/21/48

Reviewed by _____ Date _____ Date Well Completed 8/12/48

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
Description	Construction Diagram	Drill Bit		Sample Method	Lithologic Diagram	Lithologic Description
		Assume Hard Tool	170	Assume Hard Tool		Sl. Gravelly Silty Sand
8" Carbon Steel Casing			175			" " "
(+ 0.75 to 390') →			180			Sand " "
			185			"
			190			Silty Sand
			195			" "
			200			Sandy Gravel, some caliche
			205			" " , abundant caliche
			210			" " " "
			215			Sl. Gravelly Sand w/ caliche
			220			Sl. Gravelly Silty Sand w/caliche
			225			Silty Sand w/ caliche
			230			" " "
			235			" " "
			240			" " "
			245			" " "
			250			" " "
			255			" " "
			260			" " "
			265			" " "
			270			" " "
			275			" " "
			280			" " "
			285			Well sorted Silty Coarse Qtz Sand
			290			" " "
			295			" " "
			300			Sand
			305			"
			310			"
			315			"
			320			"
			325			"
			330			Sl. Gravelly Sand

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0530

AS-BUILT DIAGRAM

Boring or Well Number 699-36-61A Sheet 3 of 3
Location _____ Project _____

Logged by _____
Reviewed by _____ Date _____

Date Well Started 7/21/48
Date Well Completed 8/12/48

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Water level 339.5 (6/28/85)		Assume Hard Tool	335	Assume H.T.		Silty Sandy Gravel
Perforations in 8" casing			340			" " "
(350-389')			345			" " "
			350			" " "
			355			" " "
			360			" " "
Cement Plug – depth is			365			" " "
either 363' or 365' –			370			Sandy Gravel
both are recorded in			375			Silty Sandy Gravel
logs. Originally set			380			" " "
plug 8/20/75			385			" " "
			390			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0531

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Courtney Bach
Other (companies)
Geologist(s)

Well No. 699-36-61B Temp. Well No.
Coordinates
Elevation: Casing Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool: Hard Tool - 0-40, 250-295, 305-568'; Core Barrel 40-250, 295-3
Drilling Fluid Water, 20 gal clay
Other

COMPLETION DATA

Drilled Depth 568'
Completed Depth 380'
Date Started 11/30/59
Date Completed 2/4/60
Static Water Level/Date 340' (8/24/87)

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations (6/12/64)				? - ?
Perforations (2/4/60)	8"			330 - 400'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		+2.5 - 549.5

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement plug (set 4/12/78)	380' - 382'?		
	-		
	-		
	-		
	-		

PUMP

Type None Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers "O", "P", "Q", + "R" were removed 8/19/75
Hanford Wells says perforations from 330 to 505'. Well was perf. for piez. installation but d

Reviewed by Date Depths are below land surface unless noted.

9413205.0532

AS-BUILT DIAGRAM

Boring or Well Number 699-36-61B Sheet 1 of 4

Location _____ Project _____

Logged by _____ Date Well Started 11/30/59

Reviewed by _____ Date _____ Date Well Completed 2/4/60

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		Lithology from driller's log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			5			Sand
8" dia carbon steel casing			10			"
(+2.5 - 549.5) →			15			Fine Gravel
			20			" "
			25			" "
			30			" "
			35			" "
			40			" " w/ silt
			45			Coarse Sand
			50			" "
			55			" "
			60			Sand
			65			Coarse Sand
			70			Fine Sand
			75			" "
			80			" "
			85			" "
			90			" "
			95			" "
			100			Sand + Silt
			105			" "
			110			" "
			115			" "
			120			" "
			125			" "
			130			Fine Sand
			135			" "
			140			" "
			145			" "
			150			" " (one cobble)
			155			Silt
			160			Hard silt w/sand
			165			Sand + Silt

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0533

AS-BUILT DIAGRAM

Boring or Well Number 699-36-61B Sheet 2 of 4

Location _____ Project _____

Logged by _____ Date Well Started 11/30/59

Reviewed by _____ Date _____ Date Well Completed 2/4/60

Well Construction Data				Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit				Sample Method		
Description	Construction Diagram					Lithologic Diagram	Lithologic Description
				170			Sand & Silt
				175			Silt & Fine sand
				180			" " "
				185			Clay streaks
				190			Fine gravel
				195			Silt
				200			Silt & Clay
				205			" "
				210			" "
				215			" "
				220			Silt & Sand
				225			" "
				230			Silt & Clay
				235			" "
				240			" "
				245			Silt & clay
				250			Sand & clay
				255			" "
				260			" "
				265			Sand & Clay
				270			Sand & Silt
				275			Sand & Clay
				280			" "
				285			" "
				290			" "
				295			Sand & Silt
				300			Silt & Clay
				305			" "
				310			" "
				315			Fine gravel
				320			Clay & Gravel
				325			" "
				330			" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0534

AS-BUILT DIAGRAM

Boring or Well Number 699-36-61B Sheet 3 of 4

Location _____ Project _____

Logged by _____ Date Well Started 11/30/59

Reviewed by _____ Date _____ Date Well Completed 2/4/60

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description
8" dia. Carbon Steel	335	Clay & Gravel
Casing (+2.5 - 549.5)	340	" "
Water Level 340' (8/24/87)	345	" "
Perforations in 8" casing	350	Gravel
(2/4/60) 330 - 360' (6 cuts/ft)	355	"
" 360 - 380' (1 cut/ft)	360	Mixed gravel & clay
" 380 - 400' (6 cuts/ft)	365	Sand (heaving)
	370	" "
	375	Fine sand
	380	Cobbles
Cement Plug @ 380'	385	Sand & clay, scattered cobbles
(set 4/12/78)	390	Sand with clay
	395	" "
	400	" " (no water)
	405	Yellow Clay
4 piezometers were installed	410	" "
in this well in 1964-5.	415	Blue clay
These piezometers have	420	" "
since been removed. The	425	" "
monitoring intervals of	430	" "
these were: "O" 320-340'	435	" "
"P" 548-568'	440	Black sand & clay
"Q" 480-500'	445	Black sand (water coming back)
"R" 420-440'	450	Blue clay (starts @ 448')
There was no seal between	455	" "
these - they were merely	460	" "
gravel-packed in place	465	" "
	470	" "
	475	Blue clay + gravel
	480	" "
	485	" "
	490	" "
	495	Gravel - blue clay (boulder @ 495')

Drill Bit / Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0535

AS-BUILT DIAGRAM

Boring or Well Number 699-36-61B Sheet 4 of 4

Location _____ Project _____

Logged by _____ Date Well Started 11/30/59

Reviewed by _____ Date _____ Date Well Completed 2/4/60

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			500			Hard Cemented gravel
			505			" " "
			510			Cemented Gravel
			515			" "
			520			Cemented gravel + blue clay mixed
			525			Fine sand
			530			(no information)
			535			Hard packed gravel
8" Carbon Steel Casing			540			" " "
(+2.5 - 549.5')			545			Hard cemented gravel
			550			Basalt Rock
8" borehole to 580'			555			" "
			560			" "
			565			Harder Basalt
			570			" "
			575			" "
TD 580'			580			" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0536

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller McDonald/Swain
Other (companies)
Geologist(s)

Well No. 699-37-82A Temp. Well No.
Coordinates N37018 W81988
Elevation: Casing 636.75 Brass Marker

DRILLING METHOD
Drilling Method(s) Cable Tool
HT 0'-440'
Drilling Fluid Water
Other

COMPLETION DATA
Drilled Depth 440'
Completed Depth 175'
Date Started 9/24/60
Date Completed 10/10/60
Static Water Level/Date 169'/1991

OTHER (check if performed)
___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated 8" Carbon Steel	8"	255'		155' - 410'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 155'
Liner w/Packer @ Base	6"		0' - 150'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement Grout (Annulus)	0 - 150'	350 gal.	
Cement Grout/Sand	175' - 440'		
	-		
	-		
	-		
	-		

PUMP
Type Depth to Inlet Date Set

ACCEPTANCE
Completed Well: Accept Conditionally Accept
Reject

COMMENTS
Piezometers were removed from borehole 9/18/74
6" Liner set in well 5/12/80

Reviewed by Date Depths are below land surface unless noted.

9413205.0538

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82A Sheet 1 of 3
Location N37018 W81988 Project

Logged by
Reviewed by Date

Date Well Started 9/24/60
Date Well Completed 10/10/60

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Construction Diagram (Drill Bit)		Lithologic Diagram (Sample Method)	Lithologic Description *
Casing Elev. = 636.75		0		
Perforations: 0-135 ft				Slightly muddy sand
				Slightly muddy gravelly sand
8" carbon-steel casing				Muddy sandy gravel
				Slightly muddy sandy gravel
		25		Slightly muddy sand
6" liner (carbon steel?)				
Annulus filled with cement grout				
				Sandy mud
		50		Muddy sand
				Sand
				Muddy sand
		75		
				Sandy mud calcareous
				Muddy sand
		100		Gravel, basaltic
				Slightly muddy gravelly sand
				Muddy sandy gravel
				Slightly muddy gravelly sand
				Gravelly muddy sand
		125		Sandy gravel
				Muddy sandy gravel
				Gravelly muddy sand, cement
				Slightly muddy gravelly sand
Packer at base of 6" liner?		150		
Perforations: 155-410 ft				

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

Lithology based on ROCSAN and A-Bjornstad (1984)

A-1800-186 (05/90)

9413205.0537

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82A Sheet 2 of 3
Location N37018 W81988 Project

Logged by
Reviewed by Date

Date Well Started 9/24/60
Date Well Completed 10/10/60

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
Description	Construction Diagram	Drill Bit		Sample Method	Lithologic Diagram	Lithologic Description
Water level (1991) = 169 ft			165			
Perforations: 155-410 ft						Muddy sandy gravel
			175			Slightly muddy gravelly sand
Cement plug to 175 ft						
8" carbon steel casing						
			200			
						Slightly gravelly slightly muddy sand
Back filled with cement grout/sand						
			225			
						Slight muddy gravelly sand
			250			
			275			
			300			
			325			

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion ▲ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0539

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82A Sheet 3 of 3
Location N 37018 W 81988 Project

Logged by
Reviewed by Date

Date Well Started 9/24/60
Date Well Completed 10/10/60

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Construction Diagram (Drill Bit)		Sample Method / Lithologic Diagram	Lithologic Description *
		330		Slightly muddy gravelly sand
Backfilled with cement grout/sand				
		350		Slightly gravelly sand
8" carbon-steel casing				Slightly muddy gravelly sand
		375		
		400		Slightly gravelly sand
Perforations: 155-410 ft				Mud gray (blue)
		425		
TD = 440 ft.				
		450		

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

( ) Drillers log description

A-1800-186 (05/90)

9413205.0540

WELL COMPLETION SUMMARY REPORT

Project
Location
Drilling Co.
Driller Hatch
Other (companies)
Geologist(s)

Well No. 699-37-82B Temp. Well No.
Coordinates
Elevation: Casing 636.07 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D 25-100' H 0-25, 100-625'
Drilling Fluid WATER
Other

COMPLETION DATA

Drilled Depth 625
Completed Depth
Date Started 9/15/60
Date Completed
Static Water Level/Date 310'/9/29/60

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ As-Built, Driller's/ Geologist's Logs
- ___ Guardposts
- ___ Protective Casing

SEE Back

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated	8"			590 - 545
"	8"			540 - 505

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	10"		0 - 9'

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		0 - 603.5'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	625' - 200'?'		
Cement Grout Around shoe	~600 - ~605		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

5/64 well cleaned & casing perforated Piezometers added 9/64
8/64 well cleaned & casing perforated

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0541

699-37-82B WELL COMPLETION SUMMARY (CONTINUED)

Type	Outer Diameter	SCREEN Length	Slot Size	Interval
Perforations	8"	20'		415' - 395'
"	"	"		375' - 355'
"	"	8'		330' - 322'
"	"	8'		250' - 242'
"	"	9'		172' - 163'
				-

9413205.0542

WELL COMPLETION SUMMARY REPORT

Project
Location
Drilling Co.
Driller HATCH
Other (companies)
Geologist(s)

Well No. 699-37-8280 Temp. Well No.
Coordinates
Elevation: Casing 636.07 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D ~~[illegible]~~ 25-100' H ~~[illegible]~~ 0-25 100-625'
Drilling Fluid WATER
Other

COMPLETION DATA

Drilled Depth 625
Completed Depth 185
Date Started 9/15/60
Date Completed 10/64
Static Water Level/Date ~~215' [illegible]~~

OTHER (check if performed)

___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ As-Built, Driller's/ Geologist's Logs
___ Guardposts
___ Protective Casing

SCREEN

SEE Back

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated ~~Casing~~	8"			590 - 545
" "	8"			540 - 505

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	10"		0 - 9'

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
Carbon Steel	8"		0 - 603.5'
Piezometer	1.5"		0 - 165'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	625' - 200?' ~~[illegible]~~		
Cement Grout Cutoff Shoe	~600' - ~605'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

5/64 well cleaned & casing perforated
8/64 well cleaned & casing perforated

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0543

"0"

699-37-82B WELL COMPLETION SUMMARY (CONTINUED)

Type	Outer Diameter	SCREEN Length	Slot Size	Interval
Perforations	8"	20'		415' - 395'
"	"	20'		375' - 355'
"	"	8'		330' - 322'
"	"	8'		250' - 242'
"	"	9'		172' - 163'
Perforated PVC	1.5"	20'		185' - 165'

9413205.0544

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller
Other (companies)
Geologist(s)

Well No. 699-27-82BP Temp. Well No.
Coordinates
Elevation: Casing 636.07 Brass Marker

DRILLING METHOD

Drilling Method(s) H 0'-25', 100'-625'
D 25'-100'
Drilling Fluid water
Other

COMPLETION DATA

Drilled Depth 625'
Completed Depth 560'
Date Started 9/15/60
Date Completed
Static Water Level/Date 210' 9/29/60

OTHER (check if performed)

___ Well Abandonment
___ Well Development
___ Aquifer Testing
___ Geophysical Log(s)
___ Lock and Cap
___ Downhole TV Inspection
___ Driller's Logs
___ Pad
___ Guardposts
___ Protective Casing

CONTINUED ON BACK

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated	8"	45'		545' - 590'
"	8"	35'		505' - 540'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	10"		0' - 9'

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 603.5'
Piezometer	1.5"		0' - 540'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand pack	200'? - 625'		
Cement grout (around shoe)	~600' - ~605'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0545

"P"

699-37-82B WELL COMPLETION SUMMARY (CONTINUED)

Type	Outer Diameter	SCREEN Length	Slot Size	Interval
Perforations	8"	20'		415' - 395'
"	"	20'		375' - 355'
"	"	8'		330' - 322'
"	"	8'		250' - 242'
"	"	9'		172' - 163'
Perforated PVC	1.5"	20'		540' - 560'

9413205.0546

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller
Other (companies)
Geologist(s)

Well No. 699-37-82BQ Temp. Well No.
Coordinates
Elevation: Casing 636.07 Brass Marker

DRILLING METHOD

Drilling Method(s) H 0'-25' 100'-625'
D 25'-100'
Drilling Fluid water
Other

COMPLETION DATA

Drilled Depth 625
Completed Depth 410
Date Started 9/15/60
Date Completed
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated	8"	45'		545' - 590'
"	8"	35'		505' - 540'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	10"		0' - 9'

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	8"		0' - 603.5'
Piezometer	1.5"		0' - 390

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	200'? - 625'		
Cement Grout	~600' - ~605'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0547

"Q"

699-37-82B WELL COMPLETION SUMMARY (CONTINUED)

Type	Outer Diameter	SCREEN Length	Slot Size	Interval
Perforations	8"	20'	—	415' - 395'
"	"	20'	—	375' - 355'
"	"	8'	—	330' - 322'
"	"	8'	—	250' - 242'
"	"	9'	—	172' - 163'
Perforated PVC	1.5"	20'	—	410' - 390'

9413205.0548

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller
Other (companies)
Geologist(s)

Well No. 699-37-82BR Temp. Well No.
Coordinates
Elevation: Casing 636.07 Brass Marker

DRILLING METHOD

Drilling Method(s) H 0'-25' 100'-625'
D 25'-100'
Drilling Fluid water
Other

COMPLETION DATA

Drilled Depth 625'
Completed Depth 330'
Date Started 9/15/60
Date Completed 10/13/60
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated	8"			545' - 590'
"	8"			505' - 540'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	10"		0' - 9'

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	8"		0' - 603.5'
Piezometer	1.5"		0 - 310'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	200'? - 625'		
Cement Grout	~600' - ~605'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0549

699-37-82B "R" WELL COMPLETION SUMMARY (CONTINUED)

Type	Outer Diameter	SCREEN Length	Slot Size	Interval
Perforations	8"	20'		415' - 395'
"	"	20'		375' - 355'
"	"	8'		330' - 322'
"	"	8'		250' - 242'
"	"	9'		172' - 163'
Perforated PVC	1.5"	20'		330' - 310'

9413205.0550

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller
Other (companies)
Geologist(s)

Well No. 699-37-82BS Temp. Well No.
Coordinates
Elevation: Casing 636.07 Brass Marker

DRILLING METHOD

Drilling Method(s) H 0'-25' 100'-625'
Δ 25'-100'
Drilling Fluid water
Other

COMPLETION DATA

Drilled Depth 625'
Completed Depth 330'
Date Started 9/15/60
Date Completed 10/13/60
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated	8"			545' - 590'
"	5"			505' - 540'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	10"		0' - 9'

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon steel	8"		0' - 603.5'
Piezometer	1.5"		0' - 230'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Sand Pack	200'? - 625'		
Cement Grout	~600' - ~605'		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0551

699-37-82B "S" WELL COMPLETION SUMMARY (CONTINUED)

Type	Outer Diameter	SCREEN Length	Slot Size	Interval
Perforations	8"	20'		415' - 395'
"	"	20'		375' - 355'
"	"	8'		330' - 322'
"	"	8'		250' - 242'
"	"	9'		172' - 163'
Perforated PVC	1.5"	20'		250' - 230'

9413205.0552

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82B Sheet 1 of 4

Location _____ Project _____

Logged by _____ Date Well Started 9/15/60

Reviewed by _____ Date _____ Date Well Completed 10/64

Well Construction Data: Description	Construction Diagram	Drill Bit	Depth in Feet	Sample Method	Lithologic Diagram	Geologic/Hydrologic Data: Lithologic Description
10" dia. Carbon steel Casing			5			Sand & Silt
0-8'			10			" "
			15			Coarse gravel to 4", clean
			20			Clean gravel, small to 4"
			25			Sand & Silt
			30			" "
			35			" "
			40			" "
			45			" "
			50			" "
			55			" "
			60			" "
			65			" "
			70			" "
			75			" "
			80			" "
			85			" "
			90			" "
			95			" "
			100			Broken gravel, 3" & 4"
			105			Silt, Sand & Gravel (4")
			110			" " "
			115			" " "
			120			" " (large)
			125			Clean gravel up to 2"
8" Carbon steel casing			130			" "
enclosing 5 - 1.5" plastic			135			Gravel w/ Sand & silt
piezometer tubes			140			" " "
			145			" " "
			150			" " " (more silt
			155			" " " "
			160			All (no information)
			165			Cobbles, Gravel, Coarse Sand & silt

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

o P&RS

A-1800-186 (05/90)

9413205.0554

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82B Sheet 2 of 4
Location _____ Project _____

Logged by _____ Date Well Started 9/15/60
Reviewed by _____ Date _____ Date Well Completed 10/64

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description
	165	
	170	Cobbles, gravel, coarse sand + silt
"O" piezometer tube, 1.5"	175	Sand, silt, + clay
plastic, 0-185'; slot openings	180	" " "
165-185'	185	Large gravel, silt + sand
	190	" " "
"S" piezometer tube 1.5"	195	" " "
plastic pipe, 0-250';	200	" " "
slot openings 230-250'	205	" " "
	210	Sand, silt, + small gravel
"R" piezometer tube, 1.5"	215	(no information)
plastic pipe, 0-330';	220	Gravel, clay streaks, sand + silt
slot openings 310-330'.	225	Streaks of clay + clean sand
	230	" " "
	235	" " "
	240	" " "
Perforations in 8" casing	245	Gravel to 2", clean sand
(9/64) 163-172' 4 holes/8-in.	250	" " "
242-250' " "	255	" " "
322-330' " "	260	" " "
(shaped charge perforator)	265	" " "
	270	" " "
8" Carbon Steel Casing	275	80% sand, 20% small gravel
enclosing piezometer tubes,	280	Sand + Gravel
(0-603.5)	285	" "
	290	" " (2" max)
	295	" " (streaks of clean sa
Sand pack between piezometer	300	" "
tubes (625-200?)	305	" "
	310	" "
	315	" "
	320	" "
	325	" "
	330	" "

Construction Diagram: "O" "S" P Q R

Drill Bit / Sample Method

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0553

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82B Sheet 3 of 4
Location Project

Logged by
Reviewed by Date
Date Well Started 9/15/60
Date Well Completed 10/64

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description
	335	Clean sand + gravels to 2"
	340	" " "
	345	" " to 4"
	350	" " (sandier)
Perforations in 8" casing	355	clean sand + gravel - silt
(5/26/64) 395-415'	360	" " "
" 355-375'	365	Coarse sand + silt
(9/64) 402-410 4holes/8"	370	Sand + silt, gravel
	375	" " "
"Q" piezometer tube,	380	" " "
1.5" plastic pipe, 0-410',	385	" " "
slot openings 390-410'	390	(no information)
	395	" "
	400	Brown sandy clay
	405	Gray Clay
	410	" "
	415	" " (very sticky)
	420	Very dk gray clay, not sticky
8" Carbon Steel Casing	425	Green clay
(0-603.5')	430	" "
	435	Clay
	440	"
Sand pack between piezometer	445	"
tubes (625-200?')	450	Blue gray clay
	455	" "
	460	Black + Blue sand
	465	" "
	470	Blue sticky clay
	475	Light blue clay
	480	Blue hard sticky clay
	485	" " "
	490	(no information)
	495	Dark green sticky hard clay

Construction Diagram: "P"

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0555

AS-BUILT DIAGRAM

Boring or Well Number 699-37-62B Sheet 4 of 4
Location _____ Project _____

Logged by _____ Date Well Started 9/15/60
Reviewed by _____ Date _____ Date Well Completed 10/64

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description
	500	DK green sticky hard clay
Perforations in 8" Casing	505	Sm gravel, sand, + clay
(10/13/60) 505-540' 6 cuts/ft	510	" " "
" 560-590' 2 cuts/ft -	515	lg. gravel, sand, + clay
(5/26/64) 545-565'	520	" " "
	525	" " "
	530	Gravels, green sand
	535	Black sand + gravels
"P" piezometer tube, 1.5"	540	" " "
plastic pipe, 0-560,	545	Sand + Silt
slot openings 540-560'	550	More sand + little silt
	555	Sand + silt
	560	Coarse sand + silt
	565	Sand, silt, + clay
	570	Sand + clay
Sand Pack between piezometer	575	(no information)
tubes (625-200?)	580	Clay + sand
	585	Clay w/sand + gravel
	590	" " "
	595	Clay
Bottom of 8" Casing	600	Clean sand
603.5'	605	" " (darker)
Open hole (603.5-625')	610	Basalt
TD 625'	615	
	620	
	625	

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0556

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Aqua
Other (companies)
Geologist(s) VL McGhan
R Ledgerwood

Well No. 699-37-82C Temp. Well No.
Coordinates —
Elevation: Casing — Brass Marker

DRILLING METHOD

Drilling Method(s) Air Rotary 0-245'
Cable Tool
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 282'
Completed Depth 279'
Date Started 3/30/76
Date Completed 5/18/76
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations	8"?			165 - 279

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unkown			

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Unknown	?		? - ?

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Driller's log incomplete

Reviewed by Date Depths are below land surface unless noted.

9413205.0558

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82C Sheet 1 of 2

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
		☒	0	☒		Sand, Silt, Gravel
			5			" " "
			10			Sand, large Gravel
			15			" " "
			20			Sand, f-m, small gravel
Drill logs don't specify			25			" " "
type, dia., or length			30			Sand, fine
of casing. The rotary			35			Fine Sand + Silt
drilled a 12" hole			40			" " "
and the cable tool			45			Silt + VF Sand
apparently drilled a			50			Fine Sand + silt
8" hole			55			" "
			60			" "
Casing was perf. from			65			" "
165-279'			70			" "
			75			" "
			80			" "
			85			Silt + VF Sand
			90			Silt, VF Sand, streaks of clay
			95			" " " "
			100			Silt, fine sand, small gravel
			105			Silt + f-m sand-gravel
			110			Sand - coarse gravel
			115			" " "
			120			Sand w/silt + coarse gravel
			125			" " + m-c gravel
			130			" " " "
			135			" " " "
			140			(No sample)
			145			" "
			150			" "
			155			m-f Sand w/gravel
			160			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0557

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82C Sheet 2 of 2
Location _____ Project _____

Logged by _____ Date Well Started _____
Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
		☒	165	☒		m-f Sand w/gravel + silt
			170			" " " "
			175			" " " "
			180			Fine Sand w/silt + med. gravel
			185			" " "
			190			" " "
Drill logs don't specify type,			195			" " "
dia, or length of casing.			200			VF Sand w/silt + gravel
The rotary drilled a 12"			205			" " "
hole and the cable tool			210			" " "
apparently drilled a 8" hole.			[illegible]			Gravel w/sand VF-M + silt
						VF-M Sand w/silt + gravel
Casing was perf. from						" " " "
165-279'			230			Gravelly Sand
			235			" "
			240			Gravel with med. sand
			245			Gravel w/VF-M sand + silt
			250			20% cobbles, 30% pebbles, 20% sand, 30%
			255			" " "
		Cable tool 245-282'	260	Cable Tool 245-282'		" " "
			265			" 45% pebbles, " 15%
			270			" " " "
			275			" " 25% sand, 10%
			280			" " " "
TD = 282'			282			

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0559

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Aquo
Driller
Other (companies)
Geologist(s)

Well No. 699-37-82D Temp. Well No.
Coordinates —
Elevation: Casing — Brass Marker

DRILLING METHOD

Drilling Method(s) Air Rotary
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 250'
Completed Depth 190'
Date Started 4/5/76
Date Completed 6/1/76
Static Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations	8"?			155 - 190'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
?			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
?	8"?		? - ?

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Drillers log incomplete.

Reviewed by Date Depths are below land surface unless noted.

9413205.0560

AS-BUILT DIAGRAM

Boring or Well Number 699-37-82D Sheet 1 of 1

Location _____ Project _____

Logged by _____ Date Well Started _____

Reviewed by _____ Date _____ Date Well Completed _____

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
Drill logs don't specify type, dia., or length of casing. Hanford Wells says the permanent casing is 8" dia, perf from 155-190'						Geologic information not complete – see logs for the other wells in the cluster (699-37-82A, B, C)

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0561

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Hatch
Driller Mike Dawson
Other (companies)
Geologist(s)

Well No. 699-38-65 Temp. Well No.
Coordinates PN 37965 PW 64978
Elevation: Casing 753.33 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool, Drive barrel 0-465, Hard Tool 465-536'
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 536'
Completed Depth 395'
Date Started 9/12/59
Date Completed 12/6/59
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforations in 8" casing	8"		4 cuts/ft	330 - 475'
" " "	"		2 cuts/ft	261 - 265'
" " "	"		4 cuts/ft	220 - 235'
" " "	"		6 cuts/ft	475 - 520'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		+3 - 526'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
"Pea Gravel"	536' - 460'		
Sand	460 - 440		
Cement Plug	440 - 420		
Sand	420 - 395		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometer added 3/14/77, original piezometers installed in 1964 have been removed.

Reviewed by Date Depths are below land surface unless noted.

9413205.0562

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Hatch
Driller Mike Dawson
Other (companies)
Geologist(s)

Well No. 699-38-65 "P" Temp. Well No.
Coordinates PN37965 PW64978
Elevation: Casing 753.33 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool, Drive barrel 0-465, Hard Tool 465-536'
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 536'
Completed Depth 510'
Date Started 9/12/59
Date Completed 1964
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
PVC ?	1.5"		60	500 - 510

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
PVC ?	1.5"		0 - 500'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
See well 699-38-65	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

"P" piezometer within well 699-38-65

Reviewed by Date Depths are below land surface unless noted.

9413205.0563

AS-BUILT DIAGRAM

Boring or Well Number 699-38-65 Sheet 1 of 4

Location _____ Project _____

Logged by _____

Reviewed by _____ Date _____

Date Well Started 9/12/59

Date Well Completed 12/6/59

Well Construction Data — Drill Bit

Geologic/Hydrologic Data — Sample Method Lithology from Driller's Log

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
		5		Gravelly Sand
		10		" "
8" dia. Carbon steel		15		Sandy Silt
casing (+3 - 526')		20		" "
		25		" "
		30		" "
1.5" dia piezometer tube		35		" "
+ screen (0 - 510')		40		" "
		45		" "
		50		" "
		55		" "
		60		" "
		65		" "
		70		" "
		75		" "
		80		" "
		85		Silty Sand
		90		" "
		95		" "
		100		" "
		105		" "
		110		" "
		115		Sandy Silt
		120		" "
		125		" "
		130		" "
		135		" "
		140		Silty Sand
		145		" "
		150		" "
		155		" "
		160		" "
		165		" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0564

AS-BUILT DIAGRAM

Boring or Well Number 699-38-65 Sheet 2 of 4

Location _____ Project _____

Logged by _____ Date Well Started 9/12/59

Reviewed by _____ Date _____ Date Well Completed 12/6/59

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data	
Description	Construction Diagram (Drill Bit)			Lithologic Diagram (Sample Method)	Lithologic Description
		0	170	0	Silty Sand - hard packed
			175		" " " "
			180		" " " "
			185		" " " "
			190		Soft packed silty sand
1.5" dia. piezometer tube			195		" " " "
+ screen (0-510')			200		" " " "
			205		" " " "
			210		" " " "
			215		" " " "
			220		Heavy sand - water bearing @ 22
Perforations in 8" Casing			225		Sand
			230		"
			235		Silt
			240		"
			245		"
			250		Sandy Silt
			255		" "
			260		Heaving sand (261-264')
Perforations in 8" Casing			265		Soft packed sand + silt
			270		Sandy Silt
			275		Silty Sand
			280		" "
			285		Cemented Gravel (starts @ 282')
			290		Sandy Gravel
			295		" "
			300		" "
			305		" "
			310		" "
			315		" "
			320		" "
			325		" "
			330		" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ⊕ Split-Barrel

A-1800-186 (05/90)

9413205.0565

AS-BUILT DIAGRAM

Boring or Well Number 699-38-65 Sheet 2 of 4

Location _____ Project _____

Logged by _____ Date Well Started 9/12/59

Reviewed by _____ Date _____ Date Well Completed 12/6/59

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
		D	335	O		Sandy Gravel
			340			" "
Perforations in 8" Casing			345			" " (Water bearing)
475-520 6 cuts/ft			350			" "
330-475 4 cuts/ft			355			" "
261-265 2 cuts/ft			360			Sandy Silty Gravel
220-235 4 cuts/ft			365			" " "
			370			" " "
			375			" " "
			380			" " "
1.5" piezometer tube			385			Heaving sand + gravel
+ screen (0-510')			390			" " "
			395			Brown clay w/ fine gravel
			400			" " " "
			405			Brown clay
			410			Blue clay
			415			" "
			420			" "
Cement Plug (420-440')			425			" "
			430			" "
			435			" "
			440			Sandy Clay (to 443')
Sand (440-460')			445			Water bearing gravel (443')
			450			Gravel + black sand
			455			Gravel + colored sand
			460			Gray sand
			465			Gray sand, some gravel (2")
			470			Gray sand + gravel
"Pea gravel" 460-530'			475			" " "
			480			" " "
			485			Basalt gravel
			490			" "
			495			Sand + basalt gravel

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90

9413205.0566

AS-BUILT DIAGRAM

Boring or Well Number 699-38-65 Sheet 4 of 4

Location _____ Project _____

Logged by _____ Date Well Started 9/12/59

Reviewed by _____ Date _____ Date Well Completed 12/6/59

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
1.5" Piezometer tube (0-500')			500			Basalt gravel
w/60 slot slit screen (500-510')			505			" " , some sand
Perforations in 8" casing			510			Hard basalt + gravel, some sand
(475-520')			515			" " " "
8" Carbon steel casing			520			Gravel + sand - hard basalt
(+3 - 526')			525			" " " "
"Pea Gravel" 536-460'			530			Basalt (starts @ 526')
8" Borehole (526-536')			535			"
TD = 536'						

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0567

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller SWAIN
Other (companies)
Geologist(s)

Well No. 699-38-70 Temp. Well No. N/A
Coordinates N 38142 W 70226
Elevation: Casing 710.67' Brass Marker

DRILLING METHOD

Drilling Method(s) CABLE TOOL
HT: 0' - 413'
Drilling Fluid WATER
Other BENTONITE @ 72', 285', 350'

COMPLETION DATA

Drilled Depth 413'
Completed Depth 295' (HW)
Date Started 5/17/57
Date Completed ~~6/19/57~~ 8/20/87
Static Water Level/Date 254' (HW)

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ✓ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
CASING PERFORATIONS				255' - 380'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
CARBON STEEL	8.0"		0' - 388'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
CEMENT PLUG	295' - 310'		

PUMP

Type SUBMERSIBLE Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometers "O", "P", "Q", installed in 1964, were removed in 1975. The o monitoring intervals were: "O" (260-280'), "P" (390-410'), "Q" (320-350'). Piez tubes were separ by sand pack only.

Reviewed by Date

Depths are below land surface unless noted.

9413205.0568

AS-BUILT DIAGRAM

Boring or Well Number 699-38-70 Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 5/17/57

Reviewed by _____ Date _____ Date Well Completed 6/14/57

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method	Lith. from driller's log	
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			5			Small gravel
			10			" "
			15			Sandy silt - gravel
			20			" " "
8" carbon steel casing →			25			Silt - coarse sand
(0-388')			30			Sandy silt
			35			Sand - silt
			40			Sandy silt
			45			Sand - silt - gravel
			50			Sand, silt, + gravel
Carbon steel casing is →			55			Sand - silt
broken @ 53'			60			" "
			65			" "
			70			Sand - small gravel
			75			Clean sand
			80			Sand - silt
			85			" "
			90			" "
			95			" "
			100			" "
			105			" "
			110			" "
			115			" "
			120			" " (harder packed)
			125			" " " "
			130			" "
			135			" "
			140			" "
			145			" "
			150			" "
			155			" "
			160			" "
			165			" "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0569

AS-BUILT DIAGRAM

Boring or Well Number 699-38-70 Sheet 2 of 3

Location _____ Project _____

Logged by _____ Date Well Started 5/17/57

Reviewed by _____ Date _____ Date Well Completed 6/14/57

Well Construction Data		Depth in Feet	Geologic/Hydrologic Data	
Description	Construction Diagram (Drill Bit)		Lithologic Diagram (Sample Method)	Lithologic Description
		170		Sand - silt
		175		" "
		180		" "
		185		" "
		190		" " - small gravel
8" Carbon steel casing		195		" " " "
(0 - 388')		200		Sand, silt, + small gravel
		205		Sand - silt
		210		" "
		215		" "
		220		Sand - silt (more clay than sand
		225		" " " " "
		230		Clay + small gravel
		235		" " "
		240		" " "
		245		Clay
		250		Clay - gravel
Static water level 254' (8/20/87)		255		(no description)
		260		Sand - silt - gravel
Perforations in 8" casing		265		Sand - gravel
(255-380')		270		" "
		275		Clean gravel
		280		Sand - gravel
		285		Clean sand + gravel
		290		Sand - gravel
		295		" "
Cement Plug (295-310')		300		" "
		305		" "
		310		Sand - gravel + silt
		315		Sand - silt - gravel - clay
		320		Sand, silt, + gravel
		325		" " "
		330		" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0570

AS-BUILT DIAGRAM

Boring or Well Number 699-38-70 Sheet 3 of 3
Location _____ Project _____

Logged by _____ Date Well Started 5/17/57
Reviewed by _____ Date _____ Date Well Completed 6/14/57

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			335			Sand - gravel
			340			" "
Perforations in 8" casing			345			Clean coarse sand
(255-380')			350			Fine clean sand
			355			Clean sand
			360			Sand
			365			Sand - small gravel
			370			Sand
			375			"
			380			Sand - silt, very fine
8" Carbon steel casing (0-388')			385			" " " "
			390			Sand - gravel
8" borehole (388 - 413')			395			Sand
			400			Fine sand & silt
			405			(no sample)
			410			Fine sand + silt
			413			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0571

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. G.E.
Driller Rodda
Other (companies)
Geologist(s)

Well No. 699-40-62 Temp. Well No. 40.3-6
Coordinates PN 40300 PW 61500
Elevation: Casing 747.78' Brass Marker

DRILLING METHOD

Drilling Method(s) Assumed Cable tool
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 384'
Completed Depth 369'
Date Started 12/14/48
Date Completed 1/17/49
Static Water Level/Date 356' 1/14/49

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Casing	8"		Perforated	359' - 374'
			Perforated	335' - 348'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Assumed Carbon steel	8"		Surface - 394'
			-

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
N/A	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Submersible Depth to Inlet unknown Date Set unknown

ACCEPTANCE

Completed Well: Accept ___ Conditionally Accept ___
Reject ___

COMMENTS

Ref. ROCKSAN Database; Hanford Wells (PNL 6907); Drillers Logs

Reviewed by ___ Date ___ Depths are below land surface unless noted.

9413205.0572

AS-BUILT DIAGRAM

Boring or Well Number 699-40-62 Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 12/14/48

Reviewed by _____ Date _____ Date Well Completed 1/17/49

Well Construction Data				Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit				Sample Method		
Description	Construction Diagram					Lithologic Diagram	Lithologic Description
8" Casing				5	•		SAND GRAVEL, BOULDERS
				10			
				15			Slightly MUDDY GRAVELY SAND 25'-45'
				20			
				25			
				30			
				35			
				40			
				45			GRAVELY SAND 45-50'
				50			SAND 50-60'
				55			
				60			Slightly GRAVELY SAND 60-70'
				65			
				70			
				75			Slightly SILTY SAND 70-165
				80			
				85			
				90			
				95			
				100			
				105			
				110			
				115			
				120			
				125			
				130			
				135			
				140			
				145			
				150			
				155			
				160			

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0573

AS-BUILT DIAGRAM

Boring or Well Number 699-40-62 Sheet 2 of 3
Location _____ Project _____

Logged by _____ Date Well Started 12/14/48
Reviewed by _____ Date _____ Date Well Completed 1/17/49

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram	▼		▼	Lithologic Diagram	Lithologic Description
8" Casing			170	●		Slightly gravely slightly silty SAND
			175			SAND
			180			Slightly silty SAND 175-200'
			185			
			190			
			195			
			200			
			205			
			210			Slightly silty GRAVELY SAND
			215			Slightly gravely SAND 215-220
			220			Slightly silty SAND 220-300
			225			
			230			
			235			
			240			
			245			
			250			
			255			
			260			
			265			
			270			
			275			
			280			
			285			
			290			
			300			
			305			
			310			SILTY SAND
			315			SI SILTY GRAVELY SAND 310-315
			320			SILTY SANDY GRAVEL 315-320
			325			SI silty SAND
			330			SILTY SANDY GRAVEL 325-330

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0574

AS-BUILT DIAGRAM

Boring or Well Number 699-40-62 Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started 12/10/48

Reviewed by _____ Date _____ Date Well Completed 1/17/49

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
8" Casing			340			
Perforated 335'-348'			345			
			350			
			355			
Initial Depth to WATER 356'			360			SILTY SAND 355'-360'
Perforated 359'-374'			365			"SILT SAND and GRAVEL"
			370			360-374
			375			SAND and CLAY 374'-375'
TD 384'			380			CLAY 375-384
			385			

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0575

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Chausse
Other (companies)
Geologist(s)

Well No. 699-43-88 Temp. Well No. 43-88
Coordinates N43209 W88445
Elevation: Casing 644.82 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
HT 0'-203'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 203'
Completed Depth 191.5'
Date Started 8/12/48
Date Completed 12/21/48
Static Water Level/Date 176'/1990

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	20'		178' - 198'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 178'
			-

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Backfill/Slough	193.0' - 203.0'		
Cement Grout	191.5' - 193.0'		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0576

AS-BUILT DIAGRAM

Boring or Well Number 699-43-88 Sheet 1 of 2
Location N43174 W88400 Project

Logged by
Reviewed by Date

Date Well Started 8/12/48
Date Well Completed 12/21/48

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data	
Description	Construction Diagram (Drill Bit)			Lithologic Diagram (Sample Method)	Lithologic Description *
Casing Elev. = 643.90			0		(Sandy loam)
8" carbon-steel casing					
					Muddy sand
			25		Slightly muddy sand
					Muddy sand
					Sandy mud
					Muddy sandy gravel Calcareo
			50		
					Slightly muddy gravelly sand
					Muddy sandy gravel
			75		Slightly muddy gravelly sand
					Gravelly sand
					Slightly gravelly sand
			100		Sand
					(Fine sand and brown silt)
			125		
Perforations: 142-152 ft					(Sand gravel, silt)
			150		(Sand, gravel, clay)

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

* Lithology based on ROCSAN ~~and~~ drillers log, ( ) Drillers log description

9413205.0577

AS-BUILT DIAGRAM

Boring or Well Number 699-43-88 Sheet 2 of 2
Location N43174 W88400 Project

Logged by
Reviewed by Date

Date Well Started 8/12/48
Date Well Completed 12/21/48

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			165			(Sand, gravel, clay)
Water level (1990) = 176 ft			175			
Perforations: 178-198 ft						
Cement grout 191.5-193.0 ft						(Fine sand and fine gravel)
						(Fine sand, gravel, and clay)
			200			(Sand, gravel, clay, silt)
TD = 203 ft						
			225			

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0578

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller Stanbery & Robinson
Other (companies)
Geologist(s)

Well No. 699-43-89 Temp. Well No.
Coordinates N43200 W88500
Elevation: Casing 644.15 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool
HT 0-307'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 307'
Completed Depth 307'
Date Started 1950
Date Completed 10/18/56
Static Water Level/Date 204'/10/18/56

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	72'		175' - 247'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 175'
Carbon Steel	8"		247' - 307'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Backfill/Slough	304' - 307'		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Perforated again in 1969 175'-195'

Reviewed by Date Depths are below land surface unless noted.

9413205.0580

AS-BUILT DIAGRAM

Boring or Well Number 699-43-89 Sheet 1 of 2

Location _____ Project _____

Logged by _____ Date Well Started 1950

Reviewed by _____ Date _____ Date Well Completed 10/18/56

Well Construction Data | Geologic/Hydrologic Data

Drill Bit | Sample Method | Data from RHO-LD-158

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
		5		Recent Alluvium
8" Carbon Steel Casing 0'-175'		10		" "
		15		Silt & Fine Sand
		20		" " "
		25		" " "
		30		Silt, Clay & Sand
		35		" " "
		40		" " "
		45		Sand & Gravel
		50		" "
		55		" "
		60		" "
		65		" "
		70		" "
		75		Sand, Gravel & Silt
		80		" " "
		85		" " "
		90		" " "
		95		" " "
		100		Sand & Silt
		105		" "
		110		" "
		115		Fine & Medium Sand
		120		" " "
		125		" " "
		130		" " "
		135		" " "
		140		" " "
		145		Sand & Silty Gravel
		150		" " "
		155		" " "
		160		" " "
		165		" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0579

AS-BUILT DIAGRAM

Boring or Well Number 699-43-89 Sheet 2 of 2

Location _____ Project _____

Logged by _____

Reviewed by _____ Date _____

Date Well Started 1950

Date Well Completed 10/18/56

Well Construction Data — Drill Bit

Geologic/Hydrologic Data — Sample Method — Data from RHO-LD-158

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
		170		Sand & Silty Gravel
		175		" " "
Perforated 8" Carbon Steel Casing 175'-247'		180		" " "
		185		" " "
		190		" " "
		195		" " "
		200		" " "
		205		" " "
		210		" " "
		215		" " "
		220		" " "
		225		" " "
		230		" " "
		235		" " "
		240		" " "
		245		" " "
		250		Sand w/ Gravel & Silt
		255		" " "
8" Carbon Steel Casing 247' -307'		260		" " "
		265		" " "
		270		" " "
		275		" " "
		280		" " "
		285		Sand & Gravel
		290		" "
		295		Gravel (Granule - Boulder)
		300		Meduim to Coarse Sand
Backfill/Slough 304'-307'		305		Gravel (Granule - Cobble)
				TD=307'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0581

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Aqua Drilling
Driller
Other (companies)
Geologist(s) Ledgerwood (ARHCO)

Well No. 699-49-100B Temp. Well No.
Coordinates N49423 W100365
Elevation: Casing 791.35 Brass Marker

DRILLING METHOD

Drilling Method(s) Air Rotary 0'-170'
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 175'
Completed Depth 175'
Date Started 5/19/75
Date Completed 5/21/75
Static Water Level/Date

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	6"	31'		144' - 175'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 17'
Carbon Steel			0' - 144'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Hanford Wells Notes Depth/Bottom as 429 & Dia. 3.5". This may have b deepened at a later date, but there is no evidence in the drill Logs.

Reviewed by Date Depths are below land surface unless noted.

9413205.0582

AS-BUILT DIAGRAM

Boring or Well Number 699-49-100B Sheet 1 of 2
Location _____ Project _____

Logged by _____ Date Well Started 5/19/75
Reviewed by _____ Date _____ Date Well Completed 5/21/75

Well Construction Data — Geologic/Hydrologic Data

Drill Bit — Sample Method — Data from RHO-LD-158

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing		5		Fine-Very Fine Sand
0'-17'		10		" " " "
		15		Sandy Gravel
		20		" "
		25		Pebbles & Cobbles w/ F-VF Sand
		30		Very Fine Sand
		35		Slightly Sandy Gravel
6" Carbon Steel Casing		40		" " "
0'-144'		45		Sandy Gravel
		50		" "
		55		" "
		60		" "
		65		Cemented Silty Sandy Gravel
		70		" " " "
		75		" " " "
		80		" " " "
		85		" " " "
		90		" " " "
		95		" " " "
		100		" " " "
		105		" " " "
		110		Gravelly Med.-Coarse Sand
		115		Sandy Gravel
		120		Muddy Gravel w/ Sand & Silt
		125		Muddy Sandy Gravel
		130		" " "
		135		Muddy Gravelly Sand
		140		Coarse Black Sand w/ Silt
		145		Fine-Med. Clean Sand
Perforated 6" Carbon		150		Gravelly Sand
Steel Casing 144'-176'		155		Very Fine-Coarse Sand
		160		" " " "
		165		Very Fine Sand

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

*Note: Hanford Wells Notes Drilled Depth as 429' & Dia 3.5" / May have been deeper

A-245

A-1800-186 (05/90)

9413205.0583

AS-BUILT DIAGRAM

Boring or Well Number 699-49-100B Sheet 2 of 2

Location _____ Project _____

Logged by _____ Date Well Started 5/19/75

Reviewed by _____ Date _____ Date Well Completed 5/21/75

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method	Data fro RHO-LD-158	
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Perforated 6" Carbon		☒	170	☒		Fine-Med. Sand (Clean)
Steel Casing 144'-175'			175			" " " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0584

WELL COMPLETION SUMMARY

Project
Location
Drilling Co.
Driller
Other (companies)
Geologist(s)

Well No. 699-49-100C Temp. Well No. 6-49100C
Coordinates PN49419 PW100334
Elevation: Casing 790.43' Brass Marker

DRILLING METHOD

Drilling Method(s) Cable tool
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 408'
Completed Depth 408'
Date Started 5/28/76
Date Completed 8/25/76
Static Water Level/Date

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Casing	10"			unknown -

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
12" Casing	12"		Surface - 340'4"
10" (Liner)	10"		326' - 401'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
N/A	-		
	-		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date Depths are below land surface unless noted.

9413205.0585

AS-BUILT DIAGRAM

Boring or Well Number 699-49-100C Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 5/28/76

Reviewed by _____ Date _____ Date Well Completed 8/25/76

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method	Data from ROLSAN	
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			5			SANDY MUD 0-10'
12" Casing 0'-240.3'			10			
			15			GRAVELY MUDDY SAND 10'-13'
			20			SANDY MUD 13-15'
			25			GRAVELY MUDDY SAND 15'-25'
			30			MUDDY SANDY GRAVEL 25-30'
			35			SI MUDDY GRAVELY SAND 30'-35'
			40			MUDDY SANDY GRAVEL 35-40'
			45			SI GRAVELY MUDDY SAND 40-45'
			50			GRAVELY MUDDY SAND 45-50'
			55			SI MUDDY GRAVELY SAND 50-55'
			60			SI GRAVELY SI MUDDY SAND 55-60'
			65			SI MUDDY SAND 60-65'
			70			SI GRAVELY SI MUDDY SAND
			75			SI GRAVELY MUDDY SAND
			80			GRAVELY MUDDY SAND 75-125
			85			
			90			
			95			
			100			
			105			
			110			
			115			
			120			
			125			SI GRAVELY MUDDY SAND 125'-130'
			130			MUDDY SAND 130-135'
			135			GRAVELY SAND 135'-150'
			140			
			145			
			150			
			155			SANDY GRAVEL 150-155'
			160			SI MUDDY GRAVELY SAND 155-160
						MUDDY SAND 160'-18

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0586

AS-BUILT DIAGRAM

Boring or Well Number 699-49-100C Sheet 2 of 3

Location _____ Project _____

Logged by _____ Date Well Started 5/28/76

Reviewed by _____ Date _____ Date Well Completed 8/25/76

Well Construction Data — Drill Bit

Geologic/Hydrologic Data — Sample Method — Data from ROCSAN

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
12" Casing 0'-340.3'		170		
		175		
		180		
		185		
		190		GRAVELY MUDDY SAND 190-205
				" " "
		200		
		205		SANDY MUD 200-205'
		210		MUDDY SAND 205-220
		215		" "
		220		" "
		225		SL GRAVELLY SL MUDDY SAND
		230		GRAVELLY MUDDY SAND
		235		" " "
		240		GRAVELLY SAND
		245		SL. GRAVELLY SAND
		250		GRAVELL SAND
		255		SANDY GRAVEL
		260		MUDDY SANDY GRAVEL
		265		GRAVELLY MUDDY SAND
		270		" " "
		275		SL. MUDDY GRAVELLY SAND
		280		GRAVELLY MUDDY SAND
		285		" " "
		290		" " "
		295		" " "
		300		SL. GRAVELLY MUDDY SAND
		305		GRAVELLY MUDDY SAND
		310		SL. GRAVELLY MUDDY SAND
		315		GRAVELLY MUDDY SAND
		320		SL. GRAVELLY SL. MUDDY SAND
		325		SL. MUDDY GRAVELLY SAND
		330		MUDDY SANDY GRAVEL
				SL. GRAVELLY MUDDY SAND

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0587

AS-BUILT DIAGRAM

Boring or Well Number 699-49-100C Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started 5/28/76

Reviewed by _____ Date _____ Date Well Completed 8/25/76

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method	Data from ROCSAN 0'-350'/RH2-1A-158 350'-408'	
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
			340			GRAVELLY MUDDY SAND
			345			SL. GRAVELLY MUDDY SAND
			350			SANDY GRAVEL
10" Liner 326'-401'			355			60% Gravel, 20% Sand, 10% Clay
Perforated ?			360			" " "
			365			" " "
			370			No Record
			375			" "
			380			" "
			385			80% Gravel, 20% Sand & Clay
			390			80% Gravel, 20% Sand
			395			Gray Sticky Clay
			400			" " "
			405			Broken Basalt
						TD = 408'

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0588

WELL COMPLETION SUMMARY REPORT

Project USGS
Location
Drilling Co.
Driller Gentz
Other (companies)
Geologist(s)

Well No. 699-51-75 Temp. Well No.
Coordinates PN 50667, PW75151
Elevation: Casing 641.51 Brass Marker

DRILLING METHOD

Rotary Air Mud
Cable Tool D H
Drilling Fluid
Other Method not specified - assume cable tool

COMPLETION DATA

Drilled Depth 382
Completed Depth 235'
Date Started 8/21/57
Date Completed
Static Water Level/Date 97/9/17/57

OTHER (check if performed)

	Well Abandonment		Downhole TV Inspection
X	Well Development		As-Built, Driller's/ Geologist's Logs
	Aquifer Testing		Guardposts
	Geophysical Log(s)		Protective Casing
	Lock and Cap		

SCREEN

Type	Outer Diameter	Length	Slot Size	Depth(s)
Perforated (see back for details)	8"			190 - 370

TEMPORARY CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Shoe/Casing Diameter	Placement
CARBON Steel (assumed)	8"		0 - 376

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
Gravel Pack	382' - 365		
SAND Pack	365 - 245		
Cement Grout	245 - 235		
SAND Pack	235 - 225		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Reviewed by Date For all blanks mark N/A if not applicable.

9413205.0589

699-51-75 WELL COMPLETION SUMMARY (CONTINUED)

SCREEN					
Type	Outer Diameter	Length	Slot Size	Interval	
Perforations	8"	35'	2 cuts/ft	235 - 270'	10/57
"	"	100'	1 cut/ft	270' - 370'	10/57
"	"	45'	6 rows/ft	190' - 235'	8/63 ?
				-	
				-	
				-	

9413205.0590

WELL COMPLETION SUMMARY

Project USGS
Location
Drilling Co.
Driller Gentz
Other (companies)
Geologist(s)

Well No. 699-51-75 "P" Temp. Well No.
Coordinates PN 50667 PW75151
Elevation: Casing 641.51 Brass Marker

DRILLING METHOD

Drilling Method(s) Not specified - assume cable tool
Drilling Fluid
Other

COMPLETION DATA

Drilled Depth 382'
Completed Depth 375'
Date Started 8/21/57
Date Completed 5/31/77
Static Water Level/Date 190.9 (8/85)

OTHER (check if performed)

- ___ Well Abandonment
- ___ Well Development
- ___ Aquifer Testing
- ___ Geophysical Log(s)
- ___ Lock and Cap
- ___ Downhole TV Inspection
- ___ Driller's Logs
- ___ Pad
- ___ Guardposts
- ___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Polyethylene ?	1.5		60	270 - 275'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Polyethylene ?	1.5		0 - 270'
			-

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
	-		
	-		
See well 699-51-75	-		
	-		
	-		
	-		

PUMP

Type None Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS

Piezometer tube installed 5/31/77. Previously installed tubes (1963, 1965) were removed

Reviewed by Date Depths are below land surface unless noted.

9413205.0591

AS-BUILT DIAGRAM

Boring or Well Number 699-51-75 Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 8/21/57

Reviewed by _____ Date _____ Date Well Completed 5/31/77

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
		Not specified (Assume cable tool)	5	Not specified (assume cable tool)		Boulders, gravel, + sand
			10			" " "
			15			Boulders - gravel
1.5" dia piezometer tube →			20			" "
			25			" "
8" dia casing			30			" "
(assume carbon steel) →			35			" "
			40			" "
			45			" "
			50			Cobbles - boulders
			55			" "
			60			Boulders - gravel
			65			" "
			70			Cobbles - gravel - boulder
			75			Cobbles - gravel
			80			" "
			85			" "
			90			" "
			95			Sand, gravel, + cobbles
			100			" " "
			105			" " "
			110			" " "
			115			Cobbles - gravel
			120			" "
			125			Gravel - sand - silt
			130			" " "
			135			" " "
			140			" " "
			145			" " "
			150			" " "
			155			" " "
			160			Cobbles - gravel - sand - silt
			165			Gravel - sand - silt

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0592

AS-BUILT DIAGRAM

Boring or Well Number 699-51-75 Sheet 2 of 3
Location Project

Logged by
Reviewed by Date
Date Well Started 8/21/57
Date Well Completed 5/31/77

Well Construction Data: Description	Depth in Feet	Geologic/Hydrologic Data: Lithologic Description
Initially the well only consisted	170	Gravel - sand - silt
of 8" casing. 1.5" piezometer	175	" " "
tubes were then installed. The	180	" " "
monitoring intervals and date	185	" " "
of ins. are listed below:	190	" " "
"P" 8/63 340-360'	195	" " "
"Q" 8/63 273-293'	200	" " "
"O" 4/65 210-230'	205	" " "
The above tubes were removed 5/77	210	Sandstone
There was no seal between them, they	215	"
were sand-packed in place.	220	Cobbles - gravel - sand
	225	Gravel - sand
Sand Pack (235-225')	230	Coarse sand - little gravel
	235	Gravel - sand
Cement grout (235-245')	240	Sand - gravel
	245	" "
	250	Sand - gravel - cobbles
	255	Gravel - sand
1.5" dia piezometer tube	260	" "
(0-270'); 60 slot screen	265	Sand - silt little
from 270-275' ("P")	270	Sand - gravel - silt
(Current piez. tube installed 5/77)	275	Sand - gravel
Sand Pack (365-245')	280	Cobbles - gravel sand
	285	Cobbles - gravel sand
Perforations in 8" casing	290	Cobbles - gravel sand
(10/4/57) 235-270' (2 cuts/ft)	295	Coarse gravel - fine sand
" 270-370' (1 cut/ft)	300	Small + coarse gravel - fine san
(8/63?) 190-235' (6 rows/ft)	305	" " " " "
	310	" " " "
	315	Coarse gravel + sand
	320	" " "
	325	" " "
	330	" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0593

AS-BUILT DIAGRAM

Boring or Well Number 699-51-75 Sheet 3 of 3

Location _____ Project _____

Logged by _____ Date Well Started 8/21/57

Reviewed by _____ Date _____ Date Well Completed 5/31/77

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Perforations in 8" casing			335			Sand - silt - gravel (starts @ 332')
			340			Sand - Gravel.
			345			Sand - gravel - cobbles
Sand Pack (245-365')			350			Sand - gravel - basalt - cobbles
			355			" " " "
			360			Sand & gravel
			365			Sand - silt - gravel
Gravel Pack (382-365')			370			Sand - gravel - basalt
Bottom of 8" casing @ 376'8"			375			Basalt (starts @ 375')
			380			"
TD = 382'			382			"

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0594

WELL COMPLETION SUMMARY

Project
Location
Drilling Co. Hayden Drilling Co.
Driller J.D. St. George & Smith
Other (companies)
Geologist(s)

Well No. 699-57-83A Temp. Well No.
Coordinates N57020 W82993
Elevation: Casing 577.96 Brass Marker

DRILLING METHOD

Drilling Method(s) Cable Tool 0'-355'
Drilling Fluid Water
Other

COMPLETION DATA

Drilled Depth 355'
Completed Depth 355'
Date Started 10/10/60
Date Completed 12/6/60
Static Water Level/Date 169'/10/31/60

OTHER (check if performed)

___ Well Abandonment	___ Downhole TV Inspection
___ Well Development	___ Driller's Logs
___ Aquifer Testing	___ Pad
___ Geophysical Log(s)	___ Guardposts
___ Lock and Cap	___ Protective Casing

SCREEN

Type	Outer Diameter	Length	Slot Size	Interval
Perforated Carbon Steel	8"	195'		145' - 340'

TEMPORARY CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
			-
			-
			-
			-

PERMANENT CASING

Type	Nominal Diameter	Max. Outer Diameter	Interval
Carbon Steel	8"		0' - 145'
Carbon Steel	8"		340' - 342'

ANNULAR SEAL/FILL

Type	Interval	Quantity	Volume
Cement Grout	195' - 354'		
Wood Plug	354' - 355'		
	-		
	-		
	-		
	-		

PUMP

Type Depth to Inlet Date Set

ACCEPTANCE

Completed Well: Accept Conditionally Accept
Reject

COMMENTS P,Q&R Piezometers were set 6/9/64 all in Sand Pack (No Cement) (P) perforated 335-355, (Q) perforated 270-290' (R) " 210'-230' Piezometers were removed and well cemented to 195' on 7/26/76

Reviewed by Date

Depths are below land surface unless noted.

9413205.0595

AS-BUILT DIAGRAM

Boring or Well Number 699-57-83A Sheet 1 of 3

Location _____ Project _____

Logged by _____ Date Well Started 10/10/60

Reviewed by _____ Date _____ Date Well Completed 12/6/60

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
		Drill Bit		Sample Method		Data from Driller's Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
8" Carbon Steel Casing 0'-145'		●	5	●		Solid Cobble Bed
			10			12" Cobbles & Silty Sand
			15			" " " "
			20			Cobbles & Silty Sand
			25			" " "
			30			" " "
			35			" " "
			40			Cemented Gravel & Sand
			45			Silty Gravel & Sand
			50			" " "
			55			" " "
			60			" " "
			65			" " "
			70			" " "
			75			" " "
			80			" " "
			85			" " "
			90			" " "
			95			" " "
			100			" " "
			105			" " "
			110			" " "
			115			" " "
			120			" " "
			125			" " "
			130			" " "
			135			" " "
			140			" " "
			145			" " "
Perforated 8" Carbon Steel Casing 145'-340'			150			" " "
			155			" " "
			160			" " "
			165			" " "

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0596

AS-BUILT DIAGRAM

Boring or Well Number 699-57-83A Sheet 2 of 3

Location _____ Project _____

Logged by _____ Date Well Started 10/10/60

Reviewed by _____ Date _____ Date Well Completed 12/6/60

Well Construction Data — Geologic/Hydrologic Data

Drill Bit — Sample Method — Data from Drillers Log

Description	Construction Diagram	Depth in Feet	Lithologic Diagram	Lithologic Description
		170		Silty Gravel & Sand
		175		" " "
Perforated 8" Carbon		180		" " "
Steel Casing 145'-340'		185		" " "
		190		" " "
		195		" " "
		200		" " "
		205		" " "
		210		Conglomerate
		215		Sand & Silt
		220		" "
Cement Grout		225		" "
195'-354'		230		Brown Silty Sand
		235		" " "
		240		Yellow Sand & Silt
		245		No Record
		250		Sand & Silt
		255		" "
		260		" "
		265		" "
		270		Sand & Gravel
		275		" "
		280		" "
		285		" "
		290		" "
		295		" "
		300		" "
		305		" "
		310		" "
		315		" "
		320		Sand
		325		"
		330		Sand & Gravel

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0597

AS-BUILT DIAGRAM

Boring or Well Number 699-57-83A Sheet 3 of 3
Location _____ Project _____

Logged by _____ Date Well Started 10/10/60
Reviewed by _____ Date _____ Date Well Completed 12/6/60

Well Construction Data			Depth in Feet	Geologic/Hydrologic Data		
	Drill Bit			Sample Method		Data from Driller's Log
Description	Construction Diagram				Lithologic Diagram	Lithologic Description
Perforated 8" Carbon			335			Sand & Gravel
Steel Casing 145'-340'			340			" "
8" Carbon Steel Casing			345			Basalt
340'-342'			350			"
Cement Grout 195'-354'			355			"
						TD=355'
Wood Plug 354'-355'						

Drill Bit/Sample Method Used:
☐ Rotary ☒ Air Rotary ■ Mud Rotary ▲ Air Percussion △ Back Hoe ◇ Auger ○ Drive Barrel ● Hard Tool ● Split-Barrel

A-1800-186 (05/90)

9413205.0598

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Other Author(s) Name(s): S. S. Teel, A. W. Pearson, K. R. Barton, B. N. Bjornstad, T. J. Gilmore

Project or Program Title: Data Packages

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Editor Name (if edited), Phone:

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ID Number (include revision, volume, etc.): WHC-SD-EN-DP-029, REV. 0

List attachments.

Date Release Required: April 30, 1992

Title: Unconfined Aquifer Hydrologic Test Data Package for the 200 West Aggregate Area Management Study

Unclassified Category: UC- N/A

Impact Level: 4

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9413205.0600

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EDT No.: 157083

ECN No.:

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