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INTERIM CHANGE NOTICE (ICN)

A. Document No.: PNNL-13612 **Revision No.:** 1

Effective Date of ICN: 7/20/03

Document Title: Groundwater Quality Assessment Plan for Single-Shell Tank Waste Management Area U

Document's Original Author: R. M. Smith, F. N. Hodges, B. A. Williams

Change Requested By: R. M. Smith

B. Action:
Make changes in the WMA U groundwater quality assessment plan as described in Section D below. Attach this ICN to the front of the document, just before the title page.

C. Effect of Change:
This ICN updates the assessment plan to reflect the current wells in the monitoring system and the current constituent list and sampling schedule for WMA U.

D. Reason for Change/Description of Change:

Reason for Change:
New wells have been constructed at WMA U and the constituent list has been modified to reflect constituents with a source in the WMA. Constituents present in groundwater beneath the WMA that are part of a regional plume with a source other than the WMA have been removed from the constituent list. These plumes will be monitored within the UP-1 and ZP-1 Operable Units.

Description of Change:
1. Replace page 5 of the original document with the attached page 5 which shows a revised Figure 2.1.
2. Replace page 31 of the original document with the attached page 31 which shows a revised Table 5.2.
3. Add well construction and completion summaries for new wells 299-W18-40, 299-W19-44, and 299-W19-45 to the end of Appendix B.

E. Document Management Decisions:
The original information release form is unavailable, thus, we do not know who approved the original document. For this ICN, Stuart Luttrell and Mary Hartman will sign approval.

The attached distribution list shows the current staff who will receive this ICN as it may vary from the distribution of the original document

F. Approval Signatures
(Please Sign and Date)

Task Manager : [signature] 7/23/03
S. P. Luttrell

Type of Change: (Check one):
___ Minor ✓ Major

Project Quality Engineer: Thomas G Walker **Date:** 7/28/03
T. G. Walker

Other Approvals: R. M. Smith **Date:** 7/23/03
R. M. Smith

Mary J Hartman **Date:** 23 July 03
M. J. Hartman

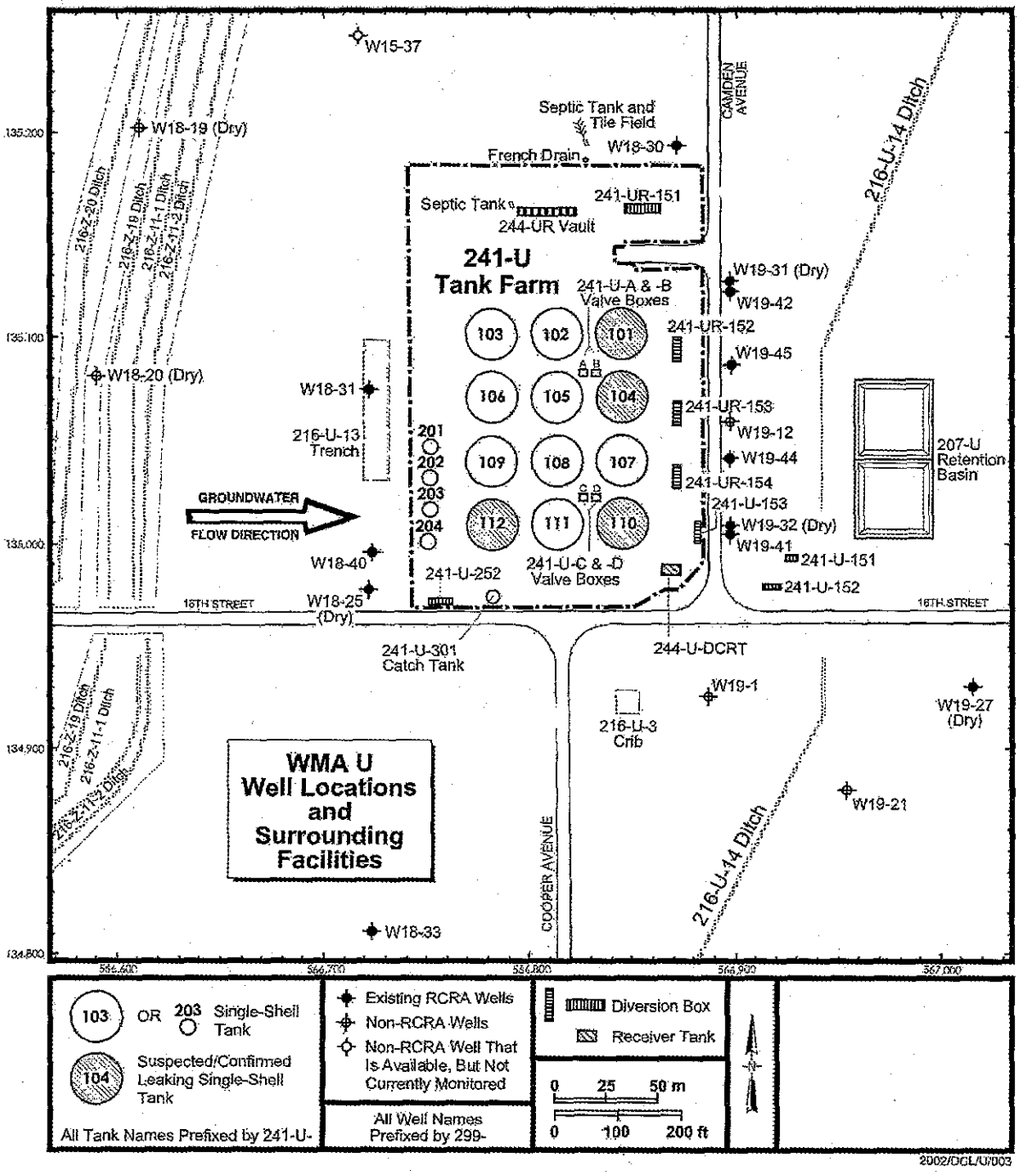


Figure 2.1. Waste Management Area U and Regulated Structures

Table 5.2. Sampling Frequency and Constituent List

Well	Specific Conductance	pH	Temperature	Alkalinity	Anions (chloride, fluoride, nitrate, nitrite, and sulfate)	Metals[a]	Technetium-99[b]	Gross Alpha/Beta[b]	Low-Level Gamma Scan[b]	Water Level
299-W18-30	Q	Q	Q	Q	Q	Q	Q	A	A	Q
299-W18-31	Q	Q	Q	Q	Q	Q	Q	A	A	Q
299-W18-40	Q	Q	Q	Q	Q	Q	Q	A	A	Q
299-W19-12	Q	Q	Q	Q	Q	Q	Q	A	A	Q
299-W19-41	Q	Q	Q	Q	Q	Q	Q	A	A	Q
299-W19-42	Q	Q	Q	Q	Q	Q	Q	A	A	Q
299-W19-44	Q	Q	Q	Q	Q	Q	Q	A	A	Q
299-W19-45	Q	Q	Q	Q	Q	Q	Q	A	A	Q

Note: Sampling and analysis frequency is Q for quarterly (February, May, August, and November) and A for annual (February).
(a) Metals include Al, Sb, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Mg, Mn, Ni, K, Ag, Na, Sr, V, Zn.
(b) These are non-RCRA regulated constituents and are included because they are analyzed to aid in source determination and contaminant movement.

5.4 Groundwater Flow

Groundwater flow direction and rate must be determined regularly. These properties are determined several ways, but the standard method for this WMA has been to measure water levels in surrounding monitoring wells. Water levels will continue to be measured on a quarterly basis in all WMA U monitoring wells. These data will be converted to elevations and evaluated using trend surface analysis and shown as a water table map. Groundwater flow velocity, v, will be estimated using the Darcy equation.

Slug tests will be conducted at all new wells to determine hydraulic conductivity. Additional aquifer testing such as vertical flow tracer tests may be conducted in the future if detected contamination increases rapidly or to levels well above the drinking water standard.

U540435

WELL CONSTRUCTION AND COMPLETION SUMMARY

Drilling Method:	Cable Tool/Air Rotary	Sample Method:	Grab/Split Spoon	WELL NUMBER:	299-W18-40 G3395
Drilling Fluid Used:	Air/None	Additives Used:	None	TEMPORARY WELL NO:	Not Allowed
Driller's Name:	G. Howell, K. Olson, M. Gomez	WA State Lic No:	1930, 1217, NA	Coordinates: N	Not documented
Drilling Company:	RSI	Company Location:	Woodland, Ca.	Coordinates: E	Not documented
Date Started:	13Aug01	Date Completed:	28Sep01	Steel Card #:	R057815
				Elevation Ground Surface:	

Depth to Water: 214.6 ft 27Sep01
(Ground surface)

GENERALIZED STRATIGRAPHY · Geologist's Log

0 - 10 ft : Fill Material
10 - 17 ft : Silty Sandy Gravel (msG)
17 - 19 ft : Gravelly Sand (Gs)
19 - 23 ft : Sandy Gravel (sG)
23 - 27 ft : Slightly Silty Sandy Gravel
27 - 38 ft : Silty Sand (mS)
38 - 47 ft : Sand (S)
47 - 53 ft : Silty Sandy Gravel (msG)
53 - 56 ft : Gravelly Sand (gS)
56 - 69.5 ft : Silty Sandy Gravel (msG)
69.5 - 119 ft : Sand (S) w/silt layer at 61 ft
119 - 132.5 ft : Sandy Silt (sM)
132.5 - 138 ft : Silty Sandy Gravel with caliche
138 - 144 ft : Silty Sandy Gravel (msG)
144 - 180 ft : Sandy Gravel (sG)
180 - 220.5 ft : Silty Sandy Gravel (msG)
220.5 - 222.5 ft : Cemented Silty Sandy Gravel
222.5 - 250 ft : Silty Sandy Gravel (msG)
250 - 252.5 ft : Cemented Silty Sandy Gravel
252.5 - 260 ft : Silty Sandy Gravel (msG)

Elevation of Reference Point: m

Height of Reference Point Above Ground Surface:

Depth of Surface Seal: 11.6 ft

Type of Surface Seal: 4x4 Concrete Pad

Fill	Casing	Screen
0 - 11.6 ft : 11-inch hole Cement Surface Seal	0 - 218.27 ft : 4 inch 304L SS sch 5 csg	
11.6 - 202 ft : 11-inch hole Granular Bentonite		
202 - 207.8 ft : 11-inch hole Bentonite Pellets		218.27 - 253.28 ft : 4 inch 304L SS Wire Wrap .020 slot scrn
207.8 - 255.28 ft : 11-inch hole 10/20 Silica Sand		
255.28 - 260 ft : 11-inch hole Slough	253.28 - 255.28 ft : 4 inch 304L SS Sump	

260 ft : Borehole drilled depth

0 - 260 ft : 11-in. Temp 10-3/4" CS csg drl to 147' w/Cable Tool, advanced to 178 w/Air Rotary, Cable Tooled to 260 ft.

Drawing By: JEA
Reference: Hanford Wells
Revision: 0
Revision Date: 18Oct01
Print Date: 08Nov01

Report Form: WELL8 Project File: W304.8.DM.4

WELL SUMMARY SHEET

0540421

Page 1 of 2

Date: 08/17/01

Well ID: C3395

Well Name: 299-W18-40

Location: SW corner of 241-U Tank Farm

Project: CY01 RCRA Drilling

Prepared By: C. Martinez / L.D. Walker

Date: 08/19/01

Reviewed By: D.C. Weekes

Date: 10/10/01

Signature: C. Martinez / L.D. Walker

Signature: D.C. Weekes

CONSTRUCTION DATA

Description

Portland cement Grout 0'-11.6'

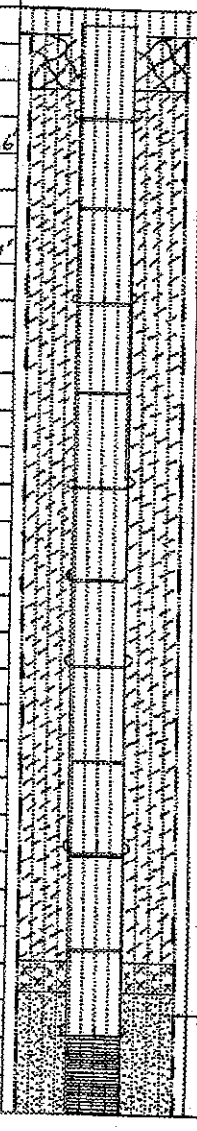
Casing: 4" sched 5 SS 304L ~~+1.9' in 218.27'~~ +1.9' → 218.27'

Granular Bentonite: 11.6' → 202.0'

Bentonite Pellets: 202.0' → 207.8'

Wellscreen: SS 304L 0.020-in slot cont. wire-wrap 218.27' → 253.28'

Diagram



GEOLOGIC/HYDROLOGIC DATA

Depth in Feet: 0, 40, 80, 120, 140, 200

Graphic Log

Lithologic Description

0'-10' Fill material

10'-17' Silty Sandy Gravel (msG)

17'-18' Gravelly Sand (GS)

18'-23' Sandy Gravel (SG)

23'-27' Slightly Silty Sandy Gravel

27'-30' Silty Sand (ms)

30'-42.5' Sand (s)

42'-53' Silty Sandy GRAVEL (msG)

53'-56' Gravelly SAND (gS)

56'-68.5' Silty sandy GRAVEL (msG)

68.5'-114' SAND (s)

114'-132.6' Sandy Silt (sM)

(81' silt layer)

132.6'-138.0' Silty Sandy Gravel w/caliche

138'-144' Silty sandy Gravel (msG)

144'-180' sandy GRAVEL (SG)

180'-220.5' silty sandy GRAVEL (msG)

220.5'-222.5' cemented silty sandy gravel

222.5'-250.0' silty sandy GRAVEL (msG)

BHI-EE-189 (12/97)

Page 2 of 3

WELL SUMMARY SHEET

Date: 09/19/01

Well ID: C3395	Well Name: 299-W18-40
Location: SW Corner of 241-A Tank Farm	Project: CY01 RCRA Drilling
Prepared By: C Martinez / LD Walker — Date: 09/19/01	Reviewed By: DC Weekes — Date: 10/10/01
Signature: C Martinez / DC Weekes for LD Walker	Signature: DC Weekes

CONSTRUCTION DATA

Description	Diagram
Sandpack: 10-20 mesh silica 207.8' → 257.8'	
Tailpipe with welded endcap: 253.28' → 255.28'	
Liners from 165.58 to 260 [illegible]	
All temporary casing removed from ground	
All depths are in feet below ground surface	

GEOLOGIC/HYDROLOGIC DATA

Depth in Feet	Graphic Log	Lithologic Description
240		
		250.0'-252.5' cemented silty sandy gravel
		252.5'-260.0' silty sandy gravel (mse)
280		TD = 260' bgs
		WL = 214.6' 9/27/01
300		

BHI-EE-189 (12/97)

WELL CONSTRUCTION SUMMARY REPORT

0540428

Start Date: 8-13-01
Finish Date: 9-28-01
Page 1 of 1

Specification No.: 0200X-SP-V0004	Rev. No.: 0	Well Name: 299-W18-40	Temp. Well No.: C3395
ECNs: NA		Approximate Location: SW corner of 241-U	
Project: CY01 RCRA Drilling		Other Companies: CHE	
Drilling Company: Resonant Sonic Inc.		Geologist(s): L. Walker Jim Favorite D Hudson C. Martinez DC Weekes	
Driller: Gary Howell #1730; Mike Gomez; Kelly Olson #1278			

TEMPORARY CASING AND DRILL DEPTH

*Size/Grade/Lbs. Per Ft.	Interval	Shoe O.D./I.D.
10 3/4"/9 3/8", FJ	0 - 258'	11"/9 3/8"
carbon steel	-	
	-	
	-	
	-	

*Indicate Welded (W) - Flush Joint (FJ) Coupled (C) & Thread Design

DRILLING METHOD/HOLE DIAMETER

Auger:	Diameter From ___	to ___
Cable Tool: x 15 3/4" OD	Diameter From 0	to 147'
Air Rotary: x Reisone Bit	Diameter From 147'	to 178
A.R. w/Sonic:	Diameter From ___	to ___
	Diameter From ___	to ___
	Diameter From ___	to ___
	Diameter From ___	to ___

* Cable tool: 178' → 260'

Drilling Fluid: none for cable tool; Air for rotary

Total Drilled Depth: 260' | Hole Dia @ TD: 11"

Total Amt. Of Water Added During Drilling:

Well Straightness Test Results: Passed 9/20/01 (20.4' x 8.5") | Static Water Level: 214.6' | Date: 9/27/01

GEOPHYSICAL LOGGING

Sondes (type)	Interval	Date	Sondes (type)	Interval	Date
	-			-	
	-			-	
	-			-	

COMPLETED WELL

Size/Wt./Material	Depth	Thread	Slot Size	Type	Interval Annual Seal/Filter Pack	Volume	Mesh Size
4" SD SS304L Sump	253.28' - 255.28'	FJ180	N/A	Colorado Silica Sand (50#)	207.8' - 257.6'	59 bags	10-20
4" ID SS304L Screen	218.27' - 253.28'	"	0.020"	Bentonite Pellets	202.0' - 207.8'	5.5 buck	1/4"
4" ID SS304L Casing	11.6' - 218.27'	"	N/A	Granular Bentonite	11.6' - 202.0'	152 bags	N/A
	-			Port	0' - 11.6'	10 bags	N/A
	-				-		

OTHER ACTIVITIES

Aquifer Test:	Date:	Well Abandoned:	Yes:	No:	Date:
Description:		Description:			

WELL SURVEY DATA

Date:	Protective Casing Elevation:
Washington State Plane Coordinates:	Brass Cap Elevation:

COMMENTS/REMARKS

Start card # R037815: vol. colorado sand, 59 bags x 0.535 ft³/bag = 31.57 ft³; bent pellets 5.5 buck x 0.62 ft³/buck = 3.41 ft³; bent granules = 152 bags x 0.71 ft³/bag = 107.92 ft³; portland cement

Reported By: DC Weekes / C. Martinez		Reviewed By: Jess Hocking	
Title: Geologist	Date: 10/28/01	Title: Geologist	Date: 11/5/01
Signature: C. Martinez		Signature: Jess Hocking	

P.C. (cont) 10 bags x 1.285 ft³/bag = 12.85 ft³

BHI-EE-181 (12/97)

0540340

WELL CONSTRUCTION AND COMPLETION SUMMARY

Drilling Method:	Cable Tool	Sample Method	Grab/Split Spoon	WELL NUMBER:	299-W19-44 C3393
Drilling Fluid Used:	None	Additives Used:	raw water	TEMPORARY WELL NO.	Not Allowed
Driller's Name:	K. Olson	WA State Lic Nr:	Data not available	Coordinates: N	Not documented
Drilling Company:	RSI	Company Location:	Woodland, Ca.	Coordinates: E	Not documented
Date Started:	05Sep01	Date Completed:	13Sep01	Start Card #:	R
				Elevation Ground Surface	

Depth to Water: 230.9 ft 05Sep01
(Ground surface)

GENERALIZED STRATIGRAPHY Geologist's Log

Elevation of Reference Point: m

Height of Reference Point Above Ground Surface:

Depth of Surface Seal: 10.3 ft

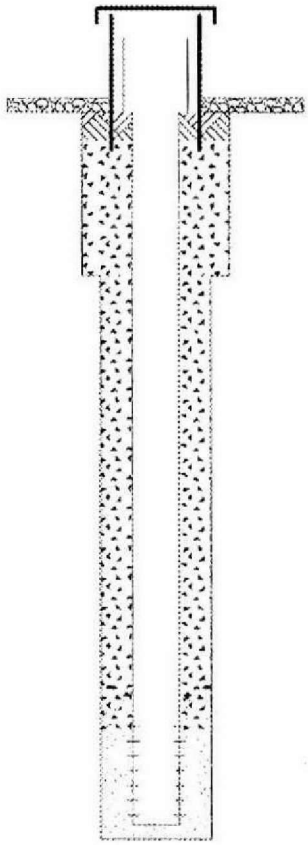
Type of Surface Seal: 4x4 Concrete Pad

0 - 2.5 ft : Sandy Gravel (Sg)
2.5 - 7 ft : gravely Sand (gS)
7 - 11 ft : sandy Gravel (sG)
11 - 19 ft : gravelly Sand (gS)
19 - 31 ft : silty sandy Gravel (MSG)
31 - 38.5 ft : sandy Gravel (sG)
38.5 - 44 ft : gravelly Sand (gS)
44 - 45.5 ft : sandy Gravel (sG)
45.5 - 50 ft : cemented silty Gravel
50 - 52 ft : gravelly Sand (gS)
52 - 58 ft : Sand (S)
58 - 59.2 ft : Silt (m)
59.2 - 67 ft : Sand (S)
67 - 67.5 ft : sandy Silt (sm)
67.5 - 68 ft : Silt (m)
68 - 69 ft : Sand (S)
69 - 70.5 ft : Silt (m)
70.5 - 81.5 ft : Sand (S)
81.5 - 88 ft : sandy Silt (sm)
88 - 97.5 ft : silty Sand (mS)
97.5 - 103 ft : Sand (S)
103 - 131.5 ft : silty Sand (mS)
131.5 - 144.5 ft : Silt (m)

144.5 - 150.5 ft : Caliche
150.5 - 155 ft : slightly silty gravelly sand
155 - 233 ft : silty sandy Gravel

233 - 234.45 ft : cemented silty sandy gravel
234.5 - 267.5 ft : silty sandy Gravel (msG)

267.5 - 269.5 ft : cemented silty sandy gravel
269.5 - 272 ft : silty sandy Gravel (msG)



Fill	Casing	Screen
0 - 10.3 ft : 12-inch hole Cement Surface Seal	0 - 229.9 ft : 4 inch 304L SS sch 5 csg	
10.3 - 61 ft : 12-inch hole Bentonite crumbles		
61 - 231.3 ft : 9-inch hole Bentonite crumbles		
213.3 - 218.9 ft : 9-inch hole 1/4" Bentonite Pellets		229.9 - 264.9 ft : 4 inch 304L SS Wire Wrap .020 slot scrn
218.9 - 266.9 ft : 9-inch hole 10/20 Silica Sand		
266.9 - 272 ft : 9-inch hole 10/20 Silica Sand	264.9 - 266.9 ft : 4 inch 304L SS Sump	

272 ft : Borehole drilled depth

0 - 61 ft : 12-in. Cable Tool 11-3/4" CS Temp csg
61 - 272 ft : 9-in. Cable Tool 8-5/8" CS Temp csg

Drawing By: JEA
Reference: Hanford Wells
Revision: 0
Revision Date: 18Oct01
Print Date: 24Oct01

Report Form: W11L9 Project File: W11L9.GPJ

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 299-W19-44

WELL DESIGNATION	:	299-W19-44
CERCLA UNIT	:	
RCRA FACILITY	:	
DEPTH DRILLED (GS)	:	272.0 ft
MEASURED DEPTH (GS)	:	266.9 13Sep01
AVAILABLE LOGS	:	Geologist & Geophysical
DATE EVALUATED	:	Data not available
EVAL RECOMMENDATION	:	Data not available
LISTED USE	:	RCRA Monitoring
CURRENT USER	:	RCRA & Operations
PUMP TYPE	:	Not Documented
MAINTENANCE	:	Data not available
COMMENTS	:	Cable Tool 11-3/4" Temp CS csg to 61 ft, 8-5/8" temp Cs csg to 272 ft
TV SCAN COMMENTS	:	

Report Form: WELLS Project File: WELLS.GPJ

Drawing By: JEA
Reference: Hanford Wells
Revision: 0
Revision Date: 18Oct01
Print Date: 24Oct01

0540337

WELL SUMMARY SHEET

Page 1 of 2
Date: 08/27/01

Well ID: C3393	Well Name: 299-W19-44
Location: East of 241-U Tank Farm	Project: CY01 RCRA Drilling
Prepared By: C Martinez / Jess Hocking — Date: 08/30/01	Reviewed By: DC Weekes — Date: 9/20/01
Signature: Charlene Martinez / Jess Hocking	Signature: DC Weekes

CONSTRUCTION DATA

Description
6" ID SS 304 Protective casing 3' above grade
4" ID SS 304L RISER
+2.00' → 229.9' bgs.
4" ID SS 304L 0.020" Cont. Wire Wrap Screen.
229.9' bgs → 264.9' bgs
4" ID SS 304L 2ft. Sump
264.9' bgs → 266.9' bgs
Colorado Silica Sand 10-20 MESH
218.9' bgs → 272.0' bgs
1/4" Bentonite Pellets
213.03' bgs → 218.9' bgs
Bentonite Crumbles
10.3' bgs → 213.03' bgs
Portland Cement Grout
0' → 10.3' bgs.
All depths are in feet below ground surface
ALL TEMP. CASING REMOVED FROM GROUND.

Diagram

GEOLOGIC/HYDROLOGIC DATA

Depth in Feet	Graphic Log	Lithologic Description
0		0'-2.5' sandy gravel (sg)
		2.5'-7.0' gravelly SAND (gS)
		7.0'-11.0' sandy GRAVEL (sG)
		11.0'-19.0' gravelly SAND (gS)
		19.0'-31.0' silty sandy GRAVEL (msG)
40		31.0'-38.5' sandy GRAVEL (sG)
		38.5'-44.0' gravelly SAND (gS)
		44.0'-45.5' sandy Gravel (sG)
		45.6'-50.0 cemented silty Gravel
		50.0-62.0' gravelly Sand (gS)
80		62.0'-58.0' SAND (S)
		58.0'-59.2' SILT (m)
		59.2'-67.0' SAND (S)
		67.0'-67.5' sandy SILT (sm)
		67.5'-68.0' SILT (m)
120		68.0'-69.0' SAND (S)
		69.0'-70.5' SILT (m)
		70.5'-81.5' SAND (S)
		81.5'-88.0' sandy SILT (sm)
		88.0'-97.5' silty SAND (mS)
160		97.5'-103.0' Sand (S)
		103.0'-131.8' silty SAND (mS)
		131.8'-144.5' SILT (m)
		144.5'-150.5' CACLCHE
		150.5'-155.0' slightly silty gravelly sand
200		155.0'-233' silty sandy GRAVEL
230.9		

BHI-EE-189 (12/97)

Page 2 of 2

WELL SUMMARY SHEET

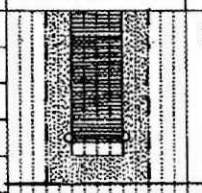
Date: 08/27/01

Well ID: C3393	Well Name: 299-W19-44
Location: East of 241-U Tank Farm	Project: CY01 BLRA Drilling
Prepared By: C. Martinez — Date: 08/30/01	Reviewed By: DCWeekes — Date: 9/20/01
Signature: Charlene Martinez	Signature: DC Weekes

CONSTRUCTION DATA

Description

Diagram



ALL TEMP. CASING REMOVED FROM GROUND.

All depths from ground surface

GEOLOGIC/HYDROLOGIC DATA

Depth in Feet	Graphic Log	Lithologic Description
245		233.0' - 234.6' cemented silty sandy gravel
		234.6' - 267.5' silty sandy gravel (ms6)
280		267.5' - 269.5' cemented silty sandy gravel
		269.5' - 272' silty sandy gravel (ms6)
320		TD = 272.0' bgs
		SWL = 230.9' bgs [9-5-01]

BHI-EE-189 (12/97)

WELL CONSTRUCTION SUMMARY REPORT

0540333

Reg Rev 5 Smart Card

Start Date: 9-5-01
Finish Date: 9-13-01
Page 1 of 1

Specification No.: 02200X-SP-V0004	Rev. No.: 0	Well Name: 299-W19-44	~~Temp.~~ Well No.: C3393
ECNs: NA		Approximate Location: East Side of 241-U	
Project: CY01 RCRA Drilling		Other Companies: CHF	
Drilling Company: Resonant Sonic Inc.		Geologist(s): Charlene Martinez, Les Walker, Mike Faurote, Catherine Trice, Jess Hocking, John Wimett	
Driller: Kelly Olson #1217			

TEMPORARY CASING AND DRILL DEPTH

*Size/Grade/Lbs. Per Ft.	Interval	Shoe O.D./I.D.
Threaded Carbon Steel (FJ) 12"	0 - 61.0'	11 3/4" / 10 3/4"
Threaded Carbon Steel (FJ) 8"	+2.00 - 272.0'	8 3/4" / 8 1/2"
	-	
	-	
	-	

*Indicate Welded (W) - Flush Joint (FJ) Coupled (C) & Thread Design

DRILLING METHOD/HOLE DIAMETER

Auger:	Diameter From ____ to ____	
Cable Tool: X 12" OID	Diameter From ~~12.0'~~ 0' to ~~61'~~ 8'	
Air Rotary:	Diameter From ____ to ____	
A.R. w/Sonic:	Diameter From ____ to ____	
	Diameter From ____ to ____	
Cable Tool 8" OID	Diameter From 0' to 272'	
	Diameter From ____ to ____	

Drilling Fluid: WATER

Total Drilled Depth: 272.0' | Hole Dia @ TD: 12" | Total Amt. Of Water Added During Drilling: UNKNOWN

Well Straightness Test Results: PASSED using 204', 6.5" old straightness tool 09/05/01 | Static Water Level: ~~Dry~~ 230.9' ~~JCW~~ | Date: ~~9/5/01~~ ~~JCW~~ 9/5/01

GEOPHYSICAL LOGGING

Sondes (type)	Interval	Date	Sondes (type)	Interval	Date
Spectral Gamma	0' - 245'	9/4/01		-	
Spectral Gamma	244' - 270'	9/5/01		-	
Neutron Moisture	60' - 230.86'	9/5/01		-	

COMPLETED WELL

Size/Wt./Material	Depth	Thread	Slot Size	Type	Interval Annular Seal/Filter Pack	Volume	Mesh Size
4" ID SS 304L Riser	+2.00 - 229.9	FJ430	-	Colorado Silica Sand ~~JCW~~ 50# bags	272.0 - 218.9	38.93 ft³ ~~116.68~~	10-20
4" SS 304L 0.020" Cont. Wire Wrap Screen	229.9 - 264.9	FJ430	0.020"	BENTONITE PELLETS 50# bags	218.9 - 213.03	4 buckets ~~7.12~~	1/4"
4" SS 304L Sump	264.9 - 266.9	FJ430	-	BENTONITE CRUMBLES 50# bags	213.03 - 10.3	131.75 bags ~~267.45~~	3/8"
	-			PORTLAND CEMENT 94# bags	10.3 - 0	13 bags 21.32	-
	-				-		

OTHER ACTIVITIES

Aquifer Test: Well Development	Date: 9/14/01	Well Abandoned:	Yes:	No:	Date:
Description: Used submersible pump to extract 3 gpm with 14.392' drawdown with pump intake set at 263.0' bgs.		Description:			

WELL SURVEY DATA

Date:	Protective Casing Elevation:
Washington State Plane Coordinates:	Brass Cap Elevation:

COMMENTS/REMARKS

Well casing, silica sand 33 bags * 0.535 ft³/bag = 20.335 ft³; bentonite pellets, 4 buckets * 0.63 ft³/bag = 2.48 ft³; bentonite crumbles 131.75 bags * 0.71 ft³/bag = 93.54 ft³; portland cement, 13 bags * 1.285 = 16.71 ft³

Reported By: Jess Hocking		Reviewed By: DA Weekes	
Title: Geologist	Date: 9/13/01	Title: Geologist	Date: 10/23/01
Signature: Jess Hocking		Signature: DA Weekes	

P.C. (cont.) = 16.71 ft³

BHI-EE-181 (12/97)

SUMMARY OF CONSTRUCTION DATA AND FIELD OBSERVATIONS
RESOURCE PROTECTION WELL - 299-W19-45

WELL DESIGNATION	:	299-W19-45
CERCLA UNIT	:	
RCRA FACILITY	:	
DEPTH DRILLED (GS)	:	266.1 ft
MEASURED DEPTH (GS)	:	261.13 24Aug01
AVAILABLE LOGS	:	Geologist & Geophysical
DATE EVALUATED	:	Data not available
EVAL RECOMMENDATION	:	Data not available
LISTED USE	:	RCRA Monitoring
CURRENT USER	:	RCRA & Operations
PUMP TYPE	:	Not Documented
MAINTENANCE	:	Data not available
COMMENTS	:	Cable Tool 10-3/4" CS Temp csg to 30 ft advance 10-3/4" csg to 266.1 ft w/ Air Rotary
TV SCAN COMMENTS	:	

Drawing By: JEA
Reference: Hanford Wells
Revision: 0
Revision Date: 18Oct01
Print Date: 08Nov01

Report Form: WELLS Project File: WELLS.GPJ

WELL SUMMARY SHEET

0540420

Page 1 of 2

Date: 08/15/01

Well ID: C3394	Well Name: 299-W19-45
Location: East side of 241-U	Project: CY01 RCRA Drilling
Prepared By: Charlene Martinez Date: 08/21/01	Reviewed By: DC Weekes Date: 9/20/01
Signature: Charlene Martinez	Signature: DC Weekes

CONSTRUCTION DATA

Description

6"-dia. protective casing set 1.0' above 4" stainless casing

4" ID SS 304L casing: +2.11' → 224.12'

Portland Cement Grout: 0' → 9.5'

Bentonite Crumbles: 9.5' → 207.3'

3/8" Bentonite Pellets: 207.3' → 213.4'

4" ID SS 304L 0.020-in. slot cont. wire-wrap wellscreen: 224.12' → 259.03'

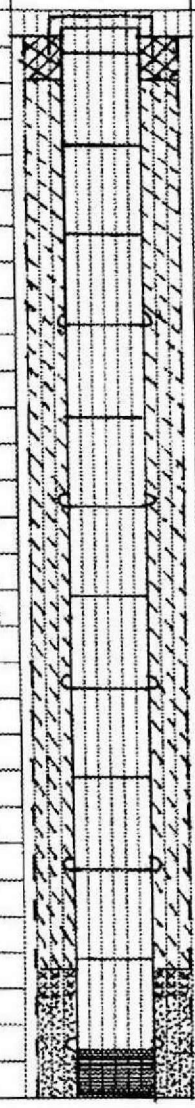
10-20 mesh silica sand: 213.4' → 216.1'

4" ID SS 304L Tailpipe (Sump): 259.03' → 261.13'

All temporary casing removed.

All depths are in feet below ground surface.

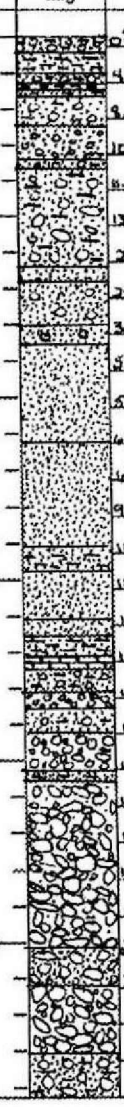
Diagram



GEOLOGIC/HYDROLOGIC DATA

Depth in Feet: 0, 40, 80, 120, 160, 200, 260

Graphic Log



Lithologic Description

0'-4.5' Silty Sandy Gravel (msG)
4.5'-8.0' Sandy Silt (sm)
8.0'-10.5' Silty Sandy Gravel (msG)
10.5'-11.0' Silt (m)
11.0'-13.0' Silty Sand (ms)
13.0'-20.0' Silty Sandy Gravel (msG)
20.0'-28.5' Sandy Gravel (SG)
28.5'-30.0' Slightly Silty Sandy Gravel
30.0'-52.0' Silty Sandy Gravel (msG)
52.0'-55.0' Sand (S)
55.0'-64.0' Gravelly Sand (GS)
64.0'-69.0' Sand (S) tr gravel
69.0'-90.0' Sand (S)
90.0'-113' Sand (S)
113.0'-118.0' Silty Sand (ms)
118.0'-129.0' Sand (S)
129.0'-133' Sand (S)
133.0'-137.0' Sandy Silt (Sm)
137.0'-139.0' Caliche
139.0'-145.0' Silty Sandy Gravel (msG)
145.0'-148.0' Gravel (G)
148.0'-154.0' Gravelly Silty Sand (gms)
154.0'-163.0' Gravel (g)
163.0'-165.0' Silty Sand (ms)
165.0'-202.0' Gravel (g) tr silt/sand
202.0'-210.0' Sandy Gravel (Sg)
210.0'-226.0' Gravel (g)
226.0'-261.0' Silty Sandy Gravel (msg)

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WELL SUMMARY SHEET

Date: 08/15/01

Well ID: C3394		Well Name: 299-W19-45	
Location: East of 241-U Tank Farm		Project: C701 RCRA Drilling	
Prepared By: Charlene Martinez	Date: 08/21/01	Reviewed By: DSlukeKes	Date: 9/20/01
Signature: Charlene Martinez		Signature: DC Weekes	

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
		240		
				9/20/01
				~~257.0 - 259.0 silty sandy gravel~~
				~~(base) slightly cemented~~ 9/20/01
				(part of previous description)
		280		265' - 266'
		300		
				TD = 300.1' bgs
				Static water level = 224.4'
				on 8/24/01 DCW
All temporary casing removed.				
All depths are in feet below ground surface.				

BHI-EE-189 (12/97)

WELL CONSTRUCTION SUMMARY REPORT

0540427

RC07815 Start Card

Start Date: 08/06/01
Finish Date: 8/25/01
Page 1 of 1

Specification No.: 0200X-SP-V0004	Rev. No.: 0	Well Name: 299-W19-45	Temp. Well No.: C3394
ECNs: NA		Approximate Location: East Side of 241-U	
Project: CY01 RCRA Drilling		Other Companies: CHI	
Drilling Company: Resonant Sonic Inc.		Geologist(s): C. Martinez, C. Trick, G. Thomas, D.C. Weekes	
Driller: Mike Gomez			

TEMPORARY CASING AND DRILL DEPTH

*Size/Grade/Lbs. Per Ft.	Interval	Shoe O.D./I.D.
Carbon Steel (FJ) 10 3/4" / 10"	0' - 266.1'	10 3/4" / 10"
	-	
	-	
	-	
	-	

*Indicate Welded (W) - Flush Joint (FJ) Coupled (C) & Thread Design

DRILLING METHOD/HOLE DIAMETER

Auger:	Diameter From ____	to ____
Cable Tool: X 10 3/4" O/D	Diameter From 0'	to 30'
Air Rotary: X Tricone Bit	Diameter From 30'	to 266.1'
A.R. w/Sonic:	Diameter From ____	to ____
	Diameter From ____	to ____
	Diameter From ____	to ____
	Diameter From ____	to ____

Drilling Fluid: Air

Total Drilled Depth: 266.1' | Hole Dia @ TD: 11"

Total Amt. Of Water Added During Drilling: N/A

Well Straightness Test Results: Done w/ 20.4', 8 1/2" OD Tool | Static Water Level: 224.4' | Date: 8/24/01

Passed 08/15/01

GEOPHYSICAL LOGGING

Sondes (type)	Interval	Date	Sondes (type)	Interval	Date
Spectral Gamma	0' - 115'	8/15/01		____	
Spectral Gamma	114' - 266'	8/16/01		____	
Neutron moisture	0' - 225'	8/16/01		____	

COMPLETED WELL

Size/WL/Material	Depth	Thread	Slot Size	Type	Interval Annual Seal/Filter Pack	Volume	Mesh Size
4" ID SS Sump (304L)	259.23' - 266.13'	F1480	N/A	Colorado Silica Sand (99%)	213.4' - 266.1'	88 ft³	10 20
4" ID SS 304L Screen	224.12' - 259.23'	"	0.020"	Bentonite Pellets (50#)	202.3' - 213.4'	5 buck.	3/8"
4" ID SS 304L Casing	+3.11' - 224.12'	"	N/A	Bentonite Crumbles (50#)	9.5' - 202.3'	146 bags	N/A
	____			Portland cement (94#)	0' - 9.5'	4 bags	N/A
	____				____		

OTHER ACTIVITIES

Aquifer Test: Well Development	Date: 8/24/01	Well Abandoned:	Yes:	No:	Date:

Description: Pumped bottom section of well with submersible pump intake set at 257.5' bgs for 118 min at 30 gpm with 17.33' drawdown. Pump raised to 226.5 bgs and run at 10 gpm with 5.38' drawdown.

Description:

WELL SURVEY DATA

Date:	Protective Casing Elevation:
Washington State Plane Coordinates:	Brass Cap Elevation:

COMMENTS/REMARKS

Vol. colorado silica sand, 88 bags @ 0.535 ft³/bag = 47.08 ft³; bent. pellets, 5 bucket @ 0.63 ft³/bucket = 3.1 ft³; bent crumbles, 146 bags @ 0.71 ft³/bag = 103.66 ft³; portland cement: 4 bags @ 1.285 ft³/bag = 5.14 ft³

Reported By: Charles Martinez		Reviewed By: DC Weekes	
Title: Geologist	Date: 10/23/01	Title: Geologist	Date: 10/23/01
Signature: Charles Martinez		Signature: DC Weekes	

8HI-EE-181 (12/97)

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