TRONOX

Susan Crowley
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June 27, 2008

Mr. Brian Rakvica, P.E.
Nevada Division of Environmental Protection
2030 East Flamingo Road, Suite 230
Las Vegas, Nevada 89119-0818

Subject: **BMI Plant Sites and Common Areas Projects, Henderson, Nevada**
Vertical Delineation of Contaminant Plumes and Hydraulic Gradients

Dear Mr. Rakvica:

This letter provides the Tronox LLC (Tronox) response to the information request regarding vertical gradients contained in the Nevada Division of Environmental Protection (NDEP) correspondence dated May 19, 2008. The information provided includes water level data, boring logs and well completion information for well clusters both on and off the Tronox site. These well clusters provide data demonstrating that an upward vertical gradient exists from the middle to deeper Muddy Creek Formation to shallower water-bearing units, including the upper-most Muddy Creek fine-grained sediments and the alluvium. The upward gradient exists both below the site and offsite in the area of Athens Road.

Tronox believes that the breadth of the well data both on and off the site is sufficient to understand vertical groundwater flow in the area of the contaminant plumes. As such, additional wells are not proposed at this time to further understand the nature of vertical groundwater flow. However, Tronox understands, as indicated in the NDEP letter of May 19, 2008, that NDEP may request additional investigation of the vertical extent of groundwater contamination. If you have any comments or questions concerning this correspondence please contact me at (702) 651-2234.

Sincerely

Susan M. Crowley
Staff Environmental Specialist

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Ho	Brian	ENSR	X	X	
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Bradley	Lisa	ENSR	X	X	
Lambeth	Jeff	Veolia			
Guerriero	Joe	AIG		X	
Giroux	Barry	GEI		X	
Stowers	Kirk	Broadbent			
Sahu	Rahnijit	BMI		X	
Crouse	George	Syngenta		X	
Erickson	Lee	Stauffer		X	
Kelly	Joe	Montrose			
Sundberg	Paul	Montrose		X	
Gibson	Jeff	AmPac			
Richards	Curt	Olin		X	
Bellotti	Michael	Olin		X	
Wilkinson	Craig	Timet		X	
Mack	Joel	Montrose Counsel			

Summary of Well Data
Supporting Vertical Hydraulic Gradients
Tronox LLC, Henderson, Nevada

On May 19, 2008, the Nevada Division of Environmental Protection (NDEP) sent an email to the Black Mountain Industrial (BMI) Complex companies requesting information on available data for well clusters that demonstrate vertical hydraulic gradients at the respective company sites. In support of the evaluation, NDEP requested information on the well locations, boring logs, water level data and total dissolved solids (TDS) and/or electrical conductance (EC) data from water quality samples.

Summary of Available Data

First groundwater beneath the Tronox Henderson Nevada facility (Site) occurs in the Quaternary Alluvium (Qal) and Muddy Creek Formation. Tronox divides the saturated sediments in the Alluvium and Muddy Creek into hydrogeologic units, in general, from shallowest to deepest, as follows:

- Quaternary Alluvium (Qal)
- Muddy Creek “First” Coarse-grained (MCcg1)
- Muddy Creek “First” Fine-grained (MCfg1)
- Muddy Creek “Second” Coarse-grained (MCcg2)
- Muddy Creek “Second” Fine-grained (MCfg2)

A complete discussion of these units is provided in the site conceptual model (ENSR 2005), and more recently in a Tronox response to the NDEP proposal to establish a uniform hydrostratigraphic nomenclature for the BMI complex.

There are 11 well clusters that have been installed both on and off the Tronox site where groundwater data has been collected or can be collected to provide information on the vertical hydraulic gradients within these units. The clusters are listed below as they occur from south to north across the Site **(Figure 1).**

- TR-9/TR-10
- TR-7/TR-8
- TR-3/TR-4
- M74/M-132/M-133
- M-134/M-135/M-136
- TR-1/TR-2/M-5A
- TR-11/MC-9
- TR-12/H-58A
- PC-134/PC-135
- PC-136/PC-137

The available well completion information, water level and water quality data from these clusters are provided in **Table 1.** The well completion data were summarized from the BMI, June 2008 “All Wells” database, and the water level data were provided from the Tronox “Mother Hen” database, updated through May 2008. Vertical gradients were estimated as the difference between the water levels in the shallow and deeper wells divided by the distance between the mid-point elevations of the screen interval. Available boring logs for these wells are provided in

Attachment A. Boring logs for recently installed wells M-132 through M-136 and PC-134 through PC-137 will be provided in the annual performance report.

There are historic water level data for most of the TR well pairs onsite, except for wells TR-11 and TR-12, which lack an adjacent Tronox shallow well completion. In all cases, the wells shown on **Table 1** are wells that have been installed and historically sampled by Tronox. Wells TR-11 and TR-12 are completed at depths below 200 feet below the ground surface (bgs) in the MCcg2 unit, and water level data has been collected since their installation in 1999. No adjacent shallow wells in the area are available for routine sampling by Tronox. However, that does not preclude these wells from being used to assess the vertical movement of groundwater in this area. Shallow wells that have been installed by Stauffer Chemical in proximity to these wells could be used to further understand the vertical gradient in this area. As such, the TR-11 and TR-12 wells are included above and on **Table 1** as wells having the potential to further evaluate vertical gradients.

Wells MC-9 and H-58A are the most proximal to wells TR-11 and TR-12, respectively, and, depending on their completion interval, could be used to support an understanding of vertical hydraulic gradients in this area. There is limited information on these wells in the BMI "All Wells" database, and as such, they were not included on Table 1.

Discussion

The distribution of well clusters and depth of well completions across the site provide an adequate assessment of the vertical hydraulic gradient between the various hydrogeologic units. Well clusters exist along the length of the western portion of the Site and in the area of the on-site barrier wall and Interceptor well field and offsite in the area of the Athens Road well field.

In general, the onsite well clusters show a consistent upward vertical gradient from the deeper wells completed in the MCcg2 and MCfg1 units into the shallower zones of the Muddy Creek and Quaternary alluvium. Water level data collected from 2005 to May 2008 show gradients ranging from -0.056 to -0.396 feet per foot (ft/ft)(minus sign indicating an upward gradient). The steepest gradients are present from MCcg2 to MCfg1 and were recorded in well pairs TR-1/TR-2 and TR-3/TR-4.

The water level data from recently installed monitor wells in the area of the barrier wall and Interceptor well field also show an upward vertical gradient from the middle portion of the Muddy Creek into the shallow or water table portion of the Muddy Creek. Water level data collected from well clusters M-74/M-132/M-133 and M-134/M-135/M-136 at the east and west terminus of the barrier wall, respectively, have yielded vertical hydraulic gradients from -0.007 to -0.227 ft/ft. The steepest gradients have been measured in well pairs M-134 (screen 60-70 feet bgs) and M-136 (screen 80-90 feet bgs).

In addition to well clusters at the barrier wall and Interceptor well field, well clusters PC-134/PC-135 and PC-136/PC-137 were recently installed at the Athens Road well field **(Figure 1).** Water level data collected from these wells show an upward gradient from the uppermost Muddy Creek (MCfg1) to the Qal, with gradients ranging from -0.059 to -0.107 ft/ft.

The TDS and EC data reveal significantly higher concentrations from water samples collected in the shallowest hydrogeologic units along the western property boundary. In general, water samples collected from wells (M-5A, TR-6) completed in the uppermost MCfg1, screened at or just below the water table contained TDS and EC concentrations an order of magnitude higher

than those completed in the middle or deepest wells. In general, EC data from wells completed below 100 feet bgs did not show significant variation in concentration ranging from about 1,000 to 2,000 micromohs/cm.

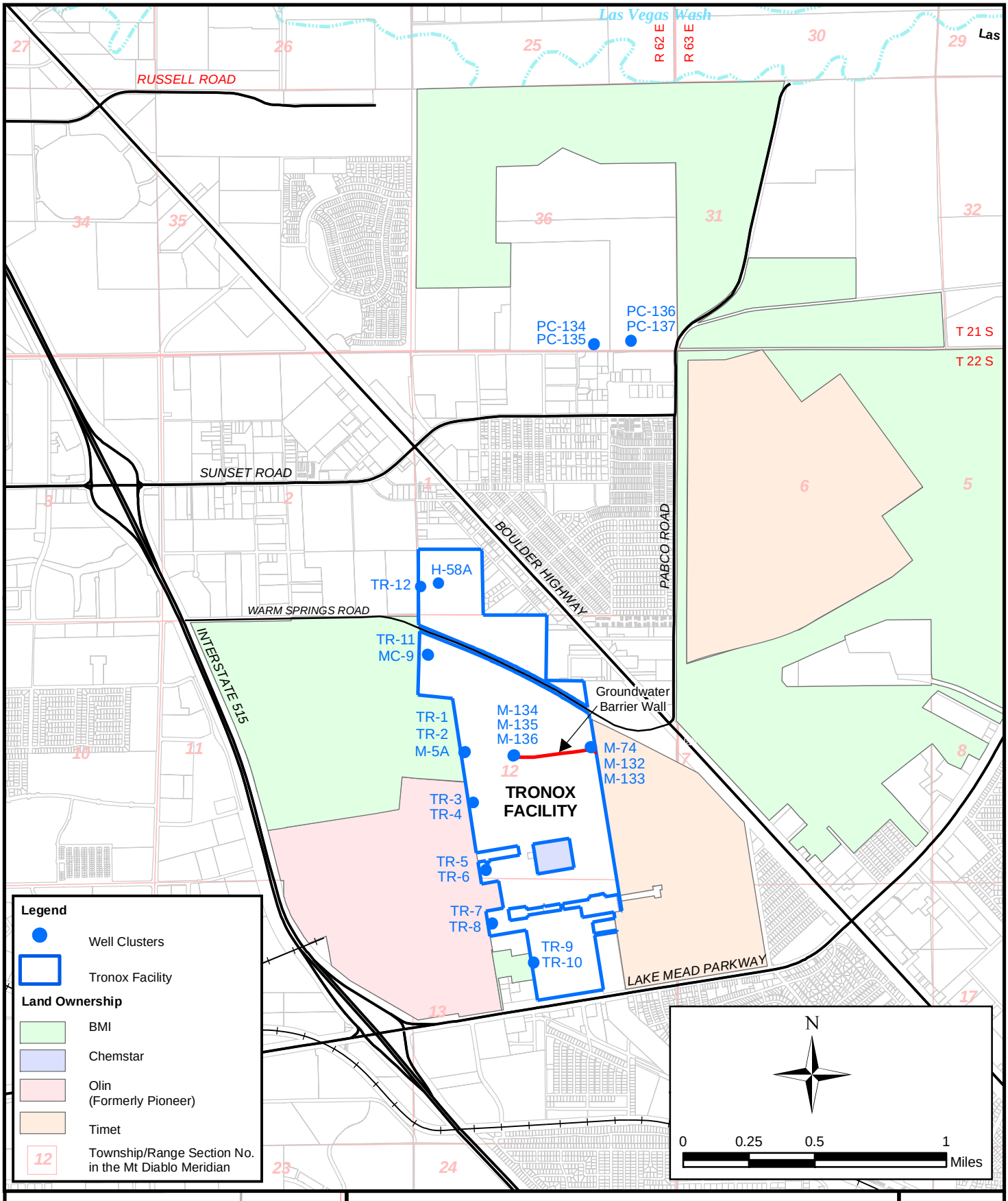
Water quality data are not yet available for the well clusters recently installed near the barrier wall and in the Athens Road area. Water quality samples from these wells were collected in May 2008 and data will be provided in the annual report.

Conclusions

The lateral distribution of well clusters and depth of the screen intervals provide an adequate well field to understand the vertical hydraulic gradient amongst the various hydrogeologic units below and off the Site. Additional data from recently installed wells adjacent to the barrier wall and Athens Road well field will improve this understanding as data is gathered from routine monitoring events. Further, it is anticipated that well installations as part of the ongoing Phase B Site Investigation program will also supplement the understanding of vertical groundwater movement. As noted above, Tronox will pursue well and water level information from wells MC-9 and H-58A to be able to further understand vertical gradients in this area of the Site.

Based on the distribution of well clusters, the installation of additional monitoring well clusters does not appear to be warranted to further understand the vertical movement of groundwater below the Site.

J:\TronoxGIS\mxd\task-160\Well Location map.mxd



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WELL LOCATION MAP

VERTICAL GRADIENT ASSESSMENT
TRONOX FACILITY
HENDERSON, NEVADA

FIGURE NUMBER:
1

DRAWN BY:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
M. Scop	6/27/2008	04020-023	1 of 1

TABLE 1
Summary of Water Level Data
for Selected Shallow and Deep Wells
TRONOX, LLC
Henderson, Nevada

WELL NUMBER[1]	AQUIFER UNIT [2]	WELL LOCATION	NORTHING [3]	EASTING [3]	WELL DIAMETER	TOP OF CASING	DEPTH TO TOP OF SCREEN	DEPTH TO BOTTOM OF SCREEN	TOTAL WELL DEPTH	ELEVATION TOP OF SCREEN	ELEVATION BOTTOM OF SCREEN	ELEVATION MID-POINT OF SCREEN	Sample Date [4]	TDS	EC (Lab)	GROUNDWATER		VERTICAL GRADIENT [8]		
																Measured DTW [6]	GW Elevation(7)	DATE		
			NAD	NAD	inches	ft-msl	ft-msl	ft-bgs	ft-bgs	ft-msl	ft-msl	ft-msl		mg/L	umho/cm	ft-bgs	ft-msl	shallow	deep	ft/ft
BARRIER AND INTERCEPTOR WELL FIELD																				
M-74	Qal	East Barrier	828713.65100	26720062.17900	2	1744.380	9.2	38.8	39	1735.18	1705.58	1720.4	1/22/08	--	--	29.35	1715.03			
													2/6/08	5860	--	29.33	1715.05	**M-74**	**M-133**	
													3/14/08	--	--	29.35	1715.03	1/22/08	1/17/08	-0.015
													5/8/08	5870	--	29.45	1714.93	2/6/08	2/5/08	-0.008
																		5/8/08	5/12/08	-0.017
M-132	MCfg1	East Barrier	26720048.491	828714.609	2	1744.27	80	90	90	1664.27	1654.27	1659.3	1/17/08	--	--	27.35	1716.92			
													2/5/08	--	--	27.51	1716.76			
													5/12/08	2350	--	27.28	1716.99	**M-133**	**M-132**	
M-133	MCfg1	East Barrier	26720067.292	828698.608	2	1743.62	60	70	70	1683.62	1673.62	1678.6	1/17/08	--	--	27.96	1715.66	1/17/08	1/17/08	-0.065
													2/5/08	--	--	28.23	1715.39	2/5/08	2/5/08	-0.071
													5/12/08	6270	--	27.99	1715.63	5/12/08	5/12/08	-0.070
M-134	MCfg1	West Barrier	26719889.138	827144.353	2	1752.14	60	70	70	1692.14	1682.14	1687.1	1/17/08	--	--	34.51	1717.63			
													2/5/08	--	--	34.64	1717.50	**M-135**	**M-134**	
													5/11/08	2810	--	33.22	1718.92	1/17/08	1/17/08	-0.013
M-135	MCfg1	West Barrier	26719890.173	827154.482	2	1751.85	29	39	39	1722.85	1712.85	1717.9	1/17/08	--	--	34.63	1717.22			
													2/5/08	--	--	36.69	1715.16			
													5/11/08	3430	--	33.14	1718.71	**M-134**	**M-136**	
M-136	MCfg1	West Barrier	26719889.774	827165.342	2	1751.87	80	90	90	1671.87	1661.87	1666.9	1/17/08	--	--	29.54	1722.33	1/17/08	1/17/08	-0.232
													2/5/08	--	--	29.77	1722.10	2/5/08	2/5/08	-0.227
													5/11/08	1400	--	29.16	1722.71	5/11/08	5/11/08	-0.187
ATHENS ROAD																				
PC-134	MCfg1	Athens Road West Subchannel	26728126.415	828776.171	2	1613.35	59.7	69.7	70	1553.65	1543.65	1548.7	1/18/08	--	--	34.69	1578.66			
													2/13/08	--	--	26.14	1587.21			
													5/11/08	1640	--	25.95	1587.40	**PC-135**	**PC-134**	
PC-135	Qal	Athens Road West Subchannel	26728123.177	828765.250	2	1612.79	19.7	49.7	50	1593.09	1563.09	1578.1	1/18/08	--	--	28.71	1584.08	1/18/08	1/18/08	0.184
													2/13/08	--	--	28.72	1584.07	2/13/08	2/13/08	-0.107
													5/11/08	--	--	--	--	6/26/08	5/11/08	-0.107
													6/26/08	--	--	28.55	1584.24			
PC-136	Qal	Athens Road East Subchannel	26728191.374	829517.888	2	1615.08	17.7	37.7	38	1597.38	1577.38	1587.4	1/18/08	--	--	30.83	1584.25			
													2/13/08	--	--	30.92	1584.16	**PC-136**	**PC-137**	
													5/14/08	6920	--	30.86	1584.22	1/18/08	1/18/08	-0.059
PC-137	MCfg1	Athens Road East Subchannel	26728198.976	829517.568	2	1614.83	59.7	69.7	70	1555.13	1545.13	1550.1	1/18/08	--	--	28.37	1586.46	2/13/08	2/13/08	-0.069
													2/13/08	--	--	28.11	1586.72	5/14/08	5/11/08	-0.067
													5/11/08	2590	--	28.11	1586.72			
WEST PROPERTY BOUNDARY - "TR" WELLS																				
M-5A	Qal	Western Property Boundary	826179.28500	26719961.11800	2	1751.80	40	50	50	1711.8	1701.8	1706.8	5/6/99	--	14200	37.69	1714.11			
													5/5/00	--	14900	39.44	1712.36			
													5/4/01	--	5860	39.11	1712.69			
													4/30/02	--	14500	39.00	1712.80			
													9/10/02	--	--	--				
													12/11/02	--	--	38.95	1712.85			
													5/7/03	--	15600	39.07	1712.73			
													7/9/03	--	15350	--				
													5/3/04	--	15350	--				
													8/3/04	--	15120	--				
													5/3/05	--	14700	38.01	1713.79	**M-5A**	**TR-2**	
													8/2/05	--	14700	--		5/3/05	2/18/05	-0.082
													5/2/06	10800	16200	37.91	1713.89	5/2/06	2/4/06	-0.089
													8/1/06	9330	15800	38.60	1713.20	5/2/07	1/18/07	-0.094
													5/2/07	9250	16000	38.26	1713.54	5/8/08	5/14/08	-0.131
													7/31/07	11100	16700	38.62	1713.18			
													5/8/08	11100	17100	42.12	1709.68			
																		TR-2	**TR-1**	

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for Selected Shallow and Deep Wells
TRONOX, LLC
Henderson, Nevada

WELL NUMBER[1]	AQUIFER UNIT [2]	WELL LOCATION	NORTHING [3]	EASTING [3]	WELL DIAMETER	TOP OF CASING	DEPTH TO TOP OF SCREEN	DEPTH TO BOTTOM OF SCREEN	TOTAL WELL DEPTH	ELEVATION TOP OF SCREEN	ELEVATION BOTTOM OF SCREEN	ELEVATION MID-POINT OF SCREEN	Sample Date [4]	TDS	EC (Lab)	GROUNDWATER		VERTICAL GRADIENT [8]		
																Measured DTW [6]	GW Elevation(7)	DATE		
			NAD	NAD	inches	ft-msl	ft-msl	ft-bgs	ft-bgs	ft-msl	ft-msl	ft-msl		mg/L	umho/cm	ft-bgs	ft-msl	shallow	deep	ft/ft
TR-1	MCcg2	Western Property Boundary	826168.04000	26719957.91000	4	1752.18	281.5	311.5	312.0	1470.68	1440.68	1455.7	9/2/99	--	903	--	--	2/18/05	2/18/05	-0.394
													9/3/99	--	1840	--	--	2/4/06	2/4/06	-0.385
													9/7/99	--	1392	--	--	1/18/07	1/18/07	-0.336
													9/23/99	--	1283	--	--	5/14/08	5/14/08	-0.215
													10/7/99	--	1283	+4.5	1756.68			
													1/13/00	--	--	+10.9	1763.08			
													2/2/01	--	1040	+13.42	1765.60			
													2/25/02	--	1130	+18.71	1770.89			
													2/19/03	--	--	+16.89	1769.07			
													2/3/04	--	1190	+20.91	1773.09			
													2/18/05	--	1120	+24.72	1776.90			
													2/4/06	--	1170	+24.49	1776.67			
													3/20/06	--	--	--	--			
													1/18/07	678	1190	+18.02	1770.20			
													5/14/08	740	1230	0.8 psi	1754.03			
TR-2	MCfg1	Western Property Boundary	826156.85000	26719954.57000	4	1751.79	144.5	174.5	175.0	1607.29	1577.29	1592.3	9/9/99	--	3950	--	--			
													9/23/99	--	4080	--	--			
													10/7/99	--	4080	28.00	1723.79			
													1/13/00	--	--	31.20	1720.59			
													2/4/01	--	932	39.03	1712.76			
													2/25/02	--	941	30.11	1721.68			
													2/19/03	--	--	29.50	1722.29			
													2/3/04	--	1000	29.38	1722.41			
													2/18/05	--	933	28.66	1723.13			
													2/4/06	--	960	27.70	1724.09			
													3/22/06	--	--	--	--			
													1/18/07	560	990	27.49	1724.30			
													5/14/08	566	965	27.13	1724.66			
TR-3	MCcg2	Western Property Boundary	826342.89000	26718941.61000	4	1772.84	219.5	249.5	250.0	1553.34	1523.34	1538.3	10/7/99	--	1330	5.40	1767.44			
													1/13/00	--	--	6.20	1766.64			
													2/4/01	--	1060	3.58	1769.26			
													2/25/02	--	1080	1.79	1771.05			
													2/19/03	--	--	+0.42	1773.26			
													2/3/04	--	1140	0.30	1772.54			
													2/18/05	--	1080	+2.50	1775.34			
													2/4/06	--	999	+0.40	1773.24			
													3/22/06	--	--	--	--	TR-4	TR-3	
													1/18/07	652	1150	+2.75	1775.59	2/18/05	2/18/05	-0.394
													5/15/08	656	1130	0.2 psi (estimate)	1773.3	2/4/06	2/4/06	-0.369
																		1/18/07	1/18/07	-0.396
TR-4	MCfg1	Western Property Boundary	826342.53000	26718951.58000	4	1772.55	124.5	144.5	145.0	1648.05	1628.05	1638.1	9/15/99	--	3720	--	--	5/15/08	5/15/08	-0.375
													9/23/99	--	1930	--	--			
													10/7/99	--	1930	34.00	1738.55			
													1/13/00	--	--	38.75	1733.80			
													2/4/01	--	1080	37.73	1734.82			
													2/25/02	--	1440	38.17	1734.38			
													2/19/03	--	--	37.92	1734.63			
													2/3/04	--	1760	38.40	1734.15			
													2/18/05	--	1520	36.45	1736.10			
													2/4/06	--	1430	36.15	1736.40			
													3/20/06	--	--	--	--			
													1/18/07	894	1560	36.42	1736.13			
													5/15/08	868	1470	36.68	1735.87			
TR-5	MCcg2	Western Property Boundary	826595.86000	26717592.13000	4	1800.27	221.0	251.0	251.5	1579.27	1549.27	1564.3	9/23/99	--	1353	--	--			
													9/24/99	--	1447	--	--			
													10/7/99	--	1447	12.00	1788.27			
													1/13/00	--	--	16.50	1783.77			
													2/4/01	--	1130	13.44	1786.83			
													2/25/02	--	1180	10.97	1789.30			
													2/20/03	--	--	8.70	1791.57			
													2/3/04	--	1260	6.65	1793.62			
													2/18/05	--	1210	4.01	1796.26			
													2/4/06	--	991	0.88	1799.39			
													3/20/06	--	--	--	--			
													1/18/07	742	1240	+0.10	1800.37	TR-6	TR-5	
													5/14/08	748	1220	0.1 psi (estimate)	1800.5	2/18/05	2/18/05	-0.198
																		2/4/06	2/4/06	-0.220

TABLE 1
Summary of Water Level Data
for Selected Shallow and Deep Wells
TRONOX, LLC
Henderson, Nevada

WELL NUMBER[1]	AQUIFER UNIT [2]	WELL LOCATION	NORTHING [3]	EASTING [3]	WELL DIAMETER	TOP OF CASING	DEPTH TO TOP OF SCREEN	DEPTH TO BOTTOM OF SCREEN	TOTAL WELL DEPTH	ELEVATION TOP OF SCREEN	ELEVATION BOTTOM OF SCREEN	ELEVATION MID-POINT OF SCREEN	Sample Date [4]	TDS	EC (Lab)	GROUNDWATER		VERTICAL GRADIENT [8]		
																Measured DTW [6]	GW Elevation(7)	DATE		ft/ft
			NAD	NAD	inches	ft-msl	ft-msl	ft-bgs	ft-bgs	ft-msl	ft-msl	ft-msl		mg/L	umho/cm	ft-bgs	ft-msl	shallow	deep	
TR-6	MCcg1	Western Property Boundary	826594.34000	26717608.38000	4	1800.36	60.0	80.0	80.0	1740.36	1720.36	1730.4	9/24/99	--	8240	--	--	1/18/07	1/18/07	-0.228
													9/25/99	--	7930	--	--	5/14/08	5/14/08	-0.230
													10/7/99	--	8240	34.75	1765.61			
													1/13/00	--	--	39.75	1760.61			
													2/4/01	--	6480	38.48	1761.88			
													2/25/02	--	6970	35.45	1764.91			
													2/20/03	--	--	39.47	1760.89			
													2/3/04	--	9310	40.22	1760.14			
													2/18/05	--	11700	36.93	1763.43			
													2/4/06	--	5910	37.5	1762.86			
													3/20/06	--	--	--	--			
													1/18/07	5590	8600	37.94	1762.42			
													5/14/08	8750	10330	38.11	1762.25			
TR-7	MCcg2	Western Property Boundary	826724.99000	26716525.47000	4	1829.03	260.0	290.0	290.5	1569.03	1539.03	1554.0	9/26/99	--	1369	--	--			
													9/28/99	--	1438	--	--			
													10/7/99	--	1438	37.10	1791.93			
													1/13/00	--	--	40.25	1788.78			
													2/22/00	--	1600	39.99	1789.04			
													2/4/01	--	1240	37.22	1791.81			
													2/25/02	--	1250	34.66	1794.37			
													2/20/03	--	--	32.04	32.04			
													2/3/04	--	1310	29.46	1799.57			
													2/18/05	--	1260	26.67	1802.36			
													2/4/06	--	1290	23.12	1805.91			
													3/20/06	--	--	--	--			
													1/18/07	746	1300	20.74	1808.29	TR-8	TR-7	
													5/14/08	800	1290	17.83	1811.20	2/18/05	2/18/05	-0.125
																		2/4/06	2/4/06	-0.142
TR-8	MCcg1	Western Property Boundary	826722.81000	26716512.15000	4	1829.08	63.0	93.0	93.5	1766.08	1736.08	1751.1	10/7/99	--	2340	50.35	1778.73	1/17/07	1/18/07	-0.158
													1/13/00	--	--	55.45	1773.63	5/14/08	5/14/08	-0.171
													2/23/00	--	2500	54.91	1774.17			
													2/4/01	--	1830	54.46	1774.62			
													2/25/02	--	1770	52.81	1776.27			
													2/20/03	--	--	53.47	1775.61			
													2/3/04	--	1970	53.98	1775.10			
													2/18/05	--	1820	51.33	1777.75			
													2/4/06	--	1670	51.21	1777.87			
													3/20/06	--	--	--	--			
													1/17/07	1140	1770	51.90	1777.18			
													5/14/08	1180	1740	51.65	1777.43			
TR-9	MCcg2	Western Property Boundary	827560.22000	26715752.71000	4	1854.29	230.0	250.0	250.5	1624.29	1604.29	1614.3	10/9/99	--	1378	60.50	1793.79			
													1/13/00	--	--	66.10	1788.19			
													2/22/00	--	1600	65.74	1788.55			
													2/4/01	--	1220	63.08	1791.21			
													2/25/02	--	1220	60.61	1793.68			
													2/19/03	--	--	58.07	1796.22			
													2/3/04	--	1310	55.42	1798.87			
													2/18/05	--	1270	52.78	1801.51			
													2/4/06	--	1240	49.16	1805.13			
													3/20/06	--	--	--	--			
													1/17/07	778	1300	46.81	1807.48	TR-10	TR-9	
													5/13/08	834	1330	43.78	1810.51	2/18/05	2/18/05	-0.056
																		2/4/06	2/4/06	-0.076
TR-10	MCcg1	Western Property Boundary	827562.53000	26715739.77000	4	1854.06	80.0	100.0	100.5	1774.06	1754.06	1764.1	10/9/99	--	2190	57.35	1796.71	1/17/07	1/17/07	-0.102
													1/13/00	--	--	62.45	1791.61	5/13/08	5/13/08	-0.109
													2/21/00	--	2100	62.15	1791.91			
													2/4/01	--	2060	61.09	1792.97			
													2/25/02	--	2060	61.19	1792.87			
													2/19/03	--	--	60.75	1793.31			
													2/3/04	--	2150	60.89	1793.17			
													2/18/05	--	2050	60.92	1793.14			
													2/4/06	--	2150	60.33	1793.73			
													3/20/06	--	--	--	--			
													1/17/07	1840	2530	61.91	1792.15			
													5/13/08	1740	2440	59.87	1794.19			

TABLE 1
Summary of Water Level Data
for Selected Shallow and Deep Wells
TRONOX, LLC
Henderson, Nevada

WELL NUMBER[1]	AQUIFER UNIT [2]	WELL LOCATION	NORTHING [3]	EASTING [3]	WELL DIAMETER	TOP OF CASING	DEPTH TO TOP OF SCREEN	DEPTH TO BOTTOM OF SCREEN	TOTAL WELL DEPTH	ELEVATION TOP OF SCREEN	ELEVATION BOTTOM OF SCREEN	ELEVATION MID-POINT OF SCREEN	Sample Date [4]	TDS	EC (Lab)	GROUNDWATER		VERTICAL GRADIENT [8]		
																Measured DTW [6]	GW Elevation(7)	DATE		
			NAD	NAD	inches	ft-msl	ft-msl	ft-bgs	ft-bgs	ft-msl	ft-msl	ft-msl		mg/L	umho/cm	ft-bgs	ft-msl	shallow	deep	ft/ft
TR-11	MCcg2	Western Property Boundary	825422.57000	26721918.29000	4	1717.12	210.0	230.0	230.5	1507.12	1487.12	1497.1	10/13/99	--	1213	+2.45	1719.57			
													1/13/00	--	--	+3.70	1720.82			
													2/2/01	--	1090	+3.93	1721.05			
													2/25/02	--	1170	+7.73	1724.85			
													2/19/03	--	--	+5.94	1723.06			
													2/3/04	--	1230	+8.57	1725.69			
													2/18/05	--	1180	+9.47	1726.59			
													2/4/06	--	1200	+11.20	1728.32			
													3/20/06	--	--	--	--			
													1/15/07	684	1210	+8.78	1725.90			
													5/13/08	722	1210	2.9 psi	1723.82			
TR-12	MCcg2	Western Property Boundary	825286.37000	26723271.82000	4	1695.84	272.0	292.0	292.5	1423.84	1403.84	1413.8	10/18/99	--	1103	+2.60	1698.44			
													1/13/00	--	--	+15.60	1711.44			
													2/2/01	--	755	+20.91	1716.75			
													2/25/02	--	818	+22.47	1718.31			
													2/19/03	--	--	+4.9	1700.74			
													2/3/04	--	879	+2.31	1698.15			
													2/18/05	--	847	+21.94	1717.78			
													2/4/06	--	851	+20.91	1716.75			
													3/20/06	--	--	--	--			
													1/15/07	500	860	+17.56	1713.40			
													5/15/08	468	850	9.0 psi	1716.63			

DEFINITIONS

NAD	North American Datum
ft-msl	feet above mean sealevel
ft-bgs	feet below ground surface
mg/L	milligrams per liter
umohs/cm	micromohs per centimeter
ft/ft	feet per foot

NOTES

(1) Wells locations are shown on Figure 1.
(2) Aquifer units designated by Tronox as follows:
- Qal - Alluvium (includes saturated uppermost MCfg1)
- MCfg1 - Muddy Creek Formation - first fine-grained facies
- MCcg1- Muddy Creek Formation - first coarse-grained facies
- MCfg2- Muddy Creek Formation - second coarse-grained facies

(3) Survey coordinates as provided in the June 2008 "all wells" database.
(4) Date as provided in the Tronox "Mother Hen" database. Inclusive of water level and groundwater sampling dates.
(5) Data reported in 2008 should be considered as "PRELIMINARY" (Not Validated). Data validation for these data is not complete. These data will be transmitted as validated in the annual report.
(6) Depth is assumed to be "positive" (vertically down from the measuring point). Those values shown with a "+" indicate distance above the measuring point (up).
(7) Values reported in psi (measured from the well head pressure gauge) were converted to elevation by multiplying by 2.31 (conversion factor) and adding to the top of casing elevation.
(8) Vertical gradient estimated as the difference between the groundwater elevations of shallow and deep wells divided by the distance between the mid-point elevations of their screen intervals.

Attachment A – Boring Logs

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION Henderson	BORING NUMBER TR-1

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-37' GRAVELLY SAND, sdy GRAVEL and SAND, interbedded. mod. brown (5YR 4/4). Poorly sorted (well graded). Gravel up to 2" diam. Sand vc-vf... predom m-f, A-SR. Minor silt 10-20%, no clay mod CaCO3 rinds on gravel grains		SW							
5			SP							
10			GP							
15	8-12' inc. gravel size 16-20' m-vf sand w/ minor pea gravel		SW							
20			GP							
25	25-29' m-vf sand w/ minor pea gravel little silt - 10-20%		SP							
30	31-33' Gravelly		GP							
35	35-37' damp		SP							
37										QAL
	37-104' sdy SILT (20-30%, vfg, A-SA grains),	4	ML							mc fg

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND

DATE DRILLED	PAGE
9-1-99	1 of 8
DRILLING METHOD: ARCH	
DRILLED BY: Beylik	
LOGGED BY: EJ KRISH	
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON, NV	BORING NUMBER TR 1

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
280	280-298' Gravelly Ss., mod brn (5YR 3/6). Com. calcareous cement. hard. vf-vc w/ com sm-granules to 1/8-1/4" of qtz and volcanics (basalt, decite, andesite)		GW/GP							HARD & fractured
290										
295										
298	298'-305 sl. silty Ss., mod brn (5YR 4/6). Var. calc. cement ... softer than above, 20-25% silt, vfg sd.		SM							
305	305-312' Gravelly Ss. mod brn (5YR 3/6 to 5YR 4/6) hard, calcareous cement vf-vc w/ com volc + qtz granules.		GW/GP							hard & fractured WTR sample @ 312'
312	TD 312'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
9-2-99	8 of 8

DRILLING METHOD: ARCH

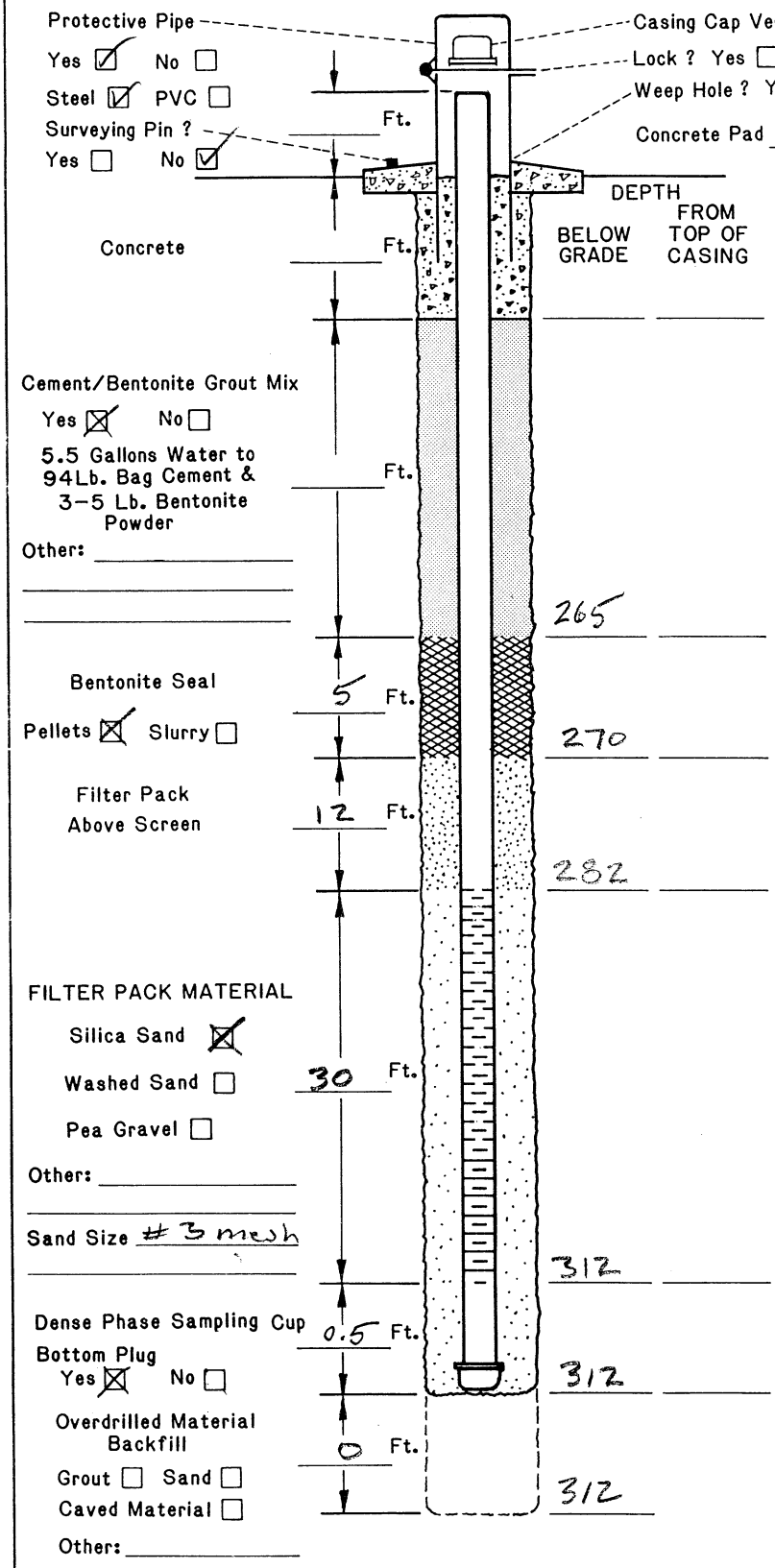
DRILLED BY: BEYLIK

LOGGED BY: E. KRISH

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4" Inches, Screen 4" Inches.
5. Slot Size of Screen: .020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☒ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   60 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 90 Gallons
4. Water Clarity Before Development ? Clear ☒
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development +4.2 Ft. Date 10-7-99
After Development +13.9 Ft. Date 1-13-00

Driller/Firm Beylik (Schoonmaker) Drill Rig Type Dresser TW70 Date Installed 9-3-99

Drill Crew EBERLY / PADILLA Well No. TR-1 Kerr-McGee Hydrologist E. KRISH

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON	BORING NUMBER TR-2

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	TOTAL DEPTH 180' SEE LOG FROM WELL TR-1 (12' EAST OF TR-2) FOR GEOLOGY									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
9/8/99	1 of 1

DRILLING METHOD: ARCH

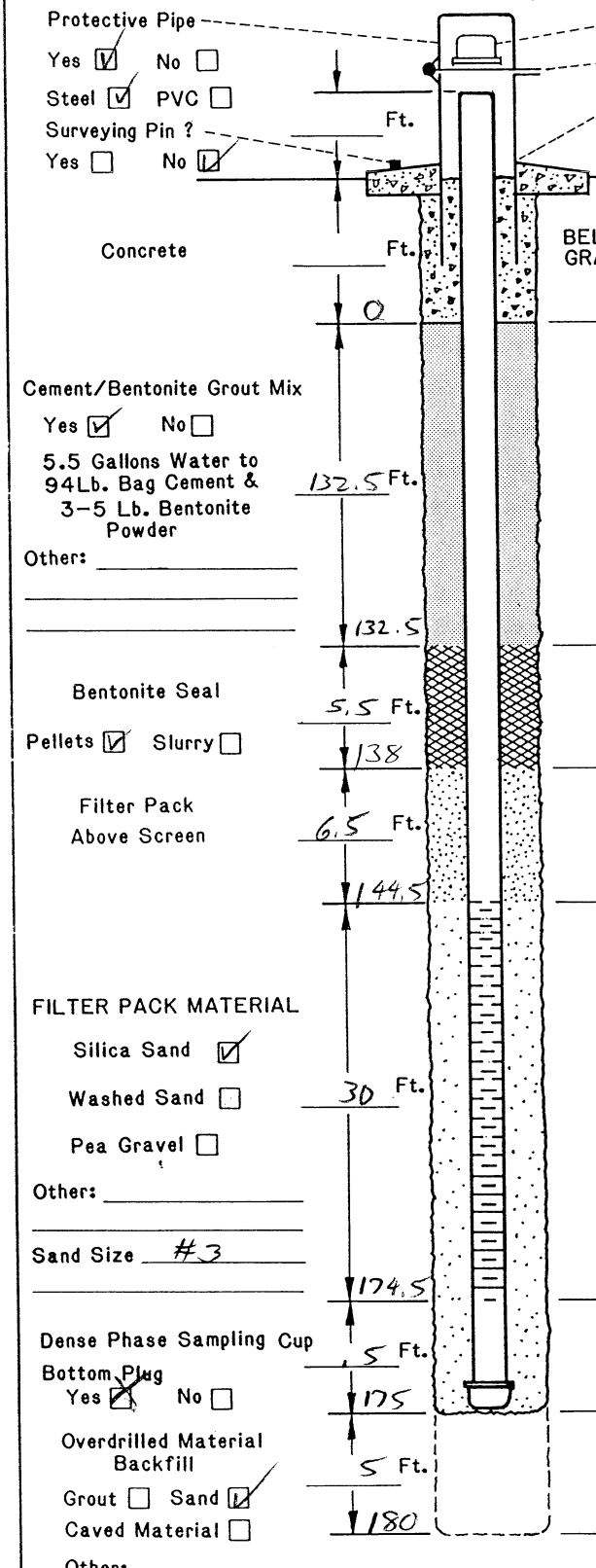
DRILLED BY: BEYLIK

LOGGED BY: T. REED

EXISTING GRADE ELEVATION (FT AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



Casing Cap Vent ? Yes ☑ No ☐
Lock ? Yes ☐ No ☐
Weep Hole ? Yes ☐ No ☐
Concrete Pad _____ Ft. x _____ Ft. x _____ Inches

DEPTH FROM TOP OF CASING | DEPTH BELOW GRADE

DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☑ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4 Inches, Screen 4 Inches.
5. Slot Size of Screen: .020
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☑ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   45 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 45 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -30.1 Ft. Date 10-7-99
After Development -29.9 Ft. Date 1-13-00

Driller/Firm A. SCHOONMAKER/BEYLICK Drill Rig Type DRESSER TW 70 Date Installed 9/9/99
Drill Crew J. EBERLEY/H. PADILLA Well No. TR-2 Kerr-McGee Hydrologist T. REED

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCLLC	LOCATION HENDARSON	BORING NUMBER TR-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	FILL: SANDY GRAVEL,									
5	4-15 SAND w/ SILT AND GRAVEL; VF- COARSE- GRAINED; V. SLI. MOIST; MOD. YELLOWISH-BROWN 10YR 5/4		SW							
10										
15	15-27 GRAVEL w/ SAND & SILT; HARD DRILLING; LARGEST COBBLES @ 24-27'; V. SLI. MOIST; PALE YELLOWISH-BROWN 10YR 6/2		GW							
20										
25										
27										QAL
30	27-190' SILT, w/ SCATTERED sdy and/or clayey layers. Mod brn (5YR 4/4). Moist, calcareous. w/ scattered nodular caliche zones throughout		ML							MC fg
35	27-32 sdy, f-mg (20-30% sd) 38-43, 1/16-1/2" nodules (caliche)									
40										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- CALICHE
- _____

DATE DRILLED: 9/10-

PAGE: 1 of 7

DRILLING METHOD: ARCH / CORE

DRILLED BY: BEYLIK DRLG.

LOGGED BY: T. REED

EXISTING GRADE ELEVATION (FT AMSL):

LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC-LLC	LOCATION HENDERSON	BORING NUMBER TR-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
45	@ 45' wet, saturated to TD		ML							WTR SMPL @ 50'
50	51-52 hard cemented caliche layer 52-57 10-25% vfg sandy w/ 2" zone of pebbles (up to 2" diam) in silt matrix @ 54'									
60	57-65 calichified, nodular 1/16 - 1/2" yell gry (5Y 8/1)									Pesticide odor from 50' to 130'
65	62-64 10-20% vfg sd									
70			ML							
75	72-82 calichified silt, nodular 1/16" - 3/4"									
80										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; CALICHE

DATE DRILLED	PAGE
9/10 - 9/12	2 of 7

DRILLING METHOD: ARCH - CORE

DRILLED BY: BEYLIK

LOGGED BY: T. REED

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC-LLC	LOCATION HENDERSON	BORING NUMBER TR-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
85	@ 82' mod brn 5YR4/4 82'-93' sdy, 20-30% vf-fg		ML							
90										
95	97'-100' calichified zone yell gry(5Y8/1) nodular to 3/4"									
100	100-110 sdy (vf-fg), 25%, w/ minor vc-1/4" A-SA vole grains 105'-110'									
105			ML							
110	110-115 calichified zone, nodular to 1/2" yell gry									
115										
120										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- CALICHE
- _____

DATE DRILLED	PAGE
9/10 - 9/12	3 of 7

DRILLING METHOD: ARCH

DRILLED BY: BETZ IK

LOGGED BY: T. REED

EXISTING GRADE ELEVATION (FT. AMSL):

LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMG-LLC	LOCATION HENDERSON	BORING NUMBER TR-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
125	SILT, as above, mod brn (5YR 4/4)		ML							pesticide odor ends @ 130'
130										
135	135-141' calichified, nodular, zone 1/16"-1/2" nodules									
140										
145	140-150 sdy, vf-fg, 30%		ML							
150										
155										
160										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND · CALICHE

DATE DRILLED	PAGE
9/10-9/12/99	4 of 7

DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: T. REED
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC-LLC	LOCATION HENDERSON	BORING NUMBER TR-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
160	160'-168' calichified nodular (1/16-1/4" diam), yell gry, sdy (vf-fg)		ML							
165										
170										
175										
180	180'-195' calichified, nodular, zone		ML							
185										
190										MC fg
	190'-200' SAND, vf-fg, mod brn, com calc. cement,									MC cg hard drilling
	192'-196' SAND, pebbly. Mod brn matrix & "salt & pepper" volc ash pebbles. vfg sd, A-SA, 1/16"-1/2" pebbles		SW							
200										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND · CALICHE

DATE DRILLED	PAGE
9/10-12/99	5 of 7

DRILLING METHOD: ARCH
DRILLED BY: BEYUK
LOGGED BY: T. REED
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON	BORING NUMBER TR-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
205	200'-230' SILT, sdy mod brn, vf-fg w/ 30-40% sd in matrix. calcareous w/ minor 1/8" caliche nodules									
210			ML							
215	212-230 calichified nodular zone (1/16"-1/2")									
220										
225										
230	230-251.5 SAND, vf-f w/m grains, A-5A, sp. calc cement gry oran (10YR7/4)		SW							
235										
240										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; CALICHE

DATE DRILLED	PAGE
9/10-12/99	6 of 7
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: T. REED	
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON	BORING NUMBER TR-3

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
245	SAND, as above		SW							
250	TD 251.5'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

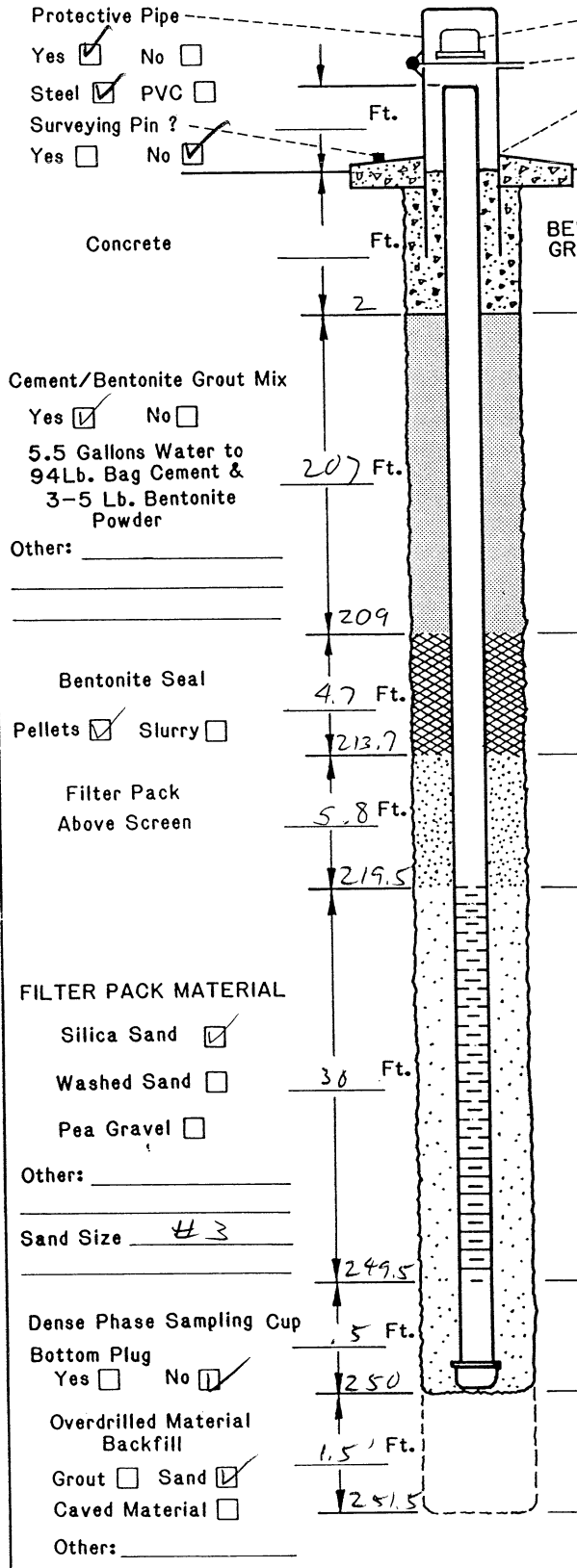
GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	PAGE
9/10-12/99	7 of 7

DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: T. REED
EXISTING GRADE ELEVATION (FT AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



Casing Cap Vent ? Yes ☐ No ☐
Lock ? Yes ☐ No ☐
Weep Hole ? Yes ☐ No ☐
Concrete Pad _____ Ft. x _____ Ft. x _____ Inches

DEPTH FROM TOP OF CASING | DEPTH BELOW GRADE

DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☑ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4 Inches, Screen 4 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☑ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   45 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 450 Gallons
4. Water Clarity Before Development ? Clear ☒
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☑
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -8.0 Ft. Date 10-7-99
After Development -3.6 Ft. Date 1-13-00

Driller/Firm A. SCHOONMAKER / BEYLIK Drill Rig Type DRESSER TW 70 Date Installed 9/12-13/99

Drill Crew J. FREELEY / S. PADILLA Well No. TR-3 Kerr-McGee Hydrologist T. REED

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON	BORING NUMBER TR-4

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	TOTAL DEPTH 14' SEE LOG FROM WELL TR-3 (~10' SOUTH OF TR-4) FOR LITHOLOGY									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
9/14/99	1 of 1

DRILLING METHOD: ARCH

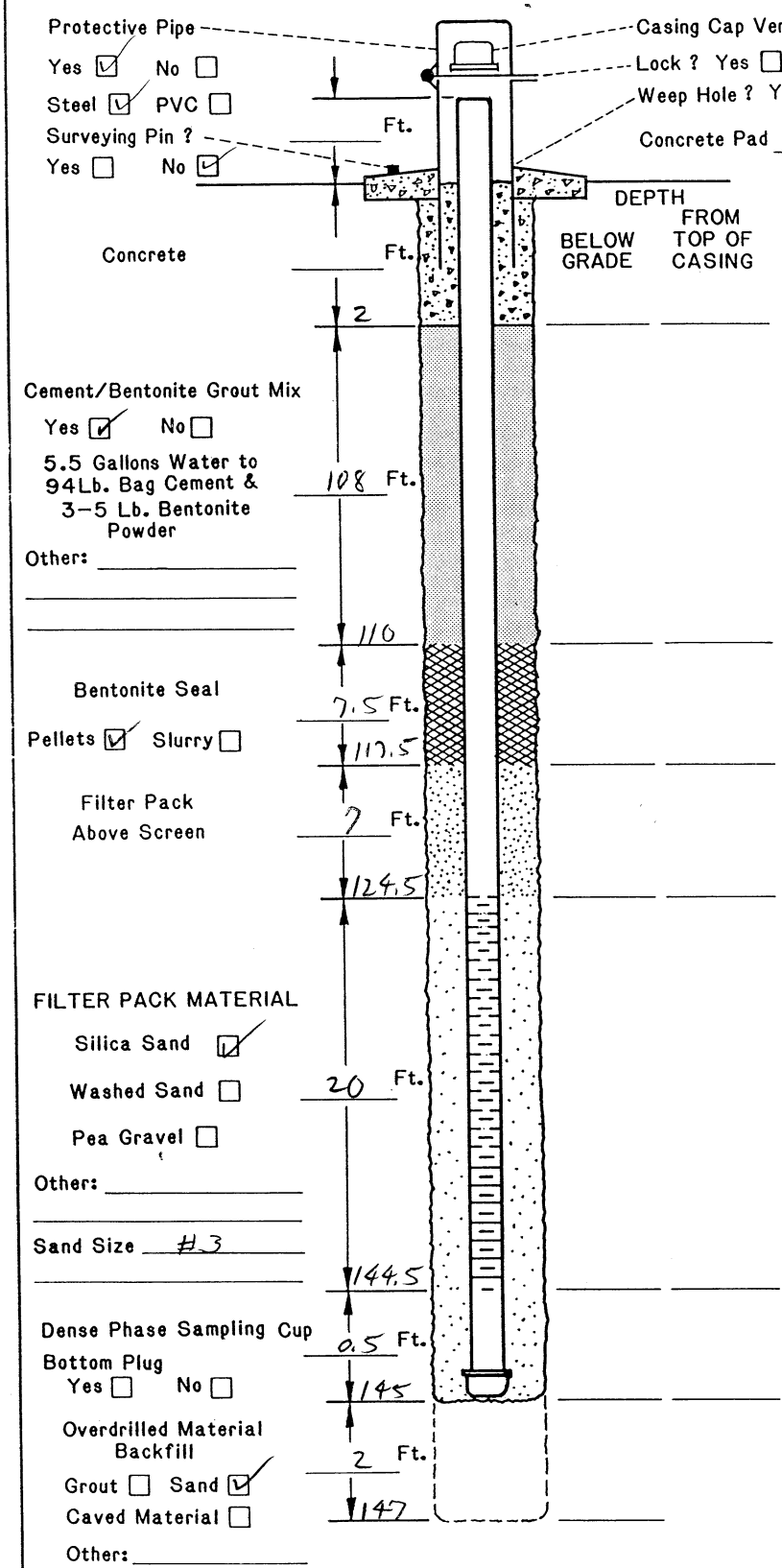
DRILLED BY: SEYLIK

LOGGED BY: T. REED

EXISTING GRADE ELEVATION (FT AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☑
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☑
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☑ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☑ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☑ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4 Inches, Screen 4 Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☑
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☑ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   45 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 225 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -36.4 Ft. Date 10-7-99
After Development -36.35 Ft. Date 1-13-00

Driller/Firm A. SCHOONMAKER/BEYUK Drill Rig Type DRESSER TW 70 Date Installed 9/15/99

Drill Crew J. EBERLEY / S. PADILLA Well No. TR-4 Kerr-McGee Hydrologist T. REED

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON	BORING NUMBER TR-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	SANDY GRAVEL w/ SILT; SLI. MOIST; GRAYISH-ORANGE PINK 5YR 7/2		GW							
5	SAND (VF-MED.) WITH SILT AND GRAVEL; SLI. MOIST; 5YR 7/2		SW							
10	SANDY GRAVEL, SLI. MOIST; SOME SILT; GRAYISH-ORANGE PINK 5YR 7/2		GW							
15										
20	SAND; VF-F GRAINED; MED-COARSE SAND ALL TO COMMON; SLI.-MOD. MOIST; LT. BROWN 5YR 6/4		SW							
25	GRAVELLY SAND; VF-COARSE; MOD. MOIST; LT. BROWN; 5YR 6/4		SW							
30										
35										Qal
37	37-62 SILT w/thin sdy zones, mod yell brn (10YR5/4) calcareous;		ML							MC fg
40										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	9/16-9/22/99
PAGE	1 of 7
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	T. REED
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KM LLC	LOCATION HENDERSON	BORING NUMBER TR-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
45	37-50 sdy, 20% vf-fg		ML							
50	50-57 nodular to semi-massive caliche									
55										
60										
62	62-72 SAND, silty w/ minor vc volc grains. Mod brn. A-SA, fg w/ vf and minor vc. Calcareous		SM							
70										
72	72-78 Gravel, sdy, granule size (1/16"-1/4") volcanic grams w/ vf-fg matrix. calcareous.		SW							
75										
78	78-130 SILT, w/minor interbedded cly silt and		ML							
80										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; CALICHE

DATE DRILLED	9/16-9/22/99
PAGE	2 of 7
DRILLING METHOD	AIR-ROTARY
DRILLED BY	BECK
LOGGED BY	T. REED
EXISTING GRADE ELEVATION (FT AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KmCLLC	LOCATION HENDERSON	BORING NUMBER TR-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
85	vfg sdy silt, mod brn, soft w/ minor calcareous cement throughout. Scattered nodular caliche zones throughout									
90			ML							
95										
100										
105										
110	112-115 CALICHE-CEMENTED ZONE, nodular		ML							
115										
120										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	9/16-9/22/99
PAGE	3 of 7
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	T. REED
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCLLC	LOCATION HENDERSON	BORING NUMBER TR-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	SILT AS ABOVE; CALICHE-CEMENTED ZONES @									
	122-125' nodular caliche									
125										
			ML							
130										
	132'-147' calcified silt, com sd to pebble sized caliche A-SA, caliche nodules									
135										
140										
145										
	147-150' silt as above, calcareous									
150	150-158 nodular caliche zone									
155			ML							
	158-180 silt as above calcareous									
160										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED: 9/16-9/22/99 | PAGE: 4 of 7

DRILLING METHOD: ARCH

DRILLED BY: BETLIK

LOGGED BY: T. REED

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMLLC	LOCATION HENDERSON	BORING NUMBER TR-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
160										
165										
170			ML							
175										
	177-180 nodular caliche									MC fg
180	180-200 SAND, silty, mod brn, soft, vfw/fg, A-SA, w/ 20-30% silt calcareous, w/ scattered minor amts of sd/granule size caliche nodules.		SM							MC cg
185										
190										
	187-195 common calichification									
195										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
9/16-9/22/99	5 of 7
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: T. REED	
EXISTING GRADE ELEVATION (FT. AMSL):	
LOCATION OR GRID COORDINATES:	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
200	200 - 216 SAND, mod brn (5YR 5/4), vf-fg w/ v. minor mg, A-SA, w/10-20% silt. Mod. calc. cement. w/ scattered minor caliche nodules (fg - pea grav size)		SW							
205										
210										
215										
	216-219 SILT, sdy, soft, (20-30% vfg), mod brn,		ML							
220	219 - 233 SAND, (as above), vf-fg, mod brn, A-SA, with interbeds (thin) containing VC-1/8" pole grains. Calcareous cement. Fractured w/ calcite on frac. surfaces		SW							
225										
230										
235	233-252.5 SAND, gravelly, mod brn, vf-f w/ VC-1/4", A-SA, granules of basalt, andesite, dacite		SW							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED: 9/16/99 - 9/22/99 | PAGE: 6 of 7

DRILLING METHOD: ARCH

DRILLED BY: BEYLIK

LOGGED BY: E. KRISH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR-5

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
245	Calcareous cement common.		SW							
250	TD 252.5									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED: 9/16-9/22/99 | PAGE: 7 of 7

DRILLING METHOD: ARCH

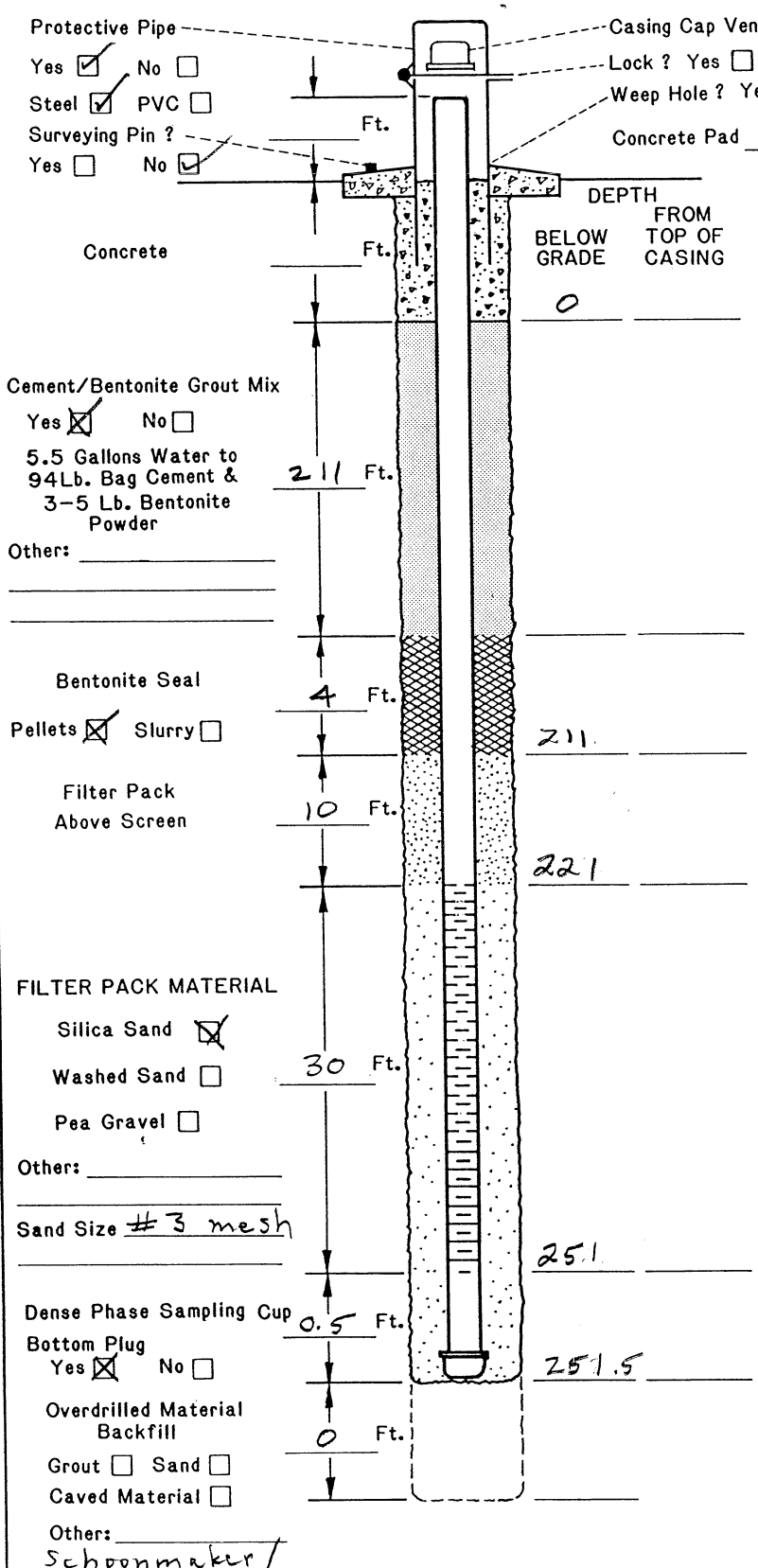
DRILLED BY: BEYLIK

LOGGED BY: E. KRISH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing 4 Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4 Inches, Screen 4 Inches.
5. Slot Size of Screen: .020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   45 / _____ Minutes ~~Hours~~
3. Approximate Water Volume Removed ? 175 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -14.6 Ft. Date 10-7-99
After Development -13.9 Ft. Date 1-13-00

Driller/Firm BEYLIK Drill Rig Type DTW70 Date Installed 9-22-99

Drill Crew EBERLY, PADILLA Well No. TR-5 Kerr-McGee Hydrologist E. KRISH

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR 6

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	TD 80' 15' North of TR 5 see TR 5 lith log for lithology									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	PAGE
9-24-99	1 of 1

DRILLING METHOD: ARCH

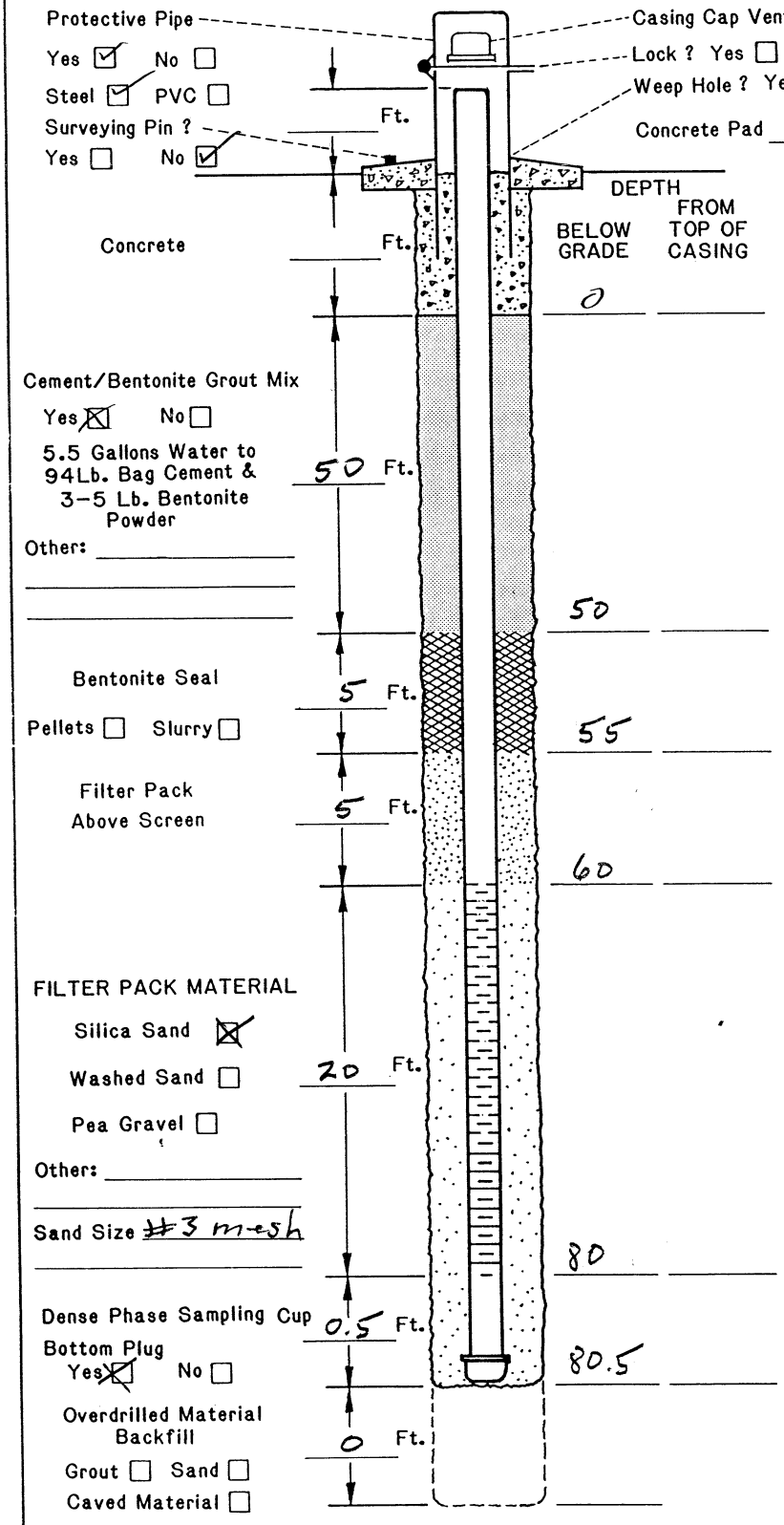
DRILLED BY: BEYLIK

LOGGED BY: E. KRISH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4 Inches, Screen 4 Inches.
5. Slot Size of Screen: .020
6. Type of Screen Perforation: Factory Slotted ☐
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   60 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 600 Gallons
4. Water Clarity Before Development ? Clear ☑
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☒ No ☐
   If Yes, Describe Pesticide
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -37.6' Ft. Date 10-7-99
After Development -36.9 Ft. Date 1-13-00

Driller/Firm BEYLIK
Drill Rig Type DTW 70
Date Installed 9-24-99
Drill Crew EBERLY / PADILLA
Well No. TR6
Kerr-McGee Hydrologist E KRISH

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-12 GRAVEL, sdy, gry oran (10YR 7/4) and mod yell brn (10YR 5/4). 60-70% gravel up to 1" diam in sd (f-vc) matrix. Mod. calcite cement. Mod calichification		GW							
12	12-20 SAND, gravelly, as above w/ 30-40% 1" diam volc gravel		SW							
20	20-26 SAND, silty gry oran (10YR 7/4) vf-vc w/ 20% silt in matrix		SM							
26	26-43 SAND, gry orange (10YR 7/4) vf-m w/ minor vc, A-SA, calcareous w/ sp-sd-size caliche nodules		SW							damp @ 28'
35										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · DEBRIS FILL · SILT · HIGHLY ORGANIC (PEAT) · SAND · SANDY CLAY · GRAVEL · CLAYEY SAND · SILTY CLAY · _____ · CLAYEY SILT · _____

DATE DRILLED	9/25-9/26/99
PAGE	1 of 8
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	E KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
			SW							Qal
43	43'-49' SILT, with thin interbeds of sdy(vfg) SILT and clayey SILT. Gry oran (10YR7/4)		ML							MC fg MC fg
50	49'-63' SAND, vf-mg, A-5A, com. caliche cement. gry oran (10YR 7/4) Fractured		SW							MC cg
60										WATER @ 63'
65	63'-70' Gravel, sdy, gry orange and dk yell brn (10YR 4/2). Pea gravel size volc grains		GW							
70	70'-82' SAND, gry orange, vf-m w/ tr vc. Com caliche cement. Fractured		SW							
75										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND

DATE DRILLED	9/25-9/26/99
PAGE	2 of 8
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
82			SW							
	82'-85' SILT, sdy, gry oran, sp. caliche frags.		ML							
85	85'-90' GRAVEL, sdy, gry oran + dk yell brn, vf-mg, A-SA w/sp. vc. Volc gravel to 1" diam.		GW							WTR-bearing MC cg
90	90'-186' SILT and sdy (vfg) SILT. Gry orange (10YR 7/4) and mod yell brn (10YR 5/4) scattered calichified zones throughout									MC fg
95	90'-106' sdy silt, vf-fg, 20-25% sd									
100	106-110' inc. in clay in matrix, 10-20%		ML							
105										
110	110'-114' com caliche nodules									
115	114'-125' 20-25% clay in matrix, w/ 10-15% vf-fg sd									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	9/25-9/26/99
PAGE	3 of 8
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	E. KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
125										
	128'-134' nodular caliche zone in sdy SILT		ML							
130										
	134-156' sdy SILT, com caliche nodules w/ 20-30% vf-fg sd A-SR									
140										
145										
	147-156' semi-massive caliche zone w/ tr. vc sd to sm. granules (volc). Cemented zone is sdy		ML							
150										
155	156-160' mod caliche still sdy, 15-25%									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	9/25-9/26/99
PAGE	4 of 8
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	E. KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR-7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
165	160-195' com calichification in sdy SILT		ML							
170										
175										
180										
185										
190	186-190' SAND, silty, hard, caliche cemented, vf-m g w/ tr c-vc		SM							
195	186-217 SILT, sdy, vf-fg, mod yell brn (10YR 9/4). 190-195' com-abn calichification		ML							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	9/25-9/26/99
PAGE	5 of 8
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	E. KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
205			ML							
210	210'-217' hard, com calichification									
215										MC fg
217	217-220 GRAVEL, sdy, calcareous, f-vc		GW							pea gravel size volc grains
220										MC cg
	220-225 SAND, cly vf-m w/vc, cemented 223'-225'		SM							
225										
	225-292' TD Gravel, sdy, vf-vc, up to 2"-3" diam. volc Com caliche cement, hard, fractured.		GW							
230										
235										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
9/25-9/26/99	6 of 8
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: E. KRISH	
EXISTING GRADE ELEVATION (FT. AMSL):	
LOCATION OR GRID COORDINATES:	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
245										
250										
255			GW							
260										
265										
270	270 – 286 silty water w/ gravels due to v. thin silty interbeds?		GM							
275										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	9/25-9/26/99
PAGE	7 of 8
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	E. KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR7

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
285			GM							
			GW							
292	TD 292'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

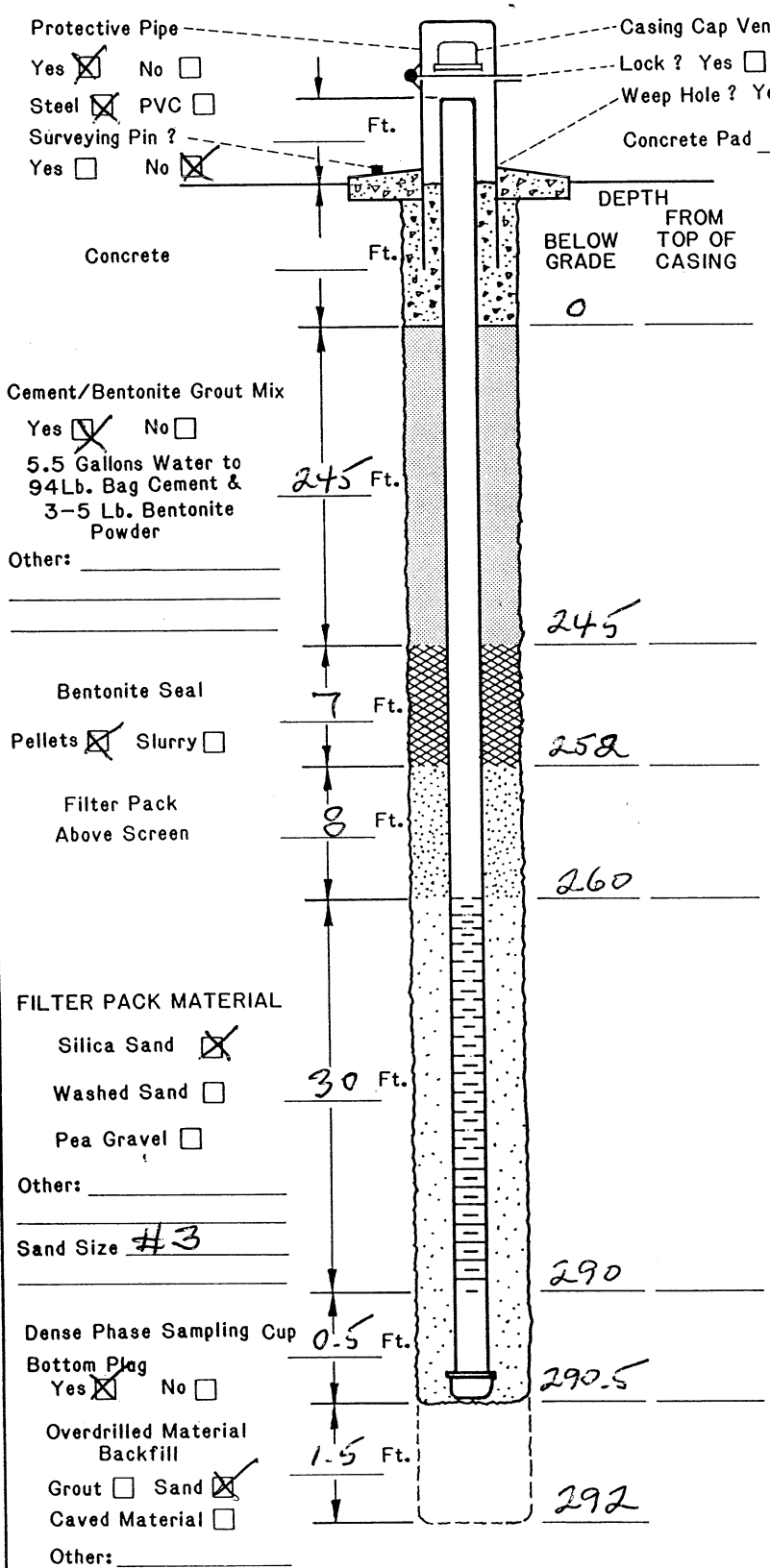
DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED: 9/25-9/26/99
PAGE: 8 of 8
DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: E. KRISH
EXISTING GRADE ELEVATION (FT AMSL):
LOCATION OR GRID COORDINATES:

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4 Inches, Screen 4 Inches.
5. Slot Size of Screen: .020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☒ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   45 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 510 Gallons
4. Water Clarity Before Development ? Clear ☒
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -39.5 Ft. Date 10-7-99
After Development -37.85 Ft. Date 1-13-00

Driller/Firm Schoonmaker/Beylik Drill Rig Type DTW 70 Date Installed 9-27-99
Drill Crew EBERLY, PADILLA Well No. TR7 Kerr-McGee Hydrologist E. KRISH

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMCC	LOCATION HENDERSON	BORING NUMBER TR8

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	HOLE LOCATED 12 ft South of TR7 - see TR7 for Lithology TD 98' NOTE: IN TR8 first MC gravel started @ 62' and ended at 93 ft.									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED: 9/30/99

PAGE: 1 of 1

DRILLING METHOD: ARCH

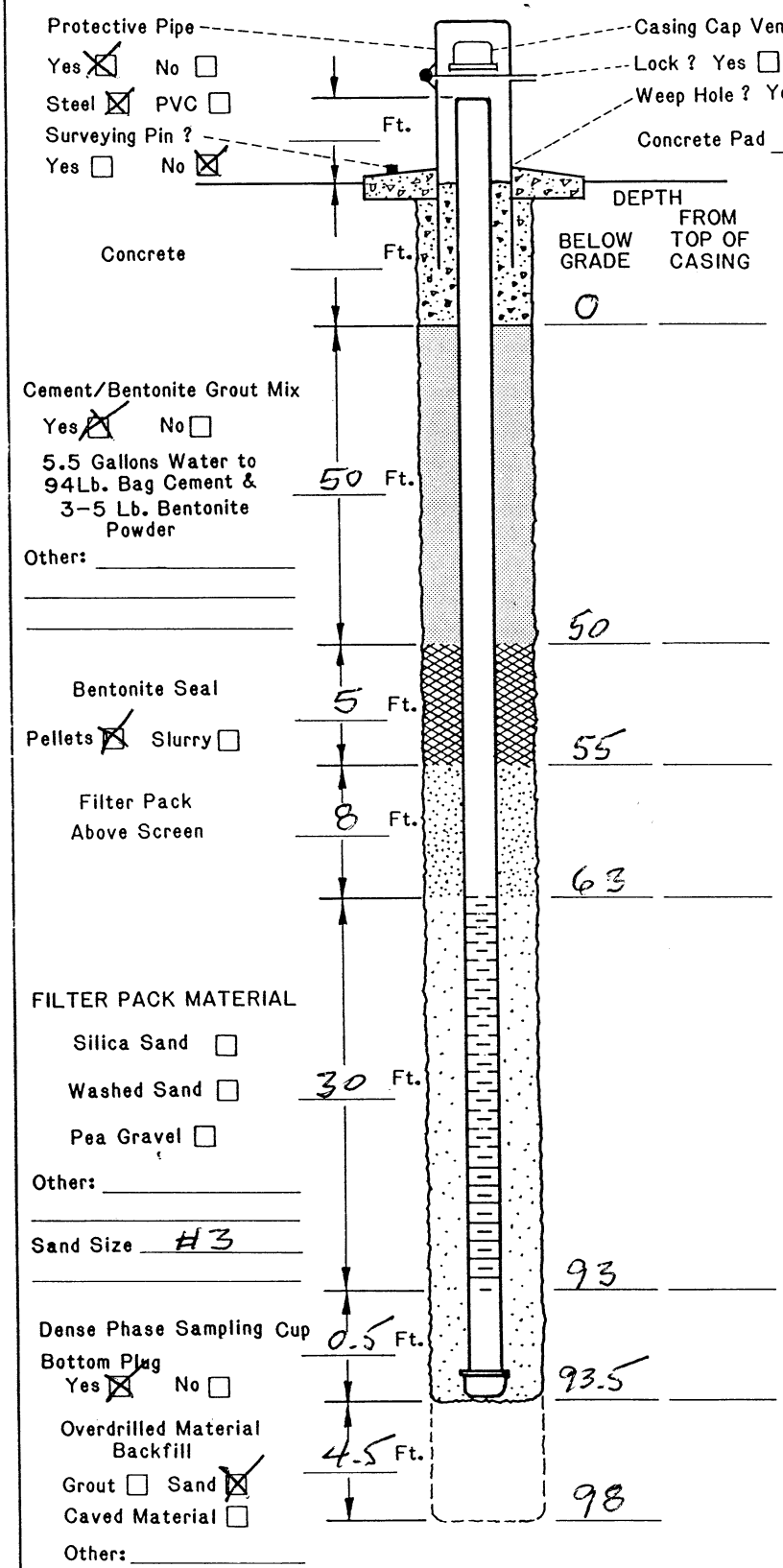
DRILLED BY: BEYLIK

LOGGED BY: E. KRUSH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4 Inches, Screen 4 Inches.
5. Slot Size of Screen: .020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☒ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   45 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 425 Gallons
4. Water Clarity Before Development ? Clear ☒
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -52.8 Ft. Date 10-7-99
After Development -53.0 Ft. Date 1-13-00

Driller/Firm Schoonmaker/Beylik Drill Rig Type D TW 70 Date Installed 9-30-99
Drill Crew Eberly, Padilla Well No. TR8 Kerr-McGee Hydrologist E KRISH

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR9

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-12 GRAVEL, sdy, mod yell brn (10YR 5/2), 20-25% vf-vc sd, A-SA. Gravels (volcanics) up to 2-4" Com. caliche coatings Boulders (1'-2') near surface		GW							
12	12-31 SAND, gravelly, mod yell brn and grg orange (10YR 7/4). 20% pea gravel (volcanics) A-SA. Sand vf-cg. mod-com caliche 16-20 hard caliche zone		SW							
31	31-45 SAND, silty, Gry oran to pale yell brn (10YR 6/4). 25% silt. f-m w/cg. A-SR. Com caliche coatings		SM							
45										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	10-6-99
PAGE	1 of 7
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	Ed KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR9

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
45			SM							Qal
	45-70 SAND, sl. silty, mod yell brn (10YR5/4), 10% silt. vf-f w tr mg									MC cg
50										
	51'-70' SAND, sl. silty, pale yell brn (10YR 6/4), 10% silty. vf-f w/com c-vc. A-SR (c-vc are volc grains) - Mod calcareous									damp below 55'
55			SP							
60	52-60 com calicification									
65										
	68-70 com. calichification									
70										
	70-75 Gravel, silty, sdy volc per gravel, pale yell brn, 40% silt matrix com. calichification		GM							
75										
	75'-83' SAND, sl silty as above com. calichification		SW							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
10-6-99	2 of 7
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT. AMSL):	
LOCATION OR GRID COORDINATES:	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR9

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
83			SW							
	83-95' Gravel, dk yell brn (10YR4/2) to brn blk (3YR2/1). Mix of volc, qtz, caliche up to 1/4" diam		GW							FIRST WTR @ 85'
95	95-99' SAND, hard-calichified, vf-vc w/ minor granules. A-SR gry orange (10YR7/4)		SW							
99	99-102' Gravel, as above		GW							
102	102-106' SAND, silty, gry oran (10YR7/4), vf-f w/mior c-vc		SM							MC cg
106	106-133 SILT, sdy, cly. Gry oran (10YR7/4), 10-20% clay, 10-20% vf-vc sand (volc grains com). 10-20% sd-granule-sized caliche nodules scattered throughout		ML							MC fg
110										
115										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
10-6-99	3 of 7
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT. AMSL):	
LOCATION OR GRID COORDINATES:	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR9

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
125			ML							
130										
135	133–168 SILT, sdy–clay, grygran, with thin layers of sdy vol gravel (½'–1' thick)									
140	@133' gravel lens mod sd-granule-size caliche nodules scattered throughout									
145	@143' gravel lens		ML							
	@147' gravel lens									
	@149' gravel lens									
150	149'–156' com calichification									
	@153' gravel lens									
155										
	@157' gravel lens									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND

DATE DRILLED	PAGE
10-6-99	4 of 7

DRILLING METHOD: ARCH

DRILLED BY: BEYLIK

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT AMSL)

LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR9

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
165	@ 163' gravel lens		ML							
	@ 167' gravel lens									
168	168'-212' SILT, sdy, gry oran, 10-20% vf-f w/ tr-sp c-vc (volc) grains									
170										
175										
180	180-186 massive caliche zone		ML							
185										
	186-195 com caliche									
190										
195										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
10-7-99	5 of 7
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR9

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
205	@ 203' 1/2'-1' gravel volc (pea gravel) 204-212 Cem caliche @ 207' 1/2'-1' volc gravel (pea gravel)		ML							
210										MC fg
215	212-250 TD GRAVEL sdy. Gry-bran and dusky yell brn (10YR2/2) 10-20% sd (vf-vc) matrix gravels (volc) granule to 1/2" diam		GW							MC cg
220	212-220 uncemented abund. WTR									
225	220-250 caliche cemented									
230	228'-230' silty gravel zone									
235										
	@ 240' layer of cobbles									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED	PAGE
10-6-99	6 of 7

DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL):
LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR9

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
245	245-247 silty matrix @ 247' layer of cubbles		GW							
250	TD 250									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

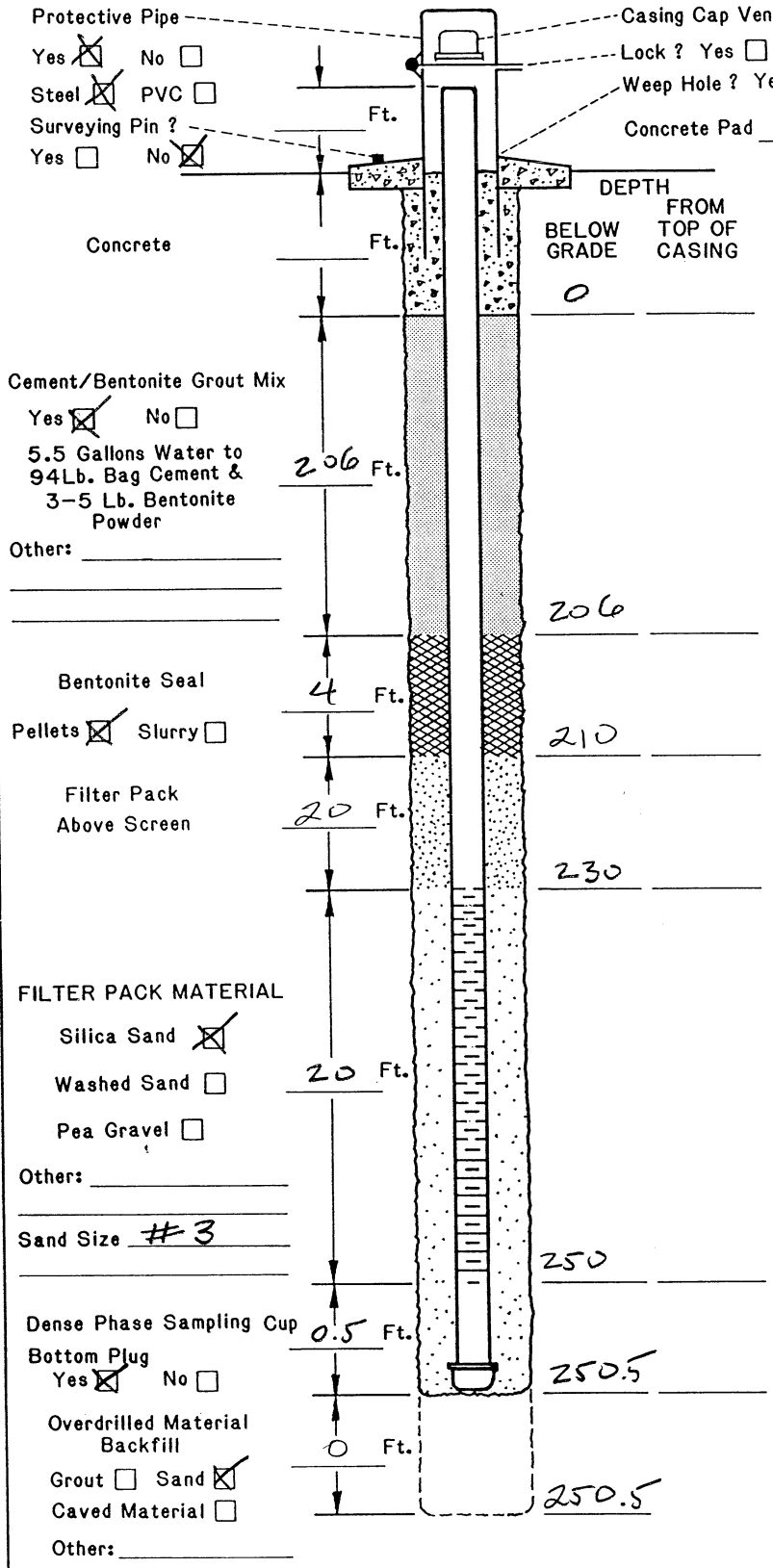
DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND; _____; _____

DATE DRILLED: 10-6-99
PAGE: 7 of 7
DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)
LOCATION OR GRID COORDINATES

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4" Inches, Screen 4" Inches.
5. Slot Size of Screen: 0.020
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☐ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   60 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 720 Gallons
4. Water Clarity Before Development ? Clear ☒
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development -64.0 Ft. Date 10-7-99
After Development -63.6 Ft. Date 1-13-00

Driller/Firm Schoonmaker/Beylik Drill Rig Type DTW-70 Date Installed 10-7-99
Drill Crew Eberly / Padilla Well No. TR 9 Kerr-McGee Hydrologist ED KRISH

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR 10

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	TOTAL DEPTH 100' SEE LOG FOR TR-9 FOR LITHOLOGY									

EXPLANATION

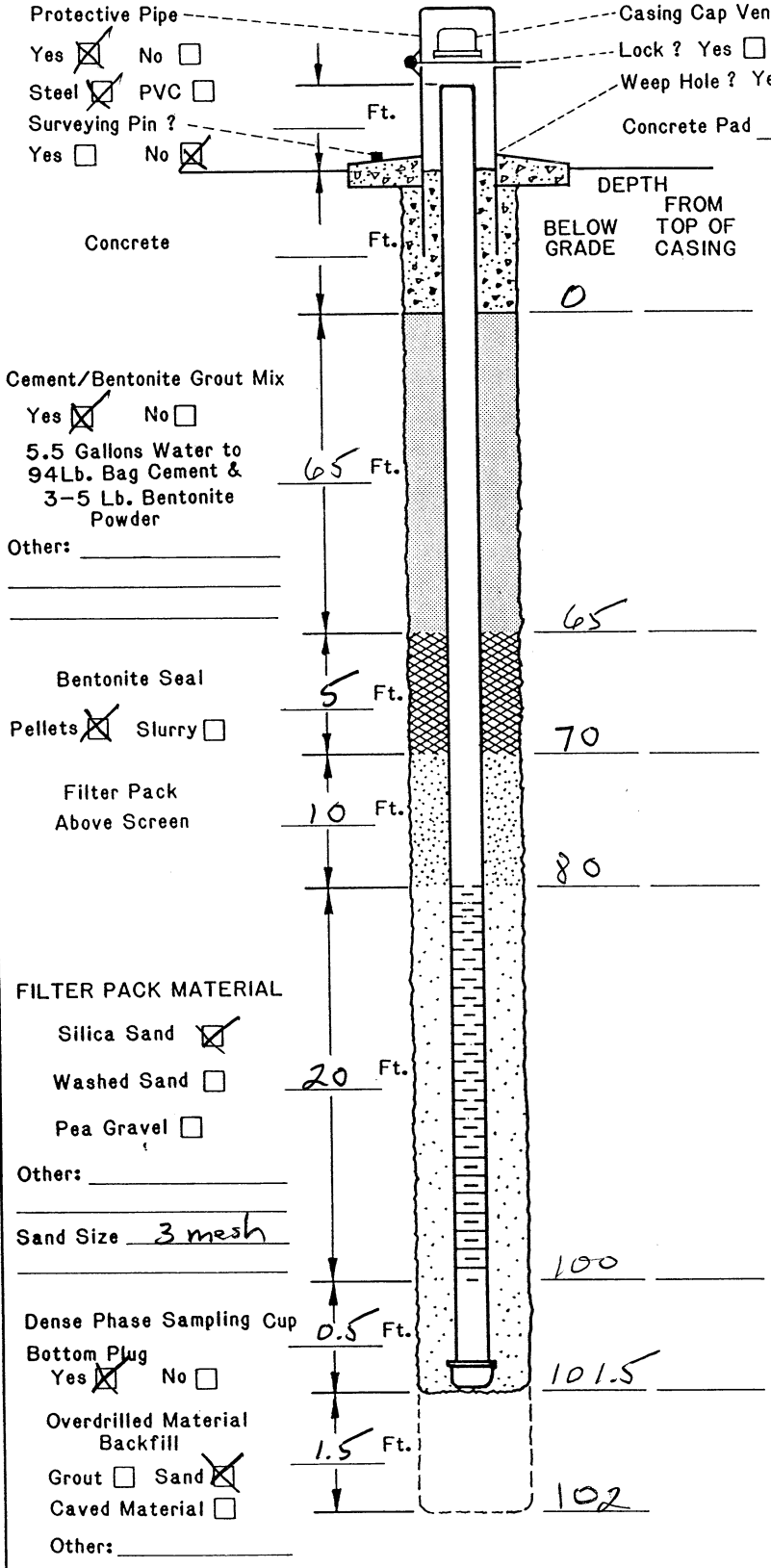
- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	10-8-99
PAGE	1 of 1
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	Ed Krish
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= ____ to ____ Feet.
4. Borehole Diameter for Outer Casing 9 5/8 Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other ____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other ____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other ____
4. Diameter of Casing and Well Screen:
   Casing 4" Inches, Screen 4" Inches.
5. Slot Size of Screen: 0.02
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other ____
7. Installed Protector Pipe w/Lock: Yes ☒ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other ____
2. Time Spent on Well Development ?
   45 / ____ ~~Minutes~~/Hours
3. Approximate Water Volume Removed ? 560 Gallons
4. Water Clarity Before Development ? Clear ☒
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe ____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe ____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling ____ Ft. Date ____
Before Development -59.7 Ft. Date 10-9-99
After Development -60.1 Ft. Date 1-13-00

Driller/Firm Schoonmaker/Beylik Drill Rig Type DTW-70 Date Installed 10-8-99
Drill Crew Eberly, Padilla Well No. TR 10 Kerr-McGee Hydrologist Ed Krish

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR11

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-4 GRAVEL, sdy, mod yell brn (10YR 5/4), sd vf-vc, gravel up to 1" diam. A-SR, com caliche cement		GW							
5	4-8 sand, vf-vc, A-SA		SW							
	7-8 hard caliche									
10	8-28 SAND, gravelly, gry oran (10YR 7/4) to mod yell brn (10YR 5/4). vf-vc, A-SA, gravel to to 1" diam Com. caliche cement		SP							
15										
20										
25	24-28 lg cobbles w/ com caliche, hard		GP							
30	28-32 SAND, w/ minor caliche and granules vf-vc		SW							
35	32-50 GRAVEL, hard, cemented, fractured Com caliche cement. Minor sd interbeds and in matrix Gry oran and dusky yell brn		GW							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND

DATE DRILLED	PAGE
10-10-99	1 of 7
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: Ed Krish	
EXISTING GRADE ELEVATION (FT AMSL):	
LOCATION OR GRID COORDINATES:	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION Henderson, NV	BORING NUMBER TR 11

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
45			GW							damp @ 42'
										WET @ 47 ▽
50	50 - 84 SILT and SILT, sdy, interbedded. brn (5YR 5/4). Non-calcareous sdy zones contain up to 25-30% vf-fg sd, A-5A		ML							ORGANIC ODOR 42'-80'
55										
60										
65										
70										
75										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
- SPLIT-BARREL
- AUGER
- ROCK CORE
- THIN-WALLED TUBE
- CONTINUOUS SAMPLER
- NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

- CLAY
- SILT
- SAND
- GRAVEL
- SILTY CLAY
- CLAYEY SILT
- DEBRIS FILL
- HIGHLY ORGANIC (PEAT)
- SANDY CLAY
- CLAYEY SAND
- _____
- _____

DATE DRILLED	PAGE
10-10-99	2 of 7
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: Ed Krish	
EXISTING GRADE ELEVATION (FT AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR11

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
			ML							ORGANIC ODOR ENDS @ 80'
84	84-102 CLAY, silty and SILT, cly. Yell gry (5Y 7/2) and mod gry yell grn (5GY 6/2) Com thin layers and nodules of soft caliche (white)		CL							
90										
95										
100	98-102 color change to brn (5YR 5/4). w/ mod sm caliche nodules									
105	102-112 SILT, sdy brn (5YR 5/4) contains 20-25% vfg sd mod com soft caliche nodules throughout		ML							
110										
115	112'-130' SILT, brn (5YR 5/4). w/ minor sdy SILT interbeds Contains zones of hard caliche 112-117 hard caliche		ML							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · DEBRIS FILL · SILT · HIGHLY ORGANIC (PEAT) · SAND · SANDY CLAY · GRAVEL · CLAYEY SAND · SILTY CLAY · CLAYEY SILT

DATE DRILLED	PAGE
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DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: Ed KRISH	
EXISTING GRADE ELEVATION (FT AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR 11

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
125	@117' 1/2' of volc granules and nodular caliche		ML							
130	130-158 SILT, sdy brn, 25-30% vf-fg sd in matrix w/ scattered sm caliche nodules scattered throughout		ML							
140										
145	140-158 hard dense calcification									
150										
155										
158	158-165 SAND, silty brn. vf-fg, A-SA, 30%		SM							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY | DEBRIS FILL | SILT | HIGHLY ORGANIC (PEAT) | SAND | SANDY CLAY | GRAVEL | CLAYEY SAND | SILTY CLAY | CLAYEY SILT

DATE DRILLED	PAGE
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DRILLING METHOD: ARCH

DRILLED BY: BEYLIK

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT. AMSL)

LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR11

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	silt in matrix.		SM							
165										
	165-170 SILT, w/ minor sdy silt. brn		ML							
170										
	170-205 SAND, silty, brn, vf-fg, A-SA, Com caliche cement throughout.		SM							
175										
180	180-185 contains 10-20% ve-granule size volc grains									
185										
190	190-205 Abu hard caliche in sand									
195										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	10-10-99
PAGE	5 of 7
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	ED KRISTI
EXISTING GRADE ELEVATION (FT AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR-11

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
205			SM							
	205-208 SAND, silty brn, 20-30% silt		SM							
210	208-230 SAND, gravelly, brn. Hard, abu caliche cement vf-mg interbedded w/ vf-vc + granules.									
215	208-216 sdy gravel vf-vc + granules (volc)		SW-SP							
220	216-225 vf-mg									
225	225-230 sdy gravel vf-vc + granules (volc)									
230	230-235 SILT, sdy brn + gryoran (10YR 6/4) 10-20% vfg sd. Com sd-sized caliche nodules		ML							
235	235-252 SAND, silty gryoran (10YR 6/4). Com caliche cement, vf-c w/ minor vc + granules		SM							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY | DEBRIS FILL | SILT | HIGHLY ORGANIC (PEAT) | SAND | SANDY CLAY | GRAVEL | CLAYEY SAND | SILTY CLAY | _____ | CLAYEY SILT | _____

DATE DRILLED: 10-10-99 | PAGE: 6 of 7
DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)
LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR11

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
245	10-20% volc granules Fractured		SM							
250	TD 252'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	10-10-99
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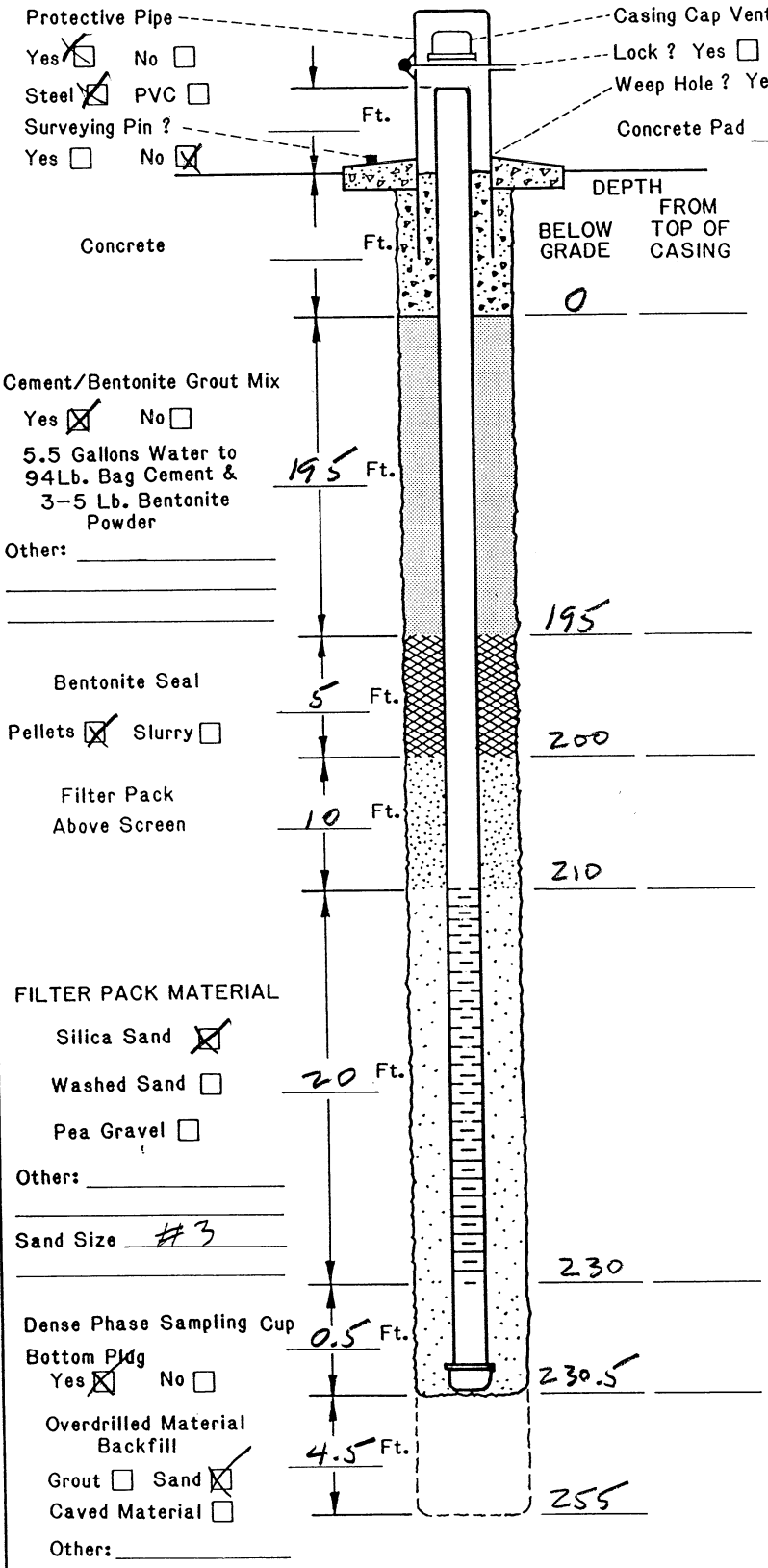
DRILLED BY	BEYLIK
LOGGED BY	ED KRISH
EXISTING GRADE ELEVATION (FT. AMSL)	
LOCATION OR GRID COORDINATES	

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4" Inches, Screen 4" Inches.
5. Slot Size of Screen: 0.02
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☒ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   60 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 420 Gallons
4. Water Clarity Before Development ? Clear ☒
   Turbid ☐ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling _____ Ft. Date _____
Before Development +3.9 Ft. Date 10-12-99
After Development +6.05 Ft. Date 1-13-00

Driller/Firm BEYLIK / SCHOONMAKER Drill Rig Type DTW 70 Date Installed 10-11-99

Drill Crew EBERLY / PADILLA Well No. TR 11 Kerr-McGee Hydrologist Ed KRISH

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR-12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
0	0-5 GRAVEL w/silty sd in matrix. Com caliche coatings. Sized up to 2", volcanics		GM							
5	5-10 SAND, silty w/ mod cobble-size volc gravel. Com caliche coatings. Sd vf-vc, A-SR		SW							
10	10-19 Gravel, boulders, w/com. caliche coatings Mod vf-vc silty sand matrix dk yell brn (10YR 2/2) and gry oran (10YR 7/4)		GW							
15										
19	19-21 SAND, silty w/mod pea gravel, volc.		SW							
21	21-27 Gravel, boulders w/ mod silty sd matrix. dk yell brn + gry oran. Sd vf-vc. Mod cemented com caliche coatings		GW							
27	27-36 GRAVEL, up to boulder size w/ minor vf-vc sd matrix. HARD well cemented w/ caliche		GP							
30										
36	36-38 SAND, HARD, well cemented (caliche). vf-vc		SP							
38										
39	38-39 SAND + GRAVEL, as above, uncemented		GW SP							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL | AUGER | ROCK CORE | THIN-WALLED TUBE | CONTINUOUS SAMPLER | NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY | DEBRIS FILL | SILT | HIGHLY ORGANIC (PEAT) | SAND | SANDY CLAY | GRAVEL | CLAYEY SAND | SILTY CLAY | _____ | CLAYEY SILT | _____

DATE DRILLED	PAGE
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DRILLING METHOD: ARCH

DRILLED BY: BEYLIK

LOGGED BY: Ed Krish

EXISTING GRADE ELEVATION (FT AMSL)

LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR-12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
43	39-43 SAND w/ minor pea gravel. Well cemented HARD. vf-VC, A-SR, vols		SP							Qal
50	43-50' SILT and cly SILT, interbedded. Mod gry oran (10YR 6/4). Contains scattered sd + granule size caliche nodules		ML							MC fg ▽ first WTR
64	50-64 SILT, cly w/ thin (1/4'-1/2') interbeds of vols pea gravel. gry oran (10YR 7/4)		ML-CL							
66	64-66 GRAVEL, w/ minor sd (m-vc) matrix. Size up to 1" diam. Dusky yell brn (10YR 2/2)		GP							
70	64-70 SILT, cly and sdy, w/ minor caliche nodules gry orange		ML							
75	70-75 SILT, sdy. 20-25% vf-fg. w/ minor caliche nodules. w/ v. minor (5%) c-vc vols grains dissem		ML							
	75-80 SAND, gravelly, f-vc + minor granules, A-SA. dusky yell brn (10YR 2/2). Minor caliche. Minor silty sd 77'-80'		SP							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
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DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: ED KRISH
EXISTING GRADE ELEVATION (FT AMSL):
LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR 12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
	80-86' SAND, silty, vf-fg w/ com vc-granules-size caliche nodules gry oran (10YR7/4)		SM							
86										
	86-91 SILT w/ v. minor scattered granule-sized volc grains, w/ minor caliche nodules		ML							
91										
	91-97 SILT, cly, mod gry yell green (5GY 6/2), w/ com white c-vc sd-sized caliche streaks and nodules.		ML							
97										
	97-106 CLAY, silty, brn (5YR 5/4) w/ minor gry yell grn interbeds. Com soft granule-sized white caliche nodules.		CL							
100										
106										
	106-117 SILT, sdy. w/ 20% vf-fg and minor sm caliche nodules		ML							
110										
117										
119	117-119 Tuff, hnbd xtal, salt + pepper texture. Blk hnbd + v. lt gry ash matrix		VOLC CL / ML							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
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DRILLING METHOD: ARCH
DRILLED BY: BEYLIK
LOGGED BY: Ed KRISH
EXISTING GRADE ELEVATION (FT AMSL):
LOCATION OR GRID COORDINATES:

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR 12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
120	119-131 SILT, cly. brn (5YR 5/4). Sp soft caliche nodules. Tr. volc grains c-vcg		ML							
131	131-170 SILT, sdy and scattered thin beds and disseminations of vc sd-granule-sized volc grains. Also contains varying amts of soft caliche nodules. brn (5YR 5/4)									
135										
140	131-136 mod-com caliche nodules w/ tr-sp volc vcg+granules		ML							
145	141-152 mod. pea size caliche nodules									
150										
155										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	PAGE
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DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: Ed Krish	
EXISTING GRADE ELEVATION (FT AMSL)	
LOCATION OR GRID COORDINATES	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY	LOCATION	BORING NUMBER TR 12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
165	162-165 mod caliche nodules and tr volc granules (dissem in silt matrix)		ML							
170										MC fg
175	170-202 SAND, com silty brn (5YR 5/4), vf-fg, A-SA. Contains mod granule-sized caliche nodules		SM							MC cg
180	180-180.5 HARD well cemented caliche layer									
185										
190										
195										

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · DEBRIS FILL · SILT · HIGHLY ORGANIC (PEAT) · SAND · SANDY CLAY · GRAVEL · CLAYEY SAND · SILTY CLAY · _____ · CLAYEY SILT · _____

DATE DRILLED 10-16-99 | PAGE 5 of 8
DRILLING METHOD
DRILLED BY
LOGGED BY
EXISTING GRADE ELEVATION (FT AMSL)
LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON NV	BORING NUMBER TR12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
202			SM							
	202 - 219 SAND, sp. silty. Brn (5YR 5/4), vf-mg.									
205	202-204 vf-f w/ com m-vc.									
			SP							
210										
215										
	218.5-219 com vc+granules									mc cg
219	219 - 229 CLAY, silty gry orange (10YR 7/4) w/ sp. (10-15%) sm soft caliche nodules		CL							mc fg(?)
225										
229	229 - 236 SAND, vf-m, brn, interbedded w/ thin volc GRAVEL beds, granule size		SW							
236	236 - 241 CLAY, brn, w/ thin interbeds of volc GRAVEL, granule-size.		CL							

EXPLANATION

- ▼ Water Table (24 Hour)
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SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND

DATE DRILLED	PAGE
10-16-99	6 of 8
DRILLING METHOD: ARCH	
DRILLED BY: BEYLIK	
LOGGED BY: ED KRISH	
EXISTING GRADE ELEVATION (FT AMSL):	
LOCATION OR GRID COORDINATES:	

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON	BORING NUMBER TR 12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
241	w/mod sm soft white caliche nodules (dissem)		CL							
	241-245 CLAY, silty brn, tr caliche nodules		CL							
245	245-247 SILT, brn		ML							
247	247-271 CLAY and silty CLAY interbedded. gry orange (10 YR 7/4) tr sm soft caliche nodules		CL							
271	271-273 SILT, cly (ash?), gry		ML							
273	273-293 SAND, vf-f w/minor m-c gr, A-SA, mod brn (5 YR 4/2). Com carb. cemented, fractured		SP							

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL; AUGER; ROCK CORE; THIN-WALLED TUBE; CONTINUOUS SAMPLER; NO RECOVERY

DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY; SILT; SAND; GRAVEL; SILTY CLAY; CLAYEY SILT; DEBRIS FILL; HIGHLY ORGANIC (PEAT); SANDY CLAY; CLAYEY SAND

DATE DRILLED	PAGE
10-16-99	7 of 8

DRILLING METHOD: ARCH

DRILLED BY: BEYLIK

LOGGED BY: ED KRISH

EXISTING GRADE ELEVATION (FT AMSL)

LOCATION OR GRID COORDINATES

SOIL BORING LOG KM-5655-B

KERR-McGEE CORPORATION Hydrology Dept. - S&EA Division	KM SUBSIDIARY KMC LLC	LOCATION HENDERSON, NV	BORING NUMBER TR 12

DEPTH IN FEET	LITHOLOGIC DESCRIPTION	GRAPHIC LOG	UNIFIED SOIL FIELD CLASS.	BLOWS PER 6"	PID (ppm)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	SOIL SAMPLE DEPTH	SOIL SAMPLE REC.	REMARKS OR FIELD OBSERVATIONS
285			SP							
290										
293	TD 293'									

EXPLANATION

- ▼ Water Table (24 Hour)
- ▽ Water Table (Time of Boring)
- PID Photoionization Detection (ppm)
- NO. Identifies Sample by Number
- TYPE Sample Collection Method

SPLIT-BARREL · AUGER · ROCK CORE · THIN-WALLED TUBE · CONTINUOUS SAMPLER · NO RECOVERY

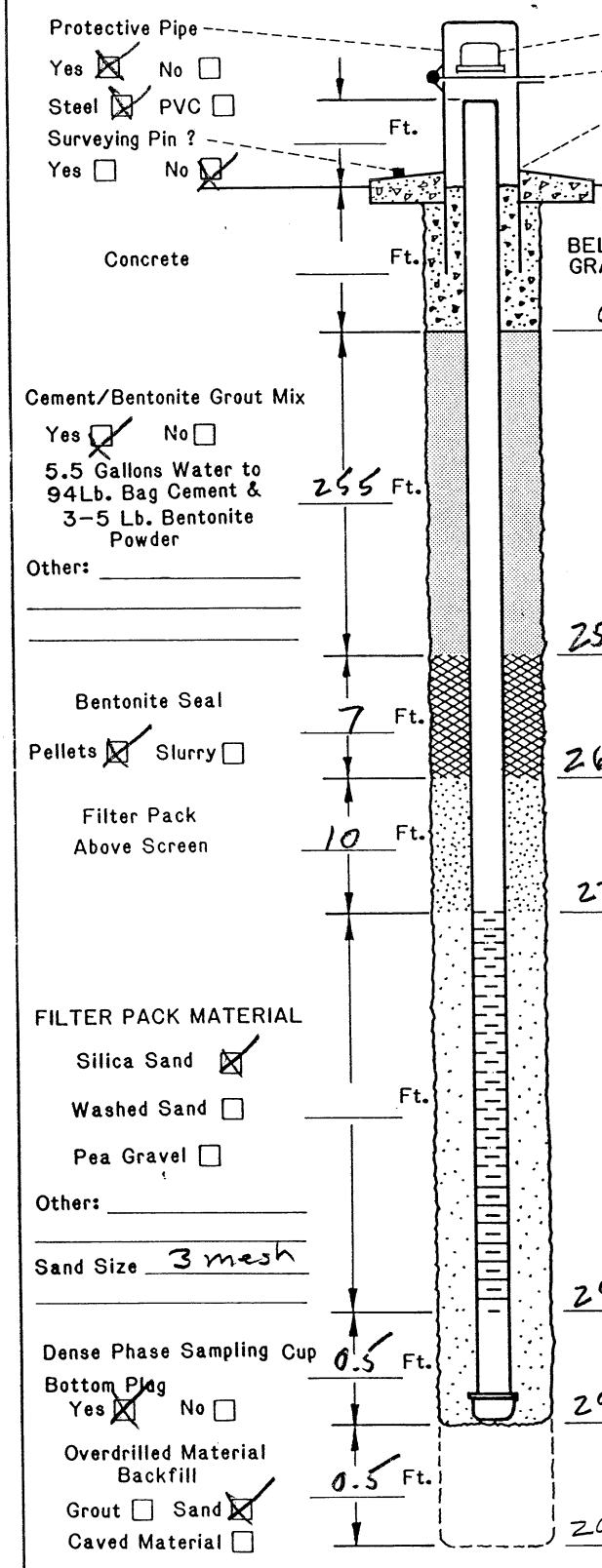
DEPTH Depth Top and Bottom of Sample
REC. Actual Length of Recovered Sample in Feet

GRAPHIC LOG LEGEND

CLAY · SILT · SAND · GRAVEL · SILTY CLAY · CLAYEY SILT · DEBRIS FILL · HIGHLY ORGANIC (PEAT) · SANDY CLAY · CLAYEY SAND

DATE DRILLED	10-16-99
PAGE	8 of 8
DRILLING METHOD	ARCH
DRILLED BY	BEYLIK
LOGGED BY	ED KRISH
EXISTING GRADE ELEVATION (FT AMSL)	
LOCATION OR GRID COORDINATES	

KERR-McGEE CORPORATION
HYDROLOGY DEPARTMENT
MONITORING WELL INSTALLATION DIAGRAM



DRILLING INFORMATION:

1. Borehole Diameter= 9 5/8 Inches.
2. Were Drilling Additives Used ? Yes ☐ No ☒
   Revert ☐ Bentonite ☐ Water ☐
   Solid Auger ☐ Hollow Stem Auger ☐
3. Was Outer Steel Casing Used ? Yes ☐ No ☒
   Depth= _____ to _____ Feet.
4. Borehole Diameter for Outer Casing _____ Inches.

WELL CONSTRUCTION INFORMATION:

1. Type of Casing: PVC ☒ Galvanized ☐ Teflon ☐
   Stainless ☐ Other _____
2. Type of Casing Joints: Screw-Couple ☒ Glue-Couple ☐ Other _____
3. Type of Well Screen: PVC ☒ Galvanized ☐
   Stainless ☐ Teflon ☐ Other _____
4. Diameter of Casing and Well Screen:
   Casing 4" Inches, Screen 4" Inches.
5. Slot Size of Screen: 0.02
6. Type of Screen Perforation: Factory Slotted ☒
   Hacksaw ☐ Drilled ☐ Other _____
7. Installed Protector Pipe w/Lock: Yes ☒ No ☐

WELL DEVELOPMENT INFORMATION:

1. How was Well Developed ? Bailing ☐ Pumping ☒
   Air Surging (Air or Nitrogen) ☐ Other _____
2. Time Spent on Well Development ?
   60 / _____ Minutes/~~Hours~~
3. Approximate Water Volume Removed ? 60 Gallons
4. Water Clarity Before Development ? Clear ☐
   Turbid ☒ Opaque ☐
5. Water Clarity After Development ? Clear ☒
   Turbid ☐ Opaque ☐
6. Did Water have Odor ? Yes ☐ No ☒
   If Yes, Describe _____
7. Did Water have any Color ? Yes ☐ No ☒
   If Yes , Describe _____

WATER LEVEL INFORMATION:

Water Level Summary (From ~~Top of Casing~~) ng

During Drilling	-50	Ft. Date	10-15-99
Before Development	+5.1	Ft. Date	10-18-99
After Development	+18.2	Ft. Date	1-13-00

Driller/Firm Beylik/Schoonmaker Drill Rig Type DTW 70 Date Installed 10-15-99

Drill Crew Eberly/Padilla Well No. TR 12 Kerr-McGee Hydrologist Ed Krish