#### **APPENDIX C**

**Monitoring Well Construction and Well Purging and Sampling Logs** 

#### KERR-McGEE CORPORATION HYDROLOGY DEPARTMENT MONITORING WELL INSTALLATION DIAGRAM Protective Pipe ------ Casing Cap Vent ? Yes No ---Lock ? Yes 🗹 No 🔲 No 🖂 ∠Weep Hole ? Yes ☐ No ☐ Steel V PVC Surveying Pin ? --Concrete Pad Ft. x \_\_\_\_\_ Ft. x \_\_\_\_inches Yes $\square$ No 🔲 DRILLING INFORMATION: DEPTH 1. Borehole Diameter= 8 Inches. FROM BELOW TOP OF Concrete 2. Were Drilling Additives Used ? Yes . No . CASING GRADE Revert Bentonite Water Solid Auger [ Hollow Stem Auger [ 3. Was Outer Steel Casing Used? Yes No D Depth= \_\_\_\_\_ to \_\_\_\_ Feet. Cement/Bentonite Grout Mix Yes D No 🗌 4. Borehole Diameter for Outer Casing 5.5 Gallons Water to Ft. WELL CONSTRUCTION INFORMATION: 94Lb. Bag Cement & I.Type of Casing: PVC Galvanized Teflon 3-5 Lb. Bentonite Powder Stainless Other \_\_ Other: 2. Type of Casing Joints: Screw-Couple Glue-Couple Other\_ 3. Type of Well Screen: PVC Gaivanized Stainless Teflon Other\_\_\_\_ Bentonite Seal 4. Diameter of Casing and Well Screen: Casing Z Inches, Screen Z Inches. Pellets Nurry N 5. Slot Size of Screen: .020 Filter Pack 6. Type of Screen Perforation: Factory Slotted Ft. Above Screen Hacksaw Drilled Dother\_ 7. Installed Protector Pipe w/Lock: Yes 🗹 No 🗌 WELL DEVELOPMENT INFORMATION: I. How was Well Developed? Bailing Pumping Air Surging (Air or Nitrogen) Other\_ FILTER PACK MATERIAL 2. Time Spent on Well Development ? Silica Sand \_\_\_\_\_\_/\_\_\_\_ | Minutes/Hours Washed Sand [ 3. Approximate Water Volume Removed ? 75 Gallons 4. Water Clarity Before Development? Clear [ Pea Gravel 🗌 Turbid Opaque Other: 5. Water Clarity After Development? Clear 🗹 Opaque [ Turbid [ 8-12 Sand Size \_ 6. Did Water have Odcr? Yes . No . 31.7 If Yes, Describe 7. Did Water have any Color? Yes . No . Dense Phase Sampling Cup Ft. If Yes . Describe Bottom Plug No 🗌 Yes 🔽 WATER LEVEL INFORMATION: Water Level Summary (From Top of Casing) Overdrilled Material Backfill Ft. Grout Sand Before Development\_\_\_\_\_ Ft. Date Caved Material After Development 20.01 Ft. Date 3/25/98 Other: \_ Driller/Firm LEE ROBEATSON WEGEN DREG. Drill Rig Type B-61 Date Installed Hydrologist Drill Crew 4. ROBERTUN / B. JOHNUN Well No. \_\_

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KERR-MCGEE CORPORATION HYDROLOGY DEPARTMENT MONITORING WELL INSTALLATION DIAGRAM \_--- Casing Cap Vent ? Yes 📋 No 🖂 Protective Pipe ---\_\_\_Lack ? Yes 🔲 No 🔲 Yes 2 No 1 .Weep Hale ? Yos 🔲 No 🗖 Studi W PVC Surveying Pin ? --Congrete Pad \_F& x \_\_\_ \_\_\_F& × \_\_\_ Yes 🔲 No 🗌 DRILLING INFORMATION: DEPTH I., Barengie Diameter \_\_\_\_\_ of inches. FROM TOP OF 2. Ware Drilling Additives Used ? Yes ... No ... Concreza CASING Revert 🔲 Sentanits 🔲 Water 🔲 Sellé Auger 🔲 Hotlew Steen Anger 🔃 3. Was Cutar Steel Casing Uset ! Yes 🔲 - No 🗹 Coment/Bentonite Grout Mix Depth=\_\_\_\_ to\_\_\_\_\_Fort Yes Wo No 4. Barobele Dismotor for Outer Steins 5.5 Gailona Water to 94Lb. Bag Crmont & WELL CONSTRUCTION INFORMATION: 12.6 3-5 Lb. Sentoniza 1. Type of Casing: PVC 🗹 Galvanizos 🔲 Tuffon 🖸 Stalniess [ Other \_ Othert \_\_ 2. Type of Casine Joints: Screw-Couple D Douple 🔲 Other \_\_ 13.6 3. Type of Well Screen: PVC [2] Gaivanized [ Stainlens 🔲 Terlon 🛄 Other 🔛 Bentonite Seal 4. Dunister of Casing and Well Screen: Palleta P Slurry Gasing 2 \_\_ Inches, Screen Z Inches, 5. Siet Size of Sersen: - 020 Flixer Pack 6. Type of Sersen Perforation: Factory Slotted 1 Ft Above Screen Haskeaw 🔲 Drilled 🗋 Other\_ 7. Inatalied Protector Pipa a/Locic Yes 🔲 No 🛄 WELL DEVELOPMENT INFORMATION: 1. How was Wall Developed ? Builing 🔲 Pamples 🗹 Air Surging (Air or Nitrogen) 🔲 Other\_ FILTER PACK MATERIAL 2. Time Spent on Well Development ? Silies Sand 17 45 / Mingres/Hours 25 PL Washed Sand [ 3. Approximate Water Volume Removed 7 50 Gallone 4. Water Glarity Bufore Development ? Clear Pez Graval [ Turbid 🖸 Donner 🗗 Others\_ 5. Water Clarity After Davelopment ? Char [] Turbid (FT Conque [ Sand Siza \_ 8-12-5. Did Water have Oder 7 Yes 🔲 No 💇 42.7 If You Describe \_\_ 7. Did Water have any Geler ! Tes . No . Dagse Phase Sampling Cup Bettom Plug Ne [] If Yes - Describe 43 WATER LEVEL INFORMATION: Water Level Summary (From Top of Casing) Overdrilled Muterial During Dritting \_\_\_\_\_22 ' Backfill FE \_ Ft. Data 3/24 Growt 🔲 Sand 🗍 Reform Development\_ Ft. Date 45 Gaved Maserial [2 After Development 13.65 Ft. Date 1/25 Others \_\_ Juste Gale. Drill Rig Typs MOSHE 8-61 Date lastalled <u>3/24/98</u> Drillat / Firm C. RoserTso. Kert-MrGea Hydrologist T. RAED Well No. Pc- 4 Drill Crew Rodgersch / John Son / RIVERS

#### KERR-McGEE CORPORATION HYDROLOGY DEPARTMENT MONITORING WELL INSTALLATION DIAGRAM Protective Pipe ------- Casing Cap Vent ? Yes No No -- Lock ? Yes V No Yes V No 🗀 .Weep Hole ? Yes 🔲 No 🗍 Steel D PVC Ft. Surveying Pin ? --Concrete Pad \_\_\_\_\_Ft. x \_\_\_\_\_Ft. x \_\_\_\_\_inches Yes 🗍 No 🗍 DRILLING INFORMATION: DEPTH I. Borehole Diameter= 8 Inches. FROM **BELOW** TOP OF Concrete 2. Were Drilling Additives Used? Yes ... No [] GRADE CASING Revert Bentonite Water Solid Auger | Hollow Stem Auger | 3. Was Outer Steel Casing Used? Yes Depth=\_\_\_\_ to Feet. Cement/Bentonite Grout Mix Yes [D No 🗌 4. Borehole Diameter for Outer Casing\_\_\_\_ 5.5 Gallons Water to WELL CONSTRUCTION INFORMATION: 12,6 Ft. 94Lb. Bag Cement & I.Type of Casing: PVC 📝 Galvanized 🗌 Teflon 🔲 3-5 Lb. Bentonite Powder Stainless Other \_\_\_ Other: 2. Type of Casing Joints: Screw-Couple V Glue-Couple | Other 13.6 3. Type of Well Screen: PVC Galvanized Stainless 🔲 Teflon 🔲 Other \_\_\_ Bentonite Seal 4. Diameter of Casing and Well Screen: 2.4 Ft. Pellets Slurry Slurry Casing 2 Inches. Screen 2 Inches. 5. Slot Size of Screen: 020 Filter Pack 6. Type of Screen Perforation: Factory Slotted 1.フ Ft. Above Screen Hacksaw Drilled Dother 7. Installed Protector Pipe w/Lock: Yes No No 17.7 WELL DEVELOPMENT INFORMATION: 1. How was Well Developed? Bailing Dumping Air Surging (Air or Nitrogen) [ Other\_ FILTER PACK MATERIAL 2. Time Spent on Well Development? Silica Sand 45 / Minutes/Hours 25 Ft. Washed Sand [ 3. Approximate Water Volume Removed ? 50 Gallons 4. Water Clarity Before Development? Clear Pea Gravei Turbid | Opaque [] Other: 5. Water Clarity After Development? Clear Opaque [ Turbid 📝 8-12 Sand Size .... 6. Did Water have Oder? Yes No W If Yes, Describe 7. Did Water have any Color? Yes No P Dense Phase Sampling Cup If Yes , Describe Bottom Plug No 🖂 Yes 🗀 WATER LEVEL INFORMATION: Water Level Summary (From Top of Casing) Overdrilled Material Backfill During Drilling 22 Ft. Date 3/24/98 Ft. Grout 🗌 Sand 🔲 Before Development\_\_ Caved Material After Development 23.65 Ft. Date 3/25/98 Other: Driller/Firm L. RogerTson Weser DRLL. Drill Rig Type MOBILE B-61 Date Installed Kerr-McGee Drill Crew ROBERTS & LOHNSON / RIVERA Well No. PC-4 Hydrologist

Page: 8 of 17

35-17-2001 01:22pm From-ENVIRON CORP

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SOIL BORING LOG ALEGGE KIR SUBSCHART re - Vien BORIND KERRAICERE CORPORATION PC-4 Hydrology Dept. - S&FA Division HEADER SOL UNIFIED SOIL FIRLD CLASS. **BOW** SOIL SAMPLE DEPTH OKAPA LOG REMARKS OR RELD CHSERVATIONS PIC PER 6 LITHOLOGIC DESCRIPTION IN FERT (ppm) DEPTH REC. NO. FILL: SANG AND CAREL IMPOWDMENT BEAM SAND / SINTY SAME; CRANEL comment to ASS; LT. There ~ DRT "U = ~ = 57, 10 Ghas- & 11-13.5" 15 SM-SAMO AS ASPAG 6M 20 8 Ý 22 C GLANG @ 25-27 30 SALD AS BOOK; SATIKATED 00 Sm. 5^ 35change C GRAPHIC LOG LEGEND Waser Table (24 Mour) 2 af **本記記** Water Table (Time of Baring) Photoionization Describe (ppm) Identifies Sample by Number Sample Collection Method CLAY 配體等 MANUAL INTER SILT EKPLANATION **图 社学** SAND E GRAVEL CLAYEV SAND CONTINUOUS SAMPLER 图部 ET STATES rate (range (state) Depth Top and Bottom of Sample
Actual Length of Recovered Sample in Feet

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Protective Pipe		Casing Cap \	/ent ? Yes No No
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Concrete	Ft.	GRADE CASING	2. Were Drilling Additives Used? Yes No 🗹 Revert 🗌 Bentonite 🗌 Water 🗍
			Solid Auger Hollow Stem Auger
•			3. Was Outer Steel Casing Used? Yes No []
Cement/Bentonite Grout Mix			Depth=toFeet.
Yes No		}	4. Borehole Diameter for Outer CasingInches.
5.5 Gallons Water to 94Lb. Bag Cement &	Ft.		WELL CONSTRUCTION INFORMATION:
3-5 Lb. Bentonite Powder		}	I.Type of Casing: PVC  Galvanized  Teflon
Other:		}	Stainless Other
		1	2. Type of Casing Joints: Screw-Couple 🕡 Glue-
	1.3		3. Type of Well Screen: PVC Galvanized
	<b>****</b>	<b>*</b>	Stainless Teflon Other
Bentonite Seal	Ft. ₩ ₩	₩	4. Diameter of Casing and Well Screen:
   Pellets ☑ Slurry □	<del></del>	<b>₿</b>	Casing Z Inches, Screen Z Inches.
i remeto [5] Sidify		<b>፠</b>	5. Slot Size of Screen: 0.020
Filter Pack			6. Type of Screen Perforation: Factory Slotted
Above Screen _	<u>/                                   </u>		Hacksaw Drilled Other
		<b>₩</b>	7. Installed Protector Pipe w/Lock: Yes No
		<u> </u>	WELL DEVELOPMENT INFORMATION:
		<u>.</u> ]	I. How was Well Developed? Bailing Dumping
		· · · · · · · · · · · · · · · · · · ·	Air Surging (Air or Nitrogen) Other
FILTER PACK MATERIAL		.}	2. Time Spent on Well Development ?
Silica Sand 🔲		· :{	·
Washed Sand	50 Ft. 7		3. Approximate Water Volume Removed ?~100 Gallons
		•	4. Water Clarity Before Development? Clear
Pea Gravel		4	Turbid Opaque
Other:			5. Water Clarity After Development ? Clear
		·.}	Turbid Opaque
Sand Size			6. Did Water have Oder? Yes ☐ No ☑
	154.6	:	If Yes, Describe
Dense Phase Sampling Cup	Ft. ( )		7. Did Water have any Color ? Yes 🗌 No 🗗
Bottom Plug	(	{	If Yes , Describe
Yes No D	55	با	- WATER LEVEL INFORMATION:
Overdrilled Material	1 -	1	Water Level Summary (From Top of Casing)
Backfill	Ft.	į	During Drilling 7 Ft. Date 5/21/98
Grout ☐ Sand ☐ Caved Material ☑	158	ر	Before DevelopmentFt. Date
Other:			After Development 7.93 Ft. Date 6/15/18
Jener -		·	, ,
Driller/Firm ROBIRTSON	WEST DRU	_ Drill Rig Type <u>B-61</u>	$\frac{H0x}{}$ Date installed $\frac{5/21/98}{}$
	1		Kerr-McGee
Drill Crew L. ROSKAT SUAL	M. PUSESON	Well No. PC-	56 Hydrologist 7 RECO

KERR MACE CORROBATION KM SUBSIDIARY					Locazia	····			<del></del>						
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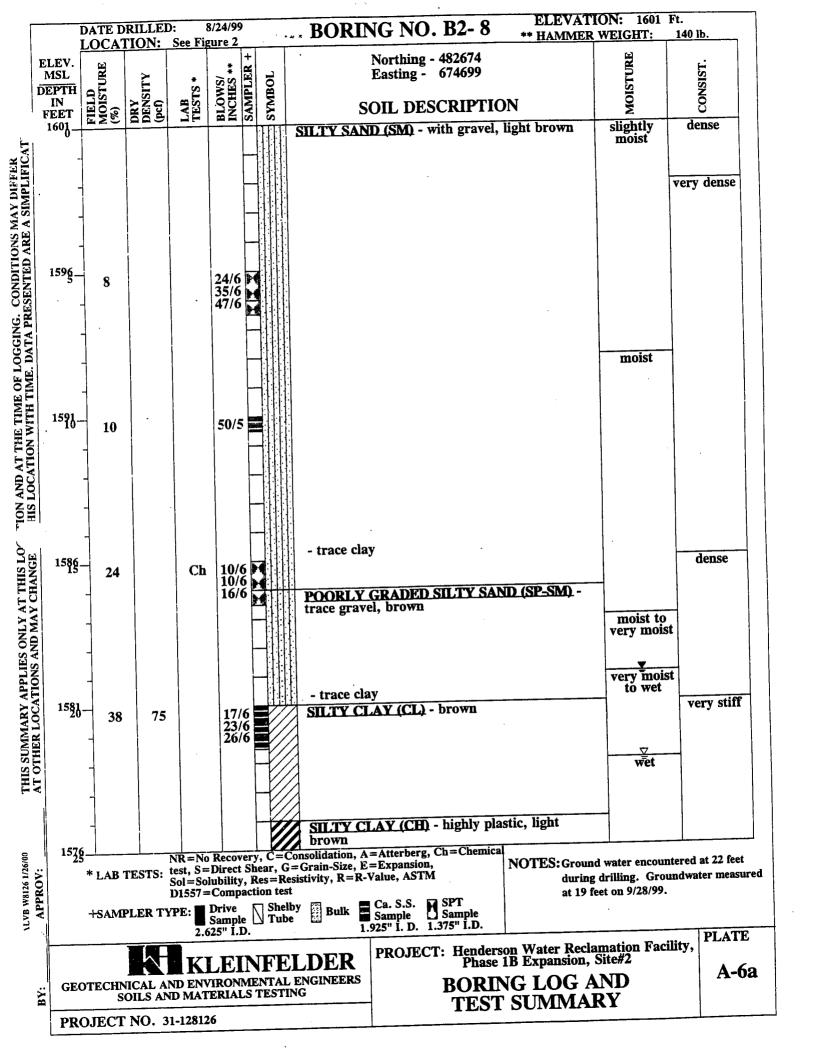
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	-					<del> </del>						-
	_									1		
	_					<u> </u>						_
-	_			<u> </u>	6	RAPHIC L	00.15	CEND	LDAT	TE DRILLED	PAGE	
	<u>Y</u>	, ,								120)9	) l	2
	V PI	D Photoionization Detection (pp	om)					DEBRIS FILL	DRI	LLING METH		
z	N( TYI		•			SILT		(IGHLY ORGANIC (P	EAT)	LLED BY	9	
		7	n <b>e</b> n		<b> </b>	SAND		SANDY	- 1		a box	
N N	X	SPLIT- BARREL AUGER	ROCK CORE		1				ια	GGED BY	K DIKLA.	
EXPLANATION		THIN-			1	GRAVEL	153	CLAYEY SAND			R&ED	
"		WALLED CONTINUOUS SAMPLER	NO RECOVE	RY		SILTY CLAY			EXI	STING GRAD	E ELEVATION (FT AMSL)	
	DF	PTH Depth Top and Bottom of So	ليــا mole			CLAYEY SILT			ΓŒ	CATION OR G	RID COORDINATES	
	R	EC. Actual Length of Recovered	Sample in Feet		: يربي	OIL I	. لسسا		-			

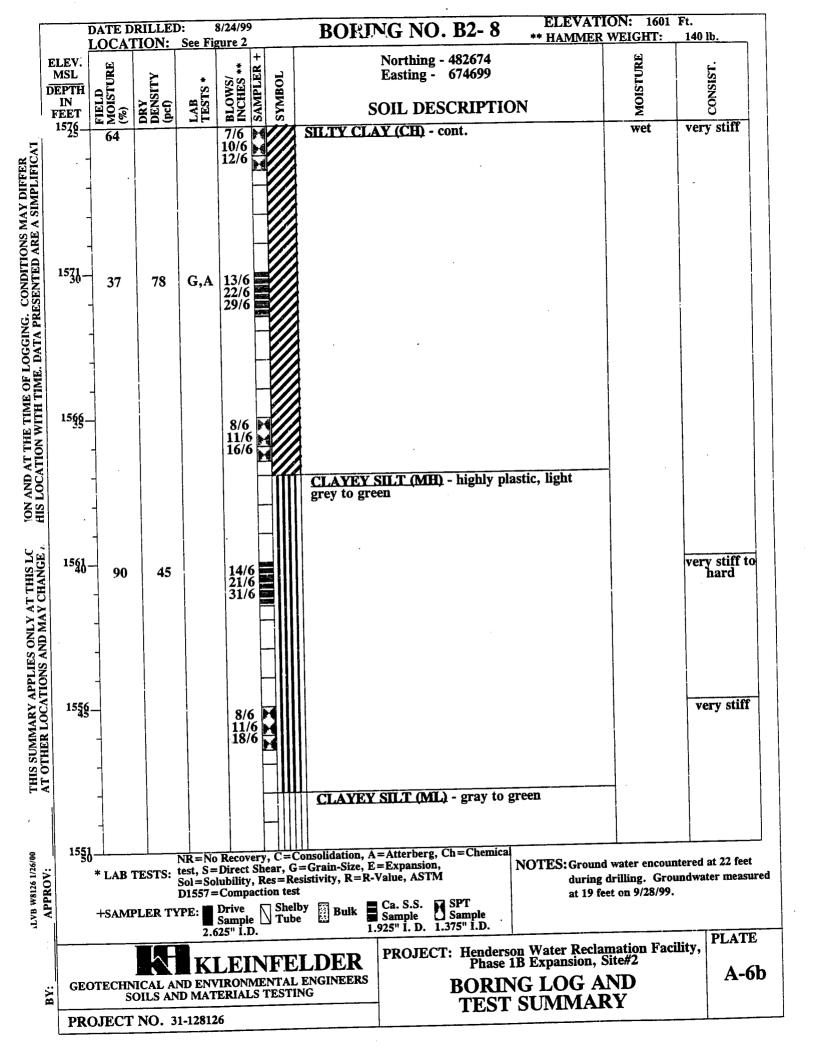
	•		
	·	-McGEE CORF	
FLUSH		ROLOGY DEPA	
MOUNT	MONITORING	WELL INSTAL	LATION DIAGRAM
Protective Pipe		Casing Can	Vent ? Yes ☐ No ☐
\ ' /		Lock ? Yes	
Yes No	<b>→</b>		
Steel 🗌 🗡 VC 🔲	Ft.	Weep Hole :	Yes No
Surveying Pin ?	r·	Concrete Pa	dFt. xFt. xInches
Yes 🗹 No 🔽		P: V:	DRILLING INFORMATION:
	12	DEPTH	
		BELOW TOP OF	<del>"</del>
Concrete	Ft.	GRADE CASING	
			Revert Bentonite Water
		<del></del>	_ Solid Auger  Hollow Stem Auger
	1 1 1		3. Was Outer Steel Casing Used? Yes \( \text{No } \text{D} \)
Cement/Bentonite Grout Mix			Depth=toFeet.
Yes Mo No			4. Borehole Diameter for Outer CasingInches.
5.5 Gallons Water to 94Lb. Bag Cement &	Ft.		WELL CONSTRUCTION INFORMATION:
3-5 Lb. Bentonite		[	1.Type of Casing: PVC 🗹 Galvanized 🗌 Teflon 🗌 📗
Powder		· ·	Stainless Other
Other:			2. Type of Casing Joints: Screw-Couple 🗹 Glue-
			Couple Other
	14.6	}	_ 3. Type of Well Screen: PVC 🗹 Galvanized 🗌
	<b>↑</b> 😹 🗟		Stainless Teflon Other
Bentonite Seal	2.4 Ft. 😸 😸	}	4. Diameter of Casing and Well Screen:
Pellets V Slurry -	<del>1</del> , 👹 🕷		Casing Z Inches, Screen Z Inches.
	<del>                                      </del>	<del></del>	5. Slot Size of Screen: . 020
Filter Pack	0.8 Ft.	<b>\</b>	6. Type of Screen Perforation: Factory Slotted
Above Screen —	<del>- 10.8 - 10.</del>		Hacksaw Drilled Dther
	7.8	<b>}</b>	7. Installed Protector Pipe w/Lock: Yes 🗌 No 🗹
		\ <del></del>	WELL DEVELOPMENT INFORMATION:
		ţ	I. How was Well Developed ? Bailing 🗍 Pumping 🗹
		]	Air Surging (Air or Nitrogen) Other
FILTER PACK MATERIAL		}	C. Time Count on Well Developer 4.0
Silica Sand 🗍		}	2. Time Spent on Well Development?
	25 Ft. 3	}	/ Millutes/ 110ul s
Washed Sand 🗹			3. Approximate Water Volume Removed ? 80 Gallons
Pea Gravel 🗌		}	4. Water Clarity Before Development? Clear  Turbid  Opaque
Other:	-   } : 目:::		5. Water Clarity After Development ? Clear 🗹
Sand Size 8-/2		1	Turbid Opaque
Sang Size	32 8	1	6. Did Water have Oder? Yes No
	136 0   -	(	— if Yes, Describe
Dense Phase Sampling Cup	7 Ft.	}	7. Did Water have any Color? Yes 🔲 No 🔃
Bottom Plug - Yes □ No ☑	33		If Yes , Describe
	منا در	1	WATER LEVEL INFORMATION:
Overdrilled Material Backfill	<b>†</b> 3 Ft.∤		Water Level Summary (From Top of Casing)  During Drilling 13 Ft. Date 5/2/98
Grout Sand	136		Before DevelopmentFt. Date
Caved Material 🗹	130	/	After Development 8,00 Ft. Date 6/15/98
Other:			
Driller/Firm ROBERTSON	WASAA DRUG.	Drill Rig Type <u>B-6/</u>	$\mu_{\rm DX}$ Date installed $5/21/98$
	/	M-11 M- A-	Kerr-McGee
Drill Crew L. RUSERTSON	M. RUBASON	Well No. PC -	58 Hydrologist TREED

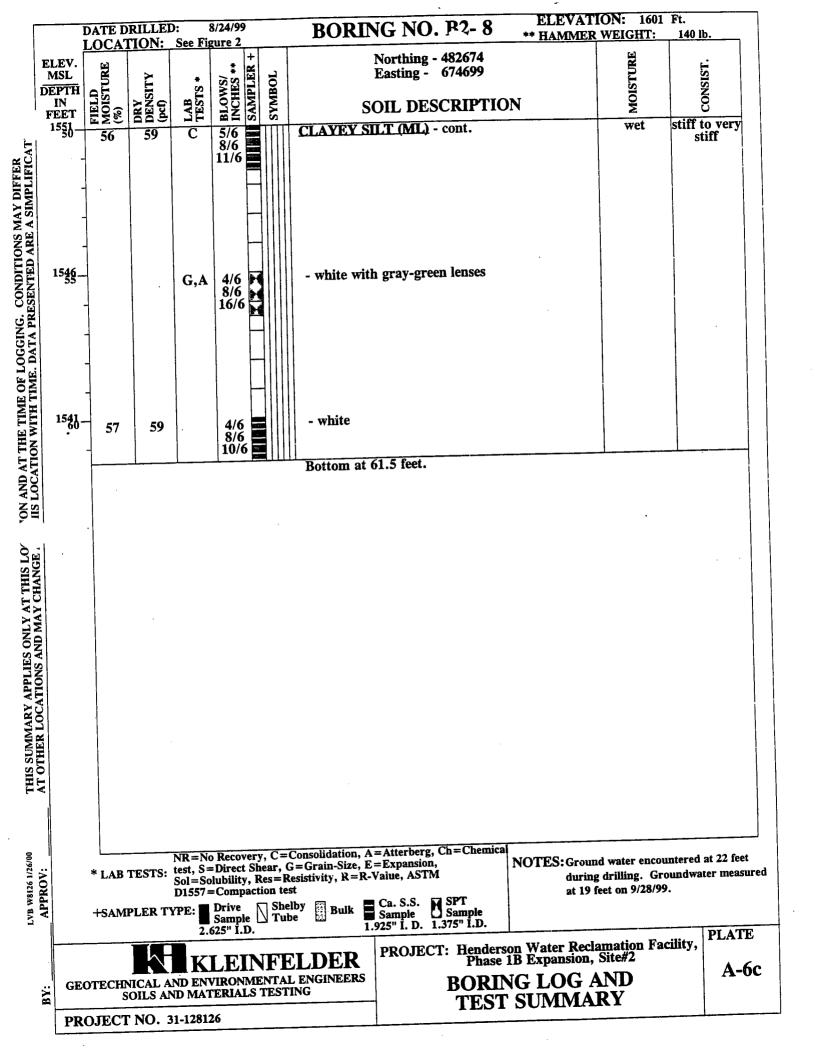
SOIL BORING LOG KM-5655-B

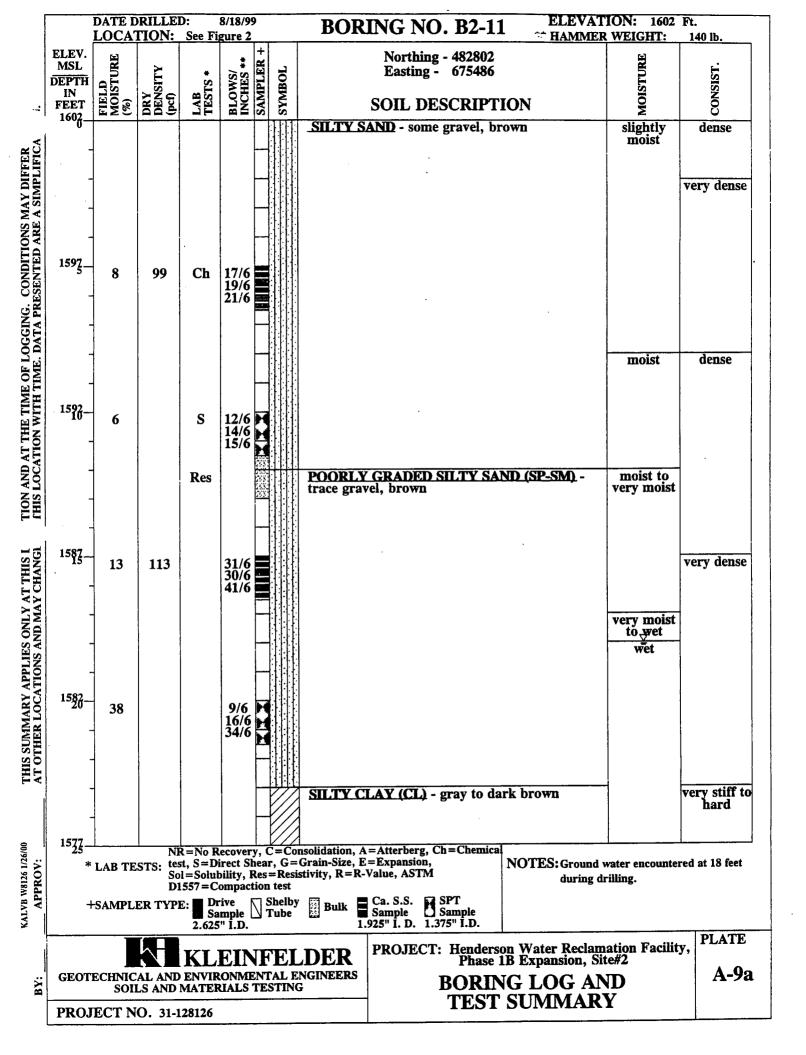
К	ERR-McGEE CORPORATION	KM SUBSIDIARY	<del></del>		LOCATION				BORIN	
Н	ydrology Dept S&EA Division	Knclu			HEND	ERSC	رلاز	W	NUMBI	ER PC-58
DEPTH IN	LITHOLOGIC DESCRIPTION		UNIFIED SOIL	BLOWS PER	! PID			IL SAM	APLE .	REMARKS OR
FEET	MIIII WAR WAR WAR WAR WAR WAR WAR WAR WAR WAR	~ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	FIELD CLASS.	6'	(ppm)	NO.	TYPE	DEPTH	H REC.	FIELD OBSERVATIONS
· .	BERM : SAND W/ GRAVEL	19								_
2,5		2 July 200			_					-
	J SAND W/ SILT; MED. B.	- 10.5.1	<u> </u>							
5-	SLI! MUIST; OCK, GRAVEL		Sm							_
	-		3/1		<del> -</del>		j			
•	1	1.0								
	]	, , , , ,								
10-	GRAVEL ZONE @ 10-14"	000	am		-					l ⊣
	1	600					27.00			
13	]		V_				. 124			]
	-	ر بی از ا			<u> </u>			!		-
15-	1									
		J-61		,	_		1			]
	4	<b>6</b> -	Sm		_					· -
20-		(,)								
120	]	Γ. 6	-		_					_
	<del>-</del>	[J.]			-					-
				· .						]
25-	CRAVEL ZONE C 26-28				<del></del>					-
	-	32.9	an		-		4			-
		360					1			]
	4	10	]		_					-
≥0 -	4				<u> </u>					
		0.								]
	-		k		-					_
34	SILTY CLAY - CLAYET SILT; GOS	ENICH-WHITE NY	CL-	<u> </u>						
35	U. SLI. PLASTIC; MMOOY CA	eak N	ML		<u> </u>	1	X	35 36.5		
	- TO 36'									-
	_									
<b> </b>			<u> </u>	<u> </u>	RAPHIC I	26.15		- T	DATE DRILLED	PAGE
1	Water Table (24 Hour)							<del>"</del>	5/21/9	is 1 of 1
	Water Table (Time of Boring PID Photoionization Detection (p	opm)			CLAY				DRILLING METH	
	NO. Identifies Sample by Number TYPE Sample Collection Method	27			SILT			1	HS	Α
EXPLANATION	SPLIT- AUGER	ROCK			SAND		SAN CLA	DY [	LOGGED BY	en orig.
N	BARREL AUGER	ROCK CORE			GRAVEL		CLA'	YEY	LOGGED BY	
<b> </b>	THIN- WALLED CONTINUOUS	S NO	<b></b>	1	SILTY		•,			DE ELEVATION (FT. AMSL)
	TUBE	RECOVE	RY	i				-	LOCATION OR	GRID COORDINATES
	DEPTH Depth Top and Bottom of S REC. Actual Length of Recovered	iample I Sample in Feet		1 21.7	CLAYEY SILT					EAST OF PC-S6

	Ī	DATE COMPLETED: 8/25/99 LOCATION: See Figure 2.	BORING N	O. WELLB2-3	ELEVATION:  ** HAMMER WEIGHT: 140 lbs.	<u> </u>
ele	evation MSL		lbol lbol	Northing - 483045 Easting - 674771		
	EPTH		Sym	Dasting . Critical	rer Ter	1
I	IN FEET	Well Construction	Well Symbol	SOIL DESCRIPTION	N WATER	İ
	1598_	Materials Well Head with	r	ND (SM) - with grave		
CAII	1593	Locking Well Cover  Native soil drill cutting well backfill				
ē	1500	Vacami	WELL GR	ADED, SILTY SAND	(SW-SM) -	
SENTED IS	1588	Bentonite seal 10' to 13' Top of sand pack	SILTY SA	<u>ND (SM)</u> - light brown		
	12	@ 13' Below Grade	- some im	e graver	_	
E. DATA	1578	Trade Top of screen @ 15' Below Grade	CLAYEY	SAND (SC) - with grav	vel, brown	
	-					
THI	1573_		SILTY CL	AY (CL) - brown		
ž Z	-					
TIO	1568_					
SCA V	JU -					
IS I		-				
Ξļ	1563_	continuous sand	- brown to	gray-green		
(m)	-	pack			•	
DZ.	1558_	-	- grav-gre	en to white		
Y CHANGE	-	1				
MAY	1552	<b>-</b> -				
Ş	1553_	- -				
NS A		]				
TIO	1548_	]	- white w	ith gray-green lenses		
OCA		]				
AT OTHER LOCATIONS AND MA	1543_	1	- white			
AT	1538_	_		ith arou aroon longer		
ď	60-	Well bottom cap		ith gray-green lenses t 61.5 feet.		
			2011022 110	_		
APPROV:					NOTES: Ground water encountered during drilling. Ground water measured at 18 feet on 8/25 Groundwater measured at 19/28/99.	iter /99.
				DO HIGH. HJ.	son Water Reclamation Facility	PLATE
			NFELDER	PROJECT: Henders Phase 2B	son Water Reclamation Facility, , Site#2	A 4
BY:	GEO	TECHNICAL AND ENVIRONS SOILS AND MATERIAL	MENTAL ENGINEERS	1	ICAL WELL	A-1
B	L	SUILS AND MATERIAL	a leating		UCTION DETAIL	









	Background Information										
Well Identification	Well Identification B2-8 Project Name Henderson, NV  Well Permit Number Project Number 01-2131F										
Well Permit Num	nber	mber <u>01-2131F</u>									
Well Lock # Sampling Date/Time 05/22/01, 17:15											
Sampler(s) Doug Errett (ENVIRON) Weather Conditions Hot, 100°F, clear											
Well Information											
Well Materials	Well Locked	Well Diameter	W	/L Equipment	Integrity						
X PVC	□Y	☐ 2 Inch	X Co	onductivity Probe	☐ Casing						
	XN			X Concrete (cracked)							
		Before Purgi	ng		<del></del>						
PID Reading Do	wnhole (ppm):			<u>0.8 – 1.0</u>							
PID Background	(ppm)			<u>same</u>							
Reference Point	Marked on Well	1?		No; use N side of	well casing						
Total Depth of W	ell from Top of	f Inner Casing (TI	O) (ft)	<u>57.6</u>							
Depth to Water (	DTW) (ft)			<u>21.12</u>							
Casing Diameter	(CD) (in)			<u>4</u>							
Water Volume in	$\mathbf{Well} (\mathbf{gal}) = (\mathbf{T})$	.041)	<u>23.9</u>								
Free Product Thickness (if applicable) (ft) N/A											
pH 6.94 Specific Conductivity (uS/cm) 7.257											
DO (mg/L) 3.83	<u>3</u>	Turbidity (1	NTU)								
Temp (°C) 24.07	<u>7</u>	ORP <u>75.8</u>									

Page 2 of 2

**Purging Data** 

Purge Sta	rt Time 17:38		Purge Method <u>Submersible Pump</u>								
Time	Purge Vol. (Gal)	pН	T (°C)	SpC (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)				
17:50	15	6.94	24.07	7,257	3.83	75.8	Clear				
18:04	30	7.21	24.07	7,227	3.55	41.5	Clear				
18:17	45	7.32	23.87	7,204	3.28	34.4	Clear				
18:30	60	7.35	23.90	7,189	3.28	45.5	Clear				
18:45	75	7.40	24.01	7,188	3.31	46.8	Clear				
		·									

**Sampling Data** 

Sample Collection Time 19:00	Sample Designation <u>B28-GW01</u>
Depth to Water (ft) $\sim 35$	Sampling Method Pump; bailer for VOCs
Sample Container(s) See analyte list	Preservative See analyte list
Analysis See analyte list	Ferrous Iron Reading 0.0 mg/L
pH <u>7.40</u>	DO (mg/L) 3.31
Temp (°C) <u>24.01</u>	ORP <u>46.8</u>
Specific Conductivity (uS/cm) 7,188	Turbidity (NTU) Clear

#### Notes: Analyte List, Containers, and Preservatives

Background Information										
Well Identification	Well Identification <u>B2-14</u> Project Name <u>Henderson, NV</u>									
Well Permit Number Project Number 01-2131F										
Well Lock # Sampling Date/Time 05/22/01, 16:50										
Sampler(s) Sarah Libeau (ENVIRON) Weather Conditions Hot, 100°F, clear										
Well Information										
Well Materials	Well Locked	Well Diameter	WL Equipment	Integrity						
X PVC	XY	☐ 2 Inch	X Conductivity Probe	☐ Casing						
<u> </u>	□N		X Concrete (cracked)							
		<u> </u>								
		Before Purgi	ng							
PID Reading Do	wnhole (ppm):		0.3 - 0.5	!						
PID Background	(ppm)		same							
Reference Point	Marked on Well	1?	No; use N side o	f well casing						
Total Depth of W	/ell from Top of	f Inner Casing (TI	O) (ft) <u>59.0</u>							
Depth to Water (	DTW) (ft)		<u>17.30</u>							
Casing Diameter	(CD) (in)		<u>4</u>							
Water Volume in Well (gal) = $(TD-DTW)(CD)^2(0.041)$ $27.4$										
Free Product Thickness (if applicable) (ft) <u>N/A</u>										
pH 7.29 Specific Conductivity (uS/cm) 8.212										
DO (mg/L) 1.14	<u>4</u>	Turbidity (1	NTU) Not measured (cle	ar)						
Temp (°C) 23.22	<u>2</u>	ORP <u>158.6</u>	1							

Page 2 of 2

**Purging Data** 

Time	Purge Vol. (Gal)	pН	T (°C)	SpC (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)
17:00	5	7.29	23.22	8,212	1.14	158.6	Clear
17:20	40	7.39	23.18	8,222	1.19	161.5	Clear
17:35	85	7.45	22.79	8,196	2.18	165.9	Clear
· · · · · · · · · · · · · · · · · · ·							

**Sampling Data** 

Sample Collection Time 17:45	Sample Designation B-14
Depth to Water (ft) 41.0	Sampling Method Pump; bailer for VOCs
Sample Container(s) See analyte list	Preservative See analyte list
Analysis See analyte list	Ferrous Iron Reading 0.0 mg/L
pH <u>7.45</u>	DO (mg/L) 2.18
Temp (°C) <u>22.79</u>	ORP <u>165.9</u>
Specific Conductivity (uS/cm) 8,196	Turbidity (NTU) Clear

Notes: Analyte List, Containers, and Preservatives

**Background Information** 

Dackgi out a fino matter								
Well Identification	on <u>PC-2</u>	ect Name <u>He</u>	me <u>Henderson, NV</u>					
Well Permit Number Project Number				mber <u>01-2131F</u>				
Well Lock #		pling Date/Ti	me <u>05/23/0</u>	1, 09:25				
Sampler(s) Sarah Libeau (ENVIRON) Weather Conditions Hot, 103°F, clear								
Well Information								
Well Materials	Well Locked	Well Diameter	WL Equ	ipment	Integrity			
X PVC	ΠY	X 2 Inch	X Conducti	vity Probe	☐ Casing			
	XN	0	<u> </u>	X Concr				
Before Purging								
PID Reading Do	wnhole (ppm):		0.3 –	<u>0.5</u>				
PID Background	(ppm)		same	same				
Reference Point	Marked on Well	<b>!</b> ?	No; u	No; use N side of well casing				
Total Depth of W	Vell from Top of	f Inner Casing (TI	(ft) <u>33.6</u>	<u>33.6</u>				
Depth to Water (	DTW) (ft)		<u>19.30</u>	19.30				
Casing Diameter	(CD) (in)		<u>2</u>					
Water Volume in	Well (gal) = (7	$(CD)^2(0)^2$	.041) <u>2.4</u>					
Free Product Thickness (if applicable) (ft) N/A								
pH <u>7.46</u>		onductivity (u	S/cm) 7,52	9				
DO (mg/L) 3.23	<u>3</u>	Turbidity	NTU) Not m	neasured				
Temp (°C) 23.25	5	<u>)</u>						

Page 2 of 2

**Purging Data** 

				<del>2.</del>			
Purge Star	rt Time <u>09:30</u>	Purge Method Dedicated Bailer					
Time	Purge Vol. (Gal)	pH	T (°C)	SpC (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)
09:37	1	7.46	23.25	7,529	3.23	147	Brown
09:49	3	7.44	22.80	7,718	3.37	160.8	Clearing
10:01	5	7.43	22.67	7,709	3.31	159.5	Clear
10:22	8	7.42	22.66	7,697	3.45	161.5	Clear
·· <u>·</u>							

**Sampling Data** 

Sample Collection Time 10:25	Sample Designation PC-2
Depth to Water (ft) 23.1	Sampling Method <u>Dedicated bailer</u>
Sample Container(s) See analyte list	Preservative See analyte list
Analysis See analyte list	Ferrous Iron Reading 0.0 mg/L
pH <u>7.42</u>	DO (mg/L) 3.45
Temp (°C) <u>22.66</u>	ORP <u>161.5</u>
Specific Conductivity (uS/cm) 7,697	Turbidity (NTU) Clear

Notes: Analyte List, Containers, and Preservatives

Page 1 of 2

**Background Information** Well Identification PC-4 Project Name Henderson, NV Well Permit Number \_\_\_\_\_ Project Number 01-2131F Well Lock # Sampling Date/Time <u>05/23/01, 09:50</u> Sampler(s) Doug Errett (ENVIRON) Weather Conditions Hot, 100°F, clear Well Information Well Materials Well Locked Well Diameter WL Equipment Integrity X PVC  $\square \mathbf{Y}$ X 2 Inch X Conductivity Probe ☐ Casing X Concrete XN(cracked) **Before Purging** PID Reading Downhole (ppm): 0.3 - 0.5PID Background (ppm) same Reference Point Marked on Well? No; use N side of well casing Total Depth of Well from Top of Inner Casing (TD) (ft) 44.1 Depth to Water (DTW) (ft) 24.19 Casing Diameter (CD) (in) 2 Water Volume in Well (gal) =  $(TD-DTW)(CD)^2(0.041)$ 3,3 Free Product Thickness (if applicable) (ft) N/A Specific Conductivity (uS/cm) 9,370 pH 7.2 DO (mg/L) 9.1 Turbidity (NTU) 260 Temp (°C) 23.90 ORP <u>59</u>

Page 2 of 2

**Purging Data** 

Purge Sta	rt Time <u>17:00</u>		Purge Method Submersible Pump				
Time	Purge Vol. (Gal)	pН	T (°C)	SpC (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)
10:15	5	7.2	23.90	9,370	9.1	59	260
10:23	9	7.3	23.48	9,400	6.0	59	94
10:30	12	7.4	23.40	9,430	5.4	60	65

**Sampling Data** 

Sample Collection Time 10:40	Sample Designation PC4-GW01
Depth to Water (ft) 24.29	Sampling Method Pump; bailer for VOCs
Sample Container(s) See analyte list	Preservative See analyte list
Analysis See analyte list	Ferrous Iron Reading 0.0 mg/L
pH <u>7.4</u>	DO (mg/L) 5.4
Temp (°C) 23.40	ORP <u>60</u>
Specific Conductivity (uS/cm) 9,430	Turbidity (NTU) 65

Notes: Analyte List, Containers, and Preservatives

**Background Information** 

24015.04110								
Well Identification	on <u>PC-56</u>	me <u>Henderson, NV</u>						
Well Permit Num	iber	ect Nu	mber <u>01-2131F</u>					
Well Lock #		pling I	Date/Time <u>05/23/0</u>	1, 12:22				
Sampler(s) Doug	°F, clear							
Well Information								
Well Materials	Well Locked	Well Diameter	W	L Equipment	Integrity			
X PVC	□Y	X 2 Inch	X Co	onductivity Probe	☐ Casing			
	XN	D		·	X Concrete			
		Before Purgi	ng					
PID Reading Do	wnhole (ppm):			0.3 - 0.5				
PID Background	(ppm)			same				
Reference Point	Marked on Wel	1?		No; use N side of well casing				
Total Depth of W	Vell from Top o	f Inner Casing (TI	(ft) (C	<u>54.7</u>				
Depth to Water (	DTW) (ft)			<u>5.95</u>				
Casing Diameter	(CD) (in)			<u>2</u>				
Water Volume in	n Well (gal) = (7	ΓD-DTW)(CD) <sup>2</sup> (0	.041)	<u>8.0</u>				
Free Product Thickness (if applicable) (ft) N/A								
pH <u>7.1</u>		Specific Con	nductiv	rity (uS/cm) 11,300	<u>0</u>			
DO (mg/L) 13.5	<u>5</u>	Turbidity (1	NTU)	<u>75</u>				
Temp (°C) 23.12	<u>2</u>	ORP <u>216</u>						

**Purging Data** 

Time	Purge Vol. (Gal)	pН	T (°C)	SpC (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)
12:46	5	7.1	23.12	11.3	13.5	216	75
12:53	10	7.1	23.27	11.3	6.5	148	81
13:08	20	7.1	23.14	11.5	3.5	109	88
13:16	25	7.1	23.24	· 11.6	3.5	109	82
		<del></del>	ļ <u> </u>	<u></u>			
		· · · · · · · · · · · · · · · · · · ·					

**Sampling Data** 

Sample Collection Time 13:30	Sample Designation PC56-GW01
Depth to Water (ft) 6.41	Sampling Method Pump; bailer for VOCs
Sample Container(s) See analyte list	Preservative See analyte list
Analysis See analyte list	Ferrous Iron Reading <u>0.0 mg/L</u>
pH <u>7.10</u>	DO (mg/L) 3.5
Temp (°C) <u>23.24</u>	ORP <u>109</u>
Specific Conductivity (uS/cm) 11,600	Turbidity (NTU) <u>82</u>

Notes: Analyte List, Containers, and Preservatives

Background Information								
Well Identification PC-58 Project Name Henderson, NV								
Well Permit Nun	nber	ect Number 01-2131F						
Well Lock # Sampling Date/Time <u>05/23/01, 12:20</u>								
Sampler(s) Sara	Sampler(s) Sarah Libeau (ENVIRON) Weather Conditions Hot, 103°F, clear							
Well Information								
Well Materials	Well Locked	Well Diameter	WL Equipment	Integrity				
X PVC	ΩΥ	X 2 Inch	X Conductivity Probe	☐ Casing				
	XN	<u> </u>		X Concrete				
	Before Purging							
PID Reading Do	wnhole (ppm):		<u>0.3 – 0.5</u>					
PID Background	(ppm)		same	same				
Reference Point	Marked on Well	1?	No; use N side of	No; use N side of well casing				
Total Depth of W	Vell from Top of	f Inner Casing (TI	O) (ft) <u>31</u>	<u>31</u>				
Depth to Water (	DTW) (ft)		<u>6.6</u>	<u>6.6</u>				
Casing Diameter	(CD) (in)		<u>2</u>					
Water Volume in	Water Volume in Well (gal) = $(TD-DTW)(CD)^2(0.041)$ $\underline{4.0}$							
Free Product Thickness (if applicable) (ft) N/A								
pH <u>7.24</u>		onductivity (uS/cm) 8,590						
DO (mg/L) 1.74	<u>4</u>	Turbidity (	(NTU) Not measured					
Temp (°C) <u>24.92</u>	<u>2</u>	ORP <u>8.4</u>						

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**Purging Data** 

Purge Sta	rt Time <u>12:30</u>		Purge Method Dedicated Bailer				
Time	Purge Vol. (Gal)	рH	T (°C)	SpC (uS/cm)	DO (mg/L)	ORP	Turbidity (NTU)
12:35	1	7.24	24.92	8,590	1.74	8.4	Brown
12:43	3	7.22	26.94	8,680	0.98	98.8	Clearing
12:56	6	7.34	27.49	8,541	1.42	115.4	Clearing
13:09	9	7.22	27.72	8,527	1.40	87.6	Clear
13:23	12	7.26	24.40	8,546	1.32	98.5	Clear
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**Sampling Data** 

Sample Collection Time 13:25	Sample Designation PC-58
Depth to Water (ft) 23.1	Sampling Method Dedicated bailer
Sample Container(s) See analyte list	Preservative See analyte list
Analysis See analyte list	Ferrous Iron Reading 0.0 mg/L
pH <u>7.26</u>	DO (mg/L) <u>1.32</u>
Temp (°C) <u>24.40</u>	ORP <u>98.5</u>
Specific Conductivity (uS/cm) 8,546	Turbidity (NTU) Clear

#### Notes: Analyte List, Containers, and Preservatives