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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT № 141926

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) GL Kasza Geosciences	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Environmental	6. Cog. Engr.: K. D. Reynolds	7. Purchase Order No.: N/A
8. Originator Remarks: The attached Borehole Completion Data is transmitted for distribution of the released version. BEST AVAILABLE COPY		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 216-A-29
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: March 5, 1993

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15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1.	WHC-SD-EN-DP-054		0	Borehole Completion Data Package for 216-A-29 RCRA Facility Monitoring Wells 299-E25-47 and 299-E25-48	3Q	1/2	1	

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. K.D. Reynolds	KD Reynolds	3/1/93	H6-08	GL Kasza	GL Kasza	3-1-93	H6-06	3	1
1	1	Cog. Mgr. R.L. Jackson	R L Jackson	3/1/93	H6-08	EDMC (2)			H6-08	3	
1	1	QA W. R. Thackaberry	W.R. Thackaberry	3-2-93	H4-16	Central Files (2)			L8-04	3	
		Safety				ERC			H6-07		
		Env.									

18.	19.	20.	21. DOE APPROVAL (if required) Ltr. No. N/A
GL KASZA GL Kasza 3-1-93 Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	R L Jackson 3/1/93 Cognizant/Project Engineer's Manager / Date	[] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

BD-7400-172-1 (07/91)

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SUPPORTING DOCUMENT

1. Total Pages 168

2. Title	3. Number	4. Rev No.
Borehole Completion Data Package For 216-A-29 RCRA Facility Monitoring Wells 299-E25-47 and 299-E25-48	WHC-SD-EN-DP-054	0

5. Key Words	6. Author
RCRA, Monitoring Wells, A-29, Borehole Completion	Name: G. L. Kasza Signature 2-26-93 Organization/Charge Code 81232/R4GD1

APPROVED FOR PUBLIC RELEASE 3/8/93 D. Vole

7. Abstract

This document contains information pertaining to the drilling and construction of groundwater monitoring wells 299-E25-47 and 299-E25-48. Geologic logs and hydrologic test data are included for each of the wells.

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9. Impact Level 3Q

10. RELEASE STAMP

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FIGURE

1 Location of Wells 299-E25-47 and 299-E25-48 2

TABLE

1 Survey Data for Groundwater Monitoring Wells Installed at the A-29 Ditch in 1992 1

9313090.0004

9313090.0005

1.0 INTRODUCTION

Two new groundwater monitoring wells were constructed at the 216-A-29 Ditch (A-29 Ditch) in the 200 East Area at the Hanford Site during 1992 in support of Tri-Party Agreement milestone M-24-25. Both wells (299-E25-47 and 299-E25-48) will serve as downgradient monitoring wells for the A-29 Ditch. The locations of these wells are illustrated in Figure 1. Well location coordinates and elevations are listed in Table 1. For convenience, well identification numbers are shortened by dropping the "299-" prefix.

The *Groundwater Monitoring Plan for the A-29 Ditch* (Kasza and Goodwin, 1992) describes the local geology, hydrogeology, groundwater chemistry and subsurface contamination to provide justification for the new wells and their locations. The wells were constructed to the specifications described by Westinghouse Hanford Company (WHC 1992).

This document is a compilation of data and information on drilling, completion, and development of the new wells. Copies of forms, notes, and diagrams completed in the field comprise the bulk of this document. Related drilling documents including decontamination records and chain-of-custody forms are retained in the WHC files. Aquifer test data were interpreted by WHC Geosciences Engineers to provide estimates of aquifer properties.

9313090.0006

Table 1. Survey Data for Groundwater Monitoring Wells Installed at the A-29 Ditch in 1992.

Well	Datum or coordinate system[a]	Coordinates center of casing	Brass Marker in Concrete	Top Hydrostaf[b] Plate North Side	Top Outer Casing North Side
E25-47	NGVD'29	N/A	670.41	673.78	673.77
	Plant 200E Datum	40,835.3 N 46,306.1 W	N/A	N/A	N/A
	Lambert NAD83	135,931.0 N 575,778.6 E	N/A	N/A	N/A
E25-48	NGVD'29	N/A	679.68	682.32	682.31
	Plant 200E Datum	40,456.8 N 46,816.1 W	N/A	N/A	N/A
	Lambert NAD83	135,815.2 N 575,623.4 E	N/A	N/A	N/A

[a] Lambert NAD83 coordinates in meters. Plant 200E coordinates in feet.
NGVD'29 elevations are feet above the National Geodetic Datum of 1929; Plant 200E elevations in feet above mean sea level.
[b] A trademark of Instrumentation Northwest, Inc.

N/A= not applicable.

Plant 200E coordinates and NGVD'29 elevations are most comparable to survey data for other wells currently in the groundwater database.

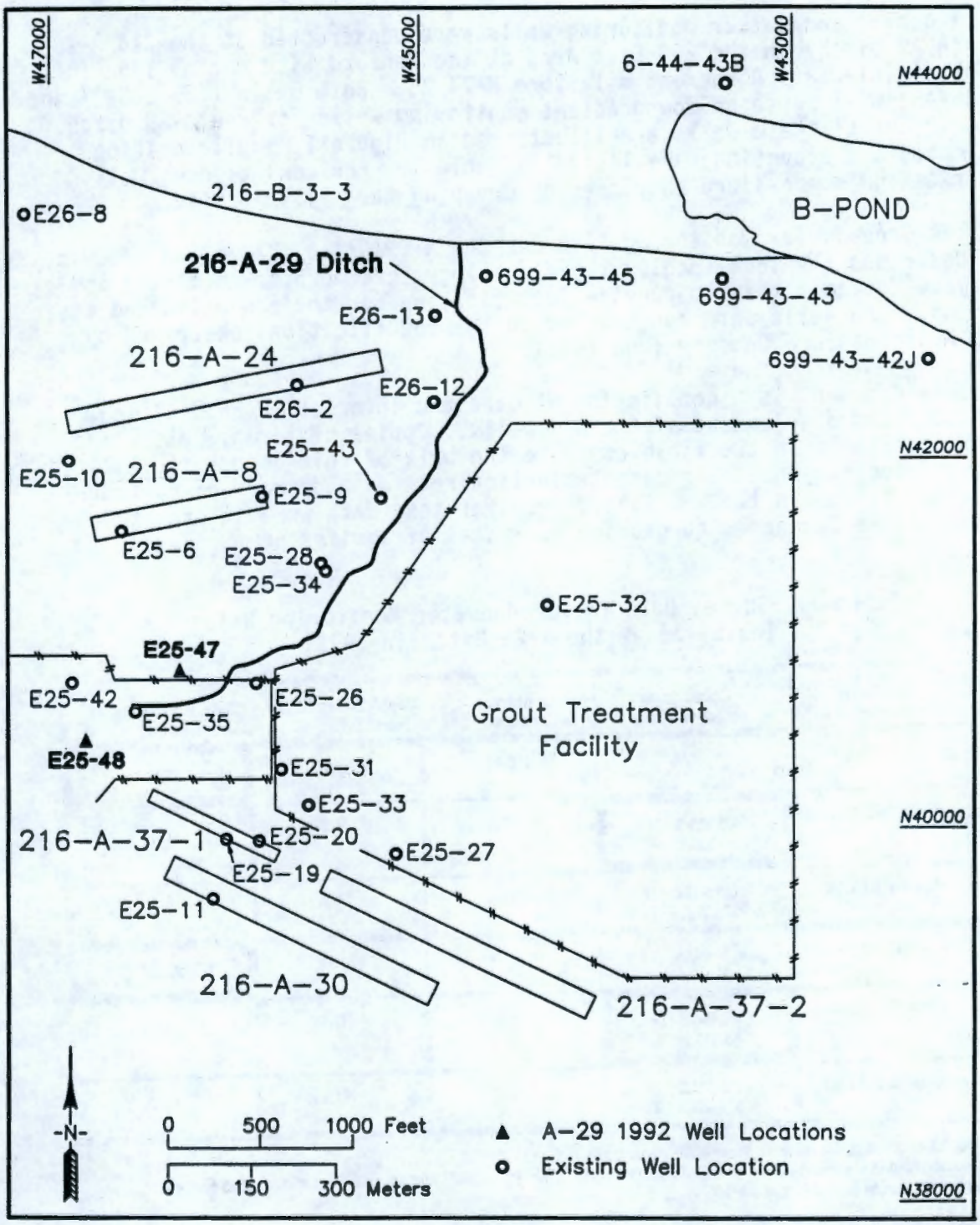

Figure 1. Location of Wells 299-E25-47 and 299-E25-48.

2.0 WELL 299-E25-47

2.1 DRILLING

Well E25-47 was drilled with an air-rotary rig after the starter casing had been installed with a backhoe. Drilling began July 14, 1992, and was completed July 28, 1992, at a total depth of 301.45 ft below land surface (bls). Carbon steel pipe was used as the temporary casing during drilling: (1) 12-in-dia casing from surface to 9.9 ft bls, (2) 10-in-dia casing from surface to 162.3 ft bls, and (3) 8-in-dia casing from surface to the total depth. No water or other drilling fluids were used during drilling. Drilling information is compiled in Appendix A.

Sediments penetrated were primarily sand to sandy gravel (see borehole log in Appendix A). Size determination for the pebble and larger size fractions was not possible since the particles were crushed by the drilling action of the down-hole hammer. Composite samples were collected for every 5 ft of depth from a continuous sampling device for moisture content, calcium carbonate analysis, radiological screening, and lithologic archiving. Physical data for sediments are contained in Appendix B.

A gross gamma log of the hole was run through the temporary casing on July 29, 1992, from 2.8 to 288.7 ft bls. The geophysical log is located in Appendix A.

The borehole and cuttings were monitored regularly for organic vapors and radioactive contaminants. There was no detectible contamination.

2.2 WELL COMPLETION

The well screen and permanent casing were installed in well E25-47 from August 4 to August 6, 1992. The static water level in the hole was 266.7 ft bls. A 10-slot, 4-in-dia stainless steel screen was set from 262.98 to 282.91 ft bls. Permanent casing is 4-in-dia stainless steel with centralizers, from 262.98 ft bls to above land surface. The 20-40 mesh silica sand pack is located between 288.9 and 259.4 ft bls. The annular seal is comprised of 3/8-in. bentonite pellets from 259.4 to 256.1 ft bls, 8-20 mesh bentonite crumbles from 256.1 to 9.8 ft bls, and cement grout from 9.8 to 2.0 ft bls. The remaining annulus was filled with concrete when a 4 ft by 4 ft by 6-in. concrete pad was installed at the well head. A 6-in. protective casing with a locking cap was also installed at the well head. Four protective steel posts were set in concrete around the well. A brass marker stamped with the well number was set into the concrete. The center line of the well was surveyed to Lambert NAD 83 and Plant 200E coordinates. Elevations based on the NGVD'29 datum were established for the top of the Hydrostar (a trademark of Instrumentaton Northwest) plate, the top of outer casing (north side), and the brass marker set in the concrete pad. The documentation compiled during well completion is located in Appendix A.

The only additives used during well drilling and completion were RD-N Rock Drill Oil (a trademark of Jet-Lube, Inc.) an approved hammer lubricant and "Well Guard," a non-petroleum-based lubricant used on casing threads and drilling tools.

9313090.0008

2.3 WELL DEVELOPMENT AND PUMP INSTALLATION

Well E25-47 was developed on September 10, 1992. A submersible pump was used to remove 1,340 gal water from the well. Final turbidity after pumping was 4.3 nephelometric turbidity units (NTU). Drawdown and recovery data were measured with a transducer in the pumping well during development. A well development log is included in Appendix C. Water level data from development and recovery are included in Appendix D.

A dedicated Hydrostar sampling pump was installed in well E25-47 on September 10 , 1992. The pump intake is located at 284.4 ft below top of casing. The pump installation record is included in Appendix C.

2.4 AQUIFER TESTING

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Concurrent with well development and prior to sampling pump installation, withdrawal and instantaneous slug injection tests were performed on September 10, 1992 at well E25-47. Appendix C contains information sheets and data for the withdrawal and instantaneous slug tests.

Water-level changes were monitored in this well during well development using a transducer and data logger system. Groundwater was discharged from E25-47 at a rate of 11.1 gal/min for 81 min. After that time, the development criteria of $\leq$5 NTU was achieved and pumping terminated. The development data were not useable because of the small water-level change that occurred during data. The maximum drawdown during development was only 0.3 ft at the well. Appendix D contains a plot showing the drawdown response of well E25-47 during the test.

Slug testing consisted of lowering and later withdrawing a 0.13 ft^3 slugging rod from the water table while measuring water-level changes with the transducer and data logger system. The slug withdrawal data for well E25-47 was analyzed using the Bouwer and Rice method (1989). From these data the hydraulic conductivity was estimated at 260 to 290 ft/d. Appendix D contains the data plots and information on the test analysis.

3.0 WELL 299-E25-48

3.1 DRILLING

Work began at well E25-48 on July 1, 1992, and the well was completed August 25, 1992. Well E25-48 was drilled using several methods, including: (1) a backhoe to set the 12-in-dia starter casing from surface to 10.0 ft bls, (2) an ODEX Hammer (a trademark of Atlas Copco & Sandvik Rock Tools) equipped air-rotary rig to run the 10-in-dia casing was run from the surface to 168.84 ft bls and the telescoped 8-in-dia casing from the surface to 265.55 ft bls, and (3) a cable tool rig to drive the 8-in-dia casing to the 297.5 ft bls total depth. Carbon steel pipe was used as the temporary casing during drilling. Five gallons of water were added during cable tool drilling to assist cuttings recovery. Drilling information is compiled in Appendix A.

Nonconformance report (NCR) 50006 was issued against well E25-48 to document that the hammer drill bit and underreamer were abandoned in the hole at 220 ft bls. Magnetic-survey logs confirm the location of the tools at over 50 ft above the water table. This NCR was closed on December 4, 1992, after it was determined that the abandoned tools would cause no impact to sample integrity.

Sediments drilled ranged from sand to sandy gravel (see borehole log in Appendix A). Determination of the intact particle size was not possible for the pebble and larger-size fraction during air-rotary drilling since the particles were crushed by the drilling action of the down-hole hammer. Composite samples were collected every 5-ft of depth by a continuous sampling device for moisture content, calcium carbonate analysis, radiological screening, and lithologic archiving. After cable tool drilling was initiated, drive barrel samples were collected. Physical data for the formations penetrated are contained in Appendix B.

A gross gamma geophysical log was run through the temporary casing on September 19, 1992, for the interval 3.4 to 282 ft bls. A copy of the gross gamma log for well E25-48 is located in Appendix A.

The borehole and cuttings were monitored regularly for organic vapors and radioactive contaminants. No detectible contamination was encountered.

9313090.0010

3.2 WELL COMPLETION

The permanent materials were installed in well E25-48 during the period August 20 to August 28, 1992. Static water level at that period ranged from 276.3 to 279.5 ft bls. A 10-slot, 4-in-dia stainless steel screen was set from 294.25 to 274.33 ft bls. The permanent casing is 4-in-dia centralized stainless steel set from 274.33 ft bls to above land surface. The sand pack is 20-40 mesh silica sand (297.5 to 268.4 ft bls). The annular seal consists of bentonite pellets (268.4 to 262.6 ft bls), 8-20 mesh bentonite crumbles (262.6 to 10.3 ft bls), and type I-II portland cement (10.3 to 2 ft bls). The remaining annulus was filled with concrete when the 4 ft by 4 ft by 6-in. concrete pad was installed at the well head. A 6-in. protective casing with a locking cap was also installed at the well head. Four protective steel posts were set in concrete around the well. A brass marker stamped with the well number was set into the concrete. The center line of the well was surveyed to Lambert NAD 83 and Plant 200E coordinates. Elevation was surveyed to the NGVD'29 datum. Elevations were established for the top of the Hydrostar plate, top of outer casing (north side), and the brass marker set in the concrete pad. Documentation of well completion is compiled in Appendix A.

The only additives during well drilling and completion were the already mentioned water, "well guard," a non-petroleum-based lubricant used on casing threads and drilling tools, and RD-N Rockoil, an approved hammer lubricant.

3.3 WELL DEVELOPMENT AND PUMP INSTALLATION

Well E25-48 was developed on September 11, 1992. A temporary submersible pump was used to remove 1,190 gal water from the well. Pumping continued until the turbidity of the discharge was measured at 5.0 NTU.

Drawdown and recovery data were measured with a transducer in the pumping well during development. The well development log is included in Appendix C. Water level data from development and recovery are included in Appendix D.

A Hydrostar sampling pump was installed in well E25-48 on October 1, 1992. The pump intake is located at 260.0 ft below top of casing. A pump installation form is included in Appendix C.

3.4 AQUIFER TESTING

Following well completion, instantaneous slug injection and withdrawal tests were performed September 11, 1992 at well E25-48. Slug testing consisted of lowering and later withdrawing a 0.13 ft^3 slugging rod from the water table, while measuring water-level changes with a transducer and data logger system.

Water-level changes were also monitored in the well during well development using the transducer and data logger system. Groundwater was discharged from E25-48 at a rates of 12.5 gallons per minute for 95 minutes. After that time, the development criteria of $\leq$5 NTUs was achieved and pumping terminated. Appendix C contains information sheets and data for the instantaneous slug tests and the well development.

Neither the slug test data nor the development data were useable for determination of aquifer parameters. The non-interpretable data was due to an excessive disturbance caused by injection of the slugging rod into the water table and the small water-level change that occurred during development pumping. The maximum drawdown during development was only 0.08 ft at well 299-E25-48. Appendix D contains the plots showing the water level responses during these tests.

9313090.0011

4.0 REFERENCES

Bouwer, H., 1989, "The Bouwer and Rice Slug Test -- An Update" in *Ground Water*, v. 27, no.3, pp 304-309.

Kasza, G. L. and S. M. Goodwin, 1992, *Groundwater Monitoring Plan for the 216-A-29 Ditch*, WHC-SD-EN-AP-045 Rev 0-A, Westinghouse Hanford Company, Richland, Washington.

WHC, 1992, *Generic Specifications-Groundwater Monitoring Wells*, WHC-S-014, Rev. 7, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

DRILLING AND CONSTRUCTION DATA

9313090.0012

CONTENTS

Well 299-E25-47 Drilling and Construction Data A-1
Well 299-E25-48 Drilling and Construction Data A-29

9313090.0013

WELL CONSTRUCTION REPORT

VALIDATED KDR 1/11/93 SIGNATURE/DATE

Specification No. WHC-S-014 Rev No. Rev 7

ECNs 150137 150138 127439 164223 166757 150132 172209 166752, 119402, 150143, 127440

Project RCRA - W017

Location 200 EAST

Drilling Company Jensen Drilling

Driller D. Minga

Other (Companies)

Geologist(s) E.C. Rafuse (WHC) Ken Lane (MCE) MO Sweeney (Hirco) Brett Thompson (MCE) D.J. Anderson, J.A Coates (WHC)

Well No. 299-E25-47 Temp. Well No.

Coordinates: ~~N 40,835.3~~ N:135,930.98 E:575,778.55

Casing Elev. 673.77' T.O.C. 673.78' Hydrostar plate Ground Elev. 670.41

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 9.9-301.05	Mud NA	MOS	7-27-92
Cable Tool	D	H		
Drilling Fluid				
Other	Backhoe 0-9.9		ECL	07/17/92

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	288.7 - 2.8	07/29/92
	-	
	-	
	-	
	-	

Completion Data

Drilled Depth 301.45 - 07/28/92

Completed Depth 291.7'

Date Started 7-14-92

Date Completed 8/6/92

Static Water Level/Date 266.7 - 07/29/92

266.7 08/6/92 - DJA

Aquifer Testing

Type INSTANTANEOUS SLUG ECL 07/14/92

Flow Meter I.D. No. - NA -

Cal Due Date - NA -

Length of Test 1 HR

Volume Pumped - NA -

Drawdown - NA -

Date of Test J.A. COATES

Completion Results

Cleaning

Verification Method visual inspection & doc. review

Criteria WHC-S-014 4.2.2, 7.6, 7.7 EII 5.4 WHC-CM-7-7 5.4

	Initials	Date
Drilling Tools/Rig	MOS	7-19-92
Temporary Materials	E.C.L.	07/14/92
Permanent Materials	DJA	08/06/92

Material Storage/Packing

Verification Method visual observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	DJA	08/4/92
Material Packing	DJA	08/4/92

Screen

Type	Length	Slot Size
Stainless 304 Sch 5	19.93'	10 slot

Depth(s) 262.98' - 282.91' w/o cap

262.98 - 283.21 w/cap

Verification Method steel tape measurements

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

Initials DJA Date 08/6/92

Lubricants/Additives

Verification Method visual observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	WELLCOND	MOS	7-20-92
Lubricants	ND-N Rockoil	MOS	7-20-92

Straightness Test

Verification Method visual observation

Criteria WHC-S-014 8.2

Initials DJA Date 08/5/92

A-6000-436 (09/90)

WELL CONSTRUCTION REPORT
(continuation sheet)

Casing (permanent)

Type	Size	Placement
304 stainless steel	4 1/2"	0 - 262.98
blank		-
		-
		-

Verification Method: measurement w/ steel tape

Criteria: WHC-S-014 4.2.1, 4.2.4, 4.2.5, 12.2.1

Initials: DJA Date: 08/06/92

Well Protection

Verification Method: visual inspection w/ tape

Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	ECL	12/18/92
Protective Casing	ECL	12/18/92
Site Restored	ECL	12/18/92
Cap, Hasp and Lock	ECL	12/18/92
Surface Pad	ECL	12/18/92

Annular Seal/Filter Pack

See note below

Verification Method: measurement w/ steel tape Criteria: WHC-S-014 4.2.6, 4.2.7, 4.2.8, 4.2.9

			Interval	Volume	Initials	Date
Grout	TYPE I/II - II	9.5 sks	2.0 - 9.8	12.27 cuft	DJA	08/04/92
Granulus		164 sks	9.8 - 252.1	113.2 cuft	DJA	08/05/92
Enviroplug		2 sks	252.1' - 259.4'	1.38 cuft.	DJA	08/04/92
SAND PACK	20-40	9 sks	259.4' - 288.9'	10.08 cuft	DJA	08/04/92
SAND BASE	10-20	1 sks	288.9' - 291.7'	1.07 cuft	DJA	08/04/92

Well Survey/Labeling

Verification Method: Review of Survey Report

Criteria: WHC-S-014

	Initials	Date
Measurement Point/Surveyed	BRT	1-8-93
Protective Casing/Brass Cap Surveyed	BRT	1-8-93
Well Number Stenciled	ECL	12/18/92
Brass Cap Labeled	ECL	12/18/92

Pump Installation

Verification Method: Visual observation

Criteria: WHC-S-014 4.2.11, 4.2.3

	Initials	Date
Pump Decon/Prep	JAC	9/10/92
Installed	JAC	9/10/92
Pump Tested	JAC	9/10/92

Other (initial if performed)

_____ Well Abandonment _____ Downhole TV Inspection _____ Complete As-Built Diagram, Driller's/Geologist's Logs

9-10-92 JAC Well Development

Comments/Remarks

read decon papers on dart bailer 8/5/92 - DJA

NOTE: Slough @ ~~300~~ DA: total 301.4' - 291.7'

Reviewed By (Sign/Print Name): Kent Reynolds / Kent Reynolds Date: 1/11/93

9213000.0015

WELL SUMMARY SHEET

Boring or Well No. 299-E25-47

Sheet 1 of 2

Location 200 EAST - N of Grout Plant

Project W017 / A29 DITCH

Elevation 670.41'

Drilling Contractor JENSEN DRILLING

Driller D. Mingo

Drilling Method and Equipment AIR ROTARY / CABLETOOL BALL/BULL

Prepared By Dennis Anderson for M. Sweeney (Sign/Print Name) Date 8/21/92

Reviewed By Edward C. Rafuse (Sign/Print Name) Date 8/22/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
		5'		SAND 0-15'
12" temporary carbon steel		10'		"
casing to 9.90' b/s		15'		SAND w/ PEBBLE 15-20'
		20		SAND 20'-25'
		25		slightly pebbly SAND 25'-30'
		30'		SAND 30-90'
		35'		"
		40'		"
		45'		"
		50		"
		55'		"
		60'		"
		65'		"
		70'		"
8-20 Mesh Bentonite		75'		"
crumbles 9.8'-256.1'		80'		"
3B 2-9-93 for D. Anderson		85'		"
		90'		SILT 90-91'
		95'		SAND 91-105
		100'		"
		105'		slightly silty sandy pebble
		110		" " " "
		115'		SAND
		120'		"
		125'		"
		130'		SILT
		135'		"
		140		"
		145		"
		150		"
		155		"
10" carbon steel casing to		A-3 160'		"
123' b/s - shoe size = .89'		165'		SAND

9313090.0016

WELL SUMMARY SHEET

Boring or Well No. 299-E25-47

Sheet 2 of 2

Location 200 EAST
Elevation 670.41'
Driller D. Mingo
Prepared By Dennis Anderson (Sign/Print Name) Date 8/21/92

Project RCRA - W017
Drilling Contractor Jensen Drilling
Drilling Method and Equipment Air Rotary / Cable Tool Backpacking
Reviewed By Edward C. Hafer / Edward C. Hafer (Sign/Print Name) Date 08/28/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
		170		SAND
		175		Pebbly gravelly SAND
		180		SAND
		185		"
		190		"
		195		Sandy pebbly GRAVEL
		200		" " "
		205		" " "
		210		" " "
		215		" " "
		220		pebbly SAND
		225		SILT
		230		SAND
		235		SAND
		240		"
		245		"
...p of Bentonite Pellets at		250		"
...51.1' b/s		255		"
...p of SAND PACK at 259.4'		260		
WL at 266.7 - 8/6/92		265		SILT
...tainless steel SCREEN set		270		SAND
...262.98-282.91 w/o cap		275		"
		280		slightly pebbly sand
...tom of SS casing w/cap at		285		" " "
...3.21' b/s		290		pebbly SAND
...tom of SAND PACK at 291.7'		295		" "
...temporary carbon steel		300		SAND
...sing set at 300.8' b/s		305		
				TD = 301.4' b/s
...ugh from 301.4'-291.7				Bottom of casing ("8") = 300.8

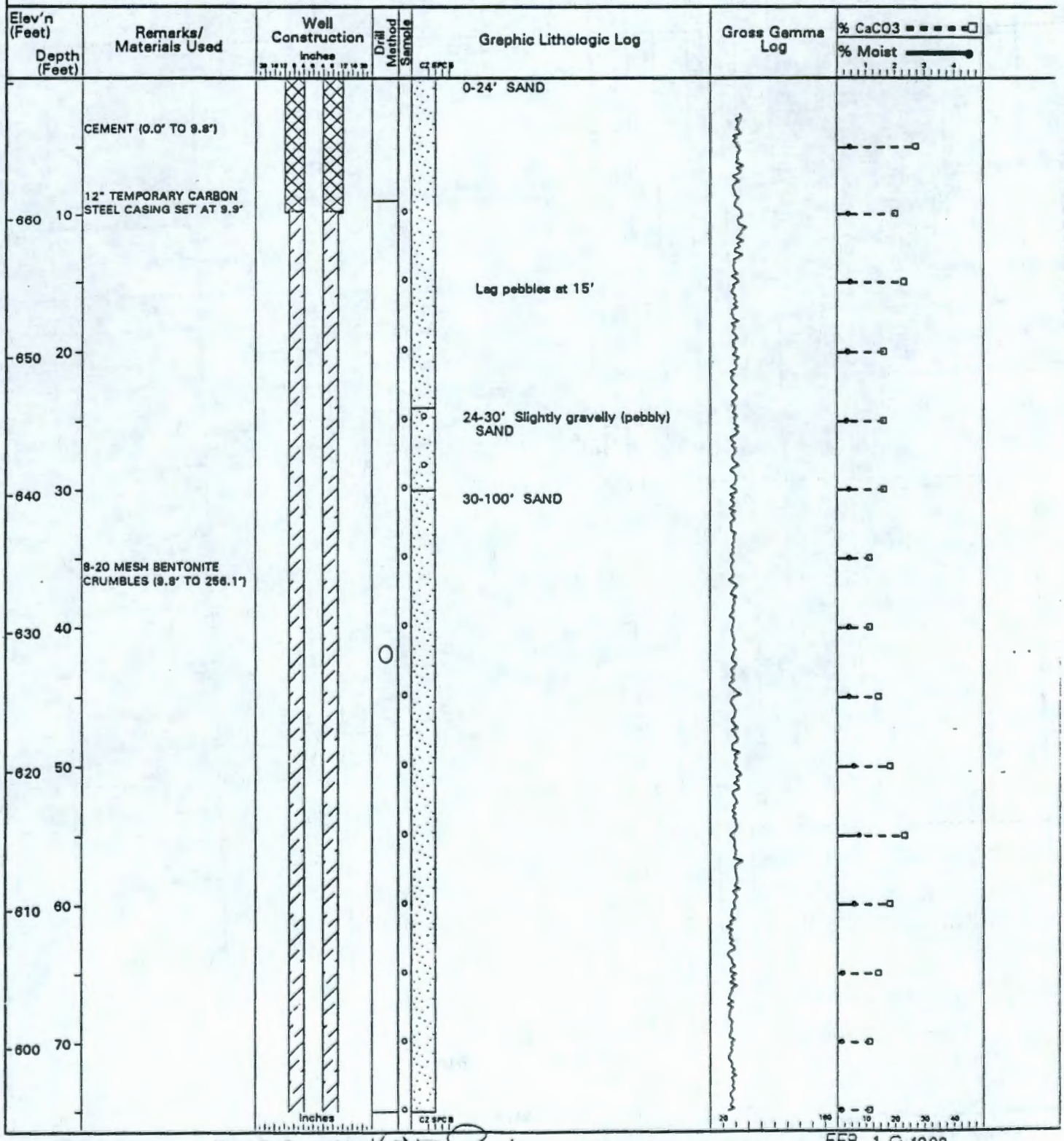
Project: W-017H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION		**Well No:** 299-E25-47	Page 1 of 4
		Total Depth: 301.45	Static Water Level: 266.70
Date Started: 7-14-92	Date Completed: 8-6-92	Surface Elevation: 670.41	Casing Elevation: 673.77
Location: NORTH OF GROUT PIT 200 EAST		Northing: 135930.98	Easting: 575778.55
Prepared By: MD SWEENEY		Hanford N: 40835.30	Hanford W: 46306.10
Drilling Co: JENSEN	Driller: D MINGO	Drill Meth: AIR ROTARY	Drill Equip: ODEX

Screen: 20.23' OF 4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP W/ENDCAP SET FROM 262.98' TO 283.21'

Filter Pack: 20-40 MESH SILICA SAND FROM 259.4' TO 288.9'

Permanent Casing: 4" DIAMETER TYPE 304 SCHEDULE 5 STAINLESS STEEL WITH CENTRALIZERS SET TO 262.98'

Comments:



Reviewed By: Kent D. Reynolds

Date: FEB. 1 9 1993

9313090.0018

Project: W-017H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION | **Well No:** 299-E25-47 |

Elev'n (Feet)	Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
590	80							
		4" DIAM T-304 SCH 5 STAINLESS STEEL PERM CASING W/CENTRLIZERS						
580	90					1' Silt lens at 90'		
570	100					100-115' Slightly silty sandy (pebble) GRAVEL		
560	110							
						115-130' SAND		
550	120							
540	130					130-162' SILT		
530	140							
						Sand lens at 144'		
520	150							
510	160	10" TEMPORARY CARBON STEEL CASING SET AT 162.3'				162-175' SAND		

Reviewed By: Kent D. Reynolds KD Reynolds Date: FEB. 1 9 1993

9313090.0019

Project: W-017H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION

Well No: 299-E25-47

Elev'n (Feet) / Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
500 / 170							
					175-180' Gravelly SAND		
490 / 180					180-195' SAND		
480 / 190							
					195-225' Gravelly (pebbly) SAND		
470 / 200							
460 / 210							
450 / 220							
					225-228' SILT		
					228-262' SAND		
440 / 230							
430 / 240							
420 / 250							

Inches

Reviewed By: Kent D. Reynolds

Date: FEB. 1 9 1993

A-7

9313090.0020

Project: W-017H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION | **Well No:** 299-E25-47 |

Elev'n (Feet)	Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
		3/8" BENTONITE PELLETS (256.1' TO 259.4')						
410	260	20-40 MESH SILICA SAND FILTER PACK (259.4' TO 288.9')				HANFORD FINE/RINGOLD CONTACT AT 262'		
						262-266' SILT		
		STATIC WATER LEVEL AT 266.7' (8-6-92)				266-280' SAND		
400	270							
		4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP SCREEN WITH ENDCAP (262.98' TO 283.21')		O				
390	280					280-295' Slightly gravelly (pebbly) SAND		
380	290	10-20 SILICA SAND (288.9' TO 291.7')						
		SLUFF (291.7' TO 301.4')				295-300' Gravelly (pebbly) SAND		
370	300	8" TEMPORARY CARBON STEEL CASING SET AT 300.8' TOTAL DEPTH = 301.4'				300-301.4' SAND		
360	310							
350	320							
340	330							
330	340							

Reviewed By: Kent D. Reynolds Date: FEB. 1 9 1993

9313090.0021

KAISER ENGINEERS HANFORD	SURVEY DATA REPORT	Request No. 9 3 1 0 5 7
Project/W.O. No. W-017H	Title Nine Odex CM Wells	File No. 2 9 9 E 2 5
KEH Job No. CR-9752	Prepared By RL Hackwith / Date 12/30/92	Reviewer V. Coyne 1 2

DESCRIPTION OF WORK	ACCEPTABILITY (Within Plan Tolerance)	DISTRIBUTION	
Horizontal (NAD'83) and vertical (NGVD'29)	Yes XX	Survey File	OR
location of monitoring wells.	No ☐	Field Project File	1
	NA ☐	P Collier	1
	TBD by Requestor ☐	L Dietz	1
		J Rieger	1
		D Weekes	1

SURVEY RESULTS AND COMMENTS

Control Monuments: Landfill Site

LF-1
N:131,301.762
E:579,339.132

C.P."D"
N:130,947.087
E:579,137.752

NOTE: Horizontal control points used were part of a traverse with a linear closure greater than 1:50,000.

USGS BM MON
W63
EL. 514.864

WELL #	COORDINATES ℄ CASING PLANT	LAMBERT WCS83S (mtrs)	ELEVATION (feet) NGVD 29 BRASS CAP	HYDROSTAR	TOP OF CASING
199-N-77	100N N: 5521.9 W: 5819.8	N: 149,243.21 E: 571,309.93	455.75	459.45	459.44
699-26-34B	200E N: 25,782.6 W: 33,716.8	N: 131,352.50 E: 579,629.52	526.47	530.29	530.27
699-25-34D	200E N: 25,253.6 W: 33,847.9	N:131,191.16 E:579,589.97	534.47	537.92	537.91

Control Monuments: 100N

100N-1
N: 148,992.908
E: 571,887.337

100N-2
N: 149,644.403
E: 571,811.368

S-324
USC&GS
EL.=466.462

NOTE: Horizontal Control points used were part of a traverse with a linear closure greater than 1:48,000.

9313090.0022

12/30/92 931-057-299-E25

KAISER ENGINEERS
HANFORD

FIELD SKETCH

Attachment To Or Description: Nine Odex CM Wells - Continued

Sheet 2 of 2

Control Monuments: Grout

SL-2	SL-3	BM MON.
N:135,705.555	N:135,916.127	2E-18
E:575,938.675	E:575,938,323	EL=678.331

Horizontal Control Monuments used to locate wells were part of a traverse with a linear closure greater than 1:50,000. Vertical control monuments used was based on 5.8 mile loop with a closure of .024 ft.

WELL #	COORDINATES ℄ CASING		ELEVATION (feet)		
	PLANT	LAMBERT WCS83S (mtrs)	BRASS CAP	HYDROSTAR	TOP OF CASING
299-E25-45	200E N: 39,939.7 W: 44,973.2	N: 135,659.15 E: 576,185.55	675.74	678.46	678.45
299-E25-47	200E N: 40,835.3 W: 46,306.1	N: 135,930.98 E: 575,778.55	670.41	673.78	673.77
299-E25-48	200E N: 40,456.8 W: 46,816.1	N: 135,815.16 E: 575,623.43	679.68	682.32	682.31
299-W27-2	200W N: 33,494.3 W: 75,430.7	N: 133,670.63 E: 566,908.55	674.10	677.13	677.11
699-41-42	200E N: 41,270.3 W: 41,898.1	N: 136,068.17 E: 577,122.21	640.32	643.92	643.91
699-44-39B	200E N: 43,426.3 W: 39,140.4	N: 136,727.61 E: 577,960.80	509.62	513.41	513.40

Control Monuments: 200W

RAG	FLAG	BM B.C. MONS.
N:133,758.279	N:133,900.567	299-W26-11
E:567,152.333	E:566,321.472	299-W26-12

Vertical control points used were based on a 3.3 mile level run with a closure of -0.037 ft.

9313090.0023

BOREHOLE LOG

VALIDATED KDR 1/11/93 SIGNATURE/DATE

Boring or Well No. 299-E25-47

Sheet 1 of 16

Location 200 EAST - N OF GROUT PLANT

Project W017 / A29 DITCH

Elevation 670.41

Drilling Contractor JENSEN

Driller D. MINGO.

Drilling Method and Equipment BACKHOE / AIR ROTARY

Prepared By [illegible] (Sign/Print Name) Date 7-20-92

Reviewed By Edward C. Rafuse (Sign/Print Name) Date 07/30/92

Depth (0)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
				0.05' LOESS	
				0.5-5' SAND - SEE 5' DESCRIPTION	NO SAMPLE
5'				5' SAND	5' @ 1450 7-19-92
	1RAD 2LITH 1 CaCO3 - H2O	BACKHOE		98% SAND 2% SILT. CG-2% COLOR WET: 5Y 4/3 OLIVE MG-30% COLOR DRY: 5Y 6/3 PALE OLIVE FG-68% BASALT: 60%, QTZ: 32%, FELDS: 10% ANGULAR SUBANGULAR. STRONG RXN TO HCL. WELL SORTED DRY.	
10'		Air Rotary		10' SAND	10' @ 1500 7-19-92
	1RAD 2LITH 1 CaCO3 H2O	~~BACKHOE~~ AB 6/1/92		99% SAND 1% SILT CG-3% COLOR WET: 5Y 4/3 OLIVE MG-40% COLOR DRY: 5Y 6/3 PALE OLIVE FG-57% BASALT: 80%, QTZ: 15%, FELDS: 5%, ANGULAR SUBANGULAR NO RXN TO HCL. MODERATE SORTING DRY	
15'				15' SAND W/ PEBBLE LAYER.	15' @ 1111 7-20-92
	1RAD 2LITH 1 CaCO3 H2O	AIR ROTARY -		95% SAND 4% PEBBLE 1% SILT. CG-70% FD-100 MG-50% COLOR WET: 5Y 2.5/1 BLACK FG-20% COLOR DRY: 5Y 4/1 DK GRAY BASALT: 80%, QTZ: 15%, FELDS: 5%, ANGULAR SUBANGULAR - SAND; PEBBLE: 60% BASALT, 30% QTZ 10% FELDS, ROUNDED - SUBROUNDED. DRY POORLY SORTED. WEAK RXN TO HCL!	PEBBLES CONCENTRATION IN LAYER @ 15', INTERSPERSED FROM 15-19'

A-6000-382 (04/90)

9213000.0024

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 2 of 16

Location 200 EAST - NOT GRAVEL PLANT

Project W017/429 DITCH

Elevation 670.41

Drilling Contractor JENSEN

Driller D WINCO

Drilling Method and Equipment AIR ROTARY

Prepared By MG SWEENEY / [signature] (Sign/Print Name) Date 7-21-92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 07/30/92

Depth (20')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAM 2 WITH 1 $CaCO_3$ - H_2O			20' SAND CG - 25% COLOR WET: 2.5/1 BLACK MG - 60% COLOR DRY: 4/1 DK GRAY. FG - 15% BASALT: 70% QTZ: 20% FELSICS: 10%, ANGULAR SUBANGULAR, DRY, MODERATE SORTING, WEAK RXN TO HCL.	20' @ 1255 7-21-92 MG 7-22-92
25'	1 RAM 2 WITH 1 $CaCO_3$ - H_2O			25' SLIGHTLY PEBBLEY SAND SAND 90% PEBBLE: 9% SILT - 1% CG: 30% CP - 2% COLOR WET: 5Y 2.5/1 BLACK MG: 60% MP - 20% COLOR DRY: 5Y 4/1 DK GRAY FG: 10% FP: 7% BASALT: 80%, QTZ: 15%, FELSIC: 5% ANGULAR SUBANGULAR; PEBBLES: 40% BASALT 40% QTZ, 20% FELSIC, ANGULAR, SUBANGULAR, DRY POORLY SORTED NO RXN TO HCL.	25' @ 1405 7-21-92 MG 7-22-92
30'	1 RAM 2 WITH 1 $CaCO_3$ - H_2O			30' SAND SAND - 98% PEBBLE 1% SILT - 1% CG: 20% CP - 10% COLOR WET: 5Y 2.5/1 BLACK MG: 60% MP - 30% COLOR DRY: 5Y 4/1 DK GRAY FG: 20% FP - 10% BASALT: 70%, QTZ: 23%, FELSICS: 10% ANGULAR SUBANGULAR - SAND & PEBBLE. MOIST, POORLY SORTED	30' @ 1408 7-21-92 MG 7-22-92
35'	1 RAM 2 WITH 1 $CaCO_3$ - H_2O			35' SAND SAME AS 30'	35' @ 1412 7-21-92 MG 7-22-92

Air Rotary

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 3 of 16

Location 200 EAST - N OF GROUT PLANT

Project W017/A29 DITCH

Elevation 670.41

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By MD SWITZENER / [illegible] (Sign/Print Name) Date 7-20-92

Reviewed By EDWARD C. RATHBUN / Edward C. Rathbun (Sign/Print Name) Date 07/30/92

Depth (40')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O	AIR ROTARY		40' SAND	40' @ 1418 7-21-92
				SAME AS 30'	
45'				45' SAND - 98% SAND 1% PEBBLES 1% SILT	45' @ 1500 7-21-92
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O			CG - 15% IMP - 95 COLOR WET: 2.5Y 6/4 LT YELLOWISH BRN	
				MG - 65% FP - 5 COLOR DRY: 2.5Y 5/4 OLIVE BRN	
				FG - 20%	
				BASALT: 45% QTZ: 30%, FELDSPARS 25% ANGULAR	
				SUBANGULAR, POORLY SORTED, MOIST	
				NO REACTION TO HCl.	
50'				50' SAND	50' @ 1512 7-21-92
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O			SAME AS 45'	
55'				55' SAND	55' @ 1515 7-21-92
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O			SAME AS 45'	

A-6000-382 (04/90)

9213080.0025

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 4 of 16

Location 200 EAST - NOF GROUT PLANT
Project WO17/A29 DITCH
Elevation 670.41
Drilling Contractor JENSEN
Driller D. MINGO
Drilling Method and Equipment AIR ROTARY
Prepared By M.A. SWEENEY (Sign/Print Name) Date 7-22-92
Reviewed By EDWARD C. RAFUSE (Sign/Print Name) Date 07/30/92

Depth (60')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1RAD 2LITH 1CaCO3-H2O	AIR ROTARY		60' SAND	60' @ 1520 7-21-92
				SAME AS 45'	
65'	1RAD 2LITH 1CaCO3-H2O			65' SAND	65' @ 1621 7-21-92
				97% SAND 3% SILT.	COMPOSITIONAL CHANGE
				CG 30% COLOR WET: 5Y 3/2 DK OLIVE GRAY	FELSIC TO MAFIC @ 64'
				MG. 35% COLOR DRY 5Y 5/2 OLIVE GRAY	
				FG. 35%	
				BASALT: 60%, QTZ: 25%, FELSITES; 15%, ANGULAR	
				SUBANGULAR, POORLY SORTED DRY	
				MODERATE RXN TO H2O.	
70'	1RAD 2LITH-CaCO3-H2O			70' SAND	70' @ 1632 7-21-92
				SAME AS 65'	
75'	1RAD 2LITH 1CaCO3-H2O			75' SAND	75' @ 1659 7-21-92
				SAME AS 65'	
				INCREASE IN GRAIN SIZE	
				CG-45%	
				MG-30%	
				FG-25%.	
				SAME MINERALOGY. COLOR, ETC	
				WEAK RXN TO HCl.	

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 5 of 16

Location 200E - NOE GROUT PLANT
Project W017/A 29 DITCH
Elevation 670.41'
Drilling Contractor JENSEN
Driller D. MINGO
Drilling Method and Equipment AIR ROTARY
Prepared By [illegible] (Sign/Print Name) Date 7-22-92
Reviewed By EDWARD C. RAFOE (Sign/Print Name) Date 8/30/92

Depth (80')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 CaCO3 H2O	AIR ROTARY		80' SAND	80 @ 1712 7-21-92
				SAME AS 75'	
				SOME INCREASE IN FINES	
				& SILT. STRONG RXN TO	
				HCl.	
85'	1 RAD 2 LITH 1 CaCO3 H2O			85' SAME AS 80'	85' @ 835 7-22-92
				SAND	
90'	1 RAD 2 LITH 1 CaCO3 H2O			90' SILT	90' @ 852 7-22-92
				100% SILT	
				COLOR DRY: 2.5Y 7/3 PALE YELLOW	
				COLOR WET: 2.5Y 4/3 OLIVE BROWN	
				DRY SAMPLE	
				STRONG RXN TO HCl	
95'	1 RAD 2 LITH 1 CaCO3 H2O			95' SAND	95' @ 908 7-22-92
				98% SAND 2% SILT.	INCREASE IN GRANULAR
				CG-5% COLOR DRY	SAND @ 98' - CHANGE
				MG-30% COLOR WET	IN MINERALOGY ALSO:
				FG-65%	QUARTZ & BASALT (60%)
				BASALT: 40%, QTZ: 25%, FELSICS: 35%	
				ANGULAR SUBANGULAR, DRY, WELL	
				SORTED STRONG RXN TO HCl.	

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 6 of 16

Location 200E - N of Grout Plant
Project W017/A29 Ditch
Elevation 670.41
Drilling Contractor Jensen
Driller D. Minno
Drilling Method and Equipment Air Rotary
Prepared By MA Sweeney / [signature] (Sign/Print Name) Date 7-22-92
Reviewed By Edwina C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date 07/30/92

Depth (100')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1RAD 2LITH 1CaCO3-H2O			100' SAND	100' @ 926 7-22-92
				SAME AS 95'	CONTACT W/ COARSE MATERIAL
					@ 100' - SEE 105' FOR
					DESCRIPTION.
					COARSE FRACTION FROM
					98' - 99' (SEE 95')
105'	1RAD 2LITH 1CaCO3-H2O			105' SLIGHTLY SILTY SANDY PEBBLE	105' @ 1015 7-22-92
				GRAVEL - 85% PEBBLE 12% SAND 3% SILT	CONTACT W/ FINER MATERIAL
				CP - 50% CG - 55% COLOR WET: 2.5Y 3/2 VDK GREY BRN.	@ 105.5' - SEE 110 FOR
				MP - 35% MG - 40% COLOR DRY: 2.5Y 5/2 GRAYISH BROWN.	DESCRIPTION
				FP - 15% FG - 5%	
				PEBBLED SAND: BASALT: 50%, QTZ: 30%, FELSIC	
				20%. ANGULAR, SUB ANGULAR, SUBROUNDED	
				DRY, POORLY SORTED, STRONG RXN	
				TO HCl.	
110'	1RAD 2LITH 1CaCO3-H2O			110' SLIGHTLY SILTY SANDY PEBBLE GRAVEL	110' @ 1026 7-22-92
				7-22-92 SAME AS 105' EXCEPT	
				W/ DECREASE IN PEBBLE COARSE	
				FRACTION CP - 35%	
				MP - 50%	
				FP - 15%	
				ALSO MOIST	
115'	1RAD 2LITH 1CaCO3-H2O			115' SAND	115 @ 1034 7-22-92
				98% SAND 2% SILT	
				CG - 10% COLOR WET: 2.5Y 4/3 OLIVE BRN	
				MG - 30% COLOR DRY: 2.5Y 5/2 GRAYISH BRN	
				FG - 60%	
				BASALT - 50%, QTZ: 35%, FELSIC 15% ANGULAR	
				SUBANGULAR, WELL SORTED, MOIST	
				STRONG RXN TO HCl.	

BOREHOLE LOG

Boring or Well No. 299-E25-43

Sheet 7 of 16

Location 200E - N of Grout Plant

Project W017 / A29 Ditch

Elevation 670.41

Drilling Contractor Jensen

Driller D. Mingo

Drilling Method and Equipment Air Rotary

Prepared By (Sign/Print Name) [illegible] Date 7-22-92

Reviewed By (Sign/Print Name) Edward C. Rafuse Date 07/20/92

Depth (ft)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1RAD 2LITH 1CaCO3-H2O	Air Rotary		120 SAND	120 @ 1046 7-22-92
				98% SAND 2% SILT	
				CG - 25% COARSE WET: 2.5Y 4/3 OLIVE BRN.	
				MG - 25% COLOR DRY: 2.5Y 5/2 GREYISH BRN.	
				FG - 50%	
				BASALT: 65%, QTZ: 25%, FELDSPARS ANGULAR	
				SUBANGULAR, MOIST, POORLY SORTED	
				WEAK RXN TO HCl.	
125'				125' WOS SAND	125 @ 1130 7-22-92
	1RAD 2LITH 1CaCO3-H2O			95% SAND 5% SILT.	
				CG - 3% COARSE WET: 2.5Y 4/3 OLIVE BRN.	
				MG - 12% COLOR DRY: 2.5Y 5/2 GREYISH BRN.	
				FG - 85%	
				BASALT: 50%, QTZ: 30%, FELDSPARS: 20%	
				ANGULAR, SUBANGULAR, MOIST, WELL	
				SORTED MODERATE RXN TO	
				HCl	
130'				130 SILT	130 @ 1142 7-22-92
	1RAD 2LITH 1CaCO3-H2O			100% SILT	
				STRONG RXN TO HCl	
				COLOR WET: 2.5Y 5/3 LT OLIVE BROWN.	
				COLOR DRY: 2.5Y 7/2 LT GREY	
135'				135 SILT	135 @ 1157 7-22-92
	1RAD 2LITH 1CaCO3-H2O			100% SILT SAME AS	
				130'	

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 8 of 16

Location 200 E. N of GRANT PLANT

Project W017/A29 DITCH

Elevation 670.41

Drilling Contractor JOHNSON

Driller D. MINIGAN

Drilling Method and Equipment AIR ROTARY

Prepared By MAS WEBNER (Sign/Print Name) Date 7-22-92

Reviewed By EDWARD E. HAYNES (Sign/Print Name) Date 07/30/92

Depth (140')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCL	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 CaCO3 H2O	AIR ROTARY		140' SILT SAME AS 130'	140' @ 1209 7-22-92
145'	1 RAD 2 LITH 1 CaCO3 H2O			145 SILT ~~SAME AS~~ MAS 7-22-92 SAME AS 130'	145 @ 1355 7-22-92 SAND INTERSECTED @ 144'
150'	1 RAD 2 LITH 1 CaCO3 H2O			150' SILT SAME AS 130'	150' @ 1413 7-22-92
155'	1 RAD 2 LITH 1 CaCO3 H2O			155' SILT SAME AS 130'	155 @ 1434 7-22-92

9313090.0031

2-5000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 9 of 16

Location 200 EAST - NORTH OF CERAMIC PLANT

Project WO17 / A29 DITCH

Elevation 670.41'

Drilling Contractor JENKEN

Driller D. MINGO.

Drilling Method and Equipment AIR ROTARY

Prepared By [illegible] (Sign/Print Name) Date 7-27-92

Reviewed By EDWARD C. RAFUSE (Sign/Print Name) Date 07/30/92

Depth (160')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 LAB 2 Lith 1 CaCO3 H2O	AIR ROTARY		160' SILT	160' @ 1448 7-22-92
				SAME AS 130'	10" CASING SET @ 163.20'
				162' SLIGHTLY SILTY SAND SAND-95% SILT 5% LT OLIVE GRAY	162' @ 1256 7-27-92
				CG-50% COLOR DRY: 5Y 6/2 COLOR WET: 5Y 3/2 DK OLIVE GRAY	CONTACT W/SILT.
				MG-40% BASALT-60%, QTZ: 30%, FELDS: 10%	
				FG-10% ANGULAR, SUBANGULAR, ROUNDED	
				SUBROUNDED. MODERATE SORTING.	
				DRY - MODERATE RXN TO HCL.	
165'	1 LAB 2 Lith 1 CaCO3 H2O			165' SAND	165' @ 1258 7-27-92
				98% SAND 2% SILT	COLOR CHANGE/SILT
				CG-55 COLOR WET: 5Y 6/2 LT OLIVE GRAY	CHANGE.
				MG-40 COLOR DRY: 5Y 3/2 DK OLIVE GRAY	
				FG-5%	
				BASALT-55%, QTZ-30%, FELDS: 20%	
				ANGULAR - SUBANGULAR - SUBROUNDED	
				WELL SORTED DRY MODERATE RXN TO HCL.	
170'	1 LAB 2 Lith 1 CaCO3 H2O			170' SAND	170' @ 1254 7-27-92
				SAME AS 165'	
175'	1 LAB 2 Lith 1 CaCO3 H2O			175' PEBBLEY GRAVEL SAND	175' @ 1307 7-27-92
				CP-0% CG-60% COLOR WET: 5Y 6/3 PALE OLIVE	
				MP-5% MG-20% COLOR DRY: 5Y 7/2 LT GREY	
				FP-95% FG-10%	
				PEBBLE & SAND: BASALT: 60% QTZ: 25%	
				FELDS: 15%, ANGULAR, SUBANGULAR -	
				ROUNDED SUBROUNDED - POORLY	
				SORTED, DRY. NO RXN TO HCL.	

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 13 of 16

Location 200 EAST - N OF GROUT PLANT

Project WD17/A 29 DITCH

Elevation 670.41'

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By M.D. SWEENEY (Sign/Print Name) Date 7-26-92

Reviewed By EDWARD C. RAFALE (Sign/Print Name) Date 07/30/92

Depth (180')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 LAB 2 LITH 1 $CaCO_3$ H_2O	AIR ROTARY		180 SAND	180' @ 1315 7-27-92
				98% SAND, 2% SILT.	
				CG-5% COLOR WET: 5Y 5/2 OLIVE GRAY	
				MG-35% COLOR DRY - 5Y 6/2 LT OLIVE GRAY	
				FG-60%	
				BASALT: 15%, QTZ: 30% FELSICS: 5%	
				ANGULAR - SUBANGULAR - SUBROUNDED	
				WELL SORTED, DRY, NO RXN TO HCl.	
185'	1 LAB 2 LITH 1 $CaCO_3$ H_2O			185' SAND	185' 1550 7-27-92
				99% SAND 1% SILT.	
				CG- COLOR WET: 5Y 5/3 OLIVE	
				MG- COLOR DRY: 5Y 6/4 PALE OLIVE	
				FG.	
				BASALT: 55%, QTZ 30%, 15% FELSICS	
				ANGULAR - SUBANGULAR - SUBROUND	
				WELL SORTED NO RXN TO HCl.	
				MOIST SAMPLE. WELL SORTED	
190'	1 LAB 2 LITH 1 $CaCO_3$ H_2O			190' SAND	190' @ 1640' 7-27-92
				SAME AS 185	SILT INCREASING @ 190'.
195'	1 LAB 2 LITH 1 $CaCO_3$ H_2O			195' SANDY PEBBLE GRAVEL	195' @ 1621 7-27-92
				PEBBLE GRAVEL: 40% GRAVEL 60% SAND.	
				CG-30% CG. 40% COLOR WET: 5Y 2.5/1 BLACK	
				MG-50% MG. 40% COLOR DRY: 5Y 4/1 DK GRAY	
				FG-20% FG. 20%	
				PEBBLE & SAND: BASALT: 50% QTZ: 30%, 20%	
				FELSICS. ANGULAR SUBANGULAR -	
				SUBROUNDED. POORLY SORTED.	
				DRY. NO RXN TO HCl.	

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 11 of 16

Location 200 EAST - N OF GROUT PLANT

Project W017/A29 DITCH

Elevation 670.41'

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By [illegible] (Sign/Print Name) Date 7-20-92

Reviewed By EDWARD C. ROFFE (Sign/Print Name) Date 07/30/92

Depth (200')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 LAD 2 Lith 1 CaCO3 H2O	Air Rotary		200' SAME AS 195' SANDY PEBBLE GRAVEL	200 @ 1634 7-22-92 QUARTZOFELDSPATHIC SAND INTERBED @ 203' (MOIST)
205'	1 LAD 2 Lith 1 CaCO3 H2O			205' SANDY PEBBLE GRAVEL SAME AS 195'	205 @ 905 7-28-92
210'	1 LAD 2 Lith 1 CaCO3 H2O			210' SANDY PEBBLE GRAVEL SAME AS 195 SLIGHT INCREASE IN SILT - 1%	210 @ 926 7-28-92
215'	1 LAD 2 Lith 1 CaCO3 H2O			215' SANDY PEBBLE GRAVEL SAME AS 195'	215 @ 941 7-28-92

A-6000-382 (04/90)

9313090.0034

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 12 of 16

Location 200 EAST - NORTH OF GROUT PLANT

Project WO17 / A24 DITCH

Elevation 670.41'

Drilling Contractor JENSEN

Driller D. MINLO

Drilling Method and Equipment AIR ROTARY

Prepared By [illegible] (Sign/Print Name)

Date 7-28-92

Reviewed By EDWARD C. RAFUSE (Sign/Print Name)

Date 07/30/92

Depth (220)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 LAB 2 LITH 1 $CaCO_3$ H_2O	Air Rotary		220 PEBBLEY SAND	220' @ 952 7-28-92
				SAND: 80% PEBBLE GRAVEL: 20%	GRAVEL @ 222' SEE
				CP-5% CG-20% COLOR WET: 5Y 5/2 OLIVE GREY	225' FOR DESCRIPTION.
				MP-25% MG-60% COLOR DRY: 5Y 7/3 PALE OLIVE	
				FP-70% FG-20%	
				PEBBLE: 90% BASALT, 10% QTZ, 10% FELSICS	
				ANGULAR, SUBANGULAR SAND: BASALT	
				45%, QTZ: 45%, FELSICS 10% ANGULAR -	
				SUBANGULAR: DRY POORLY SORTED	
225'				NO RXN TO HCl.	
	1 LAB 2 LITH 1 $CaCO_3$ H_2O			225' ~~[illegible]~~ SILT.	225' @ 1040 7-28-92
				100% SILT	GRAVEL ENDS @ 225.
				COLOR DRY: 5Y 7/3 PALE YELLOW.	SILT ENDS @ 229'
				COLOR WET: 5Y 5/3 OLIVE.	
				DRY SAMPLE. STRONG RXN TO	
				HCl.	
230'				230' SAND	230' @ 1049 7-28-92
	1 LAB 2 LITH 1 $CaCO_3$ H_2O			98% SAND 2% SILT	
				CG-3% COLOR WET: 5Y 4/2 OLIVE GREY	
				MG-60% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	
				FG-37%	
				BASALT: 70%, QTZ: 20%, FELSICS 10%.	
				ANGULAR, SUBANGULAR, WELL SORTED	
				DRY STRONG RXN TO HCl.	
235'				235' SAND	235' @ 1054 7-28-92
	1 LAB 2 LITH 1 $CaCO_3$ H_2O			SAME AS 230'	

9313090.0035

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 13 of 16

Location 200 EAST - NORTH OF GRAVEL PLANT

Project W017 '629 DITCH

Elevation 670.41'

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By M.L. SINCLAIRE (Sign/Print Name)

Date 7-27-92

Reviewed By EDWARD C. RAFFICK (Sign/Print Name)

Date 07/30/92

Depth (240')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 LAB 2 LITH 1 $CaCO_3$ H_2O	AIR ROTARY		240' SAMPLE SAND SAME AS 230'	240' @ 1108 7-28-92
245'	1 LAB 2 LITH 1 $CaCO_3$ H_2O			245' SAND SAME AS 230'	245' @ 1203 7-28-92
250'	1 LAB 2 LITH 1 $CaCO_3$ H_2O			250' SAND 98% SAND 2% SILT CG-35 COLOR MD-45 WET: 5Y4/2 OLIVE GRAY FG-20% COLOR DRY: 5Y5/2 OLIVE GRAY BASALT: 60%, QTZ: 15%, FELSICS: 5% ANGULAR, SUBANGULAR, SUBROUNDED WELL-SORTED, DRY NO RXN TO HCL	250' @ 1321 7-28-92
255'	1 LAB 2 LITH 1 $CaCO_3$ H_2O			255' SAND SAME AS 250	255' @ 1336 7-28-92

A-6000-382 (04/90)

9313090.0036

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 14 of 16

Location 200 EAST - NORTH OF GRAVEL PLANT

Project 52017 / A29 DITCH

Elevation 670.41'

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By MA SWEENEY / [illegible] (Sign/Print Name)

Date 7-20-92

Reviewed By EDWARD C. RIFFE / Edward C. Riffe (Sign/Print Name)

Date 07/30/92

Depth (260')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 Lith 1 CaCO3 H2O	Air Rotary		260' SAND	260' @ 1354 7-28-92
				98% SAND 2% SILT.	SAND GRADES @ 262'
				CG-10% COLOR WET: 5Y 4/2 OLIVE GREY	
				MG-30% COLOR DRY: 5Y 5/2 OLIVE GREY	
				FG-60%	
				BASALT: 50% QTZ: 45% FELDSPARS: 5%	
				ANGULAR, SUBANGULAR, WELL SORTED	
				MOIST: NO RXN TO HCl.	
265'				265' SILT	265 @ 1513 7-28-92
	1 RAD 2 Lith 1 CaCO3 H2O			100% SILT.	SILT BANDS @ 266
				COLOR WET: 5Y 4/3 OLIVE.	
				COLOR DRY: 5Y 5/3 OLIVE	
				WET STRONG RXN TO HCl.	
					270' @ 1526 7-28-92
270'				270' SAND	
	1 RAD 2 Lith 1 CaCO3 H2O			98% SAND 2% SILT.	
				CG-10% COLOR WET - 5Y 3/3 OLIVE BRN.	
				MG-60% COLOR DRY: 7.5Y 4/3 OLIVE BRN.	
				FG-30%	
				BASALT: 40% QTZ: 30%, FELDS 30%	
				ANGULAR - SUBANGULAR, CHERT	
				WET, NO RXN TO HCl.	
					275' @ 1538 7-28-92
275'	1 RAD 2 Lith 1 CaCO3 H2O			275' SAND	
				SAME AS 270'	

A-6000-382 (04/90)

9313090.0037

BOREHOLE LOG

Boring or Well No. 299-E25-42

Sheet 15 of 16

Location 200 EAST - NORTH OF GROUT PLANT Project 1441 / ATR DITCH

Elevation 670.41 Drilling Contractor JENSEN

Driller D. MINNS Drilling Method and Equipment AIR ROTARY

Prepared By WICKWEENER (Sign/Print Name) Date 7-28-92 Reviewed By EDWARD C. RIPLEY (Sign/Print Name) Date 07/30/92

Depth (280')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 LAB 2 LITH 1 $CaCO_3$ H_2O	AIR ROTARY		280' SLIGHTLY PEBBLEY SAND PEBBLE: 10% SAND: 87%, SILT: 3% FP-10% CG-60% COARSEST: 2.54 5/3 LT OLIVE BRN MG-30% COARSEST: 2.54 6/3 LT YELLOW BRN FG-10% BASALT: 40%, QTZ: 30%, FELSIC: 20% MINOR MAFICS: 10%, ANGULAR SUBANGULAR WET NO RXN TO HCl. POORLY SORTED	280 @ 1546 7-28-92 MINERALOGY FOR BOTH PEBBLES + SAND.
285	1 LAB 2 LITH 1 $CaCO_3$ H_2O			285' SLIGHTLY PEBBLEY SAND SAME AS 280	285' @ 1647 7-28-92
290	1 LAB 2 LITH 1 $CaCO_3$ H_2O			290' SAME AS 280' SLIGHTLY PEBBLEY SAND	290 @ 1649 7-28-92
295	1 LAB 2 LITH 1 $CaCO_3$ H_2O			295' PEBBLEY SAND PEBBLE: 30% SAND 67%, SILT 3%. FMP-5% CG: 60% COARSEST: 2.54 4/3 OLIVE FP-95% MG-30% COARSEST: 2.54 6/2 LT BRNISH GRAY FG: 10% BASALT: 45%, QTZ: 30%, FELSICS: 25% ANGULAR, SUBANGULAR, SUBROUND WET POORLY SORTED, NO RXN TO HCl.	295 @ 1707 7-28-92 PEBBLEY SAND ENDS @ 298'

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-47

Sheet 16 of 16

Location 200 EAST - NORTH OF GROUT PLANT Project CWC17/A-35 DITCH

Elevation 670.41' Drilling Contractor JE JENSEN

Driller D. MINER Drilling Method and Equipment AIR ROTARY

Prepared By [illegible] (Sign/Print Name) Date 7-2-92 Reviewed By EDWARD C. RAFUSE Edward C. Rafuse (Sign/Print Name) Date 8/30/92

Depth (300')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 CaCO3 H2O			300' SAND SAND 99% SILT 1%	300' @ 1315 7-28-92
				CG-3% COLOR DRY: 5Y4/2 OLIVE GRAY	
				MG-70% COLOR WET: 5Y3/2 DK OLIVE GRAY	TD = 289.23
				FG-27%	
				BASALT: 75%, QTZ: 20%, FELSICS: 5%	
				ANGULAR SUBANGULAR, SUBROUND.	
				WET PEARLY SORTED, NO RXN	
				TO HCl.	

93130090.0039

A-6000-382 (04/90)

Westinghouse Hanford Company

WESTINGHOUSE HANFORD COMPANY
LOG LEVEL 1 HEADER
INTERIM PURGE GAS

Page 1 of 2

Well No. 299-E26-47 Area 200 East Date 7/29/92

Log Run #1 Log Type Gamma Gamma

Elevation Datum top of brass cap Elevation 670.91'

Survey Coordinates E 135,930.48 N 575,623.93

Log Measured from Ground Surface

Location Description North side of Grout facility

Ground Surface Elevation 670.91

Surface Temperature N/A Weather Clear - Hot

BOREHOLE INFORMATION

Driller Dreary Minor Contract Drilling

Drill Rig Type Other Bit Type/Diameter Air Hammer / 8"

Borehole Diameter/Depth 12/19" 17'/40.2' 8'/~~20.0'~~ 20.0'

Depth Driller 20.0'

Depth Logger 20.0'

Liquid Level 20.0'

Liquid Type Temperature Muddy

Temperature N/A

CASING RECORD

Type 12" Carbon Steel Sch. 40 Interval +2'/ -9.95'

Type 10" Carbon Steel Sch. 40 Interval +2.5' - 40.30'

Type 8" Carbon Steel Sch. 40 Interval +2.5' - 20.0'

Type Interval

Well Screen Interval N/A

Comments: Return Fence 472' high

Centralizer used

A-27/28

A-6000-520 (05/90)

LOG HEADER

Page 1 of 2

EQUIPMENT DATA

Logging Company PNL

Operator(s) Alan Dawson

Detectors Used NaI

Detector Type Gamma Gamma

Detector Location Center

Calibration Source ID Cs137 Co60 Eu152

Calibration Source Strength 10 uR/hr

Calibration Source Distance 3 feet

Dead Time 1.2 nsec

Log Speed 2.5'/min

Interval 20.0'

Pre Survey Verification:

Start Calibration Otherwise Position 1 661 cpd Background 62.4cpm

Start Time 1:00 Position 2 4.7 cpd Sensitivity 50.2cpm/R

Stop Time 1:15 Position 3 5.4 cpm Correlation Factor 1.07

Count Variable Sec. 100/n

Count Time Constant Sec. 50 cps Time Constant TC-1

Post Survey Verification: Position 1 501 cpd Background 62.4cpm

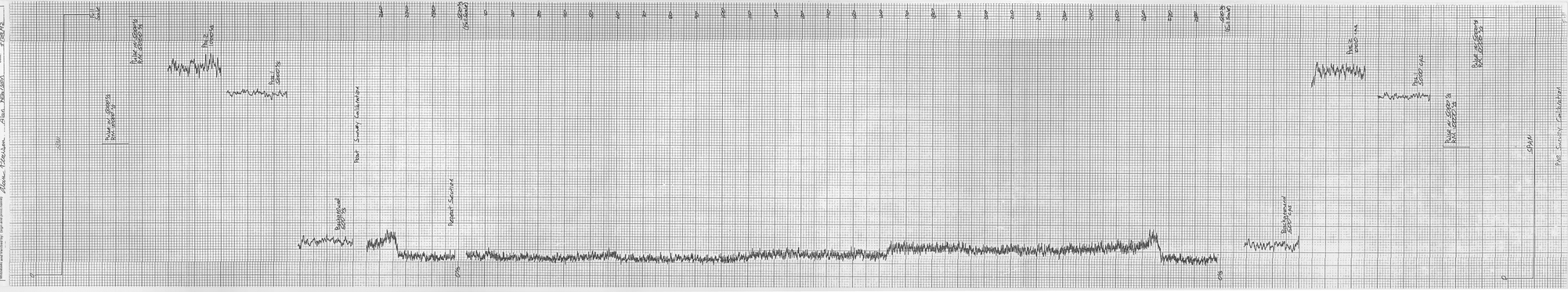
Position 2 5.4 cpm

Position 3 0.0 cpm

Comments: Return fence +472' high

Centralizer used

Recorded Data Verified by: Alan Dawson Alan Dawson Date 7/29/92



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VALIDATED
KDR 1/14/93
SIGNATURE/DATE

page 1 of 4

WELL CONSTRUCTION REPORT

Page 1 of 2

Specification No. WHC-S-014 Rev No. ~~6~~ 7

ECNs 150137, 150138, 127439, 164223, 166757, 150132, 172209, 166732, 119402, 150143

Project RCRA - W017

Location 200 East

Drilling Company Jensen Drilling

Driller D. Mingo

Other (Companies)

Geologist(s) Edward A. Rafuse (WHC), Brett Thompson, Mark Sweeney, Keith Swetz, Kent Reynolds, J.A. Cunningham, Dennis Anderson, Nancy Ballantyne (Ebasco)

Well No. 299-E25-48 Temp. Well No.

Coordinates 135,815.16 E: 575,623.43

Casing Elev. 682.31' Top of outer casing, 682.32' Top of Hydrostar plate Ground Elev. 679.68

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 0-54' 260-555' Mud	N/A	MDS	7-16-92
Cable Tool	D 265.5'-297.5' H	N/A	DA	8/20/92
Drilling Fluid	N/A	N/A	N/A	N/A
Other	Backhoe	0-10.0'	E.C.L.	7-1-92

Geophysical Logging

Sondes	Interval	Date
Magnetic log	261.6-148.0	07/14/92
gross-gamma	292.0'-3.4'	8/19/92
Magnetic Log	292.0'-15'	9/8/92
	-	
	-	

Completion Data

Drilled Depth 297.5'

Completed Depth 294.55'

Date Started 7/1/92

Date Completed 8/25/92, 10/1/92 (2)

Static Water Level/Date 277.8' 8/24/92, 279.5' 8/20/92, 276.3' b/s 8/25/94

Aquifer Testing

Type INSTANTANEOUS SLUG

Flow Meter I.D. No. - NA -

Cal. Due Date - NA -

Length of Test 1 HR

Volume Pumped - NA -

Drawdown - NA -

Date of Test 9-1-92

Completion Results

Cleaning

Verification Method Visual inspection & doc review

Criteria WHC-S-014 4.2.2, 7.6, 7.7, EII 5.4, WHC-CM-7-7 5.4

	Initials	Date
Drilling Tools/Rig	MDS	7-7-92
Temporary Materials	E.C.L.	07-01-92
Permanent Materials	DJA	8/20/92

Material Storage/Packing

Verification Method Visual observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	DJA	8/20/92
Material Packing	DJA	8/20/92

Screen

Type	Length	Slot Size
304 Stainless Steel	19.92' (9.96 ea)	10 slot
Sch 5		

Depth(s) 274.33' - 294.25' w/o cap

274.33' - 294.55' w/cap

Verification Method steel tape measurements

Criteria WHC-S-014 4.2.3, 4.2.5, 17.2.1, 4.2.1

Initials DJA Date 8/25/92

Lubricants/Additives

Verification Method Visual observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	RN-D Rock Oil	MDS	7-14-92
Lubricants	Well Guard	MDS	7-15-92

Straightness Test

Verification Method Visual observation

Criteria WHC-S-014 8.2

Initials DJA Date 8/25/92

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A-6000-436 (09/90)

WELL CONSTRUCTION REPORT
(continuation sheet) Well# 299-E25-48

Casing (permanent)

Type	Size	Placement
304 Stainless Steel	4 1/2 O.D.	0' - 274.33'
Sch 5 blank		-
w/screen & cap		0 - 294.55'
		-

Verification Method measurement w/ steel tape

Criteria WHC-S-014 4.2.1 4.2.4, 4.2.5, 12.2.1

Initials DJA Date 8/20/92

Well Protection

Verification Method visual inspection w/ tape

Criteria WHC-S-014 4.2.10

	Initials	Date
Protective Posts	ECL	12/18/92
Protective Casing	ECL	12/18/92
Site Restored	ECL	12/18/92
Cap, Hasp and Lock	ECL	12/18/92
Surface Pad	ECL	12/18/92

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

Type	Interval	Volume	Initials	Date
Portland Cement Type I-II - 10bags	2 - 10.3	12.85 cuft	DJA	8/26/92
Crumbles 8-20 mesh - 154bags - 50lbs	10.3 - 262.6	109.34 cuft	DJA	8/26/92
pellets - Enviroplug - 3bags - 50lbs	262.6 - 268.4	2.07 cuft	DJA	8/26/92
SAND 20-40 mesh - 10bags - 100lbs	268.4' - 297.5	11.2 cuft.	DJA	8/26/92

Well Survey/Labeling

Verification Method Review of Survey Report

Criteria WHC-S-014

	Initials	Date
Measurement Point/Surveyed	BRT	1-8-93
Protective Casing/Brass Cap Surveyed	BRT	1-8-93
Well Number Stenciled	ECL	12/18/92
Brass Cap Labeled	ECL	12/18/92

Pump Installation

Verification Method visual observation

Criteria WHC-S-014 4.2.11, 4.2.3

	Initials	Date
Pump Decon/Prep	JAC	9-11-92
Installed	JAC	9-11-92
Pump Tested	JAC	9-11-92

Other (initial if performed)

Well Abandonment (1) (2) NB Downhole TV Inspection NB Complete As-Built Diagram, Driller's/Geologist's Logs

JAC 9-11-92 Well Development

Comments/Remarks (1) CAMELA RUN PERFORMED TO 260' ON 7-16-92

(2) CAMELA RUN PERFORMED TO 265' ON 7-16-92

(3) DRILL BIT ABANDON @ ~~277'~~ 220' SEE MAC LOG

(4) Date well is sample ready

(5) (Drill Bit ABandon at 220') Refer to NCR 50006 Bit & underreamer last in boring NCR Closed 12-4-92

Reviewed By (Sign/Print Name) Kent D Reynolds Date 1/11/93

A-6000-136 (09/90)

9313090.0042

page 3 of 4

WELL SUMMARY SHEET

Boring or Well No. 299-E25-48

Sheet 1 of 2

Location 200 EAST - EAST OF 241AP TANK FARM

Project RCRA-W017/A29 DITCH

Elevation 679.68'

Drilling Contractor Jensen Drilling

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By MR SWINEFORD (Sign/Print Name) Date 7-15-92

Reviewed By EDWARD C. ROFFE (Sign/Print Name) Date 09/19/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
2" OD CS CASING (TEMPORARY) SET @ 9.54'. NO SHOE		0		
		5		SAND 0-20'
		10		"
		15		"
		20		PEBBELY SAND 20-30'
2" OD CS CASING (TEMPORARY) SET @ 168.84'. 0.89' SHOE		25		"
		30		SANDY PEBBLE GRAVEL 30-40'
		35		" " "
		40		SLIGHTLY PEBBLEY SAND 40-50'
		45		" " "
		50		SANDY PEBBLE GRAVEL 50-60'
		55		" " "
304 stainless Steel Blank 4 1/2" O.D. from 0-274.33'		60		SLIGHTLY SILTY SANDY PEBBLE GRAVEL 60-75'
		65		" " "
		70		" " " "
Rumbles - 10.3'-262.6' 8 20 mesh		75		PEBBLE GRAVEL 75-85'
		80		" "
		85		PEBBLE GRAVELLY SAND 85-90'
		90		SLIGHTLY SILTY SAND ~~85~~ 90-110
		95		" " "
		100		" " "
		105		" " "
		110		SAND 110-202'
		115		"
		120		"
		125		"
		130		"
		135		"
		140		"
		145		"
		150		"
		155		"
		160		

A-6000-384 (04/90)

WELL SUMMARY SHEET

Boring or Well No. 299-E25-48

Sheet 2 of 2

Location 200 EAST - 241 AP Farm

Project RCRA - WOIT / A29 DITCH

Elevation 679.68'

Drilling Contractor JENSEN DRILLING

Driller D. Mingo / J. MACKINNON

Drilling Method and Equipment AIR rotary / CABLE tool

Prepared By Dennis Anderson (Sign/Print Name) Date 8/25/92

Reviewed By EDWARD C. RAFUSE (Sign/Print Name) Date 09/19/92

CONSTRUCTION DATA: Description	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Lithologic Description
10" temporary carbon steel casing to 168.8'	165	SAND
	170	"
	175	"
	180	"
	185	"
	190	"
	195	"
	200	"
	205	silty SAND 202-210
	210	" "
8" temporary carbon steel casing to 299.5	215	SAND 210-220
	220	"
	225	pebble gravelly SAND 220-225
DRILL BIT ABANDONED @ ~~237'~~ 220'	230	sandy cobble GRAVEL 225-230
	235	pebble gravelly SAND 230-235
Stainless Steel Blank 0' - 274.33'	240	SAND 230-245
	245	"
	250	silty SAND 245-250
	255	SAND 250-
	260	SAND
SWL @ 276.3 8/25/92	265	SAND
	270	sandy SILT
	275	" "
10 slot 304 stainless Steel Screen 274.33' - 294.25'	280	" "
SS cap - 294.25' - 294.55'	285	slightly sandy GRAVEL
Grout - 2' - 10.3'	290	slightly sandy GRAVEL
8-20 mesh CRUMBLES - 10.3' - 262.6'	295	slightly sandy GRAVEL
Pellets - 262.6' - 268.4'	300	sandy Gravel
SANDPACK - 268.4' - ~~297.5~~ 294.5'		
Drilled depth of 297.5' b/s		

A-6000-384 (04/90)

9313090.0044

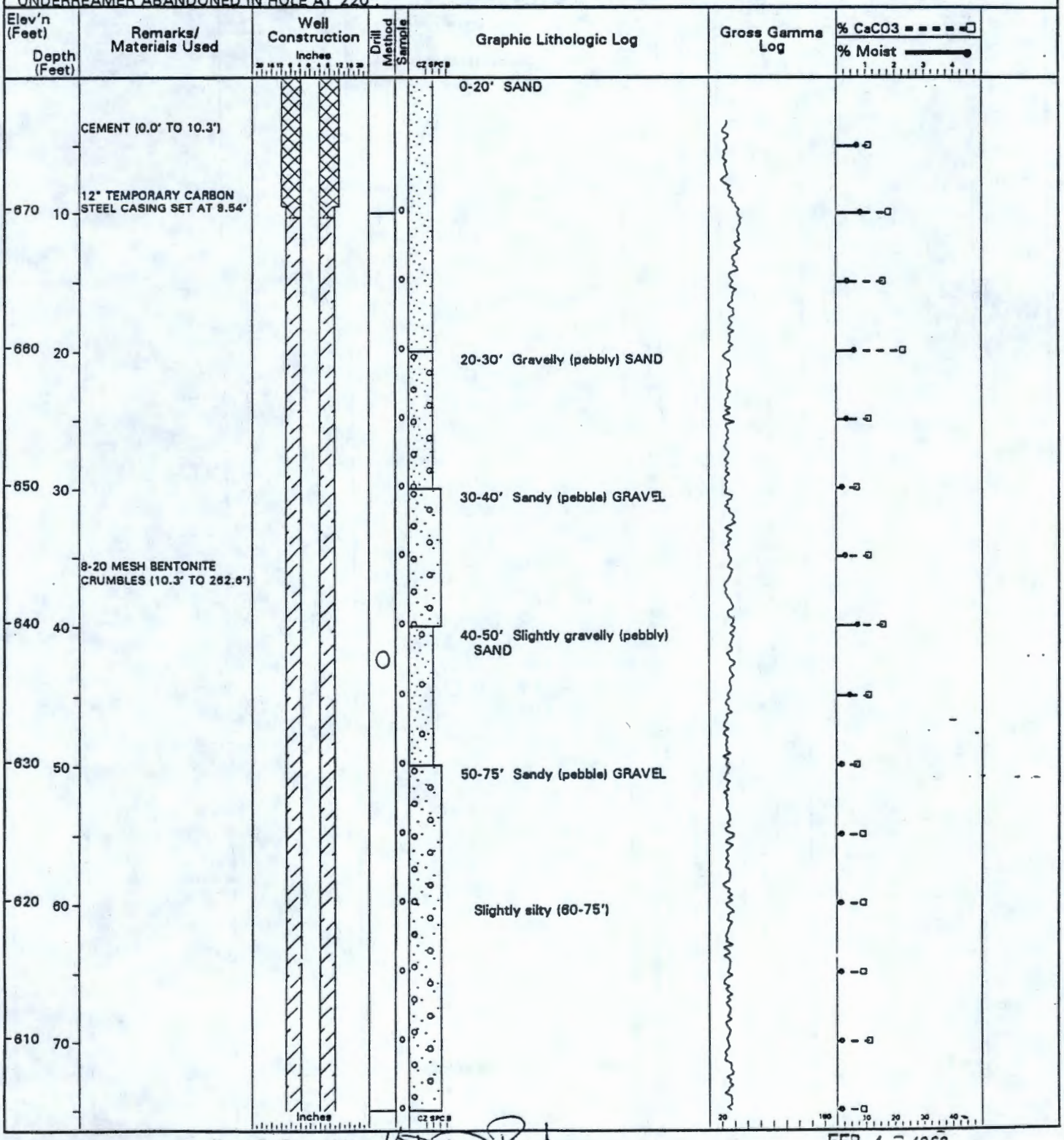
Project: W-017H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION		**Well No:** 299-E25-48	Page 1 of 4
		Total Depth: 297.50	Static Water Level: 276.30
Date Started: 7-1-92	Date Completed: 8-25-92	Surface Elevation: 679.68	Casing Elevation: 682.31
Location: NORTH OF GROUT PIT 200 EAST		Northing: 135815.16	Easting: 575623.43
Prepared By: MD SWEENEY/DJ ANDERSON		Hanford N: 40456.80	Hanford W: 46816.10
Drilling Co: JENSEN	Driller: D MINGO	Drill Meth: AIR ROTARY	Drill Equip: ODEX

Screen: 20.22' OF 4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP W/ENDCAP SET FROM 274.33' TO 294.55'

Filter Pack: 20-40 MESH SILICA SAND FROM 268.4' TO 297.5'

Permanent Casing: 4" DIAMETER TYPE 304 SCHEDULE 5 STAINLESS STEEL WITH CENTRALIZERS SET TO 274.33'

Comments: CAMERA RUNS PERFORMED ON 7/14 AND 7/16 AND MAGNETIC LOG RUN ON 9/18 TO LOCATE DRILL BIT AND UNDERREAMER ABANDONED IN HOLE AT 220'.



Reviewed By: Kent D. Reynolds

Date: FEB. 1 5 1993

9313090.0045

Project: W-017H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION

Well No: 299-E25-48

Elev'n (Feet)	Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
600	80					75-85' (Pebble) GRAVEL		
		4" DIAM T-304 SCH 5 STAINLESS STEEL PERM CASING W/CENTRLIZERS				HANFORD UPPER COARSE/HANFORD FINE CONTACT AT 85'		
						85-90' (Pebbly) gravelly SAND		
590	90					90-110' Slightly silty SAND		
580	100							
570	110					110-202' SAND		
560	120							
550	130							
540	140							
530	150							
520	160							

Inches

Reviewed By: Kent D. Reynolds

Date: FEB. 1 9 1993

9313090.0046

Project: W-017H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION

Well No: 299-E25-48

Elev'n (Feet) / Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
510 170	10" TEMPORARY CARBON STEEL CASING SET AT 168.84'						
500 180							
490 190							
480 200					202-208' Silty SAND		
470 210					208-220' SAND		
460 220	DRILL BIT AND UNDERREAMER ABANDONED AT 220'				220-225' (Pebbly) gravelly SAND		
					225-230' Sandy (cobble) GRAVEL		
450 230					230-235' (Pebbly) gravelly SAND		
					235-245' SAND		
440 240							
					245-248' Silty SAND		
					248-266.5' SAND		
430 250							

Inches

Reviewed By: Kent D. Reynolds

Date: FEB. 1 9 1993

FEB. 1 9 1993

93130900.0047

Project: W-01,7H/A-29 DITCH RCRA GROUNDWATER MONITORING WELL INSTALLATION

Well No: 299-E25-48

Elev'n (Feet) / Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
420 / 260			O				
	3/8" BENTONITE PELLETS (262.6' TO 268.4')				HANFORD FINE/RINGOLD CONTACT AT 266.5'		
					266.5-280' Sandy SILT		
410 / 270	20-40 MESH SILICA SAND FILTER PACK (268.4' TO 297.5')						
	STATIC WATER LEVEL AT 276.3' (8-25-92)						
400 / 280	4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP SCREEN WITH ENDCAP (274.33' TO 294.55')		DB		280-285' Slightly gravelly SAND		
					285-295' Slightly sandy GRAVEL		
390 / 290							
					295-297.5' Sandy GRAVEL		
	TOTAL DEPTH = 297.5' 8" TEMPORARY CARBON STEEL CASING SET AT 299.5'						
380 / 300							
370 / 310							
360 / 320							
350 / 330							
340 / 340							

Reviewed By: Kent D. Reynolds

Date: FEB. 1 9 1993

9313090.0048

KAISER ENGINEERS HANFORD

SURVEY DATA REPORT

Request No. 9 3 1 0 5 7

Project/W.O. No.	Title	File No.
W-017H	Nine Odex CM Wells	2 9 9 — E 2 5

KEH Job No.	Prepared By	Date	Reviewer	
CR-9752	RL Hackwith	12/30/92	V. Coyne	1 2

DESCRIPTION OF WORK	ACCEPTABILITY (Within Plan Tolerance)	DISTRIBUTION	
Horizontal (NAD'83) and vertical (NGVD'29)	Yes XX	Survey File	OR
location of monitoring wells.	No	Field Project File	1
	NA	P Collier	1
	TBD by Requestor	L Dietz	1
		J Rieger	1
		D Weekes	1

SURVEY RESULTS AND COMMENTS

Control Monuments: Landfill Site

LF-1
N:131,301.762
E:579,339.132

C.P."D"
N:130,947.087
E:579,137.752

NOTE: Horizontal control points used were part of a traverse with a linear closure greater than 1:50,000.

USGS BM MON
W63
EL. 514.864

WELL #	COORDINATES ℄ CASING PLANT	COORDINATES ℄ CASING LAMBERT WCS83S. (mtrs)	ELEVATION (feet) NGVD 29 BRASS CAP	HYDROSTAR	TOP OF CASING
199-N-77	100N N: 5521.9 W: 5819.8	N: 149,243.21 E: 571,309.93	455.75	459.45	459.44
699-26-348	200E N: 25,782.6 W: 33,716.8	N: 131,352.50 E: 579,629.52	526.47	530.29	530.27
699-25-34D	200E N: 25,253.6 W: 33,847.9	N:131,191.16 E:579,589.97	534.47	537.92	537.91

Control Monuments: 100N

100N-1
N: 143,992.908
E: 571,387.337

100N-2
N: 149,644.403
E: 571,811.368

S-324
USC&GS
EL.=466.462

NOTE: Horizontal Control points used were part of a traverse with a linear closure greater than 1:48,000.

12/30/92 931-057-299-E25

KAISER ENGINEERS HANFORD

FIELD SKETCH

Attachment To Or Description: Nine Odex CM Wells - Continued

Sheet 2 of 2

Control Monuments: Grout

SL-2	SL-3	BM MON.
N:135,705.555	N:135,916.127	2E-18
E:575,938.675	E:575,938,323	EL=678.331

Horizontal Control Monuments used to locate wells were part of a traverse with a linear closure greater than 1:50,000. Vertical control monuments used was based on 5.8 mile loop with a closure of .024 ft.

WELL #	COORDINATES ℄ CASING		ELEVATION (feet)		
	PLANT	LAMBERT WCS83S (mtrs)	BRASS CAP	HYDROSTAR	TOP OF CASING
299-E25-45	200E N: 39,939.7 W: 44,973.2	N: 135,659.15 E: 576,185.55	675.74	678.46	678.45
299-E25-47	200E N: 40,835.3 W: 46,306.1	N: 135,930.98 E: 575,778.55	670.41	673.78	673.77
299-E25-48	200E N: 40,456.8 W: 46,816.1	N: 135,815.16 E: 575,623.43	679.68	682.32	682.31
299-W27-2	200W N: 33,494.3 W: 75,430.7	N: 133,670.63 E: 566,908.55	674.10	677.13	677.11
699-41-42	200E N: 41,270.3 W: 41,898.1	N: 136,068.17 E: 577,122.21	640.32	643.92	643.91
699-44-39B	200E N: 43,426.3 W: 39,140.4	N: 136,727.61 E: 577,960.80	509.62	513.41	513.40

Control Monuments: 200W

RAG	FLAG	BM B.C. MONS.
N:133,758.279	N:133,900.567	299-W26-11
E:567,152.333	E:566,321.472	299-W26-12

Vertical control points used were based on a 3.3 mile level run with a closure of -0.037 ft.

0013090.0060

BOREHOLE LOG

VALIDATED
KDR 1/11/93
SIGNATURE/DATE

Boring or Well No. 299-E25-48

Sheet 1 of 15

Location 200 EAST - EAST OF 241AP TANK FARMS
Project W017 / A29 DITCH
Elevation 679.68'
Drilling Contractor JENSEN
Driller D. MINGO
Drilling Method and Equipment BACK HOE / AIR ROTARY
Prepared By [signature] / MD SWEENEY (Sign/Print Name) Date 7-2-92
Reviewed By EDWARD C. RAFFUSE [signature] (Sign/Print Name) Date 07/22/92
NB - Nancy Ballantyne

Depth (0')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
		Backhoe		0-5 SAND	NO SAMPLE
				99% SAND 1% SILT.	
				CG - 50% COLOR WET, 5Y 4/2 DK OLIVE GREY	
				MG - 40% COLOR DRY: 2.5Y 6/2 LT BROWN GREY	
				FG - 10%	
				BASALT: 25%, QTZ: 25%, UNDIFF VOLCANICS: 50%	
				SUBANGULAR TO SUBROUND, MODERATE SORTING	
				NO REN TO HCl. DRY.	
5'				5' SAND	5' @ 1608 7-1-92
	1 RAD 2 LITH 1 $CaCO_3$-H_2O	BACKHOE		SAME AS 0-5'	12" CS CASING - BACKHOE
10'				10' SAND	10' @ 1617 7-1-92
	1 RAD 2 LITH 1 $CaCO_3$-H_2O	~~BACKHOE~~ AIR ROTARY		99% SAND 2% SILT	12" CS CASING. BACKHOE
				CG - 4% COLOR WET: 5Y 4/3 OLIVE	BOC (12") @ ~~9.84~~ 9.54'
				MG - 16% COLOR DRY: 2.5Y 6/3 LT YELLOW BROWN.	
				FG - 80%	
				BASALT: 4%, QTZ: 91%, FELSICS: 5%, SUBANGULAR	
				TO SUBROUNDED. STRONG REN TO HCl	
				WELL SORTED. DRY.	
15'				15' SAND	15' @ 1014 7-8-92
	1 RAD 2 LITH 1 $CaCO_3$-H_2O	AIR ROTARY		SAME AS 10' SAMPLE	10" CS CASING

A-6000-382 (04/90)

9313090.0051

BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 2 of 15

Location 200 EAST - EAST OF 241 AP TANK FARMS

Project W017 / A29 DITCH

Elevation 679.68'

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By [signature] / MD SWEENEY (Sign/Print Name) Date 7-8-92

Reviewed By EDWARD C. RAFUSE [signature] (Sign/Print Name) Date 07/22/92

Depth (20')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 $CaCO_3$-H_2O	AIR ROTARY		20' PEBBLEY SAND	20' @ 1101 7-8-92
				75% PEBBLE, 23% SAND 2% SILT	POORLY SORTED
				MP - 75% MG - 65% COLOR WET: 2.5Y 6/2 LIGHT GRAY	10" CS CASING
				FP - 25% FG - 30% COLOR DRY: 5Y 4/2 OLIVE GRAY	
				CG - 5%	
				PEBBLE - 60% BASALT 30% QTZ, 10% FELSIC, ROUNDED - SUB ROUNDED. SAND - 80% BASALT, 20% QTZ 10% FELSIC	
				ANGULAR - SUBANGULAR, STRONG RXN TO HCL.	
				DRY.	
25'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			25' PEBBLEY SAND	25' @ 1245 7-8-92
				SAME AS 20'	10" CS CASING
30'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			30' SANDY PEBBLE GRAVEL	30' @ 1255 7-8-92
				60% PEBBLE 40% SAND <1% SILT	10" CS CASING
				MP - 30% CG - 80% COLOR WET: 5Y 2.5/2 BLACK	
				FP - 70% MG - 5% COLOR DRY: 5Y 3/2 DK OLIVE GRAY	
				FG - 15%	
				PEBBLE - 75% BASALT, 15% QTZ, 10% FELSIC. SUBANGULAR TO SUBROUNDED. SAND - 65% BASALT, 15% QTZ, 20% FELSIC.	
				ANGULAR SUBANGULAR. NO RXN TO HCL.	
				WELL - MODERATELY WELL SORTED. DRY.	
35'	1 RAD 2 LITH 1 $CaCO_3$-H_2O.			35' SANDY PEBBLE GRAVEL	35' @ 1305 7-8-92
				SAME AS 30'	10" CS CASING

A-6000-382 (04/90)

9313090.0052

BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 3 of 15

Location 200 EAST - EAST OF 241 AP TANK FARM

Project W017 / A29 DITCH

Elevation 679.68

Drilling Contractor JENSEN

Driller D. DELINGER

Drilling Method and Equipment AIR ROTARY

Prepared By [signature] / MA SWEENEY (Sign/Print Name) Date 7-8-92

Reviewed By EDWARD C. RAFFUCK Edward C. Raffuck (Sign/Print Name) Date 07/22/92

Depth (40')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O	AIR ROTARY		40' SLIGHTLY PEBBLEY SAND	40' @ 1309 7-8-92
				20% PEBBLE 80% SAND <1% SILT.	10" CS CASING
				MP - 10% MG - 65% COLOR WET: 5Y 2/2 DK OLIVE BROWN	
				FP - 90% CG - 10% COLOR DRY: 5Y 4/2 OLIVE GRAY	
				FG - 25%	
				PEBBLE - 70% BASALT, 30% QTZ, ANGULAR - SUBANGULAR	
				SAND - 60% BASALT 10% QTZ, 30% FELSIC ANGULAR - SUB-ANGULAR POORLY SORTED STRONG REACTION TO HCl. DRY.	
45'				45' SLIGHTLY PEBBLEY SAND	45' @ 1409 7-8-92
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O			SAME AS 40'	10" CS CASING.
50'				50' SANDY PEBBLE GRAVEL	50' @ 1416 7-8-92
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O			85% PEBBLE GRAVEL, 15% SAND, <1% SILT	10" CS CASING.
				CP - 10% CG - 80% COLOR WET: 5Y 2.5/2 BLACK	
				MP - 60% MG - 15% COLOR DRY: 5Y 5/2 OLIVE GRAY	
				FP - 30% FG - 5%	
				PEBBLE - 50% BASALT, 40% QTZ, 10% FELSIC, ANGULAR - SUBANGULAR. SAND - 45% BASALT 50% QTZ, 5% FELSIC ANGULAR - SUBANGULAR NO RXN TO HCl. WELL TO MODERATELY WELL SORTED. DRY.	
55'				55' SANDY PEBBLE GRAVEL	55' @ 1424 7-8-92
	1 RAD 2 LITH 1 $CaCO_3$ - H_2O			SAME AS 50'	

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 4 of 15

Location 200 EAST - EAST OF 241AP TANK FARM

Project W017 / 429 DITCH

Elevation 679.68'

Drilling Contractor JENSEN

Driller D. MINTER

Drilling Method and Equipment AIR ROTARY

Prepared By [signature] / RAD SWEENEY (Sign/Print Name) Date 7-8-92

Reviewed By EDWARD C. RAFUSE (Sign/Print Name) Date 07/22/92

Depth (60')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 $CaCO_3$-H_2O	AIR ROTARY		60' SLIGHTLY SILTY SANDY PEBBLE GRAVEL	60' @ 1429 7-8-92
				PEBBLE - 65% SAND - 32% SILT - 3%.	10" CS CASING.
				CP - 5% CG - 20% COLOR WET: 5Y 4/3 OLIVE	
				MP - 70% MG - 40% COLOR DRY: 5Y 6/3 PALE OLIVE	
				FP - 25% FG - 40%	
				PEBBLE - 65% BASALT 25% QTZ, 10% FELSIC, ANGULAR	
				SUBANGULAR. SAND - 50% BASALT, 30% QTZ, 20% FELSIC	
				ANGULAR - SUBANGULAR STRONG REACTION TO HCl.	
				POORLY SORTED. DRY.	
65'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			65' SLIGHTLY SILTY SANDY PEBBLE GRAVEL	65' @ 1528 7-8-92
				SAME AS 60'	10" CS CASING
				70' SLIGHTLY SILTY SANDY PEBBLE GRAVEL	70' @ 1534 7-8-92
70'				SAME AS 60'	10" CS CASING.
	1 RAD 2 LITH 1 $CaCO_3$-H_2O				
				75' PEBBLE GRAVEL	75' @ 1544 7-8-92
75'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			90% PEBBLE 10% SAND <1% SILT.	10" CS CASING.
				CP - 5% CG - 5% COLOR WET: 5Y 2.5/2 BLACK OR OLIVE GRAY	
				MP - 60% MG - 40% COLOR DRY: 5Y 3/2	
				FP - 35% FG - 5%	
				PEBBLE - 60% BASALT 30% QTZ, 10% FELSIC, ANGULAR -	
				SUBANGULAR - SUBROUNDED. SAND - 70% BASALT, 25% QTZ,	
				5% FELSIC. ANGULAR - SUBANGULAR NO REACTION TO	
				HCl. POORLY SORTED. DRY	

A-6000-382 (04/90)

9312000.0054

BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 5 of 15

Location 200 EAST - EAST OF 241 AP TANK FARM

Project W017 / A29 DITCH

Elevation 679.68

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By [signature] / MD SWEENEY (Sign/Print Name) Date 7-8-92

Reviewed By EDWARD C. RAFFAS [signature] (Sign/Print Name) Date 07/22/92

Depth (80')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 CaCO3-H2O	AIR ROTARY		80' PEBBLE GRAVEL SAME AS 75'	80' @ 7-8-92 10" CS CASING.
85'	1 RAD 2 LITH 1 CaCO3-H2O			85' PEBBLE GRAVELLY SAND. 75% SAND 25% PEBBLE GRAVEL CG-75% CP-2% COLOR WET: 5Y 2.5/2 BLACK. MG-20% MP-30% COLOR DRY: 5Y 3/2 DRK OLIVE GRAY FG-5% FP-65% PEBBLE-75% BASALT 20% QTZ, 5% FELSIC, ANGULAR-SUBANGULAR. SUBROUNDED. SAND-80% BASALT 15% QTZ, 5% FELSIC ANGULAR-SUBANGULAR POORLY SORTED DRY. MILD RXN TO HCL.	85' @ 7-8-92 10" CS CASING.
90'	1 RAD 2 LITH 1 CaCO3-H2O			90' SLIGHTLY SILTY SAND 96% SAND 4% SILT CG-75% COLOR WET: 5Y 5/2 OLIVE. MG-20% COLOR DRY: 5Y 6/4 PALE OLIVE FG-5% SAND-75% BASALT, 20% QTZ, 10% FELSIC, ANGULAR-SUBANGULAR. SUBROUNDED. MILD TO WEAK RXN TO HCL. DRY POORLY SORTED.	90' @ 1650 7-8-92 10" CS CASING
95'	1 RAD 2 LITH 1 CaCO3-H2O.			95' SAME AS 90' SLIGHTLY SILTY SAND	95' @ 1650 7-8-92 10" CS CASING.

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-43

Sheet 6 of 15

Location 200 EAST - EAST OF 241AP TANK FARM
Project W017 / ARS DITCH.
Elevation 679.68'
Drilling Contractor JENSEN
Driller D. MINGO
Drilling Method and Equipment AIR ROTARY
Prepared By [signature] / MOSWEENEY (Sign/Print Name) Date 7-8-91
Reviewed By EDWARD C. RAFUSE [signature] (Sign/Print Name) Date 07/22/92

Depth (400')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 $CaCO_3$-H_2O	AIR ROTARY		100' SLIGHTLY SILTY SAND	100' @ 1705 7-8-92
				SAME AS 95'	10" CS CASING
105'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			105' SLIGHTLY SILTY SAND	105' @ 0831 7-9-92
				SAME AS 100'	10" CS CASING
110'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			110' SAND	110 @ 0841 7-9-91
				98% SAND 2% SILT.	10" CS CASING
				CG-10%	
				MG-60% FG-30%	
				COLOR WET: 5Y 4/3 OLIVE.	
				COLOR DRY: 5Y 6/2 LT. OLIVE GREY	
				BASALT-45%, QTZ-20%, FELSIC-25%	
				ANGULAR SUBANGULAR SUBROUNDED	
				MILD TO STRONG RXN TO HCl. WELL SORTED	
				DRY.	
115'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			115' SAND	115' @ 1122 7-9-91
				SAME AS 110'	10" CS CASING.

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 7 of 15

Location 200 EAST - EAST OF 241AP TANK FARM
Project W017 / A29 DITCH
Elevation 679.68
Drilling Contractor JENSEN
Driller D. MINGO
Drilling Method and Equipment AIR ROTARY
Prepared By [signature] / MD SWEENEY (Sign/Print Name) Date 7-9-92
Reviewed By EDWARD C. RAMSEY (Sign/Print Name) Date 07/22/92

Depth (120')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 CaCO3-H20	AIR ROTARY		120' SAND	120' @ 1129 7-9-91
				98% SAND 2% SILT	POORLY SORTED.
				CG - 20% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	10" CS CASING.
				MG - 50% COLOR WET: 5Y 4/3 OLIVE.	
				FG - 30%	
				BASALT: 60%, QTZ: 25%, FELSICS: 15%	
				ANGULAR - SUB ANGULAR	
				STRONG RXN TO HCl - ~~DRY~~ MOIST	
125'				125' SAND	125' @ 7-9-92
	1 RAD 2 LITH 1 CaCO3-H20			99% SAND 1% SILT	10" CS CASING.
				CG - 3% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	
				MG - 55% COLOR WET: 5Y 4/3 OLIVE	
				FG - 42%	
				BASALT: 70%, QTZ: 20%, FELSICS: 10%, ANGULAR -	
				SUBANGULAR WELL SORTED MOIST	
				STRONG RXN TO HCl.	
130'				130' SAND	130' @ 7-9-92
	1 RAD 2 LITH 1 CaCO3-H20			99% SAND 1% SILT	10" CS CASING
				CG - 10% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	
				MG - 60% COLOR WET: 5Y 4/3 OLIVE.	
				FG - 30%	
				BASALT: 65%, QTZ: 30%, FELSICS: 5%, ANGULAR -	
				SUBANGULAR - POORLY SORTED. WEAK TO	
				MODERATE RXN TO HCl. MOIST.	
135'				135' SAND	
	1 RAD 2 LITH 1 CaCO3-H20			99% SAND 1% SILT.	
				CG - 30% COLOR WET: 5Y 4/3 OLIVE	135' @ 7-9-92
				MG - 40% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	10" CS CASING.
				FG - 30%	
				BASALT: 65%, QTZ - 30%, FELSICS - 5% ANGULAR -	
				SUBANGULAR - SUBROUNDED. MODERATE RXN	
				TO HCl. POORLY SORTED. MOIST.	

A-6000-382 (04/90)

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BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 8 of 15

Location 200 EAST - EAST OF 241AP TANK FARM. Project W017 / A29 DITCH

Elevation 679.68 Drilling Contractor JENSEN

Driller D. MINGO Drilling Method and Equipment AIR ROTARY.

Prepared By [signature] / MOSWEENEY (Sign/Print Name) Date 7-9-92 Reviewed By EDWARD C. RAFUSE [signature] (Sign/Print Name) Date 07/22/92

Depth (140')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1RAD 2LITH 1CaCO3-H2O	AIR ROTARY		140' SAND	140 @ 7-9-92
				99% SAND 1% SILT.	10" CS CASING.
				CG-3% CLEARNET: 5Y 4/3 OLIVE	
				MG-55% COLOR DRY: 5Y 6/2 LT OLIVE GREY	
				FG. 42%	
				BASALT: 70% QTZ: 25% FELSICS: 5% ANGULAR.	
				SUBANGULAR, MODERATE RXN TO HCl.	
				INCLUSIONS. DRY.	
145'	1RAD 2LITH 1CaCO3-H2O			145' SAND	145' @ 7-9-92
				SAME AS 140'	10" CS CASING
150'	1RAD 2LITH 1CaCO3-H2O			150' SAND	150' @ 7-9-92
				SAME AS 140'	10" CS CASING
155'	1RAD 2LITH 1CaCO3-H2O			155' SAND	155' @ 7-9-92
				SAME AS 140'	10" CS CASING

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BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 9 of 15

Location 200 WEST - EAST OF 241AP TANK FARM

Project W017 / 425 DITCH.

Elevation 679.68

Drilling Contractor JENSEN

Driller D MINGO

Drilling Method and Equipment ~~DUNLEY~~ AIR ROTARY

Prepared By [illegible] / MD SWENDAY (Sign/Print Name) Date 7-9-92

Reviewed By EDWARD C. RUSSO MS 7-9-92 / Edward C. Russo (Sign/Print Name) Date 07/22/92

Depth (160')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 $CaCO_3$-H_2O	AIR ROTARY		160' SAND	160' @ 7-9-92
				99% SAND 1% SILT	10" CS CASING
				CG-3% COLOR WHT: 5Y 4/3 OLIVE	BOC (10") @ 162.34'
				MG-55% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	
				FG-42%	
				BASALT: 70%, QTZ: 25% FELSICS: 5% ANGULAR-	
				SUBANGULAR MODERATE RXN TO HCl.	
				WELL SORTED. DRY	
165'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			165' SAND 98% SAND 2% SILT.	165' @ 7-13-92
				CG-2% COLOR WHT 5Y 4/3 OLIVE	8" CS CASING
				MG-65% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	
				FG-15%	
				BASALT: 70%, QTZ: 25% FELSICS 5%, ANGULAR	
				SUBANGULAR WEAK RXN TO HCl, WELL	
				SORTED. MOIST	
170'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			170' SAND	170' @ 7-13-92
				~~80%~~ 98% SAND MS 7-13-92 ~~20%~~ 2% SILT.	8" CS CASING
				CG-25% COLOR WHT 5Y 4/3 OLIVE	
				MG-60% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	
				FG-5%	
				BASALT: 70%, QTZ: 25% FELSICS: 5%, ANGULAR-	
				SUBANGULAR WEAK RXN TO HCl, MOIST.	
175'	1 RAD 2 LITH 1 $CaCO_3$-H_2O			175' SAND	175' @ 7-13-92
				SAME AS 170'	8" CS CASING.

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BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 10 of 15

Location 200 EAST - EAST OF 241AP TANK FARM
Project W017/A29 DITCH
Elevation 679.68
Drilling Contractor JENSEN
Driller D. MINGO
Drilling Method and Equipment AIR ROTARY
Prepared By [signature] / MD SWEENEY (Sign/Print Name) Date 7-13-92
Reviewed By EDWARD C. ROTHER / Edward C. Rother (Sign/Print Name) Date 07/22/92

Depth (190')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAO 2 WITH 1 $CaCO_3$-H_2O	AIR ROTARY		180' SAND SAME AS 175'	180' @ 7-13-92 8" CS CASING
185'	1 RAO 2 WITH 1 $CaCO_3$-H_2O			185' SAND 99% SAND 1% SILT. CG-15% COLOR WET 5Y 4/3 OLIVE MG-60% COLOR DRY 5Y 6/2 LT OLIVE GREY FG-25% BASALT:60% QTZ:30% FELDS:10% ANGULAR SUBROUNDED. WEAR RXN TO HCl DRY	185' @ 7-13-92 8" CS CASING
190'	1 RAO 2 WITH 1 $CaCO_3$-H_2O			190' SAND SAME AS 185'	190' @ 7-13-92 8" CS CASING
195'	1 RAO 2 WITH 1 $CaCO_3$-H_2O			195' SAND SAME AS 185'	195' @ 7-13-92 8" CS CASING

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BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 11 of 15

Location 200 EAST - EAST OF 241-AP TANK FARM

Project W017 / A29 DITCH

Elevation 679.68'

Drilling Contractor JENSON

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By (Sign/Print Name) / MO SWEENEY Date 7-13-92

Reviewed By (Sign/Print Name) EDWARD C. RAFFAS / Edward C. Raffas Date 07/22/92

Depth (200')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1RAD 2LITH 1CaCO3-H2O	AIR ROTARY		200' SAND 96% SAND 4% SILT	200' @ 7-13-92
				CG-3% MG-70%, FG-27% COLOR WET: 5Y 4/2 OLIVE	8" CS CAS. NO
				COLOR DRY: 5Y 6/2 LT OLIVE GRAY, BASALT: 60%, QTZ: 30%, FELSIC: 10%	
202'				ANGULAR - SUBANGULAR, MODERATE REACTION TO HCL, POORLY	
				SORTED - DRY	
	1RAD 1LITH 1CaCO3-H2O			202' SILTY SAND 85% SAND 15% SILT	202' @ 7-13-92
				CG-3% MG-10%, FG-87%, COLOR WET 5Y 5/2 OLIVE GRAY,	8" CS CAS. NO
				COLOR DRY: 5Y 7/2 LT GRAY, BASALT 65%, QTZ: 30%, FELSIC:	
				5%, ANGULAR - SUBANGULAR STRONG REACTION TO HCL,	
205'				POORLY SORTED. DRY.	
	1RAD 2LITH 1CaCO3-H2O			205' SILTY SAND	205' @ 7-13-92
				95% SAND 5% SILT.	8" CS CASING
				CG. 5% COLOR WET:	
				MG-45% COLOR DRY:	
				FG. 50%	
				BASALT: 70%, QTZ: 20%, FELSICS: 10% ANGULAR	
				SUBANGULAR, STRONG REACTION TO HCL MOIST.	
				MODERATELY WELL SORTED.	
210'				210' SAND	210' @ 7-13-92
	1RAD 2LITH 1CaCO3-H2O			97% SAND 3% SILT	8" CS CASING.
				CG: 10% COLOR WET 5Y 4/2 OLIVE	
				MG-70% COLOR DRY: 5Y 6/2 LT OLIVE GRAY	
				FG-20%	
				BASALT: 65%, QTZ: 30%, FELSICS: 5%, ANGULAR,	
				SUBANGULAR WEAK REACTION TO HCL. WELL	
				SORTED - ~~DRY~~ WAS 7-17-92 MOIST	
215'				215' SAND	215' @ 7-13-92
	1RAD 2LITH			SAME AS 210'	
				DRY	
				Drill Bit Abandoned at 220'	

BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 12 of 15

Location 200 EAST - EAST OF 241AP TANK FARM

Project W017/A29 DITCH

Elevation 679.68'

Drilling Contractor JENSEN

Driller D. MINCO

Drilling Method and Equipment AIR ROTARY

Prepared By [signature] / MO SWEENEY (Sign/Print Name) Date 7-13-92

Reviewed By EDWARD C. RAFUSE [signature] (Sign/Print Name) Date 07/22/92

Depth (220')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1RAD 2LITH 1CACO3 H2O			220 PEBBLE GRAVELLY SAND	220' @ 7-13-92
				72% SAND 25% GRAVEL 2% SILT	8" CS CASING
				CG-10% CP-5% COLOR WET 5Y 5/2 OLIVE GREY	
				MG-80% MP-40% COLOR DRY 5Y 5/2 OLIVE	Drill Bit ABandaned.
				FG-10% FP-55%	at 220' on 7/13/92
				PEBBLE-POLYBASALT 15% QTZ, 5% FOSSILS ANGULAR	
				SAND-POLYBASALT, 15% QTZ, 5% FOSSILS ANGULAR-	
				SUBANGULAR POORLY SORTED. DRY	
225'				225' SANDY GRAVEL	225' @ 7-13-92
	1RAD 2LITH 1CACO3-H2O			60% GRAVEL 38% SAND 2% SILT.	8" CS CASING.
				CG-50% CP-20% COLOR WET: 5Y 2.5/2 BLACK	
				MG-45% CP-25% COLOR DRY: 5Y 2.5/2 BLACK	
				FG 5% MP. 25%	
				FP-30%	
				COARSE: 30% BASALT 15% QTZ, 5% FOSSILS ANGULAR	
				SUBANGULAR SUBROUNDED. SAND: BASALT 80%, 15% QTZ	
				5% FOSSIL, ANGULAR. SUBANGULAR. NO RXN TO HCL	
				DRY. POORLY SORTED.	
230'				230' PEBBLE GRAVELLY SAND	230' @ 7-13-92
				30% GRAVEL 69% SAND 1% SILT	8" CS CASING
				CP-5% CG-50% COLOR DRY: 2.5Y 3/0 VERY DK GREY	
				MP-60% MG-35% COLOR WET 2.5Y 4/0 DK GREY	
				FP-35% FG-15%	
				PEBBLE-BASALT: 85% QTZ: 10%, FOSSILS: 5% ANGULAR-	
				SUBANGULAR-SUBROUNDED. SAND-BASALT: 40%, QTZ: 45%	
				FOSSILS: 15% POORLY SORTED. DRY.	
235'				235' SAND	
				SAND-99% SILT 1%	235' @ 7-13-92
				CG-2% COLOR WET 5Y 5/2 GREYISH BROWN	8" CS CASING.
				MG-60% COLOR DRY: 5Y 6/3 LT YELLOWISH BROWN	
				FG-38%	
				BASALT: 40% QTZ: 50% FOSSIL 10%, ANGULAR SUB-	
				ANGULAR. MODERATELY WELL SORTED, DRY	

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BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 13 of 15

Location 200 EAST - EAST OF 241AP TANK FARM
Project W017 / A29 DITCH
Elevation 679.68'
Drilling Contractor JENSEN
Driller D. MINGO
Drilling Method and Equipment AIR ROTARY
Prepared By (Sign/Print Name) Date 7-13-92
Reviewed By (Sign/Print Name) Date 07/22/92

Depth (240')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 RAD 2 LITH 1 CaCO3-H2O	AIR ROTARY		240 SAND	240' @ 7-13-92
				99% SAND 1% SILT	
				CG-3% COLOR WET 5Y5/2 OLIVE GREY	
				MG-60% COLOR DRY 5Y4/2 OLIVE GREY	
				FG-12%	
				BASALT 70%, QTZ 25%, FELSICS 5% ANGULAR	
				SUBANGULAR. DRY POORLY SORTED MODERATE	
				REN TO HCL	
245'				245' SILTY SAND	245' @ 7-13-92
	1 RAD 2 LITH 1 CaCO3-H2O			85% SAND 15% SILT	
				CG-3% COLOR WET 5Y 7/2	
				MG-20% COLOR DRY 5Y 7/3	
				FG-77%	
				BASALT 40% QTZ 20% FELSICS 40% ANGULAR	
				SUBANGULAR DRY, MODERATELY WELL	
				SORTED, STRONG REN TO HCL.	
250'				250' SAND	250' @ 7-13-92
	1 RAD 2 LITH 1 CaCO3-H2O			98% SAND 2% SILT	
				CG-20% COLOR WET 5Y 5/3 OLIVE	
				MG-60% COLOR DRY 5Y 4/3 OLIVE	
				FG-20%	
				BASALT 70%, QTZ 10%, FELSICS 30% ANGULAR	
				SUBANGULAR SUBROUNDED. DRY. WELL	
				SORTED	
255'				255' SAND	255' @ 7-13-92
	1 RAD 2 LITH 1 CaCO3-H2O			SAME AS 250'	

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BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 14 of 15

Location: 200 EAST - EAST of 241 Farm
Project: W017 / A29 DITCH
Elevation: 679.68'
Drilling Contractor: Jensen
Driller: C. Wamsley
Drilling Method and Equipment: Air rotary / cable tool
Prepared By: Dennis Anderson (Sign/Print Name) Date: 7/13/92
Reviewed By: EDWARD C. RAFUSE (Sign/Print Name) Date: 08/26/92

Depth (260')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1rad 2lith 1moist	AIR		260' SAND same as 250'	260' @ 1555 7/13/92
265'	2lith	AIR		265' SAND same as 255	
266.5'	2lith 1rad	DB		sandy SILT (30% sand 70% SILT) 100% vfs 5y 4/2 olgry-wet ; 5y 6.5/2 ltgry-ltolgry dry very moist, No Rxn to 10% HCl prominent bedding beginning @ 267' bls	266.5' sample 8/12/92 @ 1345 possible Upper Ringold (lac paleosol) oxid. @ 267' bls
270'	1rad 2lith 1moist	DB		sandy SILT (25% sand 75% SILT) 100% vfs 5y 4/2 olgry WET · 5y 6.5/2 ltgry-ltolgry dry moist sample, very weak Rxn to 10% HCl cont bedding showing	270' sample 8/12/92 @ 1345 sample showing lg amt of oxid @ 269.5' bls poor recovery 5 gal H_2O added for recovery
275'	1rad 2lith 1CaCO3	DB		sandy SILT (30% sand 70% SILT) 10% fs 90% vfs 3.75y 4/2 dk grbrn - olgry wet. 3.75y 6.5/2 ltgry - ltgrybrn - ltolgry sample moist, weak+ Rxn to 10% HCl sands showing higher Rxn	275' sample 8/13/92 @ 11:05 sand tagged @ 275.6' > sands @ 275' vfp @ 276-276.5 > sands

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BOREHOLE LOG

Boring or Well No. 299-E25-48

Sheet 15 of 15

Location: 200 EAST - East of 241 EVAP
Project: W017 / A29 DITCH
Elevation: 679.68'
Drilling Contractor: Jensen Drilling
Driller: C. Wamsley
Drilling Method and Equipment: CABLETOOL
Prepared By: Dennis Anderson (Sign/Print Name) Date 8/12/92
Reviewed By: Edward C. Rafuse (Sign/Print Name) Date 08/26/92

Depth	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
280'	21ith 1rad 1moist	DB		slightly gravelly SAND	280' sample 8/17/92 @ 0945
				(5% gravel 95% sand) 15% fg 85% vfg	
				10% vcs 15% cs 30% ms 25% fs 20% vfs	
				3.75y 4/2 dkgrybrn-olgry-wet	
				3.75y 5/2 grybrn-olgry dry	
				sample very moist, good sorting, sub-discoidal/	
				rnd-wellrnd for pebbles; No Rxn to 10% HCl	
				Pebbles predom basaltic, sands are 60% Qtz	
				30% basalt, 10% gran musc ect.	> gravels @
285'	21ith 1rad 1moist	DB		slightly sandy GRAVEL (10% sand 90% Gravel)	285' sample 8/17/92 @ 0920
				15% vcs 5% sc 15% vcp 20% fg	
				15% cs 20% fs 15% cp 25% vfg	
				30% ms 20% vfs 20% mp	
				5y 3 5/2 olgry-dkolgry-wet	
				5y 6/3 pl olive-dry	
				sample very moist, poor sorting, rnd/wellrnd/	
				subdiscoidal, No Rxn to 10% HCl, 50% Qtz	
				30% Qtze, 15% volporph, 15% basalt, 10%	
290'				gran, musc, ect.	
	21ith 1rad 1moist CaCO3	DB		slightly sandy GRAVEL (5% sand 95% GRAVEL)	290' sample 8/19/92 @ 1600
				10% vcs 2% sc 10% vcp 25% fg	
				15% cs 25% fs 10% cp 28% vfg	
				35% ms 15% vfs 25% mp	
				3.75y 3/2 vydkgrbrn - dk olgry WET	
				3.75y 5/2 olgry - gry brn; sample very	
				moist to saturated, good sorting,	
				subrnd - rnd / sub-discoidal, No Rxn to	
				10% HCl, 40% Qtz 15% Qtze, 25%	
295'				volporph, 10% gran-fel 20%	
	21ith 1rad CaCO3	DB		sandy GRAVEL (15% sand 85% GRAVEL)	295' sample 8/20/92 @ 0755
				particle size + color same as	
				290' sample	
				remaining desc similar to 290' sample	
297.5'	21ith 1rad CaCO3	DB		297' sample same as 295' (w/ 25%	297.5' sample 8/20/92 0940
				sand 75% GRAVEL)	
					TD @ 297.5

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WIC-30-EN-OP-054, Rev. 0

Westinghouse Hanford Company	VALIDATED BY: RAB 11/17/2 SIGNATURE/DATE	LOG HEADER	Page 1 of 2

Well No. 299-E25-48 Area 200 East Area 9/14/92

Log Run #1 Log Type Gross Gamma

Elevation Datum Input brass cap Elevation 679.68'

Survey Coordinates 135,515.16 E N 573,623.43 N

Log Measured From Ground Surface

Location Description East Side of A-Tank Farm

Ground Surface Elevation 679.68'

Surface Temperature N/A Weather Clear-Hot

BOREHOLE INFORMATION

Driller Cobb Wheeler (Screen Bolling)

Drill Rig Type Cable Tool Bit Type/Diameter Hand Tool/8"

Borehole Diameter(s)/Depth 12"/45' 10"/1148.8' 8"/2880

Depth Driller 2873' Depth Logger 2820

Liquid Level 270 Liquid Source Appearance Muddy

Temperature N/A

CASING RECORD

Type 13" Carbon Steel Sch. 40 Interval +2.0' - 9.5'

Type 10" Carbon Steel Sch. 40 Interval +2.5' - 1148.8'

Type 8" Carbon Steel Sch. 40 Interval +1.7' - 2880.8'

Type Interval -

Well Screen Interval N/A

Comments: Return Cones +0.2' high

Continued work

A-56 / R-56/56

LOG HEADER

Page 2 of 2

EQUIPMENT DATA

Logging Company	PNL	Equipment Type	Probe
Operators	Alan Dawson	Serial No.	6021/1A
Equipment Manufacturer	DOE	Calibration Reference	PNL-SOP001
Tool Type	Gross Gamma	Position 1	16'-1656
Base Calibration Type	SPS	Position 2	661 cpl
Calibration Date	N/A	Calibration Source Unit	N/A
Tool Size	1.62 outer	Position 3	all
Detector Type	Geiger	Position 4	15 cps

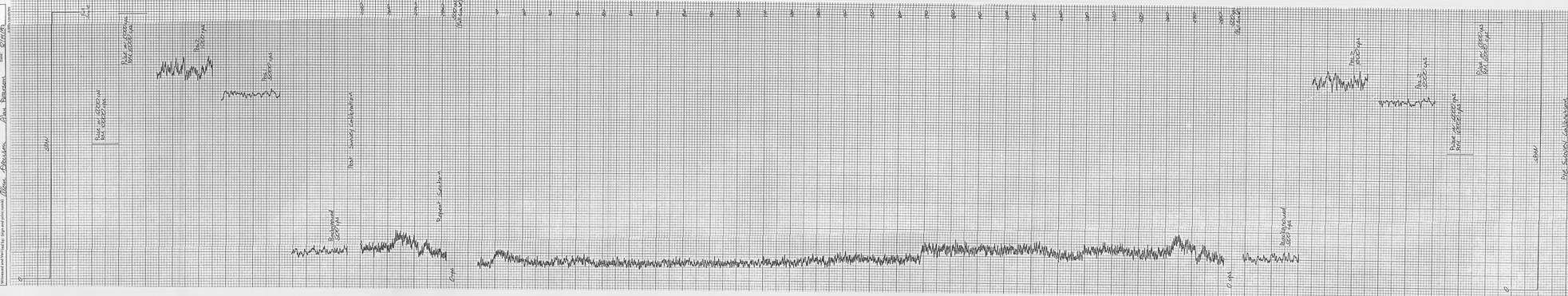
LOGGING SUMMARY DATA

Log Interval from	2820.0'	to	3.4'
Interval	2816.6'	Position 1	165.2 cpl
Pre-survey Verification	2.0'	Position 2	0.0 cpl
Post-survey Verification	1148.8'	Position 3	all
Logging Speed	5 ft/min	Recorder Scale/Offset	50 cps/in
Start Time	0900	Completion Time	12:15
Chart Speed/Div. Vert.	10 cm/hr	Time Constant	TC-1
Chart Position Vert.	50 cps/in	Position 1	165.2 cpl
Post Survey Verification	2.0'	Position 2	all
Percent Change	0.7%	Position 3	0.0%

Comments: Return Cones +0.2' high

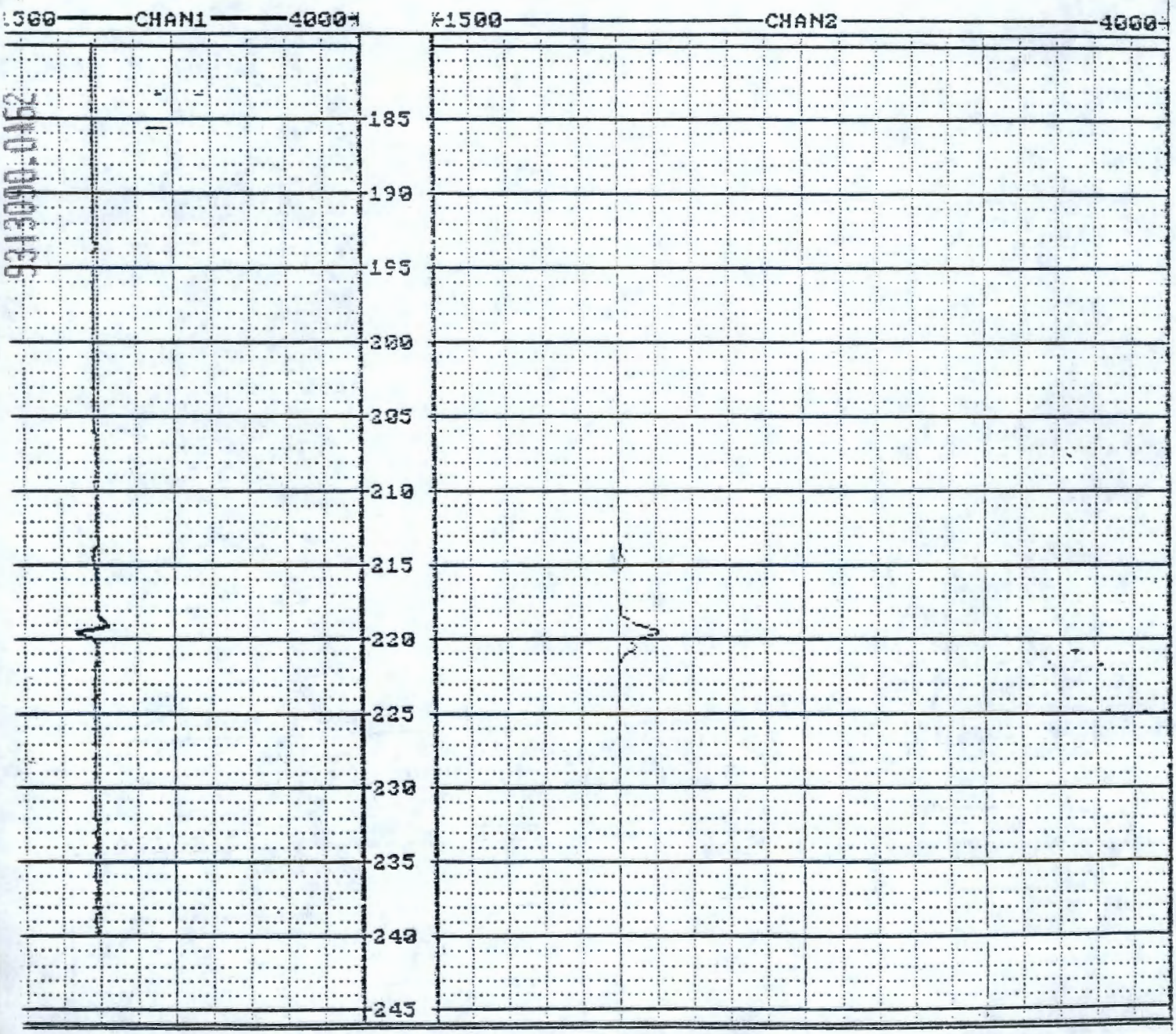
Continued work

Witnessed Field Verification (Sign and print name) Alan Dawson Date 9/14/92


Alan Dawson
9/14/92
Probe #6 6021/1A
Probe #6 6021/1A
Probe #6 6021/1A

Magnetic (Repeat Section) 240'-180' 9/18/92

UT:E:\SST\299E2548.TA2 (ON) Recs:312 Bytes:23030 Free:20854K
30.0 1.2 2216.3 2118.4 1698.1 516.1 5000.0 4893.2 4841.3



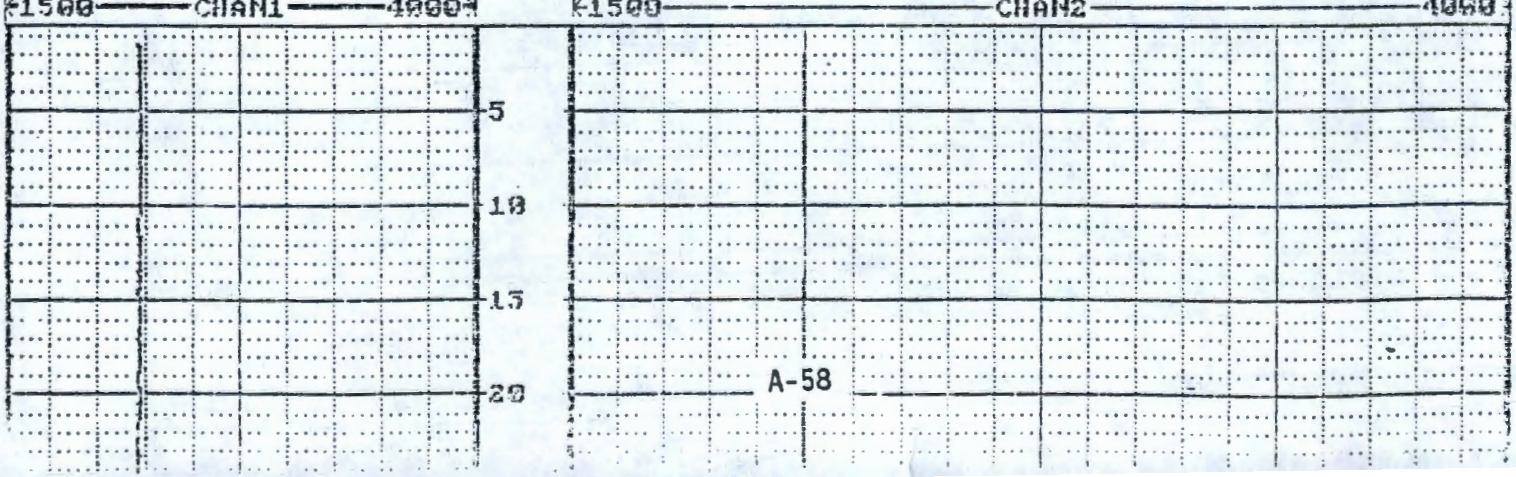
T:E:\SST\299E2548.TA2 (ON) Recs:12 Bytes:330 Free:20873K
0.0 1.2 2219.5 2117.5 1695.9 517.7 5000.0 4896.9 4841.2

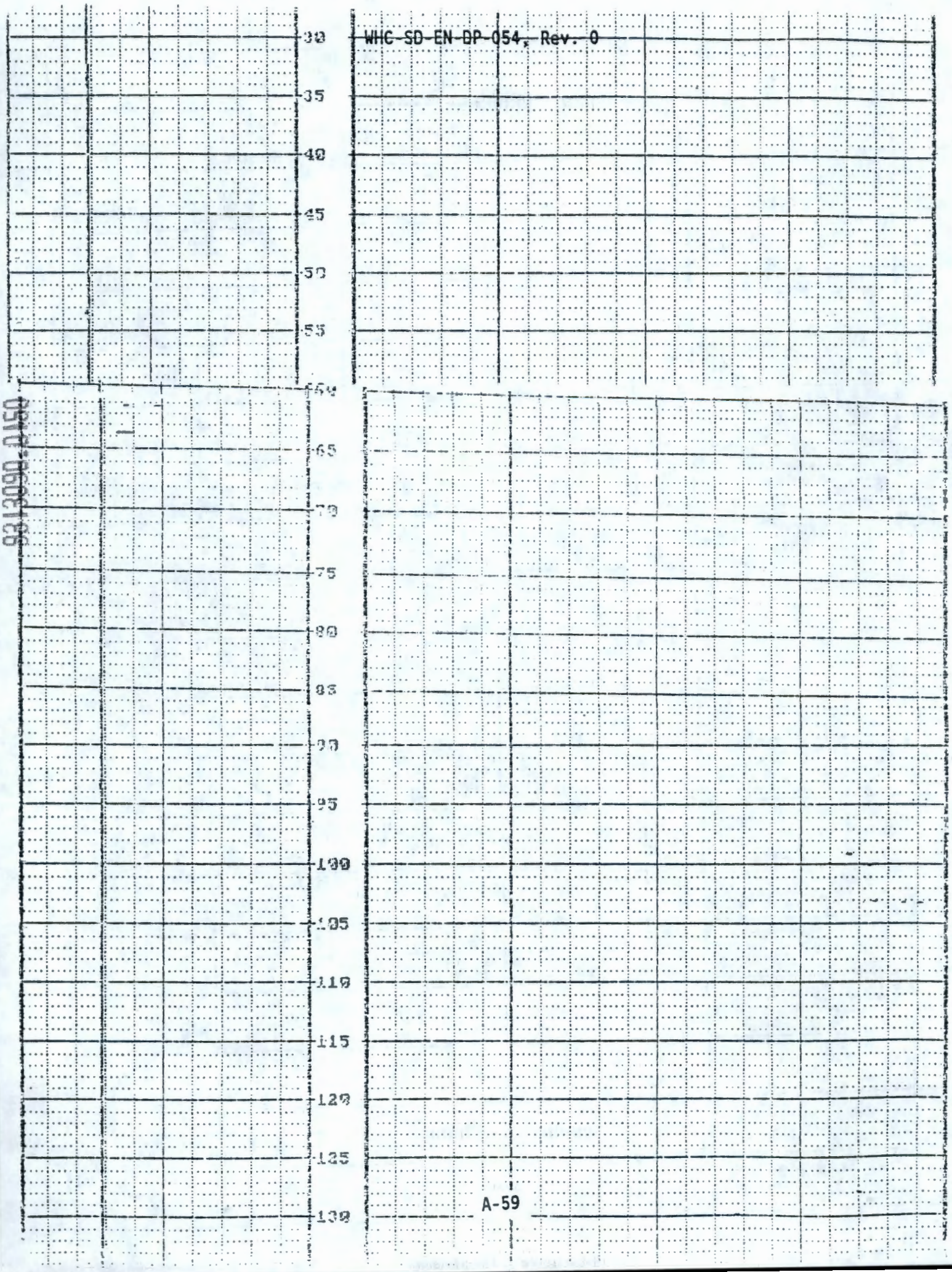
500 CHAN1 4000 1500 CHAN2 4000

9313090.0451

Magnetic 292'-1.5' 9/18/92

OUT:E:\SST\299E2548.TA1 (ON) Recs:1464 Bytes:108278 Free:20878K
1.6 1.2 2205.2 2116.0 1698.2 521.1 5000.0 4901.3 4839.724





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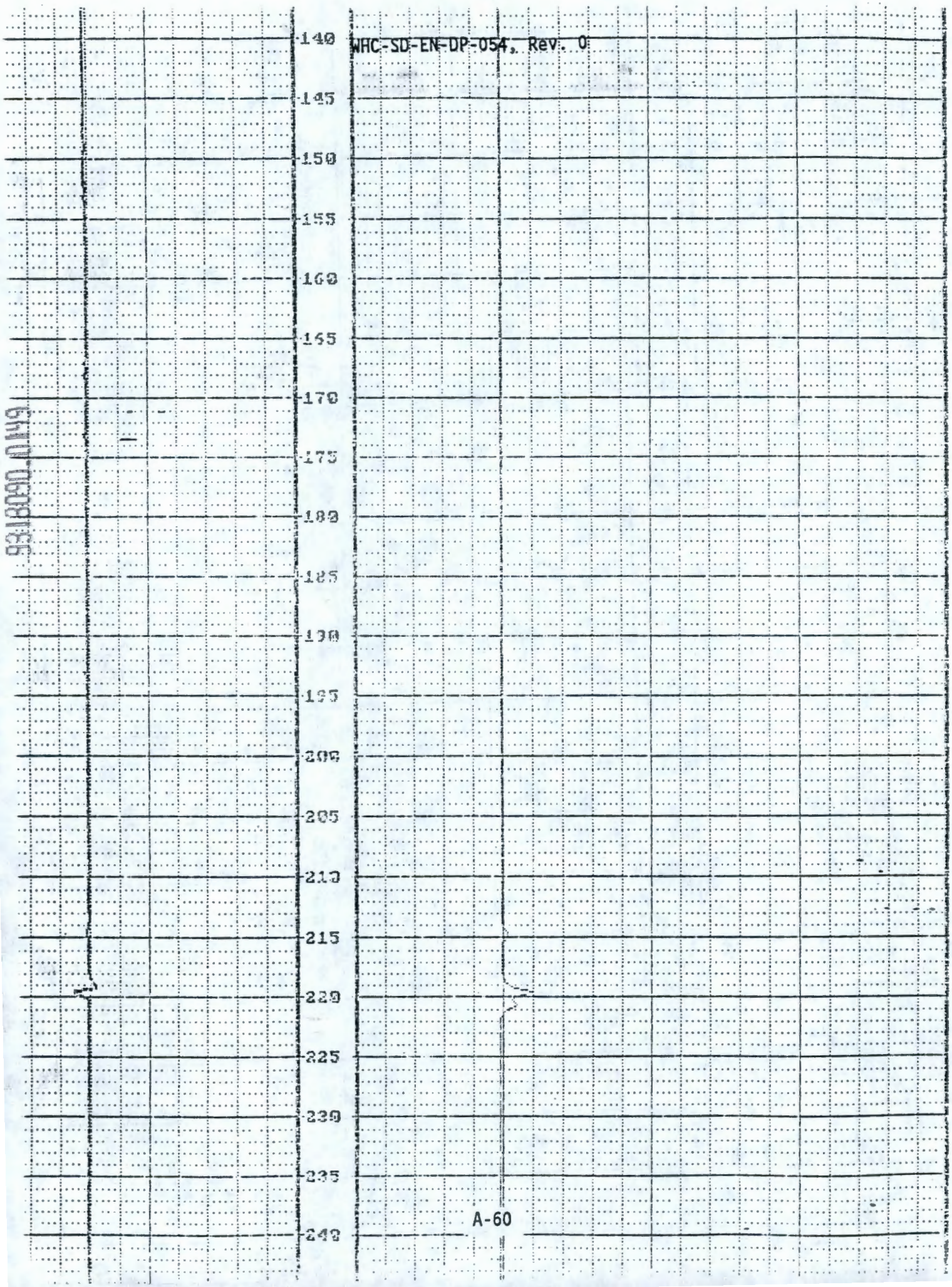

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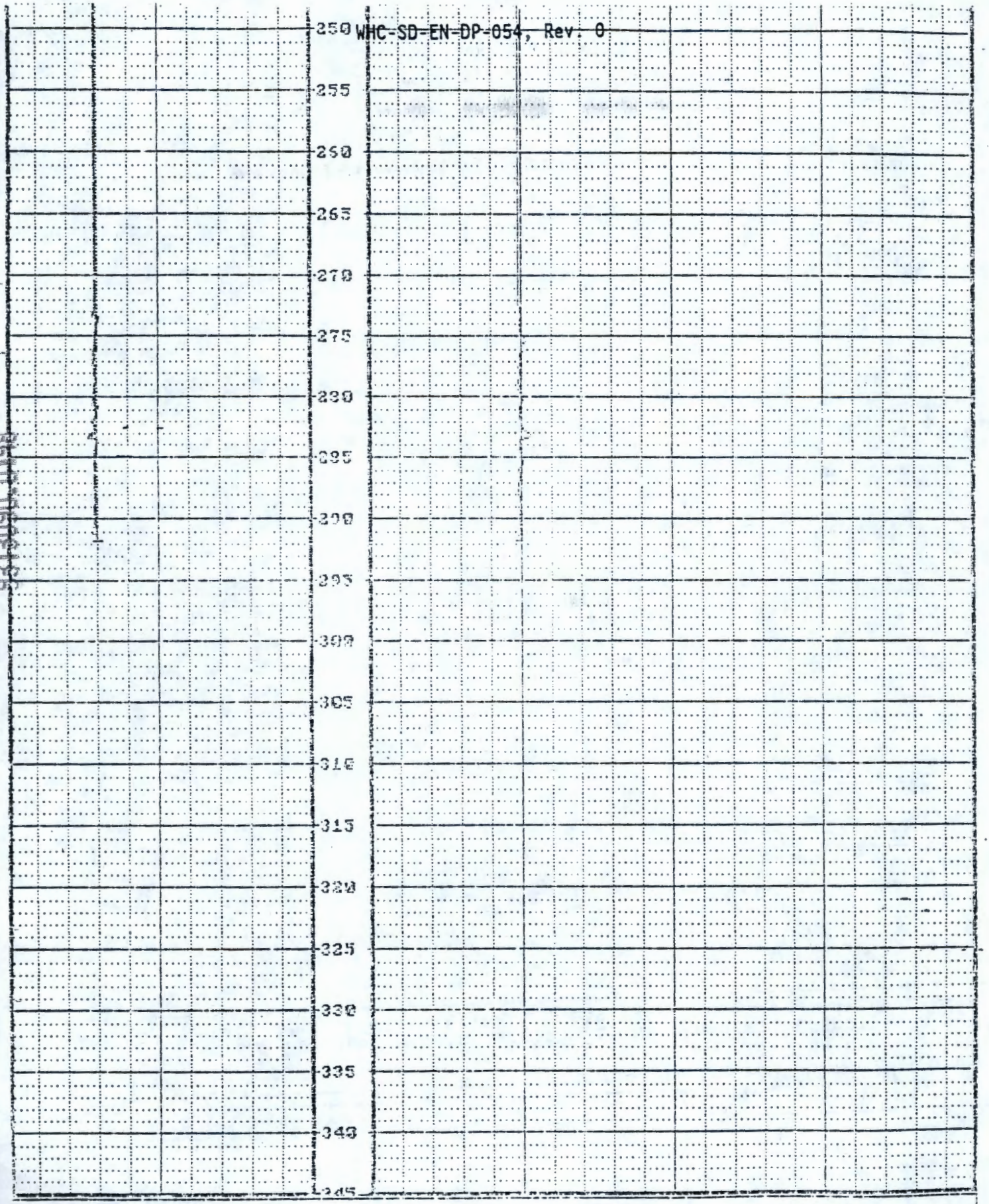
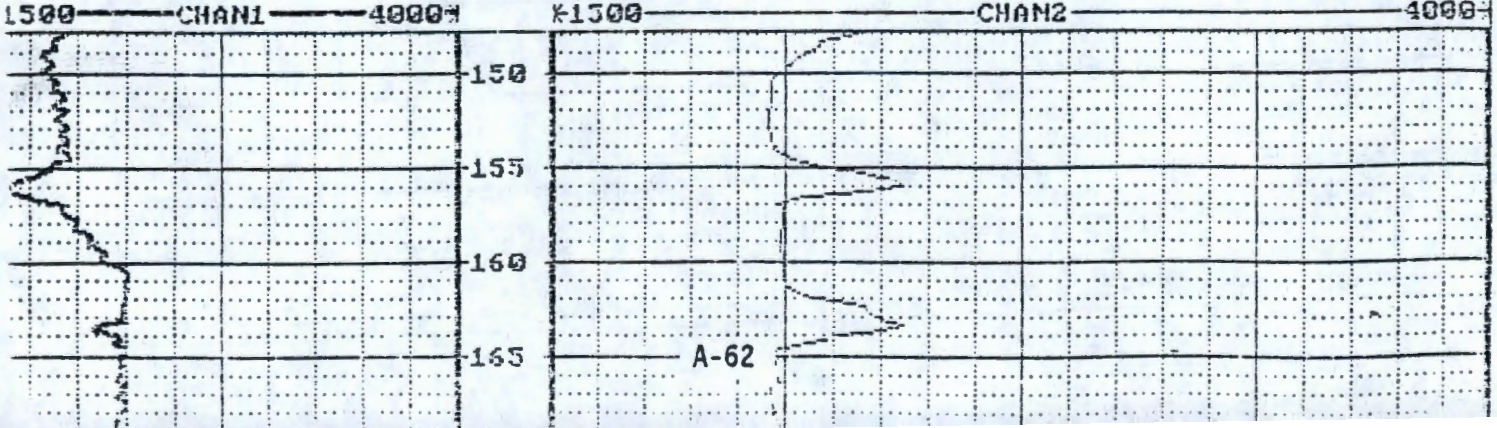


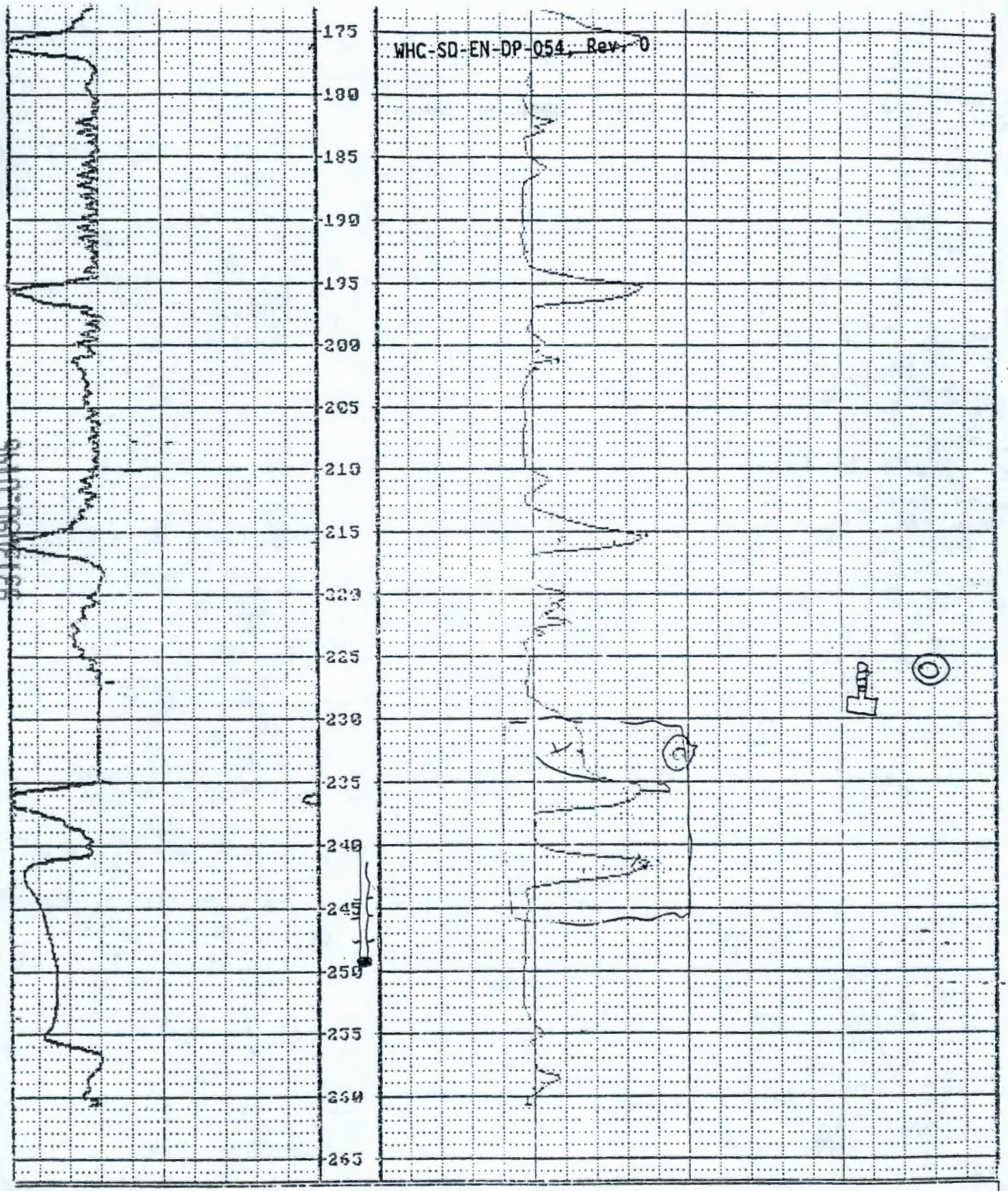
OUT:E:\SST\239E2548.T01 (ON) Recs:12 Bytes:830 Free:20904K
291.8 1.2 2232.4 2107.7 1676.4 529.1 5000.0 4872.8 4835.4

-1500 CHAN1 4000 -1500 CHAN2 4000

9313090.0147

UT:E:\299E2548.TA0 (ON) Recs:576 Bytes:42566 Free:23236K
48.0 0.6 1931.3 2308.9 1600.7 456.8 5000.0 4905.5 4783.9





OUT:E:\299E2540.TA0 (ON) Recs:12 Bytes:030 Free:23278K
260.8 0.6 2180.4 2987.3 1600.7 458.1 5000.0 4953.9 4874.9

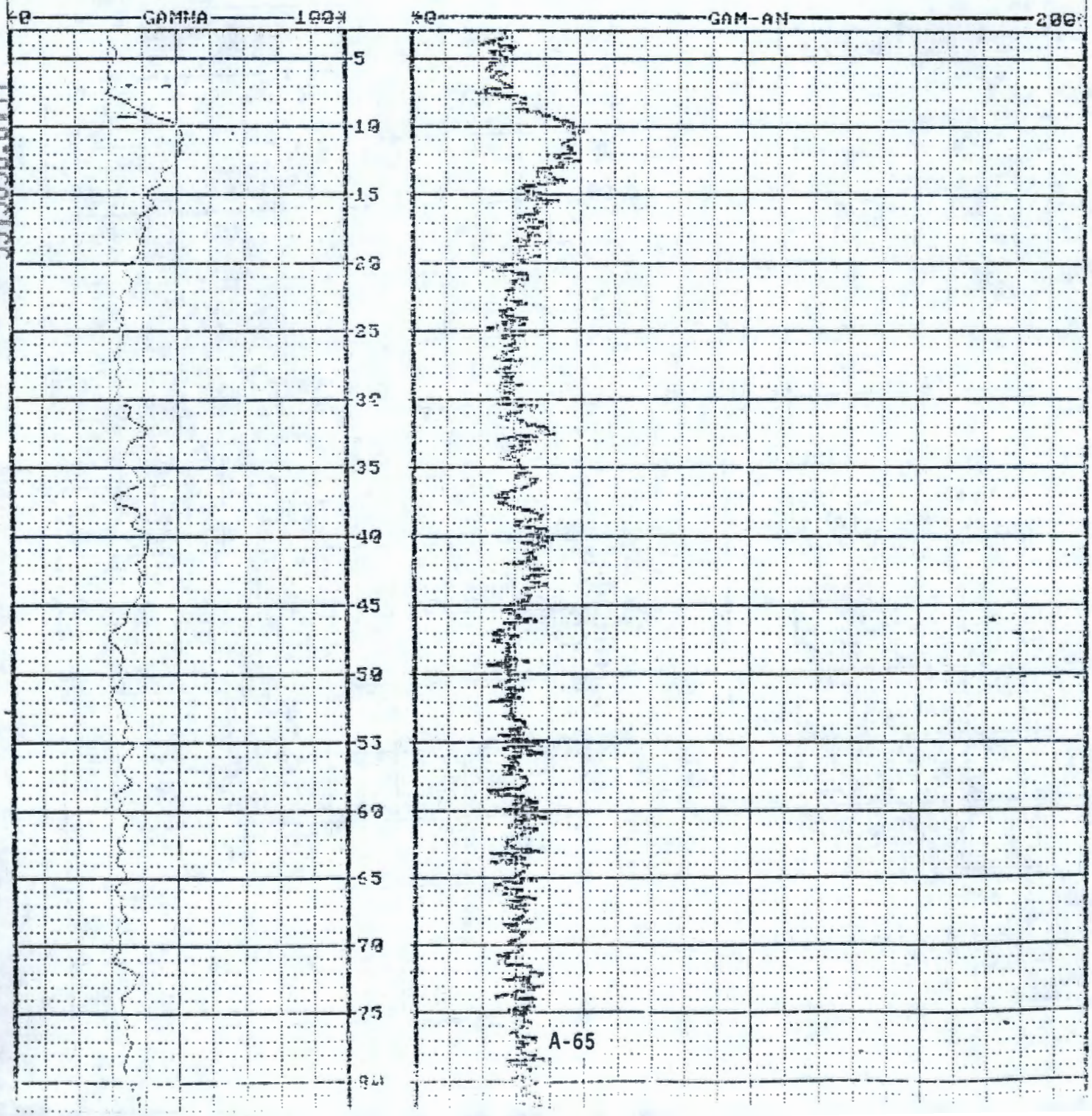
-1500 CHAN1 4000 -1500 CHAN2 4000

9313090.0145

Version 1.10
Character mode Normal 1-1 OFF

Gross Gamma 2820'-3.4' 8/19/92

OUT:E:\SST\299E2540.GA1 (OM) Recs:1406 Bytes:68062 Free:23264K
3.2 5.3 31.8 27.5 -11.0 -11.530



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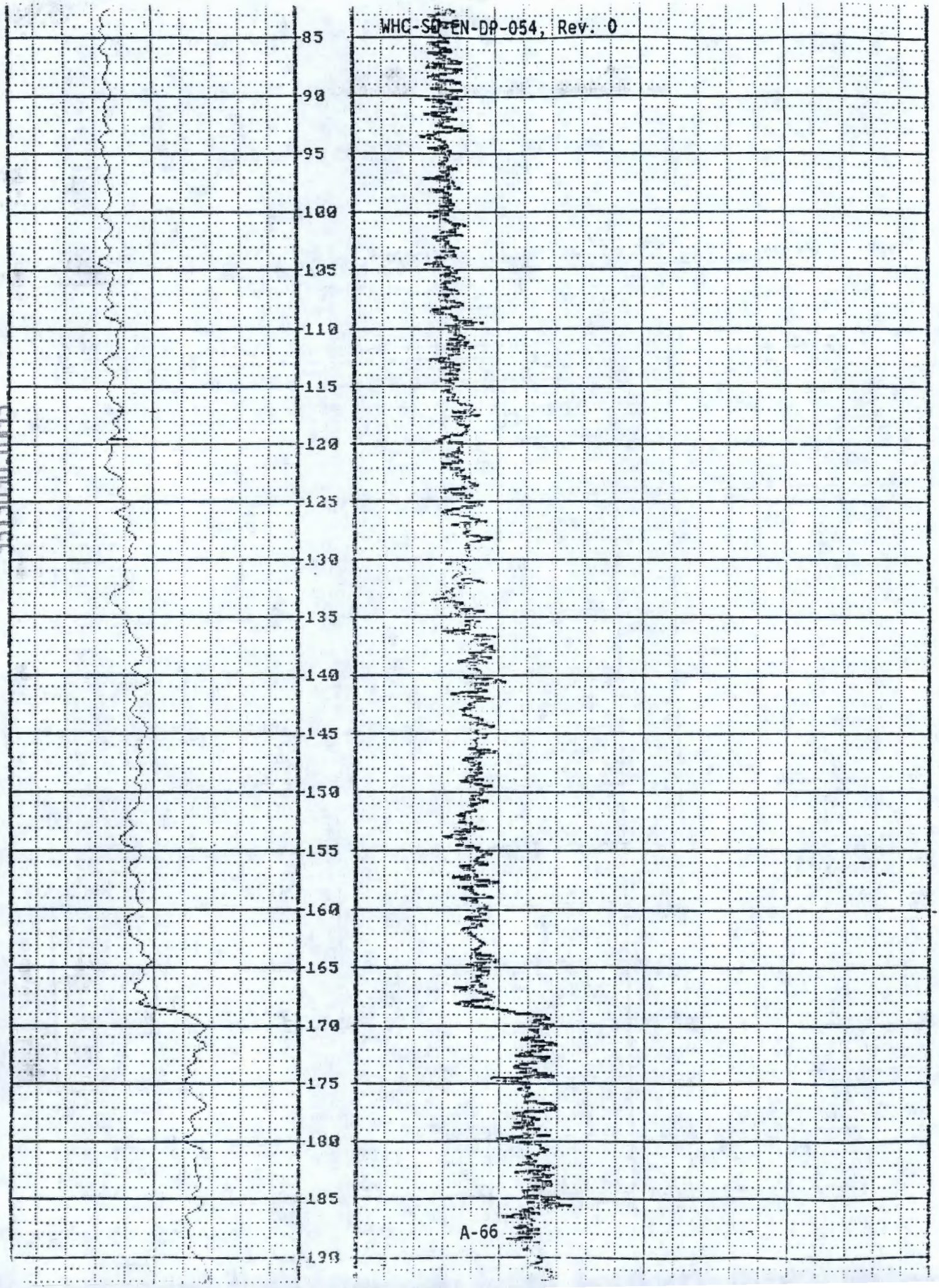

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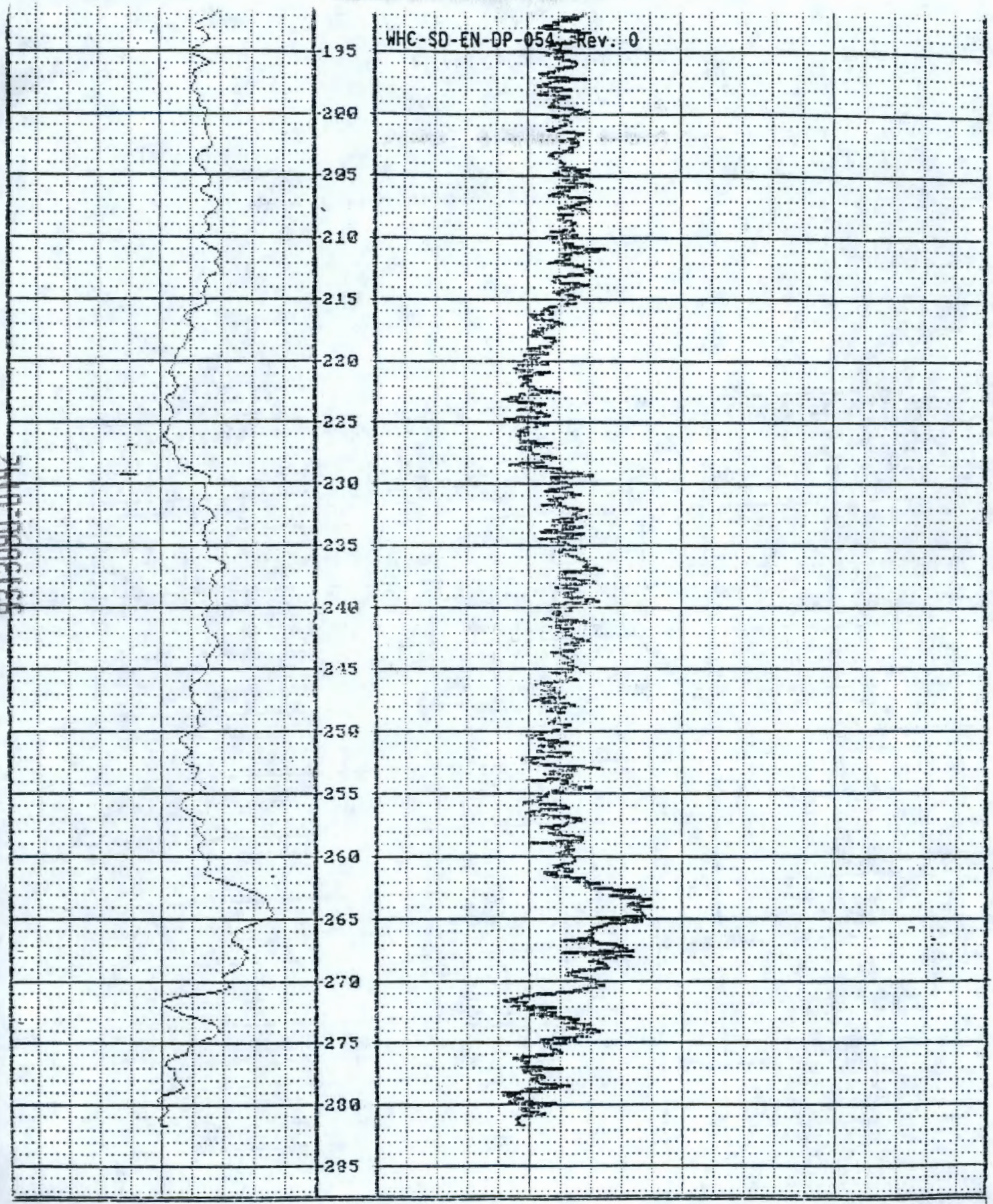
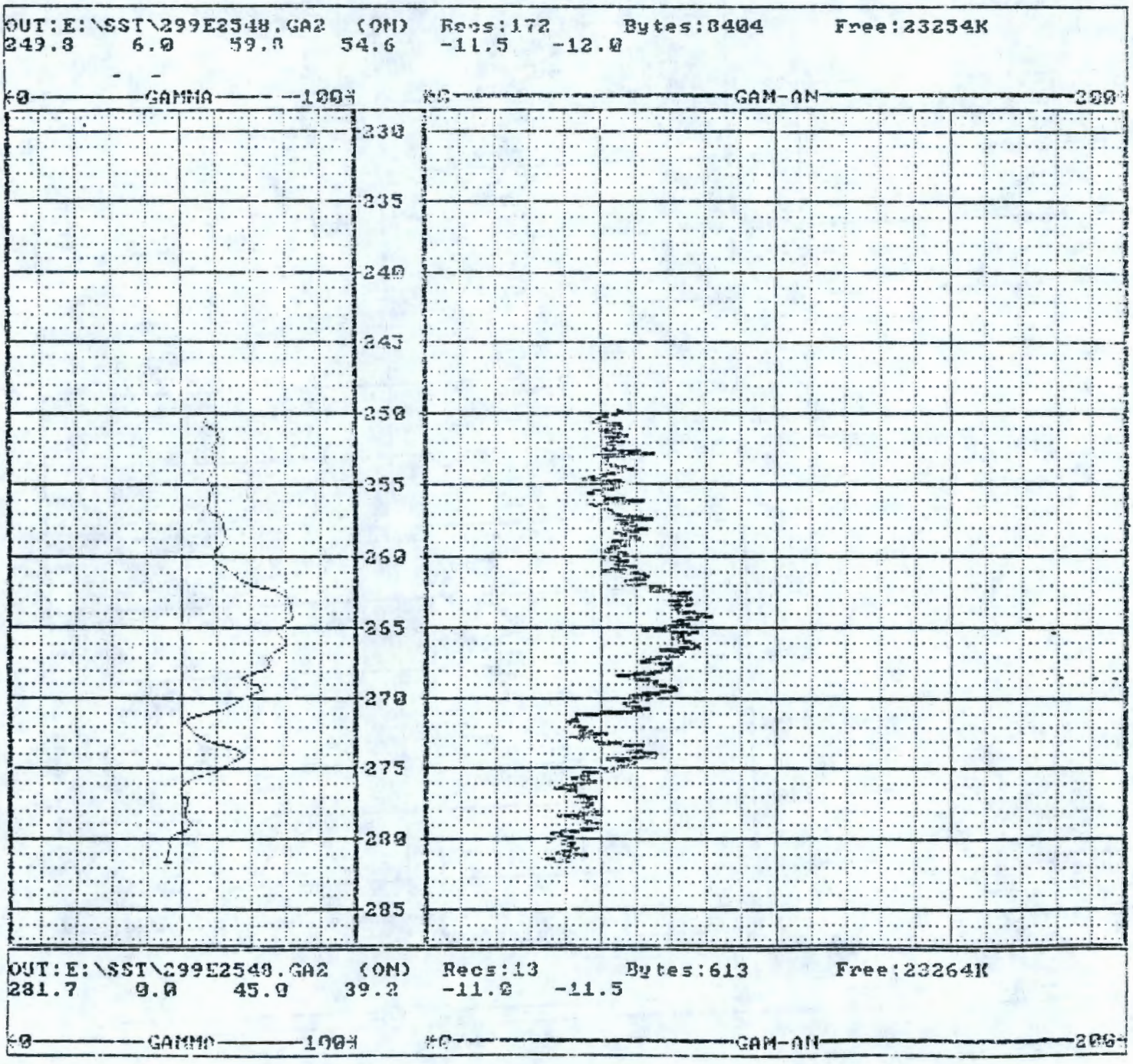


OUT:E:\SST\299E2548.GA1 (ON) Recs:13 Bytes:605 Free:23332K
281.6 6.3 49.9 46.6 -10.5 -12.0

0 GAMMA 100 | 50 GAM-AN 200

9313090.0141



APPENDIX B

SEDIMENT SAMPLE DATA

9313090.0140

CONTENTS

Well 299-E25-47 Sediment Sample Data B-1
Well 299-E25-48 Sediment Sample Data B-19

9313090.0139

Page 1 of

VALIDATED
KDR 12/17/92
SIGNATURE/DATE

J.C. McGuffey
SO-10/3-4590

9/14/92

RCRA 299-E25-47 TEST RESULTS SUMMARY

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
2-2883	299-E25-47	RCRA	5	NR	NR	NR	NR	4.36	NR	NR	2.7	na
2-2884	299-E25-47	RCRA	10	NR	NR	NR	NR	3.80	NR	NR	2.0	na
2-2885	299-E25-47	RCRA	15	NR	NR	NR	NR	4.45	NR	NR	2.3	na
2-2886	299-E25-47	RCRA	20	NR	NR	NR	NR	3.57	NR	NR	1.6	na
2-2887	299-E25-47	RCRA	25	NR	NR	NR	NR	3.20	NR	NR	1.6	na
2-2888	299-E25-47	RCRA	30	NR	NR	NR	NR	4.05	NR	NR	1.6	na
2-2889	299-E25-47	RCRA	35	NR	NR	NR	NR	4.03	NR	NR	1.1	na
2-2890	299-E25-47	RCRA	40	NR	NR	NR	NR	3.92	NR	NR	1.1	na
2-2891	299-E25-47	RCRA	45	NR	NR	NR	NR	3.84	NR	NR	1.4	na
2-2892	299-E25-47	RCRA	50	NR	NR	NR	NR	5.51	NR	NR	1.8	na
2-2893	299-E25-47	RCRA	55	NR	NR	NR	NR	7.20	NR	NR	2.3	na
2-2894	299-E25-47	RCRA	60	NR	NR	NR	NR	5.63	NR	NR	1.8	na
2-2895	299-E25-47	RCRA	65	NR	NR	NR	NR	1.58	NR	NR	1.4	na
2-2896	299-E25-47	RCRA	70	NR	NR	NR	NR	1.31	NR	NR	1.1	na
2-2897	299-E25-47	RCRA	75	NR	NR	NR	NR	1.21	NR	NR	1.1	na
2-2898	299-E25-47	RCRA	80	NR	NR	NR	NR	1.15	NR	NR	1.1	na
2-2899	299-E25-47	RCRA	85	NR	NR	NR	NR	1.54	NR	NR	1.4	na
2-2900	299-E25-47	RCRA	90	NR	NR	NR	NR	2.67	NR	NR	1.8	na
2-2901	299-E25-47	RCRA	95	NR	NR	NR	NR	1.66	NR	NR	1.4	na
2-2902	299-E25-47	RCRA	100	NR	NR	NR	NR	1.69	NR	NR	1.4	na
2-2903	299-E25-47	RCRA	105	NR	NR	NR	NR	3.59	NR	NR	1.6	na
2-2904	299-E25-47	RCRA	110	NR	NR	NR	NR	4.07	NR	NR	1.4	na
2-2905	299-E25-47	RCRA	115	NR	NR	NR	NR	1.91	NR	NR	1.6	na
2-2906	299-E25-47	RCRA	120	NR	NR	NR	NR	1.54	NR	NR	1.4	na
2-2907	299-E25-47	RCRA	125	NR	NR	NR	NR	1.05	NR	NR	1.4	na
2-2908	299-E25-47	RCRA	130	NR	NR	NR	NR	2.22	NR	NR	1.6	na
2-2909	299-E25-47	RCRA	135	NR	NR	NR	NR	2.77	NR	NR	1.6	na
2-2910	299-E25-47	RCRA	140	NR	NR	NR	NR	1.69	NR	NR	1.6	na
2-2911	299-E25-47	RCRA	145	NR	NR	NR	NR	1.18	NR	NR	1.4	na
2-2912	299-E25-47	RCRA	150	NR	NR	NR	NR	1.36	NR	NR	1.8	na

NR = Not Requested
na = not applicable

J.C. McGuffey

SO-10/3-4590

9/14/92

RCRA 299-E25-47 TEST RESULTS SUMMARY

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
2-2913	299-E25-47	RCRA	155	NR	NR	NR	NR	1.36	NR	NR	1.8	na
2-2914	299-E25-47	RCRA	160	NR	NR	NR	NR	1.48	NR	NR	1.8	na
2-2915	299-E25-47	RCRA	162	NR	NR	NR	NR	0.95	NR	NR	1.4	na
2-2916	299-E25-47	RCRA	165	NR	NR	NR	NR	0.92	NR	NR	1.4	na
2-2917	299-E25-47	RCRA	170	NR	NR	NR	NR	1.16	NR	NR	1.1	na
2-2918	299-E25-47	RCRA	175	NR	NR	NR	NR	1.13	NR	NR	1.4	na
2-2919	299-E25-47	RCRA	180	NR	NR	NR	NR	1.02	NR	NR	1.4	na
2-2920	299-E25-47	RCRA	185	NR	NR	NR	NR	1.51	NR	NR	1.4	na
2-2921	299-E25-47	RCRA	190	NR	NR	NR	NR	1.58	NR	NR	1.4	na
2-2922	299-E25-47	RCRA	195	NR	NR	NR	NR	0.96	NR	NR	1.1	na
2-2923	299-E25-47	RCRA	200	NR	NR	NR	NR	0.85	NR	NR	1.1	na
2-2924	299-E25-47	RCRA	205	NR	NR	NR	NR	0.99	NR	NR	1.1	na
2-2925	299-E25-47	RCRA	210	NR	NR	NR	NR	0.98	NR	NR	1.1	na
2-2926	299-E25-47	RCRA	215	NR	NR	NR	NR	0.85	NR	NR	0.9	na
2-2927	299-E25-47	RCRA	220	NR	NR	NR	NR	0.83	NR	NR	1.1	na
2-2928	299-E25-47	RCRA	225	NR	NR	NR	NR	0.92	NR	NR	1.1	na
2-2929	299-E25-47	RCRA	230	NR	NR	NR	NR	0.92	NR	NR	1.1	na
2-2930	299-E25-47	RCRA	235	NR	NR	NR	NR	0.90	NR	NR	1.1	na
2-2931	299-E25-47	RCRA	245	NR	NR	NR	NR	0.64	NR	NR	1.1	na
2-2932	299-E25-47	RCRA	250	NR	NR	NR	NR	0.77	NR	NR	1.4	na
2-2933	299-E25-47	RCRA	255	NR	NR	NR	NR	1.03	NR	NR	1.1	na
2-2934	299-E25-47	RCRA	260	NR	NR	NR	NR	1.08	NR	NR	1.4	na
2-2935	299-E25-47	RCRA	265	NR	NR	NR	NR	14.35	NR	NR	2.0	na
2-2936	299-E25-47	RCRA	270	NR	NR	NR	NR	3.56	NR	NR	1.4	na
2-2937	299-E25-47	RCRA	275	NR	NR	NR	NR	3.08	NR	NR	1.4	na
2-2938	299-E25-47	RCRA	280	NR	NR	NR	NR	2.26	NR	NR	1.4	na
2-2939	299-E25-47	RCRA	285	NR	NR	NR	NR	3.99	NR	NR	1.1	na
2-2940	299-E25-47	RCRA	290	NR	NR	NR	NR	4.28	NR	NR	1.1	na
2-2941	299-E25-47	RCRA	295	NR	NR	NR	NR	2.93	NR	NR	1.1	na
2-2942	299-E25-47	RCRA	300	NR	NR	NR	NR	1.97	NR	NR	1.1	na

NR = Not Requested
na = not applicable

P.3 of 15

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-E25-47	DEPTH	5-300
SAMPLE/SPECIMEN NO	2-2883 - ~~2-2941~~ 2-2942	COST CODE/WORK ORDER NUMBER			R3314
REQUESTED BY: ORG	81421	PERSON	B. WILLIAMS	PHONE	6-3416
********HEIS********	NA	MSIN	H4-56	DATE	9/2/92

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Moisture Content	~~58~~ 60	GEL-14 / Rev. 0 / 3-13-92
Calcium Carbonate	~~58~~ 60	GEL-19 / Rev. 0 / 9-7-90

REMARKS:

ARCHIVE YES ☐ NO ■

TAPE RELEASE STICKER HERE

RECEIVED BY JC McGuffey

DATE 9/2/92

9313090.0136

GEL 07 ☑ GEL 16 ☐
GEL 09 ☐ GEL 17 ☐
GEL 10 ☐ GEL 19 ☑
GEL 14 ☑ GEL ☐

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 2-2883 - 2-2911

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GEL-14 SOIL MOISTURE

Tested By LDB/JCM Balance: 3304 Calibration Due Date 10-25-92

Date 9/10/92 Thermometer: 0014 Calibration Due Date 9-16-92

GEL-19 CALCIUM CARBONATE

Vessel No. 5650

Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
2 2883	301.29	291.34	63.08	9.95	228.26	4.36	1.2	2.7	computer/JCM
2 2884	378.48	366.91	62.76	11.57	304.15	3.80	0.9	2.0	
2 2885	309.76	299.27	63.77	10.49	235.50	4.45	1.0	2.3	
2 2886	401.97	390.26	61.90	11.71	328.36	3.57	0.7	1.6	
2 2887	411.01	400.20	61.90	10.81	338.30	3.20	0.7	1.6	
2 2888	349.77	338.53	61.22	11.24	277.31	4.05	0.7	1.6	
2 2889	391.35	378.67	64.07	12.68	314.60	4.03	0.5	1.1	
2 2890	402.96	390.14	63.19	12.82	326.95	3.92	0.5	1.1	
2 2891	411.25	398.36	62.71	12.89	335.65	3.84	0.6	1.4	
2 2892	328.41	314.44	60.83	13.97	253.61	5.51	0.8	1.8	
2 2893	323.63	306.13	62.94	17.50	243.19	7.20	1.0	2.3	
2 2894	312.81	299.45	62.31	13.36	237.14	5.63	0.8	1.8	
2 2895	293.26	289.69	63.60	3.57	226.09	1.58	0.6	1.4	
2 2896	356.25	352.47	63.88	3.78	288.59	1.31	0.5	1.1	
2 2897	408.39	404.26	62.98	4.13	341.28	1.21	0.5	1.1	
2 2898	398.45	394.64	62.40	3.81	332.24	1.15	0.5	1.1	
2 2899	288.31	284.89	62.36	3.42	222.53	1.54	0.6	1.4	
2 2900	168.88	166.14	63.37	2.74	102.77	2.67	0.8	1.8	
2 2901	349.93	345.22	62.23	4.71	282.99	1.66	0.6	1.4	
2 2902	417.09	411.17	61.86	5.92	349.31	1.69	0.6	1.4	
2 2903	409.33	397.31	62.71	12.02	334.60	3.59	0.7	1.6	
2 2904	262.99	255.09	60.98	7.90	194.11	4.07	0.6	1.4	
2 2905	289.00	284.76	62.19	4.24	222.57	1.91	0.7	1.6	
2 2906	314.52	310.69	62.36	3.83	248.33	1.54	0.6	1.4	
2 2907	366.41	363.28	63.78	3.13	299.50	1.05	0.6	1.4	
2 2908	267.15	262.70	62.28	4.45	200.42	2.22	0.7	1.6	
2 2909	250.38	245.33	63.09	5.05	182.24	2.77	0.7	1.6	
2 2910	299.90	295.94	61.85	3.96	234.09	1.69	0.7	1.6	
2 2911	230.52	228.59	64.42	1.93	164.17	1.18	0.6	1.4	↓

Remarks:

Tests Checked By: L N Bruggeman / computer Date 9-14-92

BD-6000-806 (04/92)

GEL 07 ☑ GEL 16 ☐
GEL 09 ☐ GEL 17 ☐
GEL 10 ☐ GEL 19 ☑
GEL 14 ☑ GEL ☐

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 2-2912 - 2-2940

Page 2 of 3

GEL-14 SOIL MOISTURE

Tested By JCM/LDB Balance: 3304 Calibration Due Date 10-25-92

Date 9/10/92 Thermometer: 0014 Calibration Due Date 9-16-92

GEL-19 CALCIUM CARBONATE

Vessel No. 5650

Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
2 2912	210.10	208.12	62.28	1.98	145.84	1.36	0.8	1.8	computer/JCM
2 2913	304.17	300.92	62.12	3.25	238.80	1.36	0.8	1.8	
2 2914	287.40	284.12	61.88	3.28	222.24	1.48	0.8	1.8	
2 2915	259.85	257.99	61.52	1.86	196.47	0.95	0.6	1.4	
2 2916	379.61	376.72	62.30	2.89	314.42	0.92	0.6	1.4	
2 2917	300.55	297.81	61.83	2.74	235.98	1.16	0.5	1.1	
2 2918	336.48	333.44	63.57	3.04	269.87	1.13	0.6	1.4	
2 2919	380.48	377.27	62.93	3.21	314.34	1.02	0.6	1.4	
2 2920	341.42	337.23	60.00	4.19	277.23	1.51	0.6	1.4	
2 2921	348.85	344.41	62.89	4.44	281.52	1.58	0.6	1.4	
2 2922	289.89	287.72	62.47	2.17	225.25	0.96	0.5	1.1	
2 2923	293.77	291.82	63.43	1.95	228.39	0.85	0.5	1.1	
2 2924	369.17	366.15	62.12	3.02	304.03	0.99	0.5	1.1	
2 2925	359.19	356.29	61.83	2.90	294.46	0.98	0.5	1.1	
2 2926	426.37	423.30	63.09	3.07	360.21	0.85	0.4	0.9	
2 2927	378.15	375.54	61.40	2.61	314.14	0.83	0.5	1.1	
2 2928	205.66	204.36	63.72	1.30	140.64	0.92	0.5	1.1	
2 2929	270.15	268.26	62.83	1.89	205.43	0.92	0.5	1.1	
2 2930	243.18	240.57	62.13	1.61	178.44	0.90	0.5	1.1	
2 2931	305.44	303.91	63.51	1.53	240.40	0.64	0.5	1.1	
2 2932	351.70	349.49	62.29	2.21	287.20	0.77	0.6	1.4	
2 2933	355.35	352.37	63.30	2.98	289.07	1.03	0.5	1.1	
2 2934	368.47	365.22	63.04	3.25	302.18	1.08	0.6	1.4	
2 2935	276.17	249.32	62.25	26.85	187.07	14.35	0.9	2.0	
2 2936	396.48	385.03	63.07	11.45	321.96	3.56	0.6	1.4	
2 2937	400.14	390.07	62.88	10.07	327.19	3.08	0.6	1.4	
2 2938	360.69	354.10	62.59	6.59	291.51	2.26	0.6	1.4	
2 2939	265.55	257.78	62.90	7.77	194.88	3.99	0.5	1.1	
2 2940	380.82	367.77	62.70	13.05	305.07	4.28	0.5	1.1	

Remarks:

Tests Checked By: L U Ruggeman / computer Date 9-14-92

BD-6000-806 (04/92)

P.6 of 15

GEL 07 ☐ GEL 09 ☐ GEL 10 ☐ GEL 14 ☑	GEL 16 ☐ GEL 17 ☐ GEL 19 ☑ GEL ☐	**GEOTECHNICAL ENGINEERING LABORATORY** **GEL-14, GEL-19**

Sample No(s). 2-2941

Page 3 of 3

GEL-14 SOIL MOISTURE

Tested By LDB/JCM Balance: 3304 Calibration Due Date 10-25-92

Date 9/11/92 Thermometer: 0014 Calibration Due Date 9-16-92

GEL-19 CALCIUM CARBONATE

Vessel No. 5650

Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
2 2941	380.31	371.28	62.57	9.03	308.71	2.93	0.5	1.1	computer/JCM
2 2942	408.49	401.81	63.25	6.68	338.56	1.97	0.5	1.1	↓

Remarks:

Tests Checked By: L.D. Bruggeman / Computer Date 9-18-92

BD-6000-806 (04/92)

9313090.0133

P7 of 15

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: MARK D SWEENEY

Company Contact: ED RAGUSE

Telephone: MOBILE: 948-6669 OFFICE: 376-0542

Project Designation/Sampling Locations: LW17/A29 DITCH 299-E25-47

Collection Date:

Ice Chest No.: N/A

Field Logbook No.: N/A

Bill of Lading/Airbill No.: N/A

Offsite Property No.: N/A

Method of Shipment: GOVT VEHICLE

Shipped to: 2701 M

Possible Sample Hazards/Remarks: NO RAD/NO CHEM.

93130000182

Sample Identification

299-E25-47	5	CaCO3/HNO3	299-E25-47	60 mm	CaCO3/HNO3
	10			65	
	15			70	
	20			75	
	25			80	
	30			85	
	35			90	
	40			95	
	45			100	
	50			105	
	55			110	

7-19-92	1450	7-21-92 1520
7-19-92	1500	7-21-92 1621
7-21-92	1111	7-21-92 1632
7-21-92	1255	7-21-92 1659
7-21-92	1405	7-21-92 1712
7-21-92	1408	7-22-92 835
7-21-92	1412	7-22-92 852
7-21-92	1418	7-22-92 900
7-21-92	1506	7-22-92 926
7-21-92	1512	7-22-92 1015
7-21-92	1515	7-22-92 1026

] Field Transfer of Custody — CHAIN OF POSSESSION — (Sign and Print Names)

elinquished by: E.C. Raguse	Received by: J C McGuffey	Date/Time: 09/01/92 12:40
elinquished by:	Received by:	Date/Time:
elinquished by:	Received by:	Date/Time:
elinquished by:	Received by:	Date/Time:

Final Sample Disposition

sposal Method:	Disposed by:	Date/Time:

omments:

A-6000-407 (12/90)

P.8 of 15

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: MARK D. SWEENEY

Company Contact: E.C. RAFFE

Telephone: MOBILE: 946-0661 OFFICE: 376-0542

Project Designation/Sampling Locations: WOW/A24 DITCH 299-E25-47

Collection Date: N/A

Ice Chest No.: N/A

Field Logbook No.: N/A

Bill of Lading/Airbill No.: N/A

Offsite Property No.: N/A

Method of Shipment: GOVT VEHICLE

Shipped to: 2701

Possible Sample Hazards/Remarks: NO RAD / NO CHEM.

Sample Identification

299-E25-47	115 CaCO3/H2O	7-22-92 1034	299-E25-47	165 CaCO3 H2O	7-22-92 1258
			299-E25-47	170	7-22-92 1259
	120	7-22-92 1046		175	7-22-92 1307
	125	7-22-92 1130		180	1315
	130	7-22-92 1142		185	1556
	135	7-22-92 1157		190	1604
	140	7-22-92 1209		195	1621
	145	7-22-92 1355		200	1634
	150	7-22-92 1413		205	7/28/92 905
	155	7-22-92 1434		210	926
	160	7-22-92 1448		215	941
	162	7-22-92 1256		220	952

Field Transfer of Custody	CHAIN OF POSSESSION	(Sign and Print Names)
Relinquished by: E.C. Raffe	Received by: JC McGuffey	Date/Time: 09/01/92 12:40
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90)

9013090.0131

Westinghouse Hanford Company	CHAIN OF CUSTODY

Company Contact EDRAGUNE Telephone MOBILE 948-0869 OFFICE: 376-0542

Sample Collected by MDSWEENEY Date ON GOING Time ON GOING

Sample Locations 299-E25-47 - W017/A29 DITCH

Ice Chest No. N/A Field Logbook and Page No. N/A

Remarks NO RAD / NO CHEM

Bill of Lading No. N/A Offsite Property No. N/A

Method of Shipment GVT VEHICLE

Shipped to 2701

Sample Identification				
299-E25-47	225	$CaCO_3 \cdot H_2O$	9/2/92	
	230	$CaCO_3 \cdot H_2O$	7-28-92	1044
	235			1059
	~~240~~			~~1083~~
	245			1303
	250			1321
	255			1336
	260			1354
	265			1513
	270			1526
	275			1538
	280			1546
	285			1642
	290			1649
	295			1707
	300			1718

E.C.L 09/01/92

93180080.0100

Chain of Possession

Relinquished by:	Received by:	Date/Time:
E.C. Lykes E.C. Lykes	J. McGuffey	09/01/92 12:40
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

A-6000-407 (07/89)

P. 10 of 15

RADIATION RELEASE

Bldg. 299-E25-47 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2883 5
54-3000-022 (01/89)

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Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2888 30
54-3000-022 (01/89)

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Released By LRD Health Physics
Remarks 2 2884 10
54-3000-022 (01/89)

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Remarks 2 2889 35
54-3000-022 (01/89)

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Released By LRD Health Physics
Remarks 2 2885 45
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2890 40
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2886 20
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2891 45
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2887 25
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2892 50
54-3000-022 (01/89)

9313090.0129

P.11 of 15

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 2 2893 55

54-3000-022 (01/89)

ADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 80
2 2898

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 2 2894 60

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 2 2899 85

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 2 2895 65

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks ~~2 2896~~ 90
2-2900

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 70
2 2896

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 95
2 2901

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 75
2 2897

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRW
Health Physics
Remarks 100
2 2902

54-3000-022 (01/89)

9313090.0128

P.12 of 15

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD
Health Physics
Remarks 2 2903 105
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRD
Health Physics
Remarks 2 2904 10
54-3000-022 (01/89)

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Health Physics
Remarks 2 2905 115
54-3000-022 (01/89)

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Health Physics
Remarks 2 2906 120
54-3000-022 (01/89)

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Released By LRD
Health Physics
Remarks 2 2907 125
54-3000-022 (01/89)

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Health Physics
Remarks 2 2908 130
54-3000-022 (01/89)

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Health Physics
Remarks 2 2909 135
54-3000-022 (01/89)

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Health Physics
Remarks 2 2910 140
54-3000-022 (01/89)

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Health Physics
Remarks 2 2911 145
54-3000-022 (01/89)

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Health Physics
Remarks 2 2912 150
54-3000-022 (01/89)

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Health Physics
Remarks 2 2913 155
54-3000-022 (01/89)

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Health Physics
Remarks 2 2913 175
54-3000-022 (01/89)

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Health Physics
Remarks 2 2914 160
54-3000-022 (01/89)

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Health Physics
Remarks 2 2918 180
54-3000-022 (01/89)

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Health Physics
Remarks 2 2915 [illegible]
54-3000-022 (01/89)

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Health Physics
Remarks 2 2920 185
54-3000-022 (01/89)

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Health Physics
Remarks 2 2916 165
54-3000-022 (01/89)

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Health Physics
Remarks 2 2921 190
54-3000-022 (01/89)

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Health Physics
Remarks 2 2917 170
54-3000-022 (01/89)

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Health Physics
Remarks 2 2922 195
54-3000-022 (01/89)

9313090.0126

P.14+15

RADIATION RELEASE

Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 200
2 2923
54-3000-022 (01/89)

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Remarks 225
2 2928
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Remarks 2 2924 205
54-3000-022 (01/89)

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Remarks 2 2929 230
54-3000-022 (01/89)

9313090.0125

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Released By LRP Health Physics
Remarks 2 2925 210
54-3000-022 (01/89)

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Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 235
2 2930
54-3000-022 (01/89)

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Bldg. 299 E25-47 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 215
2 2926
54-3000-022 (01/89)

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Bldg. 299-E25-47 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 245
2 2931
54-3000-022 (01/89)

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Released By LRP Health Physics
Remarks 2 2927 220
54-3000-022 (01/89)

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Released By LRP Health Physics
Remarks 250
2 2932
54-3000-022 (01/89)

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Released By LRV Health Physics
Remarks 255
2-2933
54-3000-022 (01/89)

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Bldg. 299 E25-47 Expiration Date 09/04/92
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Remarks 280
2 2938
54-3000-022 (01/89)

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Released By LRV Health Physics
Remarks 260
2 2934
54-3000-022 (01/89)

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Remarks 285
2 2939
54-3000-022 (01/89)

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Remarks 265
2 2935
54-3000-022 (01/89)

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Remarks 290
2 2940
54-3000-022 (01/89)

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Remarks 270
2 2936
54-3000-022 (01/89)

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Released By LRV Health Physics
Remarks 295
2 2941
54-3000-022 (01/89)

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Remarks 275
2 2937
54-3000-022 (01/89)

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Released By LRV Health Physics
Remarks 300
2 2942
54-3000-022 (01/89)

9313090.0124

VALIDATED KDR 12/17/92 SIGNATURE/DATE

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-E25-47		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
5'	7-16-92	SOIL	7-16-92	1618-92-40	19	1
10'	7-16-92		7-16-92	1619-92-41	20	<D
15'	7-21-92		7-22-92	1665-92-40	17	<D
20'	7-21-92		7-22-92	1666-92-41	11	<D
25'	7-23-92		7-23-92	1682-92-10	10	<D
30'	7-23-92		7-23-92	1683-92-11	8	<D
35'	7-23-92		7-23-92	1684-92-12	11	<D
40'	7-23-92		7-23-92	1685-92-13	9	<D
45'	7-23-92		7-23-92	1686-92-14	10	<D
50'	7-23-92		7-23-92	1687-92-15	15	<D
55'	7-23-92		7-23-92	1688-92-16	10	1
60'	7-23-92		7-23-92	1689-92-17	15	1
65'	7-23-92		7-23-92	1690-92-18	12	<D
70'	7-23-92		7-23-92	1691-92-19	11	<D
75'	7-23-92		7-23-92	1692-92-20	11	<D
80'	7-23-92		7-23-92	1693-92-21	10	1
85'	7-23-92		7-23-92	1694-92-22	11	<D
90'	7-23-92		7-23-92	1695-92-23	10	1
95'	7-23-92		7-23-92	1696-92-24	12	1
100'	7-23-92		7-23-92	1697-92-25	12	<D
105'	7-23-92		7-23-92	1698-92-26	11	1
110'	7-23-92		7-23-92	1699-92-27	15	<D
115'	7-23-92		7-23-92	1700-92-28	17	<D

Performed By: C. Allessio Date: 7-23-92

Supervisor Review: [illegible] Date: 8/24/92

Page: 1 of 3

A-6000-829 (10/91)

9313090.0123

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-E25-47		Date: —
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
120'	7-23-92	SOIL	7-23-92	1701-92-29	14	1
125'	7-23-92		7-24-92	1705-92-33	15	<D
130'	7-23-92		7-24-92	1706-92-34	24	1
135'	7-23-92		7-24-92	1707-92-35	17	1
140'	7-23-92		7-24-92	1708-92-36	14	<D
145'	7-28-92		7-28-92	1733-92-14	21	1
150'	7-28-92		7-28-92	1734-92-15	19	<D
155'	7-28-92		7-28-92	1735-92-16	15	<D
160'	7-28-92		7-28-92	1736-92-17	11	<D
162'	7-29-92		7-29-92	1752-92-33	15	<D
165'	7-29-92		7-29-92	1753-92-34	13	<D
170'	7-29-92		7-29-92	1754-92-35	12	<D
175'	7-29-92		7-29-92	1755-92-36	11	<D
180'	7-29-92		7-29-92	1756-92-37	12	<D
185'	7-29-92		7-29-92	1757-92-38	11	<D
190'	7-29-92		7-29-92	1758-92-39	13	1
195'	7-29-92		7-29-92	1759-92-40	13	1
200'	7-29-92		7-29-92	1760-92-41	14	<D
205'	7-29-92		7-29-92	1761-92-42	11	<D
210'	7-29-92		7-29-92	1762-92-43	9	<D
215'	7-29-92		7-29-92	1766-92-47	9	<D
220'	7-29-92		7-29-92	1767-92-48	14	<D
225'	7-29-92		7-29-92	1768-92-49	16	1

Performed By: C. Allessio Date: 7-29-92

Supervisor Review: [illegible] Date: 8/24/92

Page 2 of 3

A 6000-829 (10/91)

9313090.0122

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-E25-47		Date: –
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
230'	7-29-92	SOIL	7-29-92	1769-92-50	14	1
235'	7-29-92		7-29-92	1770-92-4	14	1
240'	7-29-92		7-29-92	1771-92-5	12	<D
245'	7-29-92		7-29-92	1772-92-6	15	<D
250	7-29-92		7-29-92	1773-92-7	16	<D
255'	7-29-92		7-29-92	1774-92-8	15	1
260'	7-29-92		7-29-92	1775-92-9	11	<D
265'	7-30-92		7-30-92	1776-92-10	16	<D
270'	7-30-92		7-30-92	1777-92-11	16	<D
275'	7-30-92		~~9-12~~ 7-30-92	1778-92-12	17	1
280'	7-30-92		7-30-92	1779-92-13	13	1
285'	7-30-92		7-30-92	1780-92-14	12	<D
290'	7-30-92		7-30-92	1781-92-15	9	<D
295'	7-30-92		7-30-92	1782-92-16	12	1
300'	7-30-92	TD	7-30-92	1783-92-17	13	<D

Performed By: CL Allessio Date: 7-30-92

Supervisor Review: [illegible] Date: [illegible]

Page: 3 of 3

A 6000 829 (10/91)

9313090.0121

VALIDATED
KDR 12/15/92
SIGNATURE/DATE
FOR INFORMATION ONLY

P16-15

COPY

J.C. McGuffey
SO-10/3-4590

9/15/92

RCRA 299-E25-48 TEST RESULTS SUMMARY

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
2-2943	299-E25-48	RCRA	5	NR	NR	NR	NR	7.06	NR	NR	1.1	na
2-2944	299-E25-48	RCRA	10	NR	NR	NR	NR	8.19	NR	NR	1.8	na
2-2945	299-E25-48	RCRA	15	NR	NR	NR	NR	3.73	NR	NR	1.6	na
2-2946	299-E25-48	RCRA	20	NR	NR	NR	NR	6.05	NR	NR	2.3	na
2-2947	299-E25-48	RCRA	25	NR	NR	NR	NR	3.40	NR	NR	1.1	na
2-2948	299-E25-48	RCRA	30	NR	NR	NR	NR	1.94	NR	NR	0.7	na
2-2949	299-E25-48	RCRA	35	NR	NR	NR	NR	3.01	NR	NR	1.1	na
2-2950	299-E25-48	RCRA	40	NR	NR	NR	NR	7.22	NR	NR	1.6	na
2-2951	299-E25-48	RCRA	45	NR	NR	NR	NR	4.47	NR	NR	1.1	na
2-2952	299-E25-48	RCRA	50	NR	NR	NR	NR	1.74	NR	NR	0.7	na
2-2953	299-E25-48	RCRA	55	NR	NR	NR	NR	1.65	NR	NR	0.9	na
2-2954	299-E25-48	RCRA	60	NR	NR	NR	NR	1.19	NR	NR	0.9	na
2-2955	299-E25-48	RCRA	65	NR	NR	NR	NR	1.36	NR	NR	0.9	na
2-2956	299-E25-48	RCRA	70	NR	NR	NR	NR	1.52	NR	NR	1.1	na
2-2957	299-E25-48	RCRA	75	NR	NR	NR	NR	1.45	NR	NR	0.9	na
2-2958	299-E25-48	RCRA	80	NR	NR	NR	NR	1.57	NR	NR	1.1	na
2-2959	299-E25-48	RCRA	85	NR	NR	NR	NR	2.01	NR	NR	1.1	na
2-2960	299-E25-48	RCRA	90	NR	NR	NR	NR	2.15	NR	NR	0.9	na
2-2961	299-E25-48	RCRA	95	NR	NR	NR	NR	4.33	NR	NR	1.6	na
2-2962	299-E25-48	RCRA	100	NR	NR	NR	NR	2.99	NR	NR	0.9	na
2-2963	299-E25-48	RCRA	105	NR	NR	NR	NR	2.12	NR	NR	1.1	na
2-2964	299-E25-48	RCRA	110	NR	NR	NR	NR	3.24	NR	NR	1.8	na
2-2965	299-E25-48	RCRA	115	NR	NR	NR	NR	3.60	NR	NR	1.6	na
2-2966	299-E25-48	RCRA	120	NR	NR	NR	NR	6.01	NR	NR	2.0	na
2-2967	299-E25-48	RCRA	125	NR	NR	NR	NR	4.58	NR	NR	2.0	na
2-2968	299-E25-48	RCRA	130	NR	NR	NR	NR	3.17	NR	NR	1.1	na
2-2969	299-E25-48	RCRA	135	NR	NR	NR	NR	3.06	NR	NR	0.9	na
2-2970	299-E25-48	RCRA	140	NR	NR	NR	NR	2.93	NR	NR	1.1	na
2-2971	299-E25-48	RCRA	145	NR	NR	NR	NR	1.33	NR	NR	1.1	na
2-2972	299-E25-48	RCRA	150	NR	NR	NR	NR	0.90	NR	NR	1.1	na

NR = Not Requested
na = not applicable

J.C. McGuffey

SO-10/3-4590

FOR INFORMATION ONLY

9/15/92 RCRA 299-E25-48 TEST RESULTS SUMMARY

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
2-2973	299-E25-48	RCRA	155	NR	NR	NR	NR	0.79	NR	NR	0.9	na
2-2974	299-E25-48	RCRA	160	NR	NR	NR	NR	1.08	NR	NR	0.9	na
2-2975	299-E25-48	RCRA	165	NR	NR	NR	NR	3.18	NR	NR	0.9	na
2-2976	299-E25-48	RCRA	170	NR	NR	NR	NR	2.75	NR	NR	0.7	na
2-2977	299-E25-48	RCRA	175	NR	NR	NR	NR	2.41	NR	NR	0.5	na
2-2978	299-E25-48	RCRA	180	NR	NR	NR	NR	2.21	NR	NR	0.5	na
2-2979	299-E25-48	RCRA	185	NR	NR	NR	NR	2.23	NR	NR	0.7	na
2-2980	299-E25-48	RCRA	190	NR	NR	NR	NR	2.75	NR	NR	0.9	na
2-2981	299-E25-48	RCRA	195	NR	NR	NR	NR	1.48	NR	NR	0.7	na
2-2982	299-E25-48	RCRA	200	NR	NR	NR	NR	1.02	NR	NR	0.9	na
2-2983	299-E25-48	RCRA	202	NR	NR	NR	NR	2.42	NR	NR	1.1	na
2-2984	299-E25-48	RCRA	205	NR	NR	NR	NR	1.56	NR	NR	0.9	na
2-2985	299-E25-48	RCRA	210	NR	NR	NR	NR	1.20	NR	NR	0.9	na
2-2986	299-E25-48	RCRA	215	NR	NR	NR	NR	2.76	NR	NR	0.7	na
2-2987	299-E25-48	RCRA	220	NR	NR	NR	NR	1.33	NR	NR	0.7	na
2-2988	299-E25-48	RCRA	225	NR	NR	NR	NR	1.37	NR	NR	0.7	na
2-2989	299-E25-48	RCRA	230	NR	NR	NR	NR	1.03	NR	NR	0.7	na
2-2990	299-E25-48	RCRA	235	NR	NR	NR	NR	1.47	NR	NR	0.7	na
2-2991	299-E25-48	RCRA	240	NR	NR	NR	NR	1.39	NR	NR	0.7	na
2-2992	299-E25-48	RCRA	245	NR	NR	NR	NR	0.94	NR	NR	1.1	na
2-2993	299-E25-48	RCRA	250	NR	NR	NR	NR	1.18	NR	NR	0.7	na
2-2994	299-E25-48	RCRA	255	NR	NR	NR	NR	1.51	NR	NR	0.7	na
2-2995	299-E25-48	RCRA	260	NR	NR	NR	NR	1.51	NR	NR	0.5	na
2-2996	299-E25-48	RCRA	270	NR	NR	NR	NR	28.06	NR	NR	1.8	na
2-2997	299-E25-48	RCRA	275	NR	NR	NR	NR	12.45	NR	NR	2.7	na
2-2998	299-E25-48	RCRA	280	NR	NR	NR	NR	13.37	NR	NR	0.9	na
2-2999	299-E25-48	RCRA	285	NR	NR	NR	NR	6.41	NR	NR	0.5	na
2-3000	299-E25-48	RCRA	290	NR	NR	NR	NR	8.83	NR	NR	0.5	na
2-3001	299-E25-48	RCRA	295	NR	NR	NR	NR	8.64	NR	NR	0.7	na
2-3002	299-E25-48	RCRA	297.5	NR	NR	NR	NR	11.68	NR	NR	0.5	na

NR = Not Requested
na = not applicable

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TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-E25-48	DEPTH	5-297.5
SAMPLE/SPECIMEN NO	2-294~~2~~3- 2-300~~1~~2	COST CODE/WORK ORDER NUMBER			R331~~41~~
REQUESTED BY: ORG	81421	PERSON	B. WILLIAMS	PHONE	6-3416
********HEIS********	NA	MSIN	H4-56	DATE	9/2/92

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Moisture Content	60	GEL-14 / Rev. 0 / 3-13-92
Calcium Carbonate	60	GEL-19 / Rev. 0 / 9-7-90

REMARKS:

ARCHIVE YES ☐ NO ■

TAPE RELEASE STICKER HERE

see back pages

RECEIVED BY JC McGuffey

DATE 9/2/92

9313090.0118

GEL 07 ☐ GEL 16 ☐
GEL 09 ☐ GEL 17 ☐
GEL 10 ☐ GEL 19 ☑
GEL 14 ☑ GEL ☐

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 2-2943 - 2-2970

Page 1 of 3

GEL-14 SOIL MOISTURE

Tested By LD Bruggeman Balance: 3304 Calibration Due Date 10-25-92

Date 9/14/92 Thermometer: 0018 Calibration Due Date 9-17-93

GEL-19 CALCIUM CARBONATE

Vessel No. 5650

Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
~~2 2942~~									
2 2943	390.44	368.85	62.94	21.59	305.91	7.06	0.5	1.1	computer JCM
2 2944	431.04	403.15	62.61	27.89	340.54	8.19	0.8	1.8	
2 2945	354.17	343.71	63.38	10.46	280.33	3.73	0.7	1.6	
2 2946	283.22	270.62	62.48	12.60	208.14	6.05	1.0	2.3	
2 2947	290.55	283.03	62.05	7.52	220.98	3.40	0.5	1.1	
2 2948	377.52	371.49	61.39	6.03	310.10	1.94	0.3	0.7	
2 2949	378.99	369.77	63.39	9.22	306.38	3.01	0.5	1.1	
2 2950	293.75	278.15	62.04	15.60	216.11	7.22	0.7	1.6	
2 2951	352.29	339.78	59.87	12.51	279.91	4.47	0.5	1.1	
2 2952	428.94	422.69	63.28	6.25	359.41	1.74	0.3	0.7	
2 2953	483.72	476.89	62.63	6.83	414.26	1.65	0.4	0.9	
2 2954	414.47	410.32	62.53	4.15	347.79	1.19	0.4	0.9	
2 2955	521.84	515.67	63.44	6.17	452.23	1.36	0.4	0.9	
2 2956	385.40	380.58	62.79	4.82	317.79	1.52	0.5	1.1	
2 2957	435.31	429.99	63.83	5.32	366.16	1.45	0.4	0.9	
2 2958	411.73	406.33	63.15	5.40	343.18	1.57	0.5	1.1	
2 2959	453.08	445.41	62.93	7.67	382.48	2.01	0.5	1.1	
2 2960	453.06	444.85	62.78	8.21	382.07	2.15	0.4	0.9	
2 2961	438.50	422.97	63.96	15.53	359.01	4.33	0.7	1.6	
2 2962	451.17	439.90	62.57	11.27	377.33	2.99	0.4	0.9	
2 2963	446.52	438.53	61.90	7.99	376.63	2.12	0.5	1.1	
2 2964	367.71	358.14	62.34	9.57	295.80	3.24	0.8	1.8	
2 2965	348.64	338.71	63.21	9.93	275.50	3.60	0.7	1.6	
2 2966	361.39	344.36	61.01	17.03	283.35	6.01	0.9	2.0	
2 2967	389.29	374.88	60.27	14.41	314.61	4.58	0.9	2.0	
2 2968	299.04	291.78	62.99	7.26	228.79	3.17	0.5	1.1	
2 2969	237.76	232.51	61.17	5.25	171.34	3.06	0.4	0.9	
2 2970	315.19	308.01	63.20	7.18	244.81	2.93	0.5	1.1	

Remarks:

Tests Checked By: LD Bruggeman / computer Date 9-15-92

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BD-6000-806 (04/92)

54 15

GEL 07 ☐	GEL 16 ☐	GEOTECHNICAL ENGINEERING LABORATORY	Sample No(s). 2-2971 - 2-2999
GEL 09 ☐	GEL 17 ☐	GEL-14, GEL-19	
GEL 10 ☐	GEL 19 ☑		Page 2 of 3
GEL 14 ☑	GEL ☐		

GEL-14 SOIL MOISTURE | **GEL-19 CALCIUM CARBONATE**

Tested By L D Bruggeman Balance: 3304 Calibration Due Date 10-25-92 Vessel No. 5650

Date 9/15/92 Thermometer: 0018 Calibration Due Date 9-17-93 Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
2 2971	435.46	430.57	62.24	4.89	368.33	1.33	0.5	1.1	computer JCM
2 2972	345.97	343.43	61.78	2.54	281.65	0.90	0.5	1.1	
2 2973	381.24	378.75	63.78	2.49	314.97	0.79	0.4	0.9	
2 2974	378.67	375.32	64.28	3.35	311.04	1.08	0.4	0.9	
2 2975	335.92	327.55	63.94	8.37	263.61	3.18	0.4	0.9	
2 2976	338.77	331.34	61.32	7.43	270.02	2.75	0.3	0.7	
2 2977	318.59	312.53	61.16	6.06	251.37	2.41	0.2	0.5	
2 2978	324.11	318.43	61.94	5.68	256.49	2.21	0.2	0.5	
2 2979	367.14	360.48	61.33	6.66	299.15	2.23	0.3	0.7	
2 2980	294.06	287.84	61.81	6.22	226.03	2.75	0.4	0.9	
2 2981	359.94	355.66	62.12	4.33	293.54	1.48	0.3	0.7	
2 2982	273.48	271.32	59.73	2.16	211.59	1.02	0.4	0.9	
2 2983	296.73	291.18	62.13	5.55	229.05	2.42	0.5	1.1	
2 2984	368.05	363.37	64.13	4.68	299.24	1.56	0.4	0.9	
2 2985	384.83	381.01	62.64	3.82	318.37	1.20	0.4	0.9	
2 2986	408.75	399.43	62.03	9.32	337.40	2.76	0.3	0.7	
2 2987	381.98	377.78	62.25	4.20	315.53	1.33	0.3	0.7	
2 2988	419.48	414.63	61.56	4.85	353.07	1.37	0.3	0.7	
2 2989	379.92	376.70	62.73	3.22	313.97	1.03	0.3	0.7	
2 2990	304.91	301.38	60.78	3.53	240.60	1.47	0.3	0.7	
2 2991	340.65	336.85	62.84	3.80	274.01	1.39	0.3	0.7	
2 2992	201.07	199.78	62.60	1.29	137.18	0.94	0.5	1.1	
2 2993	169.21	167.97	63.30	1.24	104.67	1.18	0.3	0.7	
2 2994	339.34	335.21	61.23	4.13	273.98	1.51	0.3	0.7	
2 2995	327.79	323.83	61.56	3.96	262.27	1.51	0.2	0.5	
2 2996	311.99	257.21	62.01	54.78	195.20	28.06	0.8	1.8	
2 2997	368.31	334.30	61.03	34.01	273.27	12.45	1.2	2.7	
2 2998	387.71	349.31	62.14	38.40	287.17	13.37	0.4	0.9	
2 2999	480.11	454.95	62.58	25.16	392.37	6.41	0.2	0.5	

emarks:

ests Checked By: L D Bruggeman / computer Date 9-15-92

BD-6000-806 (04/92)

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GEL 07 ☐ GEL 09 ☐ GEL 10 ☐ GEL 14 ☑	GEL 16 ☐ GEL 17 ☐ GEL 19 ☑ GEL ☐	**GEOTECHNICAL ENGINEERING LABORATORY** **GEL-14, GEL-19**

Sample No(s). 2-3000 - 2-3002

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GEL-14 SOIL MOISTURE

Tested By L D Bruggeman Balance: 3304 Calibration Due Date 10-25-92

Date 9-15-92 Thermometer: 0018 Calibration Due Date 9-17-93

GEL-19 CALCIUM CARBONATE

Vessel No. 5650

Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
2 3000	485.58	451.27	62.63	34.31	388.64	8.83	0.2	0.5	computer CM
2 3001	476.84	439.34	63.20	~~376.14~~ 33.50	376.14	8.64	0.3	0.7	↓
2 3002	414.24	377.58	63.60	36.66	313.98	11.68	0.2	0.5	↓

Remarks:

Tests Checked By: L D Bruggeman / computer Date 9-15-92

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BD-6000-806 (04/92)

9413090.0115

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Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: MARK D. SWEENEY

Company Contact: E.O. RATFUSE

Telephone: HOME: 948-6661 OFFICE: 376 0542

Project Designation/Sampling Locations: W017/A24 DITCH 299-E25-48

Collection Date: NA

Ice Chest No.: N/A

Field Logbook No.: N/A

Bill of Lading/Airbill No.: N/A

Offsite Property No.: N/A

Method of Shipment: GOVT VEHICLE

Shipped to: 27621

Possible Sample Hazards/Remarks: NO RAD / NO CHEM.

Sample Identification

299-E25-48	5	$Na_2B_4O_7 \cdot H_2O$	7-1-92 1600	299-E25-48	60 $CaCO_3 \cdot H_2O$ 7-8-92 1426
	10		7-1-92 1617		65 7-8-92 1528
	15		7-8-92 1014		70 7-8-92 1534
	20		7-8-92 1101		75 7-8-92 1544
	25		7-8-92 1245		80 7-8-92 1551
	30		7-8-92 1255		85 7-8-92 1643
	35		7-8-92 1305		90 7-8-92 1650
	40		7-8-92 1309		95 7-8-92 1658
	45		7-8-92 1409		100 $CaCO_3 \cdot H_2O$ 7-8-92 1705
	50		7-8-92 1416		105 7-8-92 831
	55		7-8-92 1424		110 7-8-92 841

Field Transfer of Custody	CHAIN OF POSSESSION	(Sign and Print Names)
linquished by: D. J. Anderson	Received by: E.C. RATFUSE E.C. Ratfuse	Date/Time: 08/20/92 12:45
linquished by: E.C. RATFUSE E.C. Ratfuse	Received by: J McGuffey	Date/Time: 9/1/92 12:43
linquished by:	Received by:	Date/Time:
inquished by:	Received by:	Date/Time:

Final Sample Disposition

posal Method:	Disposed by:	Date/Time:

nments:

A-6000-407 (12/90)

9312090.0114

8 of 15

Westinghouse Hanford Company	CHAIN OF CUSTODY

ustody Form Initiator: MARK D SWEENEY

ompany Contact: ED RATHSE

Telephone: OFFICE: 376-0542 MOBILE: 948-0663

roject Designation/Sampling Locations: 600 17 / ANS DITCH 299-E25-48

Collection Date: N/A.

e Chest No.: N/A

Field Logbook No.: N/A

ill of Lading/Airbill No.: N/A

Offsite Property No.: N/A

lethod of Shipment: GOVT VEHICLE

hipped to: 2701

ossible Sample Hazards/Remarks: NO HAZ / NO CHEM.

Sample Identification

299-E25-48 115 CaCO3 Hzo	7-9-92 1122	299-E25-48 170 CaCO3 Hzo	7-12-92 0852
120	7-9-92 1129	175	7-12-92 0854
125	7-9-92 1305	180	7-13-92 0852
130	7-9-92 1320	185	7-13-92 1005
135	7-9-92 1332	190	7-13-92 1007
140	7-9-92 1339	195	7-13-92 1015
145	7-9-92 1431	200	7-13-92 1021
150	7-9-92 1440	205	7-13-92 1022
155	7-9-92 1450	205	7-13-92 1258
160	7-9-92 1506	210	7-13-92 1302
165	7-12-92 ~~7-9-92~~ 0848	215 ~~220~~	7-13-92 1312

Field Transfer of Custody — CHAIN OF POSSESSION — (Sign and Print Names)

nquished by: O. J. Anderson	Received by: E.C. Rathse E.C. Rathse	Date/Time: 08/20/92 1245
nquished by: E.C. Rathse E.C. Rathse	Received by: J. McGuffey	Date/Time: 9/1/92 12:43
nquished by:	Received by:	Date/Time:
nquished by:	Received by:	Date/Time:

Final Sample Disposition

osal Method:	Disposed by:	Date/Time:

ments:

A-6000-407 (12/90)

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Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: [illegible] K. D. Sweeney

Company Contact: E.C. Rafuse — Telephone: Office: 376-[illegible] Mobile: 946-[illegible]

Project Designation/Sampling Locations: WO17/[illegible] Ditch 299-E25-48 — Collection Date: N/A

Ice Chest No.: N/A — Field Logbook No.: N/A

Bill of Lading/Airbill No.: N/A — Offsite Property No.: N/A

Method of Shipment: Govt Vehicle

Shipped to: 270.

Possible Sample Hazards/Remarks: No Rad/No Chem

93130090.0112

Sample Identification

299-E25-48	270	$CaCO_3$ Moist	7-13-92 1318	299-E25-48	270'	$CaCO_3$ Moist 8/12/92 @ 13:45
	275		7-13-92 1403	299-E25-48	275'	$CaCO_3$ Moist 8/13/92 @ 1105
	280		7-13-92 1410	299-E25-48	280'	$CaCO_3$ Moist 8/17/92 @ 0845
	285		7-13-92 1418	299-E25-48	285'	Moist 8/17/92 @ 0920
	290		7-13-92 1422	299-E25-48	290'	$CaCO_3$ 8/19/92 @ 1600
	295		7-13-92 1543	299-E25-48	295	$CaCO_3$ 8/2/92 @ 0750
	300		7-13-92 1542	299-E25-48	297.5	$CaCO_3$ 8/2/92 @ 0940
	255		7-13-92 1551			
	260		7-13-92 1555			
	~~265~~		~~No sample~~ E.C.R. 8/01/92			

Field Transfer of Custody	CHAIN OF POSSESSION	(Sign and Print Names)
Relinquished by: J.G. Anderson	Received by: E.C. Rafuse / E.C. Rafuse	Date/Time: 08/20/92 1245
Relinquished by: E.C. Rafuse / E.C. Rafuse	Received by: JC McGuffey	Date/Time: 9/1/92 12:43
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2943 5
54-3000-022 (01/89)

RADIATION RELEASE

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Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2948 30
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2944 10
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 35
2 2949
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2945 15
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2950 40
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2946 20
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2951 45
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2947 25
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2952 50
54-3000-022 (01/89)

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RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2953 55
54-3000-022 (01/89)

RADIATION RELEASE 11 of 15

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 80
2 2958
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2954 60
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 85
2 2959
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2955 65
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 90
2 2960
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2956 70
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 95
2 2961
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2957 75
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 289 E25-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 100
2 2962
54-3000-022 (01/89)

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12 of 15

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 105
2 2963
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2958 130
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2964 110
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2969 135
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 115
2 2965
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 140
2 2970
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2966 120
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2971 145
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 2 2967 125
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By [signature] Health Physics
Remarks 150
2 2972
54-3000-022 (01/89)

9313090.0109

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2973 155
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 180
2 2978
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 160
2 2974
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2979 185
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 [illegible] 165
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2980 190
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 170
2 2976
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2981 195
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 175
2 2977
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 625-48 Expiration Date 09/04/92
Released By LRP Health Physics
Remarks 2 2982 200
54-3000-022 (01/89)

9313090.0108

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2983 202
54-3000-022 (01/89)

RADIATION RELEASE 14 of 15

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2988 225
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2984 205
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2989 230
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2985 210
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2990 235
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 215
2 2986
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2991 240
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2987 220
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRW Health Physics
Remarks 2 2992 245
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 250
2 2993
54-3000-022 (01/89)

RADIATION RELEASE 15415

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2998 280
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 255
2 2994
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 285
2 2999
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2995 260
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 290
2 3000
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 2 2996 270
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 295
2 3001
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 275
2 2997
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299 E25-48 Expiration Date 09/04/92
Released By LRD Health Physics
Remarks 297.5
2 3002
54-3000-022 (01/89)

9313090.0106

Westinghouse Hanford Company	GEOTECHNICAL SAMPLE TRANSFER RECORD Cover Sheet	
Procedure No., Revision No., Effective Date 3-30-91 CM-7-7 ETI 5.7A Rev 3	Geotechnical Sample Transfer Record No. HGTL-92-35	Page 1 of 3
Type of Geotechnical Sample		

Initiated By:	Signature	Date 09/03/92
	Name (Print): EDWARD C. RAFFI	Group/Organization: WHC
Transported By:	Signature	Date
	Name (Print): EDWARD C. RAFFI	Group/Organization: WHC
Received By HGSL:	Signature	Date 9-3-92
	Name (Print): MARILYN HARRIS	Group/Organization: EAR 9-3-92
Authenticated By:	Signature	Date
	Name (Print)	Group/Organization: WHC

DISTRIBUTION: White – EFSG File Custodian Yellow – Manager, Geosciences Pink – EFSG Library Goldenrod – Originator

BC-6000-291 (04-89)

9313090.0105

Westinghouse Hanford Company	GEOTECHNICAL SAMPLE TRANSFER RECORD Attachment Sheet

Procedure No., Revision No., Effective Date 3-30-11 (1)(1) 7-7, ED 5.7A Rev 3 | Geotechnical Sample Transfer Record No. HGTL-12-25 | Page 2 of 2

BOREHOLE DESIGNATION/ SAMPLE NO	BOX NO.	DEPTH (ft)	COMMENTS
[illegible]	1	[illegible]	[illegible]
	1	[illegible]	
	1	[illegible]	
	1	[illegible]	
	1	[illegible]	
	1	[illegible]	
	2	[illegible]	
	2	[illegible]	
	2	[illegible]	
	2	[illegible]	
	2	[illegible]	
	2	[illegible]	
	2	[illegible]	
	3	[illegible]	
	3	[illegible]	
	3	[illegible]	
	3	[illegible]	
	3	[illegible]	
	3	[illegible]	
	4	[illegible]	
	4	[illegible]	
	4	[illegible]	
	4	[illegible]	
	4	[illegible]	
	5	[illegible]	
	5	[illegible]	
	5	[illegible]	
	5	[illegible]	
	5	[illegible]	
	5	[illegible]	
	6	[illegible]	
	6	[illegible]	
	6	[illegible]	
	6	[illegible]	
	6	[illegible]	
	6	[illegible]	

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BC-6000-286 (04/89)

9313090.0104

Westinghouse Hanford Company	GEOTECHNICAL SAMPLE TRANSFER RECORD Attachment Sheet

Procedure No., Revision No., Effective Date	Geotechnical Sample Transfer Record No.	Page
11117-7 EII5.7H, [illegible]	H/ITL [illegible]-12-35	2 of 3

BOREHOLE DESIGNATION/ SAMPLE NO.	BOX NO.	DEPTH (ft)	COMMENTS
7-[illegible]	7	[illegible]	[illegible]
	7	[illegible]	
	7	[illegible]	
	7		
	7	[illegible]	[illegible]
	7	[illegible]	[illegible]
	7	[illegible]	[illegible]
	2	[illegible]	
	2	[illegible]	
	2	[illegible]	
	[illegible]	[illegible]	
	2	[illegible]	
	[illegible]		
	2		
	9	[illegible]	
	9	[illegible]	
	—	[illegible]	
	9	[illegible]	[illegible]
	9	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible] 11:05
	10	[illegible]	[illegible]
	10	[illegible]	[illegible]
	10	[illegible]	[illegible]
	10	295	[illegible]
	10	[illegible]	[illegible]

Distribution: White – EFSG File Custodian; Pink – EFSG Library; Yellow – Manager, Geosciences; Goldenrod – Originator

BC-6000-286 (04/89)

9313090.0103

VALIDATED 4 pages KDR 1/11/93 SIGNATURE/DATE

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-E25-48		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
5'	7-9-92	SOIL	7-9-92	1505-92-19	14	<D
10'	7-9-92		7-9-92	1506-92-20	17	1
15'	7-9-92		7-9-92	1507-92-21	20	1
20'	7-9-92		7-9-92	1508-92-22	17	<D
25'	7-9-92		7-9-92	1509-92-23	13	1
30'	7-9-92		7-9-92	1510-92-24	11	1
35'	7-9-92		7-9-92	1511-92-25	14	<D
40'	7-9-92		7-9-92	1512-92-26	15	<D
45'	7-9-92		7-9-92	1513-92-27	15	<D
50'	7-9-92		7-9-92	1514-92-28	10	<D
55'	7-9-92		7-9-92	1515-92-29	11	<D
60'	7-9-92		7-9-92	1516-92-30	21	1
65'	7-9-92		7-9-92	1517-92-31	10	<D
70'	7-9-92		7-9-92	1518-92-32	14	<D
75'	7-9-92		7-9-92	1519-92-33	11	<D
80'	7-9-92		7-9-92	1520-92-34	13	<D
85'	7-9-92		7-9-92	1521-92-35	11	<D
90'	7-9-92		7-10-92	1524-92-39	12	<D
95'	7-9-92		7-10-92	1525-92-40	10	<D
100'	7-9-92		7-10-92	1526-92-41	11	<D
105'	7-9-92		7-10-92	1527-92-42	12	1
110'	7-9-92		7-10-92	1528-92-43	16	1
115'	7-9-92		7-10-92	1529-92-44	12	1

Performed By: C. Allessio Date: 7-10-92

Supervisor Review: [signature] Date: 9/1/92

Page: 1 of 34 9-2-92

A-6000-829 (10/91)

9313090.0102

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-E25-48		Date: —
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
120'	7-9-92	SOIL	7-10-92	1530-92-45	12	1
125'	7-13-92		7-13-92	1535-92-4	17	<D
130'	7-13-92		7-13-92	1536-92-5	17	<D
135'	7-13-92		7-13-92	1537-92-6	20	<D
140'	7-13-92		7-13-92	1538-92-7	15	1
145'	7-13-92		7-13-92	1539-92-8	14	1
150'	7-13-92		7-13-92	1540-92-9	19	1
155'	7-13-92		7-13-92	1541-92-10	15	<D
160'	7-14-92		7-14-92	1550-92-18	22	1
165'	7-14-92		7-14-92	1551-92-19	14	1
170'	7-14-92		7-14-92	1552-92-20	14	1
175'	7-14-92		7-14-92	1553-92-21	10	1
180'	7-14-92		7-14-92	1554-92-22	16	<D
185'	7-14-92		7-14-92	1555-92-23	13	<D
190'	7-14-92		7-14-92	1556-92-24	13	1
195'	7-14-92		7-14-92	1557-92-25	15	<D
200'	7-14-92		7-14-92	1558-92-26	15	<D
202'	7-14-92		7-14-92	1559-92-27	16	<D
205'	7-14-92		7-14-92	1560-92-28	17	<D
210'	7-14-92		7-14-92	1561-92-29	16	<D
215'	7-14-92		7-15-92	1582-92-50	14	<D
220'	7-14-92		7-15-92	1583-92-4	16	<D
225'	7-14-92		7-15-92	1584-92-5	14	1

Performed By: C. Alessio Date: 7-15-92

Supervisor Review: [signature] Date: 9/1/92

Page: 2 of 34

4ca 9-2-92

A-6000-829 (10/91)

9313090.0101

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-E25-48		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
230'	7-14-92	SOIL	7-15-92	1585-92-6	13	<D
235'	7-14-92		7-15-92	1586-92-7	15	1
240'	7-14-92		7-15-92	1587-92-8	15	<D
245'	7-14-92		7-15-92	1588-92-9	16	<D
250'	7-14-92		7-15-92	1589-92-10	14	<D
255'	7-14-92		7-15-92	1590-92-11	18	1
260'	7-14-92		7-15-92	1591-92-12	12	<D
266.5'	8-12-92		8-13-92	1885-92-26	24	1
270'	8-12-92		8-13-92	1886-92-27	18	<D
275'	8-13-92		8-14-92	1897-92-37	14	<D
280'	8-19-92		8-19-92	1910-92-50	16	1
285'	8-19-92		8-19-92	1911-92-4	12	1

Performed By: G. Alleseio Date: 8-19-92

Supervisor Review: [illegible] Date: 9/1/92

Page: 3 of 34 9-2-92

A-6000-829 (10/91)

9313090.0100

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-E25-48		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
290'	9-2-92	Soil	9-2-92	2046-92-7	8	<D
295'	9-2-92	↓	9-2-92	2047-92-6	10	1
297.5'	9-2-92	↓	9-2-92	2048-92-5	8	<D

Performed By: C. Allessio Date: 9-2-92

Supervisor Review: [illegible] Date: 9/[illegible]/92

Page: 4 of 4

A 6000 829 (10/91)

9313090.0099

APPENDIX C

WELL DEVELOPMENT AND PUMP INSTALLATION

9313090.0098

CONTENTS

Well 299-E25-47 Well Development and Pump Installation C-1
Well 299-E25-48 Well Development and Pump Installation C-22

9313090.0097

VALIDATED 10/1/92
KSR 12/17/92
SIGNATURE/DATE

p. 1 of 10

WELL DEVELOPMENT FORM

page 1 of 1

Well Designation: 299-E25-47 Well Depth: 286.90' BTOC

Screened Interval: 286.9'-266.97' BTOC Date Well Devel. Performed: 9-10-92

BAILING

Water Level Prior to Bailing: _____ Time of Measurement: _____

Volume of Bailer: _____ Number of Bails Removed: _____ Gallons: _____

Summary Discription of Water Removed: _____

Water Level After Bailing: _____ Time of Measurement: _____

SURGE BLOCK:

N.A.

Type of Surge Block: _____ Dimensions of Surge Block: _____

TD Before	Stroke Length	Stroke Frequency	Surge Interval	Surge Time	TD After	TD Difference

AIIRLIFT:

N.A.

Depyh to Eductor Pipe: _____ Airlift Start Time: _____

Flow Rate: _____ Accumulated Flow: _____ Airlift Stop Time: _____

Turbidity (NTU): _____

MECHANICAL PUMPING:

Pumping Technique: Constant Discharge Pump Depth: 286.60'BTOC Pump Start Time: 0900

Flow Rate: 11.1gpm Accumulated Flow: 1340gals Pump Stop Time: 1020

Turbidity (NTU): 53, 17, 10, 6.5, 5.9, 8.4, 4.3

COMMENTS: N.A.

Recorded by: James A. Coates James A. Coates Date: 9-14-92

Sign and Print Name

A-6000-393 (03/90)

9313090.0096

EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

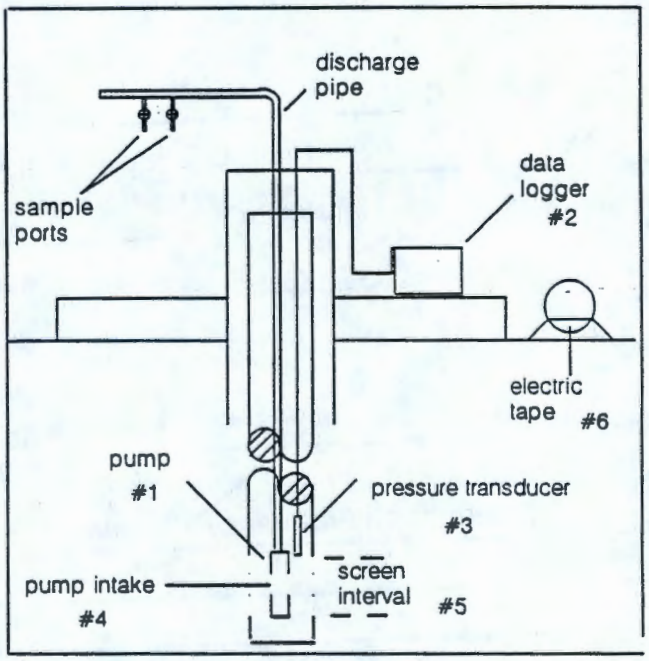
Page / of /

WELL DESIGNATION 299-E25-47 DEPTH 286.90' Btoc 6"

Equipment Configuration

Item	Description
#1	1.5 hp. Grundfos submersible
#2	In-Situ datalogger 2K192
#3	In-Situ Inc s/n 262362 (cal. 2-21-93)
#4	@286.60' Btoc 6"
#5	286.90'-266.97' Btoc 6"
#6	Solinst s/n: ET-5 (cal. 1-13-93)
#7	
#8	
#9	
#10	

Diagram

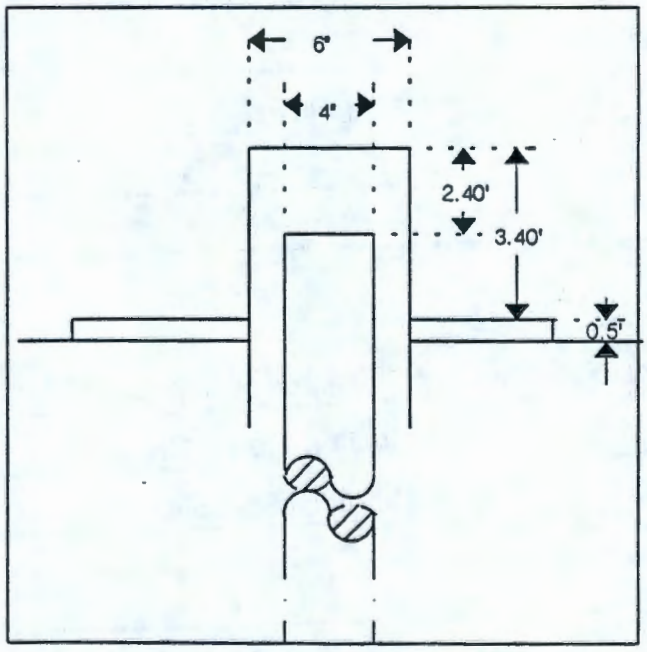


Well Head

Comments

N/A

Diagram



Signature of Recorder James A. Coates James A. Coates Date 9-14-92

A-6000-417 (08/89)

9313090.0095

DRAWDOWN/RECOVERY

page 1 of 9

Well Designation: 299-E25-47 Date: 9-10-92

Well Depth: 286.90' BTOC Screened Interval: 286.90'-266.97'BTOC

Pumping Method: Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-5/262362 Calibration Due: 1-13-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (6") Pump Start Time: 0900 Pump Stop Time: 1020

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Units:
				Bucket Method: 5gal./27.0sec.
				=11.1gal/min.
	See Attached Data			
			See Attached Data	

Recorded by: James A. Coates James A. Coates Date: 9-15-92
Sign and Print Name

BD-6000-402(03/90)

9313090.0094

SE2000
Environmental Logger
09/11 07:52

Well No. 299-E25-47
Baseline Test

Unit# 192 Test 0

INPUT 1: Level (F) TOC

Reference	270.970
SG	1.000
Linearity	0.000
Scale factor	9.998
Offset	0.010
Delay mSEC	50.000

Step 0 09/10 08:39:48

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0.000	270.963	-270.963
1	0.017	270.963	-270.963
2	0.033	270.960	-270.960
3	0.050	270.960	-270.960
4	0.067	270.957	-270.957
5	0.083	270.947	-270.947
6	0.100	270.947	-270.947
7	0.117	270.944	-270.944
8	0.133	270.944	-270.944
9	0.150	270.944	-270.944
10	0.167	270.944	-270.944
11	0.183	270.941	-270.941
12	0.200	270.938	-270.938
13	0.217	270.938	-270.938
14	0.233	270.938	-270.938
15	0.250	270.938	-270.938
16	0.267	270.938	-270.938
17	0.283	270.938	-270.938

9313090.0093

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p. 4 of 10

SE2000
Environ mental Logger
09/ 11 07:49

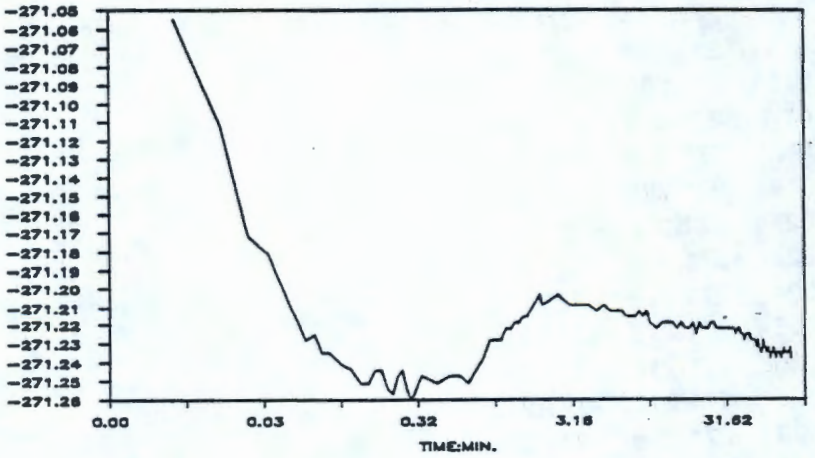
Well No. 299-E25-47
DRAWDOWN TEST (Q=11.1gpm)

Unit# 19 2 Test 1

NPUT 1: Level (F) TOC

Reference 270.970
SG 1.000
Linearity 0.000
Scale fac tor 9.998
Offset 0.010
Delay mSE C 50.000

Step 0 0 9/10 08:58:26



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.0000	271.083	-271.083
0.008	0.0001	271.055	-271.055
0.017	0.0003	271.112	-271.112
0.025	0.0004	271.172	-271.172
0.033	0.0006	271.181	-271.181
0.042	0.0007	271.200	-271.200
0.050	0.0008	271.216	-271.216
0.058	0.0010	271.228	-271.228
0.067	0.0011	271.225	-271.225
0.075	0.0013	271.235	-271.235
0.083	0.0014	271.235	-271.235
0.100	0.0017	271.241	-271.241
0.117	0.0019	271.244	-271.244
0.133	0.0022	271.251	-271.251
0.150	0.0025	271.251	-271.251
0.167	0.0028	271.244	-271.244
0.183	0.0031	271.244	-271.244
0.200	0.0033	271.254	-271.254
0.217	0.0036	271.257	-271.257
0.233	0.0039	271.247	-271.247
0.250	0.0042	271.244	-271.244
0.267	0.0044	271.254	-271.254
0.283	0.0047	271.260	-271.260
0.300	0.0050	271.257	-271.257
0.317	0.0053	271.251	-271.251

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p. 5 of 10

0.333	0.0056	271.247	-271.247
0.417	0.0069	271.251	-271.251
0.500	0.0083	271.247	-271.247
0.583	0.010	271.247	-271.247
0.667	0.011	271.251	-271.251
0.750	0.013	271.244	-271.244
0.833	0.014	271.238	-271.238
0.917	0.015	271.228	-271.228
1.000	0.017	271.228	-271.228
1.083	0.018	271.228	-271.228
1.167	0.019	271.222	-271.222
1.250	0.021	271.222	-271.222
1.333	0.022	271.219	-271.219
1.417	0.024	271.219	-271.219
1.500	0.025	271.216	-271.216
1.583	0.026	271.216	-271.216
1.667	0.028	271.213	-271.213
1.750	0.029	271.209	-271.209
1.833	0.031	271.206	-271.206
1.917	0.032	271.203	-271.203
2.000	0.033	271.209	-271.209
2.500	0.042	271.203	-271.203
3.000	0.050	271.209	-271.209
3.500	0.058	271.209	-271.209
4.000	0.067	271.209	-271.209
4.500	0.075	271.213	-271.213
5.000	0.083	271.209	-271.209
5.500	0.092	271.213	-271.213
6.000	0.100	271.213	-271.213
6.500	0.108	271.213	-271.213
7.000	0.117	271.216	-271.216
7.500	0.125	271.216	-271.216
8.000	0.133	271.216	-271.216
8.500	0.142	271.213	-271.213
9.000	0.150	271.216	-271.216
9.500	0.158	271.213	-271.213
10.000	0.167	271.219	-271.219
11.000	0.183	271.222	-271.222
12.000	0.200	271.219	-271.219
13.000	0.217	271.219	-271.219
14.000	0.233	271.219	-271.219
15.000	0.250	271.222	-271.222
16.000	0.267	271.219	-271.219
17.000	0.283	271.222	-271.222
18.000	0.300	271.222	-271.222

9313090.0091

5 of 9
p. 6 of 10

19.000	0.317	271.219	-271.219
20.000	0.333	271.225	-271.225
21.000	0.350	271.219	-271.219
22.000	0.367	271.222	-271.222
23.000	0.383	271.222	-271.222
24.000	0.400	271.222	-271.222
25.000	0.417	271.219	-271.219
26.000	0.433	271.219	-271.219
27.000	0.450	271.222	-271.222
28.000	0.467	271.222	-271.222
29.000	0.483	271.222	-271.222
30.000	0.500	271.222	-271.222
31.000	0.517	271.222	-271.222
32.000	0.533	271.222	-271.222
33.000	0.550	271.222	-271.222
34.000	0.567	271.222	-271.222
35.000	0.583	271.222	-271.222
36.000	0.600	271.225	-271.225
37.000	0.617	271.222	-271.222
38.000	0.633	271.222	-271.222
39.000	0.650	271.225	-271.225
40.000	0.667	271.225	-271.225
41.000	0.683	271.228	-271.228
42.000	0.700	271.225	-271.225
43.000	0.717	271.225	-271.225
44.000	0.733	271.225	-271.225
45.000	0.750	271.228	-271.228
46.000	0.767	271.228	-271.228
47.000	0.783	271.228	-271.228
48.000	0.800	271.228	-271.228
49.000	0.817	271.232	-271.232
50.000	0.833	271.228	-271.228
51.000	0.850	271.232	-271.232
52.000	0.867	271.235	-271.235
53.000	0.883	271.235	-271.235
54.000	0.900	271.228	-271.228
55.000	0.917	271.232	-271.232
56.000	0.933	271.232	-271.232
57.000	0.950	271.235	-271.235
58.000	0.967	271.232	-271.232
59.000	0.983	271.235	-271.235
60.000	1.000	271.238	-271.238
61.000	1.017	271.235	-271.235
62.000	1.033	271.235	-271.235
63.000	1.050	271.232	-271.232

9313090.0090

64.000	1.067	271.235	-271.235
65.000	1.083	271.238	-271.238
66.000	1.100	271.235	-271.235
67.000	1.117	271.235	-271.235
68.000	1.133	271.235	-271.235
69.000	1.150	271.235	-271.235
70.000	1.167	271.238	-271.238
71.000	1.183	271.235	-271.235
72.000	1.200	271.235	-271.235
73.000	1.217	271.232	-271.232
74.000	1.233	271.235	-271.235
75.000	1.250	271.235	-271.235
76.000	1.267	271.235	-271.235
77.000	1.283	271.235	-271.235
78.000	1.300	271.235	-271.235
79.000	1.317	271.235	-271.235
80.000	1.333	271.232	-271.232
81.000	1.350	271.238	-271.238

9313090.0089

SE2000
Environ mental Logger
09/ 11 07:46

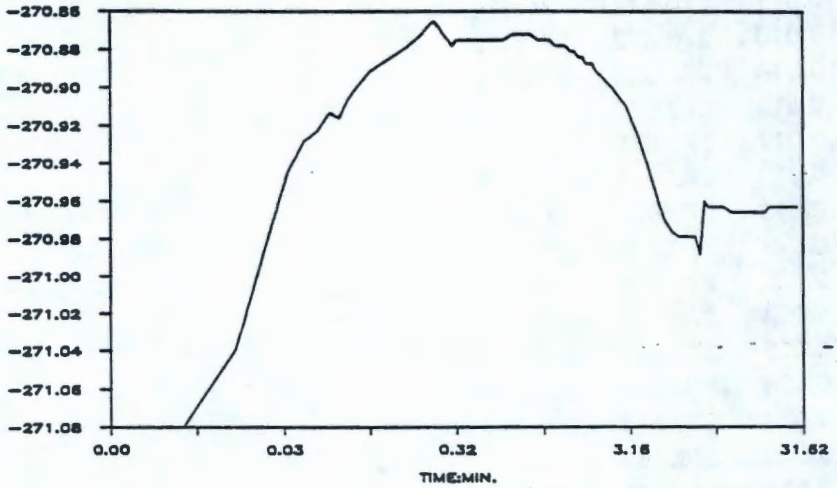
WELL NO. 299-E25-47
RECOVERY TEST

Unit# 19 2 Test 2

NPUT 1: Level (F) TOC

Reference 270.970
SG 1.000
Linearity 0.000
Scale fac tor 9.998
Offset 0.010
Delay mSE C 50.000

Step 0 0 9/10 10:20:23



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.0000	271.023	-271.023
0.008	0.0001	271.080	-271.080
0.017	0.0003	271.039	-271.039
0.025	0.0004	270.982	-270.982
0.033	0.0006	270.944	-270.944
0.042	0.0007	270.928	-270.928
0.050	0.0008	270.922	-270.922
0.058	0.0010	270.913	-270.913
0.067	0.0011	270.916	-270.916
0.075	0.0013	270.906	-270.906
0.083	0.0014	270.900	-270.900
0.100	0.0017	270.891	-270.891
0.117	0.0019	270.887	-270.887
0.133	0.0022	270.884	-270.884
0.150	0.0025	270.881	-270.881
0.167	0.0028	270.878	-270.878
0.183	0.0031	270.875	-270.875
0.200	0.0033	270.872	-270.872
0.217	0.0036	270.868	-270.868
0.233	0.0039	270.865	-270.865
0.250	0.0042	270.868	-270.868
0.267	0.0044	270.872	-270.872
0.283	0.0047	270.875	-270.875
0.300	0.0050	270.878	-270.878
0.317	0.0053	270.875	-270.875

0.333	0.0056	270.875	-270.875
0.417	0.0069	270.875	-270.875
0.500	0.0083	270.875	-270.875
0.583	0.010	270.875	-270.875
0.667	0.011	270.872	-270.872
0.750	0.013	270.872	-270.872
0.833	0.014	270.872	-270.872
0.917	0.015	270.875	-270.875
1.000	0.017	270.875	-270.875
1.083	0.018	270.875	-270.875
1.167	0.019	270.878	-270.878
1.250	0.021	270.878	-270.878
1.333	0.022	270.878	-270.878
1.417	0.024	270.881	-270.881
1.500	0.025	270.881	-270.881
1.583	0.026	270.884	-270.884
1.667	0.028	270.884	-270.884
1.750	0.029	270.887	-270.887
1.833	0.031	270.887	-270.887
1.917	0.032	270.887	-270.887
2.000	0.033	270.891	-270.891
2.500	0.042	270.900	-270.900
3.000	0.050	270.910	-270.910
3.500	0.058	270.925	-270.925
4.000	0.067	270.941	-270.941
4.500	0.075	270.957	-270.957
5.000	0.083	270.970	-270.970
5.500	0.092	270.976	-270.976
6.000	0.100	270.979	-270.979
6.500	0.108	270.979	-270.979
7.000	0.117	270.979	-270.979
7.500	0.125	270.979	-270.979
8.000	0.133	270.988	-270.988
8.500	0.142	270.960	-270.960
9.000	0.150	270.963	-270.963
9.500	0.158	270.963	-270.963
10.000	0.167	270.963	-270.963
11.000	0.183	270.963	-270.963
12.000	0.200	270.966	-270.966
13.000	0.217	270.966	-270.966
14.000	0.233	270.966	-270.966
15.000	0.250	270.966	-270.966
16.000	0.267	270.966	-270.966
17.000	0.283	270.966	-270.966
18.000	0.300	270.966	-270.966

9313090.0097

19.000	0.317	270.966	-270.966
20.000	0.333	270.963	-270.963
21.000	0.350	270.963	-270.963
22.000	0.367	270.963	-270.963
23.000	0.383	270.963	-270.963
24.000	0.400	270.963	-270.963
25.000	0.417	270.963	-270.963
26.000	0.433	270.963	-270.963
27.000	0.450	270.963	-270.963
28.000	0.467	270.963	-270.963
29.000	0.483	270.963	-270.963

9313090.0096

VALIDATED
KDR 12/17/92
SIGNATURE/DATE

BOREHOLE TEST INFORMATION

Borehole 299-E25-47 Borehole Diameter 4 in. Hanford Coordinates N/A

Interval Tested 286.90'-266.97' Depth Interval 286.90'-266.97' Test Type: Instantaneous Slug

Borehole Depth: 286.90' BTOC Instruction Used: WHC-CM-7-7 (EII 10.1)

EQUIPMENT

NAME	DESCRIPTION
Electric Sounder	Solinst s/n: ET-5 Calibration due: 1-13-93
Data Logger	In-Situ Inc. s/n: 2K192
Pressure Transducer	In-Situ Inc. s/n: 262362 Calibration due: 2-21-93
Slugging Rod	Site Fabricated 72.0"Lx2.0"D 0.13 cu. ft.
Steel Measuring Tape	300' Graduated Steel Tape

MEASUREMENT DATUM

Control Datum: Top of Casing (TOC) 6"

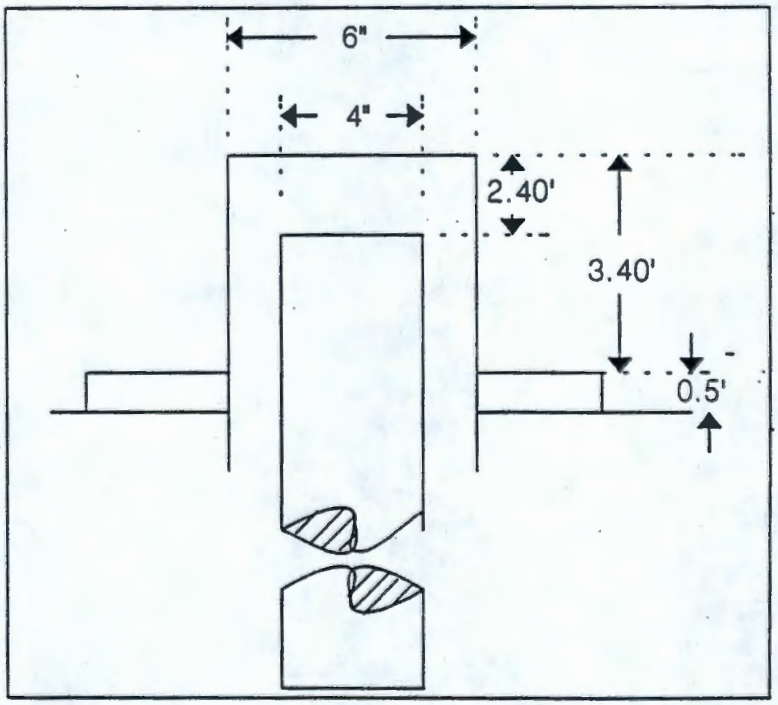
Elevation: N/A

Electric Sounder: TOC 6"

Steel Tape: TOC 6"

Pressure Transducer: TOC 6"

WELL HEAD DIAGRAM



COMMENTS

N.A.

Recorded by: James A. Coates James A. Coates Date: 9-15-92

Sign and Print Name

A-6000-417 (08/89)

9313090.0085

INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION

Borehole: 299-E25-47

Interval Tested: 286.90'-266.97' Btoc 6"

Depth To Water: 270.97' Btoc 6"

Depth to Transducer: 9.529' BWL

Measured by: James A. Coates

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1220	1245
Withdrawal	1245	1305

Date: 9-10-92

Initial Pressure (Pi): 270.97'

Slug Level/Pressure (Pmax) 269.432'

Borehole Diameter: 4"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A Coates James A. Coates Date: 9-15-92

Sign and Print Name

BD-6000-293(07/90)

9313090.0084

SE2000
Environmental Logger
09/11 07:44

WELL NO. 299-E25-47
INJECTION BASELINE TEST

Unit# 192 Test 3

INPUT 1: Level (F) TOC

Reference	270.970
SG	1.000
Linearity	0.000
Scale factor	9.998
Offset	0.010
Delay mSEC	50.000

Step 0 09/10 12:17:20

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0.000	270.970	-270.970
1	0.017	270.979	-270.979
2	0.033	270.982	-270.982
3	0.050	270.985	-270.985
4	0.067	270.988	-270.988
5	0.083	270.988	-270.988
6	0.100	270.988	-270.988
7	0.117	270.988	-270.988
8	0.133	270.988	-270.988
9	0.150	270.988	-270.988
10	0.167	270.988	-270.988
11	0.183	270.988	-270.988
12	0.200	270.988	-270.988
13	0.217	270.988	-270.988
14	0.233	270.988	-270.988
15	0.250	270.988	-270.988
16	0.267	270.988	-270.988
17	0.283	270.985	-270.985
18	0.300	270.985	-270.985
19	0.317	270.985	-270.985
20	0.333	270.985	-270.985
21	0.350	270.982	-270.982
22	0.367	270.982	-270.982
23	0.383	270.982	-270.982
24	0.400	270.982	-270.982
25	0.417	270.979	-270.979
26	0.433	270.979	-270.979
27	0.450	270.979	-270.979
28	0.467	270.976	-270.976
29	0.483	270.976	-270.976

9313090.0083

SE2000
Environ mental Logger
09/ 11 07:42

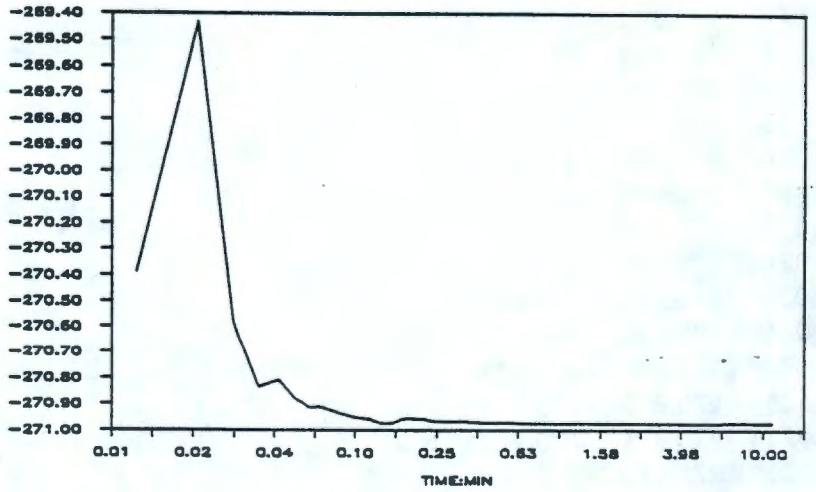
WELL NO. 299-E25-47
INJECTION TEST

Jnit# 19 2 Test 4

NPUT 1: Level (F) TOC

Reference 270.970
SG 1.000
Linearity 0.000
Scale fac tor 9.998
Offset 0.010
Delay mSE C 50.000

Step 0 0 9/10 12:48:27



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.0000	270.957	-270.957
0.008	0.0001	270.388	-270.388
0.017	0.0003	269.432	-269.432
0.025	0.0004	270.587	-270.587
0.033	0.0006	270.834	-270.834
0.042	0.0007	270.808	-270.808
0.050	0.0008	270.878	-270.878
0.058	0.0010	270.913	-270.913
0.067	0.0011	270.910	-270.910
0.075	0.0013	270.922	-270.922
0.083	0.0014	270.935	-270.935
0.100	0.0017	270.951	-270.951
0.117	0.0019	270.957	-270.957
0.133	0.0022	270.973	-270.973
0.150	0.0025	270.973	-270.973
0.167	0.0028	270.957	-270.957
0.183	0.0031	270.954	-270.954
0.200	0.0033	270.957	-270.957
0.217	0.0036	270.957	-270.957
0.233	0.0039	270.963	-270.963
0.250	0.0042	270.966	-270.966
0.267	0.0044	270.966	-270.966
0.283	0.0047	270.966	-270.966
0.300	0.0050	270.966	-270.966
0.317	0.0053	270.966	-270.966

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0.333	0.0056	270.966	-270.966
0.417	0.0069	270.970	-270.970
0.500	0.0083	270.970	-270.970
0.583	0.010	270.970	-270.970
0.667	0.011	270.973	-270.973
0.750	0.013	270.973	-270.973
0.833	0.014	270.973	-270.973
0.917	0.015	270.973	-270.973
1.000	0.017	270.973	-270.973
1.083	0.018	270.973	-270.973
1.167	0.019	270.973	-270.973
1.250	0.021	270.973	-270.973
1.333	0.022	270.973	-270.973
1.417	0.024	270.973	-270.973
1.500	0.025	270.973	-270.973
1.583	0.026	270.973	-270.973
1.667	0.028	270.973	-270.973
1.750	0.029	270.973	-270.973
1.833	0.031	270.973	-270.973
1.917	0.032	270.973	-270.973
2.000	0.033	270.973	-270.973
2.500	0.042	270.973	-270.973
3.000	0.050	270.973	-270.973
3.500	0.058	270.973	-270.973
4.000	0.067	270.973	-270.973
4.500	0.075	270.973	-270.973
5.000	0.083	270.973	-270.973
5.500	0.092	270.973	-270.973
6.000	0.100	270.973	-270.973
6.500	0.108	270.970	-270.970
7.000	0.117	270.970	-270.970
7.500	0.125	270.970	-270.970
8.000	0.133	270.970	-270.970
8.500	0.142	270.970	-270.970
9.000	0.150	270.970	-270.970
9.500	0.158	270.970	-270.970
10.000	0.167	270.970	-270.970
11.000	0.183	270.970	-270.970

9313090.0081

INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL

Borehole: 299-E25-47

Interval Tested: 286.90'-266.97' Btoc 6"

Depth To Water: 270.97' Btoc 6"

Depth to Transducer: 9.529' BWL

Measured by: James A. Coates

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1305	1315
Withdrawal	1315	1325

Date: 9-10-92

Initial Pressure (Pi): 270.97'

Slug Level/Pressure (Pmax) 271.667

Borehole Diameter: 4"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: J A Coates James A. Coates Date: 9-15-92

Sign and Print Name

BD-6000-293(07/90)

9313090.0080

SE2000
Environmental Logger
09/11 07:41

WELL NO. 299-E25-47
BASELINE WITHDRAWAL TEST

Unit# 192 Test 5

INPUT 1: Level (F) TOC

Reference	270.970
SG	1.000
Linearity	0.000
Scale factor	9.998
Offset	0.010
Delay mSEC	50.000

Step 0 09/10 13:01:06

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.000	270.970	-270.970
1.000	0.017	270.973	-270.973
2.000	0.033	270.973	-270.973
3.000	0.050	270.973	-270.973
4.000	0.067	270.970	-270.970
5.000	0.083	270.970	-270.970
6.000	0.100	270.970	-270.970
7.000	0.117	270.966	-270.966
8.000	0.133	270.966	-270.966
9.000	0.150	270.966	-270.966
10.000	0.167	270.966	-270.966

9313090.0079

SE2000
Environ mental Logger
09/ 11 07:38

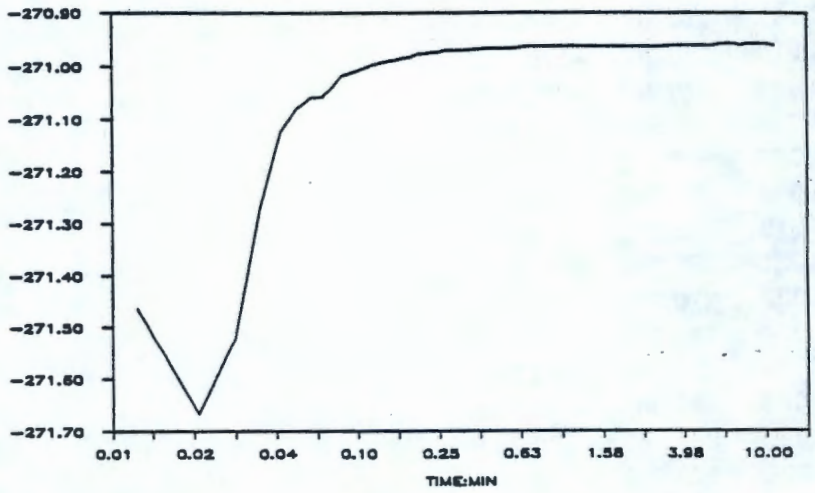
WELL NO. 299-E25-47
WITHDRAWAL TEST

Unit# 19 2 Test 6

INPUT 1: Level (F) TOC

Reference 270.970
SG 1.000
Linearity 0.000
Scale fac tor 9.998
Offset 0.010
Delay mSE C 50.000

Step 0 0 9/10 13:12:01



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0	270.988	-270.988
0.008	0.0001	271.462	-271.462
0.017	0.0003	271.667	-271.667
0.025	0.0004	271.522	-271.522
0.033	0.0006	271.269	-271.269
0.042	0.0007	271.124	-271.124
0.050	0.0008	271.080	-271.080
0.058	0.0010	271.058	-271.058
0.067	0.0011	271.058	-271.058
0.075	0.0013	271.039	-271.039
0.083	0.0014	271.017	-271.017
0.100	0.0017	271.007	-271.007
0.117	0.0019	270.998	-270.998
0.133	0.0022	270.992	-270.992
0.150	0.0025	270.988	-270.988
0.167	0.0028	270.985	-270.985
0.183	0.0031	270.982	-270.982
0.200	0.0033	270.976	-270.976
0.217	0.0036	270.976	-270.976
0.233	0.0039	270.973	-270.973
0.250	0.0042	270.973	-270.973
0.267	0.0044	270.970	-270.970
0.283	0.0047	270.970	-270.970
0.300	0.0050	270.970	-270.970
0.317	0.0053	270.970	-270.970

0.333	0.0056	270.970	-270.970
0.417	0.0069	270.966	-270.966
0.500	0.0083	270.966	-270.966
0.583	0.010	270.966	-270.966
0.667	0.011	270.963	-270.963
0.750	0.013	270.963	-270.963
0.833	0.014	270.963	-270.963
0.917	0.015	270.963	-270.963
1.000	0.017	270.963	-270.963
1.083	0.018	270.963	-270.963
1.167	0.019	270.963	-270.963
1.250	0.021	270.963	-270.963
1.333	0.022	270.963	-270.963
1.417	0.024	270.963	-270.963
1.500	0.025	270.963	-270.963
1.583	0.026	270.963	-270.963
1.667	0.028	270.963	-270.963
1.750	0.029	270.963	-270.963
1.833	0.031	270.963	-270.963
1.917	0.032	270.963	-270.963
2.000	0.033	270.963	-270.963
2.500	0.042	270.963	-270.963
3.000	0.050	270.963	-270.963
3.500	0.058	270.960	-270.960
4.000	0.067	270.960	-270.960
4.500	0.075	270.960	-270.960
5.000	0.083	270.960	-270.960
5.500	0.092	270.960	-270.960
6.000	0.100	270.957	-270.957
6.500	0.108	270.957	-270.957
7.000	0.117	270.957	-270.957
7.500	0.125	270.960	-270.960
8.000	0.133	270.957	-270.957
8.500	0.142	270.957	-270.957
9.000	0.150	270.957	-270.957
9.500	0.158	270.957	-270.957
10.000	0.167	270.957	-270.957
11.000	0.183	270.960	-270.960

9313090.0077

FOR INFORMATION ONLY

SAMPLE PUMP INSTALLATION FORM and WELL DEVELOPMENT CHECKLIST

WELL DESIGNATION 299-E25-47 DEPTH 286.90'BTOC

PUMP INSTALLATION

Project: WO17 Date: 9-10-92

Pump Type: Hydrostar

Pump Model No.: 8001

Installed By: S.Mackinnon (JDC)

Depth to Water: 270.97'Btoc

Reported Depth to Water:

Screened Interval: 286.90'-266.97'

Depth to Bottom: 286.9'

PUMP/RISER DISCRIPTION:

Pipe: 3/4"S.S.

Pump Length: 4.3'

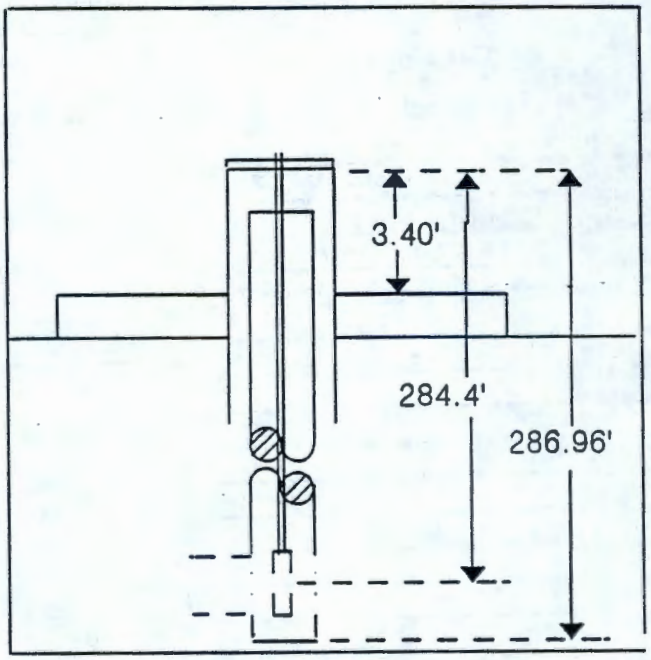
Pump Screen Length: 1.9'

Total Material Length: 284.3'

Distance Pump Off Bottom: 2.6'

Pump Intake @: 284.4'

Material Cleaning: Manufacturer



PUMP TEST: 5 GALS/74 Strokes (satisfactory)

COMMENTS:

WELL DEVELOPMENT INFORMATION

Pump Intake @: 286.6'

Transducer @: 9.529'BWL

Date: 9-10-92

Flow Rate (Q): 11.1 gpm

AQUIFER TEST INFORMATION

Slugging Rod Dim: 6'x 2"=.13 cf

Transducer @: 9.529'BWL

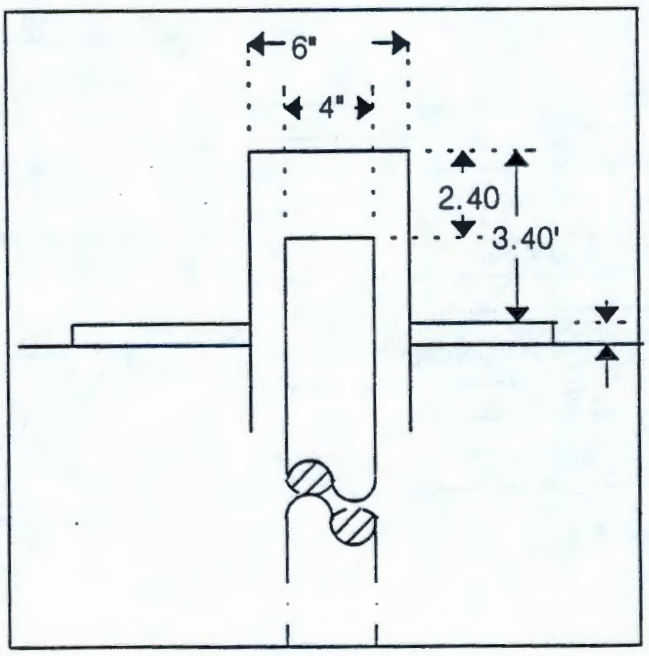
Date: 9-10-92

EQUIPMENT INFORMATION:

Data logger: 2K192

E.Tape: ET-5 (1-13-93)

Transducer: 262362 (2-21-93)



Completed By: James A. Coates Date 9-15-92

9313090.0076

WHC-SD-EN-DP-054 Rev. 0

~~For Information Only~~

VALIDATED
KDR 1/11/93
SIGNATURE/DATE

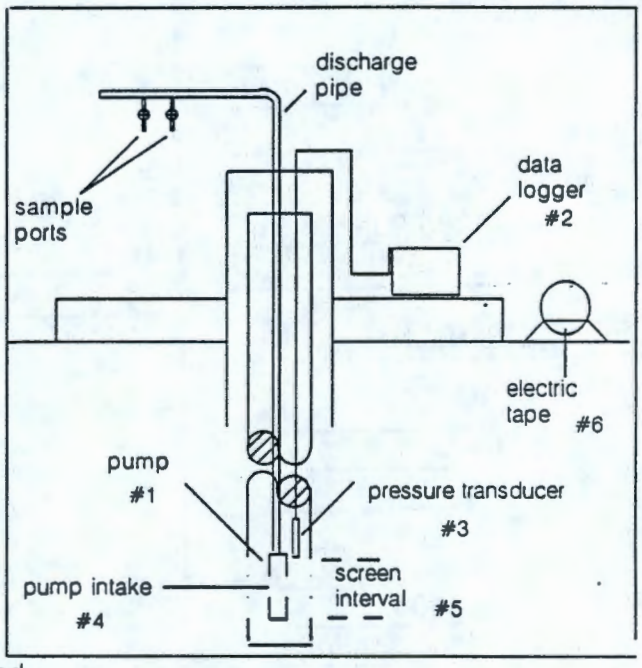
EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

WELL DESIGNATION 299-E25-48 DEPTH 297.70' Btoc 6"

Equipment Configuration

Item	Description
#1	1.5 hp. Grundfos submersible
#2	In-Situ datalogger 2K192
#3	In-Situ Inc s/n 262362 (cal. 2-21-93)
#4	@296.50' Btoc 6"
#5	297.70'-277.78' Btoc 6"
#6	Solinst s/n: ET-5 (cal. 1-13-93)
#7	
#8	
#9	
#10	

Diagram

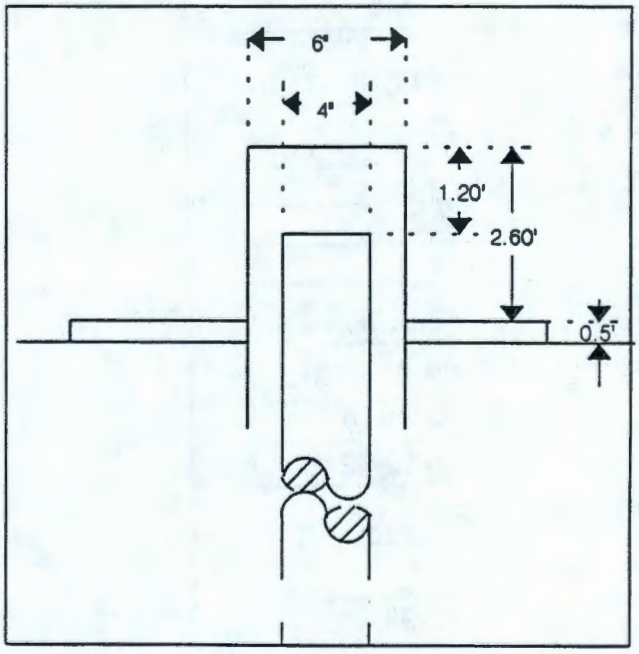


Well Head

Comments

N/A

Diagram



Signature of Recorder James A. Coates James A. Coates Date 10-07-92

A-6000-417 (08/89)

9313090.0075

WELL DEVELOPMENT FORM

Well Designation: 299-E25-48 Well Depth: 297.70' BTOC

Screened Interval: 297.7'-277.78' BTOC Date Well Devel. Performed: 9-11-92

BAILING

Water Level Prior to Bailing: _____ Time of Measurement: _____

Volume of Bailer: _____ Number of Bails Removed: _____ Gallons: _____

Summary Discription of Water Removed: _____

Water Level After Bailing: _____ Time of Measurement: _____

SURGE BLOCK:

N.A.

Type of Surge Block: _____ Dimensions of Surge Block: _____

TD Before	Stroke Length	Stroke Frequency	Surge Interval	Surge Time	TD After	TD Difference

AIIRLIFT:

N.A.

Depyh to Eductor Pipe: _____ Airlift Start Time: _____

Flow Rate: _____ Accumulated Flow: _____ Airlift Stop Time: _____

Turbidity (NTU): _____

MECHANICAL PUMPING:

Pumping Technique: Constant Discharge Pump Depth: 296.50'BTOC Pump Start Time: 1000

Flow Rate: 12.5gpm Accumulated Flow: 1190gals Pump Stop Time: 1135

Turbidity (NTU): 71, 20, 10, 9.0, 8.0, 6.1, 5.0

COMMENTS: N.A.

Recorded by: James A. Coates Date: 10-7-92

Sign and Print Name

A-6000-393 (03/90)

9313090.0074

DRAWDOWN/RECOVERY

Well Designation: 299-E25-48 Date: 9-11-92

Well Depth: 297.70' BTOC Screened Interval: 297.70'-277.78'BTOC

Pumping Method: Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-5/262362 Calibration Due: 1-13-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (6") Pump Start Time: 1000 Pump Stop Time: 1135

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Units:
				Bucket Method: 5gal./24.0sec.
				=12.5 gal/min.
	See Attached Data			
			See Attached Data	

Recorded by: James A. Coates James A. Coates Date: 10-8-92

Sign and Print Name

BD-6000-402(03/90)

9313090.0073

WELL NO.:299-E25-48
TEST TYPE:BASELINE (DRAWDOWN)

DATA LOGGER:

S/N: SE2000
Unit# 192
Test 0
INPUT 1

TRANSDUCER:

Reference 279.580
SG 1.000
Linearity 0.000
Scale factor 9.998
Offset 0.010
Delay mSEC 50.000

START DATE & TIME:

Step 0 = 09/11/92 09:45:59

9313090.0072

TIME:min.	TIME:hrs.	DEPTH TO WATER:ft.	d(WL):ft.
0.00000	0.0000	279.583	279.583
1.00000	0.0167	279.583	279.583
2.00000	0.0333	279.583	279.583
3.00000	0.0500	279.583	279.583
4.00000	0.0667	279.583	279.583
5.00000	0.0833	279.580	279.58
6.00000	0.1000	279.580	279.58
7.00000	0.1167	279.580	279.58
8.00000	0.1333	279.576	279.576
9.00000	0.1500	279.576	279.576
10.00000	0.1667	279.573	279.573
11.00000	0.1833	279.573	279.573
12.00000	0.2000	279.573	279.573
13.00000	0.2167	279.573	279.573
14.00000	0.2333	279.573	279.573
15.00000	0.2500	279.573	279.573
16.00000	0.2667	279.570	279.57

# WELL NO.:299-E25-48
# TEST TYPE:DRAWDOWN
Q= 12.5gpm

DATA LOGGER:

S/N: SE2000
Unit# 192
Test 1
INPUT 1

TRANSDUCER:

Reference 279.580
SG 1.000
Linearity 0.000
Scale factor 9.998
Offset 0.010
Delay mSEC 50.000

START DATE & TIME:

Step 0 = 09/11/92 10:03:41

TIME:min.	TIME:hrs.	DEPTH TO WATER:ft.	d(WL):ft.
0.00000	0.0000	279.624	279.624
0.00830	0.0001	279.640	279.64
0.01660	0.0003	279.668	279.668
0.02500	0.0004	279.658	279.658
0.03330	0.0006	279.674	279.674
0.04160	0.0007	279.671	279.671
0.05000	0.0008	279.677	279.677
0.05830	0.0010	279.668	279.668
0.06660	0.0011	279.668	279.668
0.07500	0.0013	279.665	279.665
0.08330	0.0014	279.665	279.665
0.10000	0.0017	279.668	279.668
0.11660	0.0019	279.671	279.671
0.13330	0.0022	279.665	279.665
0.15000	0.0025	279.671	279.671
0.16660	0.0028	279.668	279.668
0.18330	0.0031	279.665	279.665
0.20000	0.0033	279.668	279.668
0.21660	0.0036	279.665	279.665

9313090.0021

0.23330	0.0039	279.662	279.662
0.25000	0.0042	279.668	279.668
0.26660	0.0044	279.662	279.662
0.28330	0.0047	279.665	279.665
0.30000	0.0050	279.665	279.665
0.31660	0.0053	279.665	279.665
0.33330	0.0056	279.662	279.662
0.41660	0.0069	279.662	279.662
0.50000	0.0083	279.662	279.662
0.58330	0.0097	279.655	279.655
0.66660	0.0111	279.655	279.655
0.75000	0.0125	279.655	279.655
0.83330	0.0139	279.649	279.649
0.91660	0.0153	279.652	279.652
1.00000	0.0167	279.643	279.643
1.08330	0.0181	279.640	279.64
1.16660	0.0194	279.643	279.643
1.25000	0.0208	279.636	279.636
1.33330	0.0222	279.636	279.636
1.41660	0.0236	279.630	279.63
1.50000	0.0250	279.633	279.633
1.58330	0.0264	279.630	279.63
1.66660	0.0278	279.627	279.627
1.75000	0.0292	279.633	279.633
1.83330	0.0306	279.627	279.627
1.91660	0.0319	279.627	279.627
2.00000	0.0333	279.624	279.624
2.50000	0.0417	279.627	279.627
3.00000	0.0500	279.630	279.63
3.50000	0.0583	279.627	279.627
4.00000	0.0667	279.630	279.63
4.50000	0.0750	279.636	279.636
5.00000	0.0833	279.633	279.633
5.50000	0.0917	279.633	279.633
6.00000	0.1000	279.633	279.633
6.50000	0.1083	279.636	279.636
7.00000	0.1167	279.640	279.64
7.50000	0.1250	279.640	279.64
8.00000	0.1333	279.640	279.64
8.50000	0.1417	279.643	279.643
9.00000	0.1500	279.640	279.64
9.50000	0.1583	279.640	279.64
10.00000	0.1667	279.640	279.64
11.00000	0.1833	279.643	279.643
12.00000	0.2000	279.643	279.643

9313090.0020

13.00000	0.2167	279.640	279.64
14.00000	0.2333	279.640	279.64
15.00000	0.2500	279.640	279.64
16.00000	0.2667	279.643	279.643
17.00000	0.2833	279.640	279.64
18.00000	0.3000	279.643	279.643
19.00000	0.3167	279.643	279.643
20.00000	0.3333	279.643	279.643
21.00000	0.3500	279.646	279.646
22.00000	0.3667	279.646	279.646
23.00000	0.3833	279.646	279.646
24.00000	0.4000	279.646	279.646
25.00000	0.4167	279.646	279.646
26.00000	0.4333	279.646	279.646
27.00000	0.4500	279.649	279.649
28.00000	0.4667	279.646	279.646
29.00000	0.4833	279.649	279.649
30.00000	0.5000	279.643	279.643
31.00000	0.5167	279.646	279.646
32.00000	0.5333	279.643	279.643
33.00000	0.5500	279.646	279.646
34.00000	0.5667	279.646	279.646
35.00000	0.5833	279.643	279.643
36.00000	0.6000	279.646	279.646
37.00000	0.6167	279.646	279.646
38.00000	0.6333	279.643	279.643
39.00000	0.6500	279.646	279.646
40.00000	0.6667	279.646	279.646
41.00000	0.6833	279.643	279.643
42.00000	0.7000	279.646	279.646
43.00000	0.7167	279.649	279.649
44.00000	0.7333	279.646	279.646
45.00000	0.7500	279.646	279.646
46.00000	0.7667	279.649	279.649
47.00000	0.7833	279.646	279.646
48.00000	0.8000	279.649	279.649
49.00000	0.8167	279.646	279.646
50.00000	0.8333	279.646	279.646
51.00000	0.8500	279.649	279.649
52.00000	0.8667	279.643	279.643
53.00000	0.8833	279.646	279.646
54.00000	0.9000	279.649	279.649
55.00000	0.9167	279.646	279.646
56.00000	0.9333	279.649	279.649
57.00000	0.9500	279.646	279.646

9313090.0069

58.00000	0.9667	279.646	279.646
59.00000	0.9833	279.649	279.649
60.00000	1.0000	279.646	279.646
61.00000	1.0167	279.646	279.646
62.00000	1.0333	279.646	279.646
63.00000	1.0500	279.646	279.646
64.00000	1.0667	279.649	279.649
65.00000	1.0833	279.649	279.649
66.00000	1.1000	279.646	279.646
67.00000	1.1167	279.649	279.649
68.00000	1.1333	279.649	279.649
69.00000	1.1500	279.649	279.649
70.00000	1.1667	279.652	279.652
71.00000	1.1833	279.646	279.646
72.00000	1.2000	279.649	279.649
73.00000	1.2167	279.652	279.652
74.00000	1.2333	279.646	279.646
75.00000	1.2500	279.652	279.652
76.00000	1.2667	279.646	279.646
77.00000	1.2833	279.652	279.652
78.00000	1.3000	279.646	279.646
79.00000	1.3167	279.649	279.649
80.00000	1.3333	279.649	279.649
81.00000	1.3500	279.652	279.652
82.00000	1.3667	279.655	279.655
83.00000	1.3833	279.652	279.652
84.00000	1.4000	279.652	279.652
85.00000	1.4167	279.652	279.652
86.00000	1.4333	279.649	279.649
87.00000	1.4500	279.652	279.652
88.00000	1.4667	279.646	279.646
89.00000	1.4833	279.646	279.646
90.00000	1.5000	279.649	279.649
91.00000	1.5167	279.646	279.646

9313090.0068

WELL NO.:299-E25-48
TEST TYPE:RECOVERY

DATA LOGGER:

S/N: SE2000
Unit# 192
Test 2
INPUT 1

TRANSDUCER:

Reference 279.580
SG 1.000
Linearity 0.000
Scale factor 9.998
Offset 0.010
Delay mSEC 50.000

START DATE & TIME:

Step 0 = 09/11/92 11:35:55

TIME:min.	TIME:hrs.	DEPTH TO WATER:ft.	d(WL):ft.
0.00000	0.0000	279.529	279.529
0.00830	0.0001	279.561	279.561
0.01660	0.0003	279.564	279.564
0.02500	0.0004	279.548	279.548
0.03330	0.0006	279.532	279.532
0.04160	0.0007	279.529	279.529
0.05000	0.0008	279.532	279.532
0.05830	0.0010	279.538	279.538
0.06660	0.0011	279.542	279.542
0.07500	0.0013	279.545	279.545
0.08330	0.0014	279.545	279.545
0.10000	0.0017	279.538	279.538
0.11660	0.0019	279.542	279.542
0.13330	0.0022	279.545	279.545
0.15000	0.0025	279.542	279.542
0.16660	0.0028	279.542	279.542
0.18330	0.0031	279.542	279.542
0.20000	0.0033	279.538	279.538
0.21660	0.0036	279.538	279.538
0.23330	0.0039	279.542	279.542

9313090.0062

0.25000	0.0042	279.542	279.542
0.26660	0.0044	279.545	279.545
0.28330	0.0047	279.538	279.538
0.30000	0.0050	279.545	279.545
0.31660	0.0053	279.542	279.542
0.33330	0.0056	279.542	279.542
0.41660	0.0069	279.545	279.545
0.50000	0.0083	279.545	279.545
0.58330	0.0097	279.545	279.545
0.66660	0.0111	279.545	279.545
0.75000	0.0125	279.545	279.545
0.83330	0.0139	279.551	279.551
0.91660	0.0153	279.551	279.551
1.00000	0.0167	279.551	279.551
1.08330	0.0181	279.551	279.551
1.16660	0.0194	279.545	279.545
1.25000	0.0208	279.545	279.545
1.33330	0.0222	279.557	279.557
1.41660	0.0236	279.551	279.551
1.50000	0.0250	279.554	279.554
1.58330	0.0264	279.554	279.554
1.66660	0.0278	279.554	279.554
1.75000	0.0292	279.557	279.557
1.83330	0.0306	279.557	279.557
1.91660	0.0319	279.557	279.557
2.00000	0.0333	279.557	279.557
2.50000	0.0417	279.561	279.561
3.00000	0.0500	279.564	279.564
3.50000	0.0583	279.567	279.567
4.00000	0.0667	279.570	279.57
4.50000	0.0750	279.576	279.576
5.00000	0.0833	279.580	279.58
5.50000	0.0917	279.583	279.583
6.00000	0.1000	279.583	279.583
6.50000	0.1083	279.586	279.586
7.00000	0.1167	279.583	279.583
7.50000	0.1250	279.583	279.583
8.00000	0.1333	279.583	279.583
8.50000	0.1417	279.586	279.586
9.00000	0.1500	279.583	279.583
9.50000	0.1583	279.586	279.586
10.00000	0.1667	279.586	279.586

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VALIDATED
2/22/93
SIGNATURE/DATE

BOREHOLE TEST INFORMATION

Borehole 299-E25-48 Borehole Diameter 4 in. Hanford Coordinates N/A

Interval Tested 297.70'-277.78' Depth Interval 297.70'-277.78' Test Type: Instantaneous Slug

Borehole Depth: 297.70' BTOC Instruction Used: WHC-CM-7-7 (EII 10.1)

EQUIPMENT

NAME	DESCRIPTION
Electric Sounder	Solinst s/n: ET-5 Calibration due: 1-13-93
Data Logger	In-Situ Inc. s/n: 2K192
Pressure Transducer	In-Situ Inc. s/n: 262362 Calibration due: 2-21-93
Slugging Rod	Site Fabricated 72.0"Lx2.0"D 0.13 cu. ft.
Steel Measuring Tape	300' Graduated Steel Tape

MEASUREMENT DATUM

Control Datum: Top of Casing (TOC) 6"

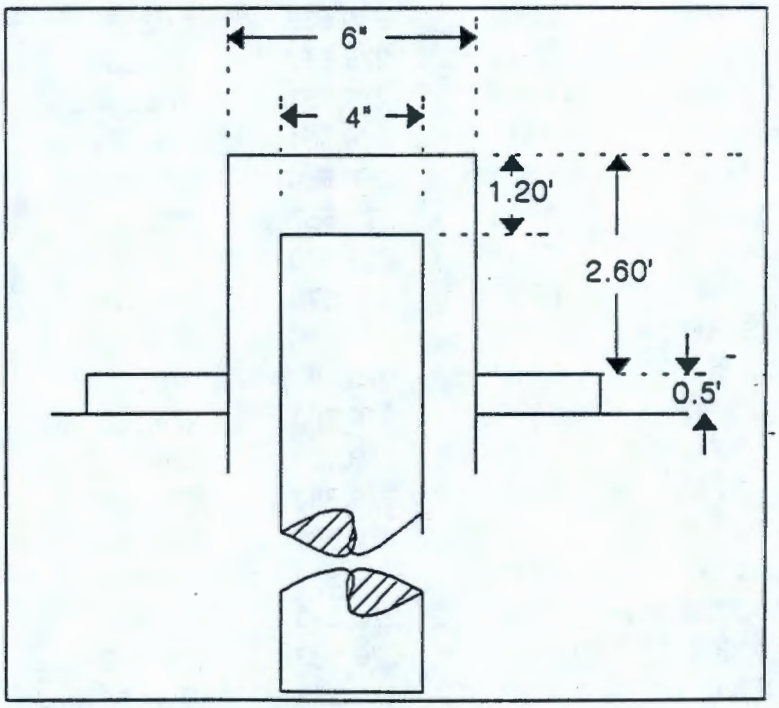
Elevation: N/A

Electric Sounder: TOC 6"

Steel Tape: TOC 6"

Pressure Transducer: TOC 6"

WELL HEAD DIAGRAM



COMMENTS

N.A.

Recorded by: James A. Coates James A. Coates Date: 10-7-92
Sign and Print Name

A-6000-417 (08/89)

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INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION

Borehole: 299-E25-48

Interval Tested: 297.70'-266.78' Btoc 6"

Depth To Water: 279.58' Btoc 6"

Depth to Transducer: 11.048' BWL

Measured by: James A. Coates

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1237	1300
Withdrawal	1300	1315

Date: 9-11-92

Initial Pressure (Pi): 279.58'

Slug Level/Pressure (Pmax) 280.070'

Borehole Diameter: 4"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A. Coates (Sign and Print Name) James A. Coates Date: 10-8-92

BD-6000-293(07/90)

9313090.0155

WELL NO.:299-E25-48
TEST TYPE:BASELINE (INJECTION)

DATA LOGGER:

S/N: SE2000
Unit# 192
Test 3
INPUT 1

TRANSDUCER:

Reference 279.580
SG 1.000
Linearity 0.000
Scale factor 9.998
Offset 0.010
Delay mSEC 50.000

START DATE & TIME:

Step 0 = 09/11/92 12:39:40

TIME:min.	TIME:hrs.	DEPTH TO WATER:ft.	d(WL):ft.
0.00000	0.0000	279.583	279.583
1.00000	0.0167	279.598	279.598
2.00000	0.0333	279.608	279.608
3.00000	0.0500	279.611	279.611
4.00000	0.0667	279.614	279.614
5.00000	0.0833	279.617	279.617
6.00000	0.1000	279.621	279.621
7.00000	0.1167	279.621	279.621
8.00000	0.1333	279.624	279.624
9.00000	0.1500	279.624	279.624
10.00000	0.1667	279.624	279.624
11.00000	0.1833	279.624	279.624
12.00000	0.2000	279.627	279.627
13.00000	0.2167	279.627	279.627
14.00000	0.2333	279.627	279.627
15.00000	0.2500	279.627	279.627
16.00000	0.2667	279.627	279.627
17.00000	0.2833	279.627	279.627
18.00000	0.3000	279.627	279.627
19.00000	0.3167	279.627	279.627

9313090.0156

20.00000	0.3333	279.627	279.627
21.00000	0.3500	279.627	279.627
22.00000	0.3667	279.627	279.627
23.00000	0.3833	279.627	279.627

9313090.0157

WELL NO.:299-E25-48

TEST TYPE:INJECTION

SLUG VOLUNE: 0.13 cu.ft.

DATA LOGGER:

S/N: SE2000
Unit# 192
Test 4
INPUT 1

TRANSDUCER:

Reference 279.580
SG 1.000
Linearity 0.000
Scale factor 9.998
Offset 0.010
Delay mSEC 50.000

START DATE & TIME:

Step 0 = 09/11/92 13:04:59

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TIME:min.	TIME:hrs.	DEPTH TO WATER:ft.	d(WL):ft.
0.00000	0.0000	279.576	279.576
0.00830	0.0001	279.434	279.434
0.01660	0.0003	278.973	278.973
0.02500	0.0004	279.580	279.58
0.03330	0.0006	279.573	279.573
0.04160	0.0007	279.614	279.614
0.05000	0.0008	279.627	279.627
0.05830	0.0010	279.649	279.649
0.06660	0.0011	279.630	279.63
0.07500	0.0013	279.605	279.605
0.08330	0.0014	279.576	279.576
0.10000	0.0017	279.564	279.564
0.11660	0.0019	279.586	279.586
0.13330	0.0022	279.589	279.589
0.15000	0.0025	279.573	279.573
0.16660	0.0028	279.573	279.573
0.18330	0.0031	279.576	279.576
0.20000	0.0033	279.580	279.58
0.21660	0.0036	279.576	279.576
0.23330	0.0039	279.576	279.576

0.25000	0.0042	279.576	279.576
0.26660	0.0044	279.576	279.576
0.28330	0.0047	279.576	279.576
0.30000	0.0050	279.576	279.576
0.31660	0.0053	279.576	279.576
0.33330	0.0056	279.576	279.576
0.41660	0.0069	279.576	279.576
0.50000	0.0083	279.576	279.576
0.58330	0.0097	279.576	279.576
0.66660	0.0111	279.576	279.576
0.75000	0.0125	279.576	279.576
0.83330	0.0139	279.576	279.576
0.91660	0.0153	279.576	279.576
1.00000	0.0167	279.576	279.576
1.08330	0.0181	279.576	279.576
1.16660	0.0194	279.573	279.573
1.25000	0.0208	279.573	279.573
1.33330	0.0222	279.576	279.576
1.41660	0.0236	279.573	279.573
1.50000	0.0250	279.576	279.576
1.58330	0.0264	279.576	279.576
1.66660	0.0278	279.573	279.573
1.75000	0.0292	279.576	279.576
1.83330	0.0306	279.576	279.576
1.91660	0.0319	279.576	279.576
2.00000	0.0333	279.576	279.576
2.50000	0.0417	279.576	279.576
3.00000	0.0500	279.576	279.576
3.50000	0.0583	279.576	279.576
4.00000	0.0667	279.573	279.573
4.50000	0.0750	279.573	279.573
5.00000	0.0833	279.573	279.573
5.50000	0.0917	279.573	279.573
6.00000	0.1000	279.576	279.576
6.50000	0.1083	279.576	279.576
7.00000	0.1167	279.576	279.576
7.50000	0.1250	279.573	279.573
8.00000	0.1333	279.573	279.573
8.50000	0.1417	279.573	279.573
9.00000	0.1500	279.573	279.573
9.50000	0.1583	279.573	279.573
10.00000	0.1667	279.576	279.576

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INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL

Borehole: 299-E25-48

Interval Tested: 297.70'-277.87' Btoc 6"

Depth To Water: 279.58' Btoc 6"

Depth to Transducer: 11.048' BWL

Measured by: James A. Coates

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1315	1325
Withdrawal	1325	1335

Date: 9-11-92

Initial Pressure (Pi): 279.58'

Slug Level/Pressure (Pmax) 280.012'

Borehole Diameter: 4"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: J.A. Coates James A. Coates Date: 10-8-92

Sign and Print Name

BD-6000-293(07/90)

9313090.0160

Well No. 299-E25-48 WITHDRAWAL & BASELINE TESTS

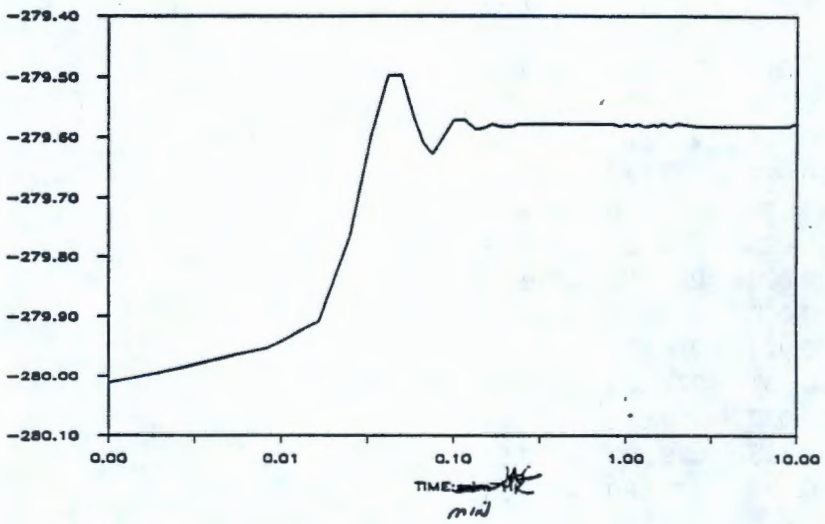
UNIT #192 Test 6

INPUT 1: Level (F) TOC

Reference 279.580
SG 1.000
Linearity 0.000
Scale fac tor 9.998
Offset 0.010
Delay mSE C 50.000

Step 0 0 9/11 13:27:53

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	280.012	-280.012
0.042	0.0007	279.497	-279.497
0.050	0.0008	279.497	-279.497
0.058	0.0010	279.564	-279.564
0.067	0.0011	279.608	-279.608
0.075	0.0013	279.627	-279.627
0.083	0.0014	279.608	-279.608
0.100	0.0017	279.570	-279.570
0.117	0.0019	279.570	-279.570
0.133	0.0022	279.586	-279.586
0.150	0.0025	279.583	-279.583
0.167	0.0028	279.576	-279.576
0.183	0.0031	279.580	-279.580
0.200	0.0033	279.580	-279.580
0.217	0.0036	279.580	-279.580
0.233	0.0039	279.576	-279.576
0.250	0.0042	279.576	-279.576
0.267	0.0044	279.576	-279.576
0.283	0.0047	279.576	-279.576
0.300	0.0050	279.576	-279.576
0.317	0.0053	279.576	-279.576
0.333	0.0056	279.576	-279.576
0.417	0.0069	279.576	-279.576
0.500	0.0083	279.576	-279.576
0.583	0.010	279.576	-279.576
0.667	0.011	279.576	-279.576



UNIT 192 TEST 5

INPUT 1: Level (F) TOC

Reference 279.580
SG 1.000
Linearity 0.000
Scale fac tor 9.998
Offset 0.010
Delay mSE C 50.000

Step 0 0 9/11 13:15:57

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0.000	279.573	-279.573
1	0.017	279.576	-279.576
2	0.033	279.576	-279.576
3	0.050	279.576	-279.576
4	0.067	279.576	-279.576
5	0.083	279.576	-279.576
6	0.100	279.576	-279.576
7	0.117	279.576	-279.576
8	0.133	279.576	-279.576
9	0.150	279.576	-279.576

5 of 5

0.750	0.013	279.576	-279.576
0.833	0.014	279.576	-279.576
0.917	0.015	279.580	-279.580
1.000	0.017	279.576	-279.576
1.083	0.018	279.580	-279.580
1.167	0.019	279.576	-279.576
1.250	0.021	279.580	-279.580
1.333	0.022	279.580	-279.580
1.417	0.024	279.576	-279.576
1.500	0.025	279.580	-279.580
1.583	0.026	279.576	-279.576
1.667	0.028	279.576	-279.576
1.750	0.029	279.580	-279.580
1.833	0.031	279.580	-279.580
1.917	0.032	279.576	-279.576
2.000	0.033	279.576	-279.576
2.500	0.042	279.580	-279.580
3.000	0.050	279.580	-279.580
3.500	0.058	279.580	-279.580
4.000	0.067	279.580	-279.580
4.500	0.075	279.580	-279.580
5.000	0.083	279.580	-279.580
5.500	0.092	279.580	-279.580
6.000	0.100	279.580	-279.580
6.500	0.108	279.580	-279.580
7.000	0.117	279.580	-279.580
7.500	0.125	279.580	-279.580
8.000	0.133	279.580	-279.580
8.500	0.142	279.580	-279.580
9.000	0.150	279.580	-279.580
9.500	0.158	279.576	-279.576
10.000	0.167	279.576	-279.576
10	0.167	279.576	-279.576
11	0.183	279.576	-279.576

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APPENDIX D

AQUIFER TESTS

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SUMMARY OF AQUIFER TEST RESULTS

Aquifer tests were conducted at both wells in an attempt to determine the aquifer properties of the formation. Slug test data for well E25-48 and the development data from both wells were not amenable to analysis because of an over-damped effect ("oscillatory behavior"; Figure D-1) or the development time was not long enough for a Cooper-Jacob evaluation (Figure D-2).

The slug withdrawal test data from well E25-47 were used to estimate the hydraulic conductivity of the uppermost unconfined aquifer at that well. The data were analyzed using the Bouwer and Rice method (Bouwer 1989) for partially penetrating well screens in unconfined aquifers. The hydraulic conductivity at well E25-47 was estimated at 260 to 290 ft/d (Figure D-3). The high hydraulic conductivities are near the upper limit for this analysis technique. This creates a greater spread in the data, and significantly decreases the water-level response time. Because of the high conductivities, the response and therefore the greater spread of data, the regression analysis becomes very sensitive the inclusion or exclusion of only one or two data points in the best line fit.

Figure D-4 shows some of the terminology used in the Bouwer and Rice evaluation. The input and background information are displayed in the summary analysis sheet.

Slug tests stress a relatively small portion of the aquifer near the borehole. The hydraulic conductivity of the sediments around the borehole may also be affected by the drilling process, and/or local formational heterogeneities. As a consequence, slug test data results may not be representative of the aquifer over a larger area.

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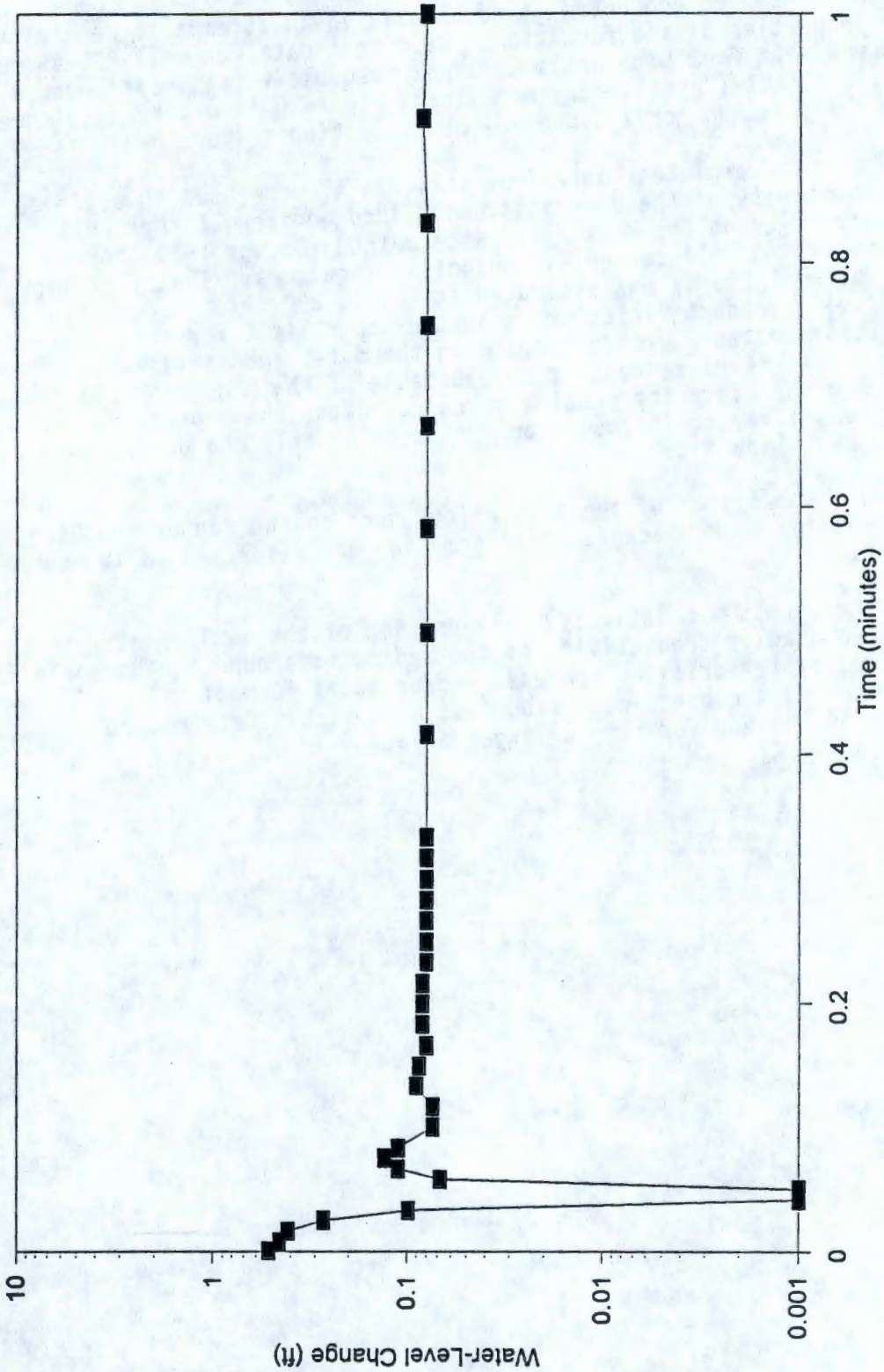

Figure 1. Slug Withdrawal Test at Well 299-E25-48.

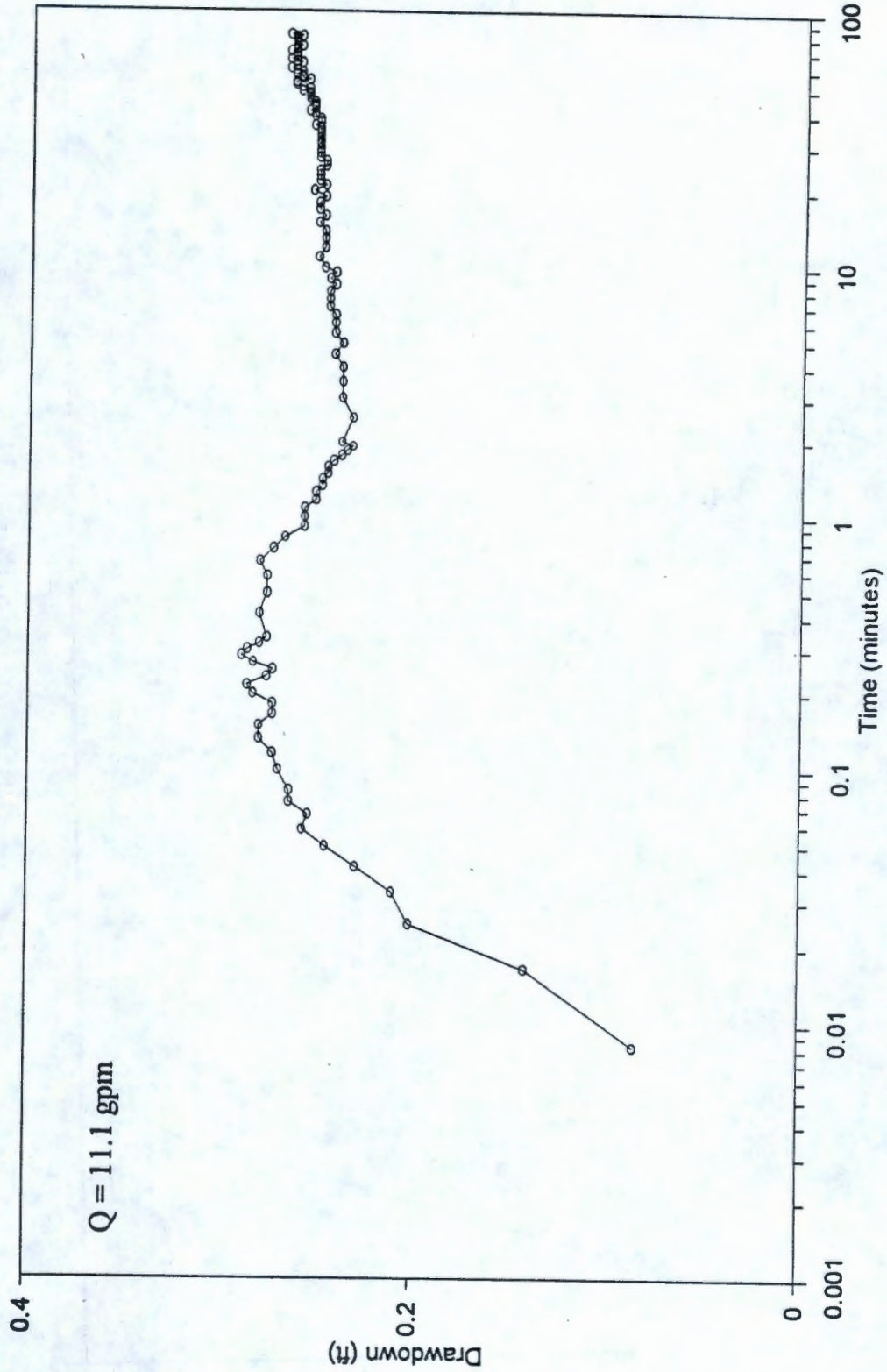

Figure 2. Development Drawdown Data at Well 299-E25-47.

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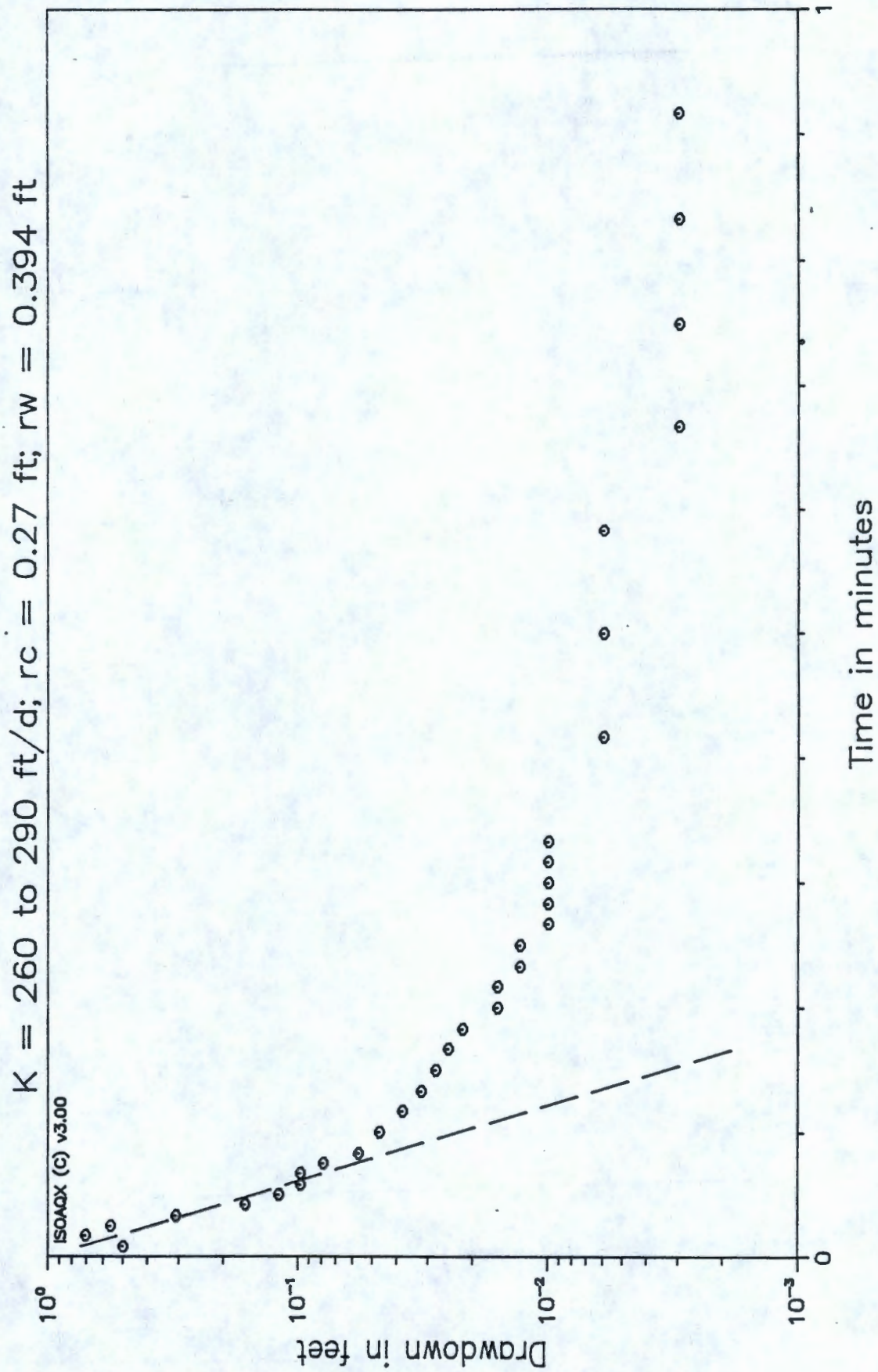

Figure 3. Slug Withdrawal Test at Well 299-E25-47.

AQUIFER TEST SUMMARY

WELL 299-E25-47

Purpose of Test: To estimate hydraulic conductivity of the uppermost unconfined aquifer beneath 216-A-29 ditch in the 200-East Area.

Type of Tests Performed: Slug Withdrawal

Hydrogeologic Unit Tested: Near Hanford Formation/Ringold Contact

Screened Interval : 266.97 to 286.90 feet (btoc)

Date of Test: 9/10/92

Start time of Test: 13:12

Pumping Rate: N/A

Slug Rod Volume: 0.13 ft^3

Initail Water-level: 270.97 ft (btoc)

Measurement Methods: Electrical tape, pressure transducer

Maximum Drawdown: N/A

Analysis Methods: Bouwer and Rice (1976)

Input Parameters: r_c = 0.27 ft; r_w = 0.394 ft; Le = 15.93 ft; b = 130 ft

Test Results: K = 260 to 290 ft/d

Remarks:
- o High transmissivity precludes analysis of development test data
- o btoc-below top of casing
- o r_c = casing radius
- o r_w = well radius
- o Le = screened interval
- o b = estimated aquifer thickness

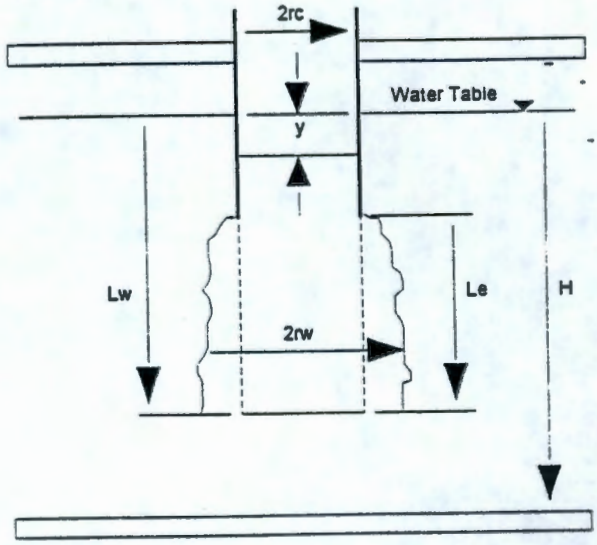

Figure 4. Terminology.

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ID Number (include revision, volume, etc.): WHC-SD-EN-DP-054, Rev. 0

List attachments.

Date Release Required: 3/10/93

Title: Borehole Completion Data Package for 216-A-29 RCRA Facility Monitoring Wells 299-E25-47 and 299-E25-48

Unclassified Category: UC-

Impact Level: 3 Q

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Part 1

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