AP-49

2013 Annual Groundwater Report Justis SWD (H-2)

DATE: March 27, 2014

ARCADIS

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Mr. Leonard Lowe
New Mexico Oil Conservation Division
1220 So. Saint Francis Drive
Santa Fe, New Mexico 87505

Subject:
2013 ANNUAL GROUNDWATER REPORT
NMOCD Case # AP-49
Justis Saltwater Disposal System (SWD) H-2
T26S, R37E, Section 2, Unit H, Lea County, New Mexico

Date:
March 27, 2014

Contact:
Sharon Hall

Phone:
432 687-5400

Email:
shall@arcadis-us.com

Mr. Lowe,

On behalf of Rice Operating Company (ROC), ARCADIS respectfully submits this 2013 Annual Groundwater Report and Project Status Report for the Justis H-2 site located in the Justis Salt Water Disposal (SWD) System.

A Stage 2 Abatement Plan was prepared and submitted to the New Mexico Oil Conservation Division (NMOCD) on May 25, 2006. On June 7, 2006, NMOCD certified the plan as Administratively Complete. A public notice was submitted and approved on July 21, 2006. Final approval for the Stage 2 Abatement Plan was received on October 3, 2006. The abatement system, consisting of a solar/wind powered pump and Reverse Osmosis (R/O) system, was installed on November 6, 2006. During 2013, 3,000 gallons of water was pumped from MW-2, 1,900 gallons of treated water was re-injected and 1,100 gallons was disposed into the permitted SWD well on site. Since startup in 2007, a total of 174,181.8 gallons of groundwater has been removed from MW-2, 68,152.3 gallons re-injected, and 106,029.5 gallons disposed into the permitted SWD well on site.

On July 16, 2009, a formal request was submitted to NMOCD for suspension of further sampling of BTEX and sulfate at the site. In an email dated January 26, 2012, the NMOCD granted suspension of BTEX sampling at this site.

All wells were sampled quarterly in 2013 per NMOCD guidelines. The attached tables summarize the analytical results from groundwater samples collected from the monitor wells at the site.

The R/O system will continue to be operated and quarterly monitoring well sampling will continue in 2014.

ROC is the service provider (agent) for the Justis Salt Water Disposal System and has no ownership of any portion of the pipelines, wells or facilities. The Justis System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Thank you for your consideration concerning this summary of groundwater monitoring information. If you have any questions please do not hesitate to contact me or Hack Conder.

Best Regards,

ARCADIS U.S, Inc.

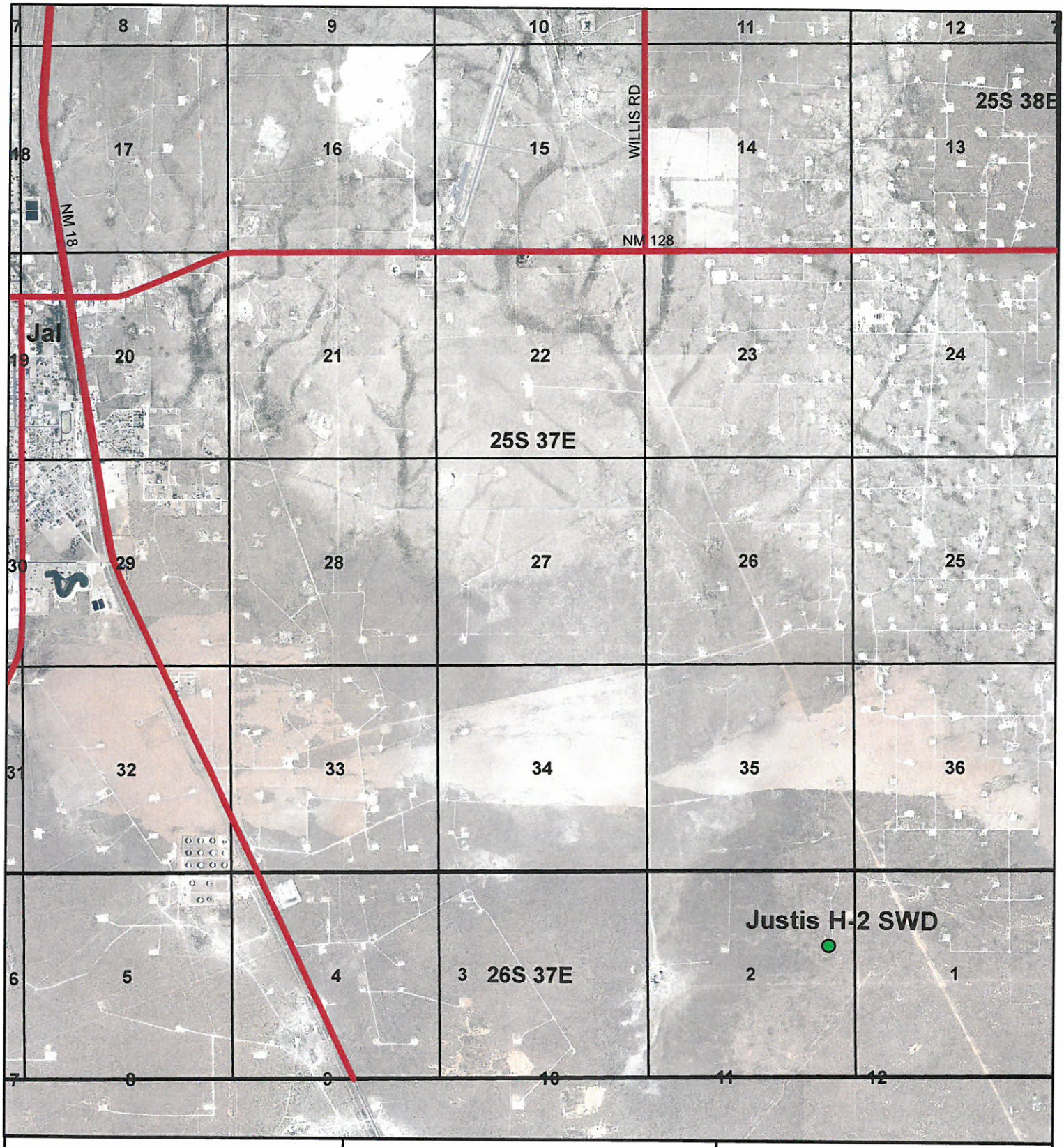
Sharon E. Hall
Associate Vice President

Copies: Hack Conder- ROC

Glen Von Gonten-NMOCD

Attachments:
Site Location Map
Monitor Well Location Figure
Monitor Well Summary Tables
November Monitor Well Lab Results

Site Location



RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

Justis H-2 SWD

LEGALS: UL/H sec. 2
T-26-S R-37-E
LEA COUNTY, NM

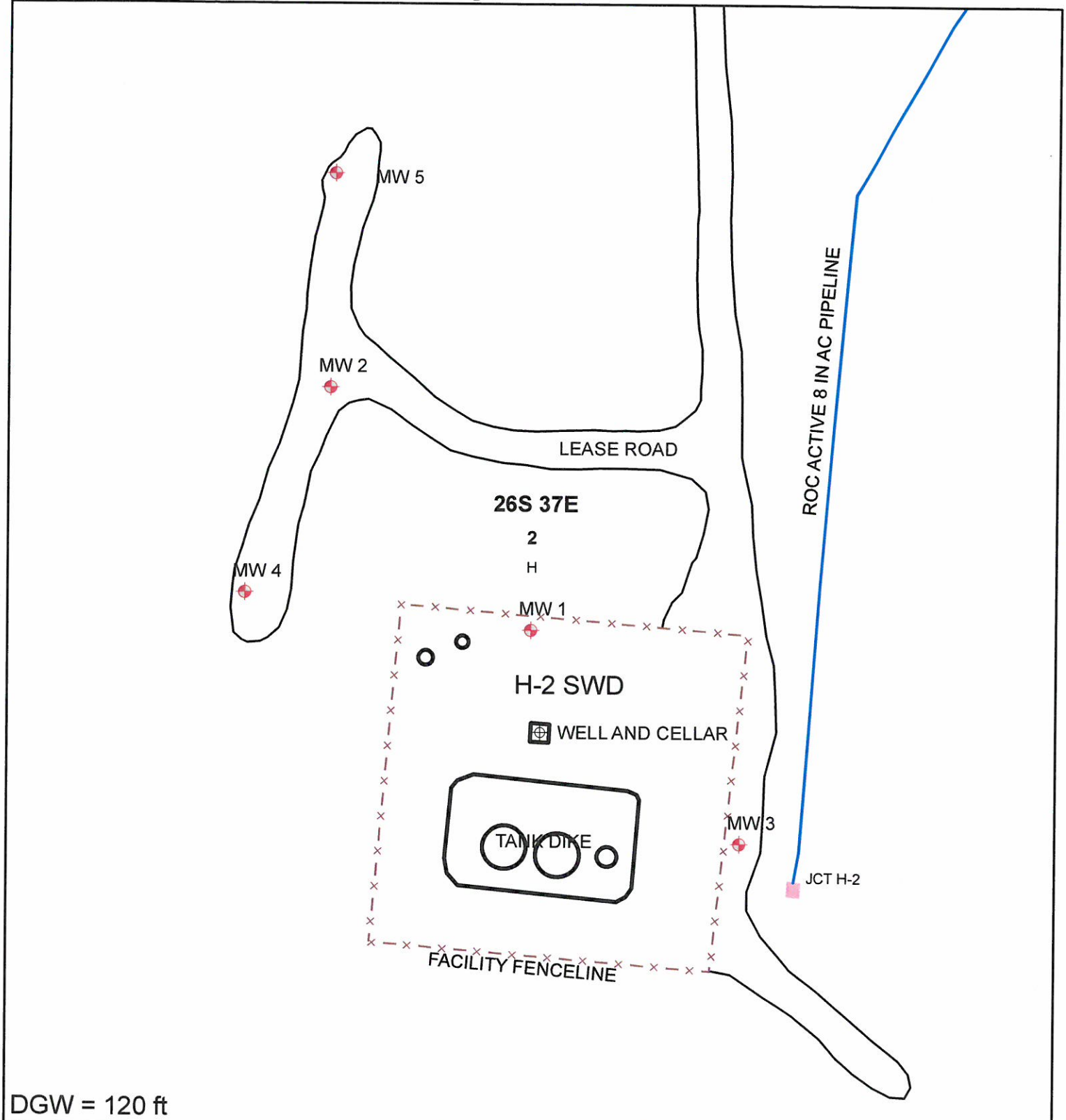
NMOCD CASE #: AP-49

N
W E
S

0 0.5 1
Miles

Drawing date: 3/26/14
Drafted by: L. Flores

Monitoring Well Locations



DGW = 120 ft

RECS
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Justis
H-2 SWD

LEGALS: UL/H sec. 2
T-26-S R-37-E
LEA COUNTY, NM

NMOCD CASE #: AP-49

N
W E
S

0 30 60 120
Feet

Drawing date: 3/26/14
Drafted by: L. Flores

ROC - Justis H-2 (AP-49)

Unit Letter H, Section 2, T26S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	116.2	145	18.8	56.4	1/3/2002	336	1112	<0.002	<0.002	<0.002	<0.006	116	
1	XXX	XXX	XXX	XXX	3/1/2002	301	971	XXX	XXX	XXX	XXX	190	
1	XXX	XXX	XXX	XXX	6/10/2002	173	XXX	0.001	0.008	0.01	0.066	XXX	
1	116.2	137	XXX	66	8/16/2002	111	619	<0.001	<0.001	<0.001	<0.001	202	
1	123.32	144	XXX	60	11/12/2002	257	971	<0.001	0.001	<0.001	<0.001	194	
1	122.95	144	XXX	70	2/13/2003	97.5	647	<0.001	<0.001	<0.001	<0.001	200	
1	123.34	144	XXX	70	5/20/2003	102	682	<0.001	<0.001	<0.001	<0.001	196	
1	122.94	144	XXX	70	9/16/2003	594	1920	<0.001	<0.001	<0.001	<0.001	186	
1	123.19	144	XXX	70	12/16/2003	81.5	587	0.013	<0.001	<0.001	<0.001	180	
1	122.43	144	XXX	70	3/11/2004	727	2060	<0.001	<0.001	<0.001	<0.001	227	
1	122.24	144	XXX	70	6/28/2004	1030	3230	0.0056	<0.001	<0.001	<0.001	349	
1	122.22	144	XXX	70	9/23/2004	106	749	<0.001	<0.001	<0.001	<0.001	175	
1	122.18	144	XXX	68	12/21/2004	93.1	858	<0.001	<0.001	<0.001	0.00108	215	
1	121.97	144	XXX	75	3/29/2005	98.2	608	<0.001	<0.001	<0.001	<0.001	169	
1	122.08	144	XXX	80	6/16/2005	173	711	<0.001	<0.001	<0.001	<0.001	166	
1	XXX	XXX	XXX	XXX	9/15/2005	151	840	<0.001	<0.001	<0.001	<0.001	133	
1	122.12	153	31.5	100	12/5/2005	93.5	586	<0.001	<0.001	<0.001	<0.001	114	
1	121.81	153	31.8	100	2/27/2006	414	1120	<0.001	<0.001	<0.001	<0.001	157	
1	121.94	153	31.7	100	6/14/2006	206	782	<0.001	<0.001	<0.001	<0.001	151	
1	121.89	153	31.7	100	12/5/2006	223	512	<0.001	<0.001	<0.001	<0.001	47.6	Clear with no odor *pH changed from last sampling

ROC - Justis H-2 (AP-49)

Unit Letter H, Section 2, T26S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	122	142.6	13.4	40.3	1/7/2002	1839	3908	<0.002	<0.002	<0.002	<0.006	120	
2	XXX	XXX	XXX	XXX	3/1/2002	700	1780	XXX	XXX	XXX	XXX	150	
2	XXX	XXX	XXX	XXX	5/23/2002	904	2710	<0.001	<0.001	<0.001	<0.001	243	
2	121.85	142	XXX	25	8/16/2002	1040	3390	<0.001	<0.001	<0.001	<0.001	188	
2	122.1	142	XXX	25	11/12/2002	1130	2600	0.002	0.003	<0.001	<0.002	200	
2	121.71	142	XXX	25	2/13/2003	1110	2780	<0.001	<0.001	<0.001	<0.001	216	
2	122.08	142	XXX	25	5/20/2003	1130	3600	<0.001	<0.001	<0.001	<0.001	215	
2	121.7	142	XXX	25	9/16/2003	1070	3540	<0.001	<0.001	<0.001	<0.001	167	
2	122	142	XXX	30	12/16/2003	1230	2490	0.032	0.003	<0.001	<0.001	202	
2	121.87	142	XXX	30	3/11/2004	1200	3660	<0.001	<0.001	<0.001	<0.001	164	
2	121.74	142	XXX	30	6/28/2004	2570	6290	0.0112	<0.001	<0.001	<0.001	208	
2	121.7	142	XXX	25	9/23/2004	1130	3760	<0.001	<0.001	<0.001	<0.001	198	
2	121.65	142	XXX	10	12/21/2004	1150	2877	0.0055	<0.001	<0.001	<0.001	210	
2	121.45	142	XXX	25	3/29/2005	1310	2620	<0.001	<0.001	<0.001	<0.001	186	
2	121.58	142	XXX	30	6/16/2005	1280	3080	<0.001	<0.001	<0.001	<0.001	221	
2	XXX	XXX	XXX	XXX	9/15/2005	1110	3240	<0.001	<0.001	<0.001	<0.001	196	
2	121.52	142.6	3.4	20	12/5/2005	1110	2630	<0.001	<0.001	<0.001	<0.001	134	
2	121.4	142.6	3.4	20	2/27/2006	1360	3450	<0.001	<0.001	<0.001	<0.001	139	
2	121.4	142.6	3.4	15	6/14/2006	1260	3520	<0.001	<0.001	<0.001	<0.001	204	
2	N/A	142.6	XXX	XXX	12/5/2006	1240	2300	<0.001	<0.001	<0.001	<0.001	156	Clear with no odor *Temperature lower due to air pump
2	XXX	142.6	XXX	XXX	3/15/2007	1810	3540	<0.001	<0.001	<0.001	<0.001	222	clear with no odor
2	XXX	142.6	XXX	XXX	6/13/2007	1350	3820	<0.001	<0.001	<0.001	<0.001	193	clear with no odor

2	XXX	142.6	XXX	XXX	9/17/2007	1424	3820	<0.002	<0.002	<0.002	<0.006	234	Clear No Odor
2	XXX	142.6	XXX	XXX	11/13/2007	1600	3053	<0.001	<0.001	<0.001	<0.003	177	Clear No odor
2	XXX	142.6	XXX	XXX	2/23/2008	1500	3390	<0.001	<0.001	<0.001	<0.003	169	Clear No odor

ROC - Justis H-2 (AP-49)

Unit Letter H, Section 2, T26S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2R	120.9	153.8	21.4	75	5/21/2008	1600	4490	<0.002	<0.002	<0.002	<0.006	252	Clear No odor REPLACED THE WELL WITH 4 in RECOVERY WELL
2R	XXX	XXX	XXX	70	6/15/2009	1440	3030	<0.001	<0.001	<0.001	<0.003	146	Clear No Odor
2R	XXX	XXX	XXX	XXX	8/27/2008	1360	3090	<0.001	<0.001	<0.001	<0.003	198	Clear No odor
2R	XXX	XXX	XXX	XXX	12/1/2008	1800	3600	<0.001	<0.001	<0.001	<0.003	176	Clear No odor
2R	XXX	XXX	XXX	XXX	2/25/2009	2320	3850	<0.001	<0.001	<0.001	<0.003	52	Clear No odor
2R	XXX	XXX	XXX	XXX	9/4/2009	1500	3390	<0.001	<0.001	<0.001	<0.003	166	Clear No odor
2R	XXX	XXX	XXX	XXX	11/16/2009	1580	2870	<0.001	<0.001	<0.001	<0.003	128	Clear No odor
2R	XXX	XXX	XXX	XXX	3/5/2010	1520	3790	<0.001	<0.001	<0.001	<0.003	175	Clear No odor
2R	XXX	XXX	XXX	XXX	6/1/2010	1600	3730	<0.001	<0.001	<0.001	<0.003	184	Clear No odor
2R	XXX	XXX	XXX	Pumping	8/23/2010	1640	2690	<0.001	<0.001	<0.001	<0.003	160	Clear No odor
2R	XXX	XXX	XXX	Pumping	11/19/2010	1500	2970	<0.001	<0.001	<0.001	<0.003	197	Clear No odor
2R	XXX	XXX	XXX	Pumping	3/7/2011	2100	3810	<0.001	<0.001	<0.001	<0.003	158	Clear No odor
2R	XXX	XXX	XXX	XXX	6/7/2011	1720	3120	<0.001	<0.001	<0.001	<0.003	162	Clear No odor

2R	XXX	XXX	XXX	XXX	9/13/2011	1560	3260	<0.001	<0.001	<0.001	<0.003	171	Clear No odor
2R	XXX	XXX	XXX	XXX	12/7/2011	1320	3040	<0.001	<0.001	<0.001	<0.003	175	Clear No odor
2R	XXX	XXX	XXX	XXX	3/7/2012	1700	3180	XXX	XXX	XXX	XXX	164	Clear No odor
2R	XXX	XXX	XXX	XXX	6/4/2012	1500	2810	XXX	XXX	XXX	XXX	148	Clear No odor
2R	XXX	XXX	XXX	XXX	9/19/2012	1580	3100	<0.001	<0.001	<0.001	<0.003	126	Clear No odor
2R	XXX	XXX	XXX	XXX	11/26/2012	1240	3140	XXX	XXX	XXX	XXX	468	Clear No odor, Samples Collected at the Tank
2R	XXX	XXX	XXX	XXX	2/26/2013	1620	3370	XXX	XXX	XXX	XXX	565	Clear No odor, Samples Collected at the Tank
2R	XXX	165	XXX	XXX	6/13/2013	1620	2940	XXX	XXX	XXX	XXX	130	Clear No Odor, Samples Collected at the Tank
2R	XXX	165	XXX	XXX	9/13/2013	1560	3040	XXX	XXX	XXX	XXX	124	Clear No Odor, Samples Collected at Tank
2R	XXX	165	XXX	XXX	11/20/2013	1600	3480	XXX	XXX	XXX	XXX	140	Clear with no odor

ROC - Justis H-2 (AP-49)
Unit Letter H, Section 2, T26S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	122.1	137.5	10	30.1	1/7/2002	48	577	<0.005	<0.005	<0.005	<0.015	145	
3	XXX	XXX	XXX	XXX	3/1/2002	37.2	561	XXX	XXX	XXX	XXX	167	
3	XXX	XXX	XXX	XXX	5/16/2002	35.4	570	<0.001	<0.001	<0.001	<0.001	182	
3	118.68	133	XXX	20	8/16/2002	93.1	631	<0.001	<0.001	<0.001	<0.001	238	
3	118.9	133	XXX	25	11/12/2002	97.5	688	0.03	0.014	0.002	0.003	219	
3	118.53	133	XXX	25	2/13/2003	102	666	<0.001	<0.001	<0.001	<0.001	250	
3	118.87	133	XXX	25	5/20/2003	168	885	<0.001	<0.001	<0.001	<0.001	278	
3	118.53	133	XXX	25	9/16/2003	204	568	<0.001	<0.001	<0.001	<0.001	184	
3	118.79	133	XXX	30	12/16/2003	40.8	517	0.013	<0.001	<0.001	<0.001	204	
3	118.71	133	XXX	30	3/11/2004	65	666	<0.001	<0.001	<0.001	<0.001	203	
3	118.53	133	XXX	30	6/28/2004	124	735	0.0124	<0.001	<0.001	<0.001	295	
3	118.52	133	XXX	25	9/23/2004	115	703	0.00113	<0.001	<0.001	<0.001	242	
3	118.52	133	XXX	7	12/21/2004	154	1057	0.0127	<0.001	0.00144	<0.001	272	
3	118.31	133	XXX	25	3/29/2005	108	670	<0.001	<0.001	<0.001	<0.001	215	
3	118.41	133	XXX	30	6/16/2005	62.4	535	<0.001	<0.001	<0.001	<0.001	180	
3	XXX	XXX	XXX	XXX	9/15/2005	56.4	664	<0.001	<0.001	<0.001	<0.001	139	
3	118.25	133.7	2.5	20	12/5/2005	30.7	450	<0.001	<0.001	<0.001	<0.001	131	
3	118.18	133.7	2.5	15	2/27/2006	26.8	562	<0.001	<0.001	<0.001	<0.001	123	
3	118.18	133.7	2.5	15	6/14/2006	38.3	514	<0.001	<0.001	<0.001	<0.001	151	
3	118.21	133.7	2.5	10	12/5/2006	26.1	486	<0.001	<0.001	<0.001	<0.001	164	Clear with no odor.
3	118.26	133.4	2.4	10	3/15/2007	77.6	532	<0.001	<0.001	<0.001	<0.001	226	clear with no odor
3	118.49	133.4	2.4	10	6/13/2007	86.9	512	<0.001	<0.001	<0.001	<0.001	193	Sand to clear with no odor
3	118.07	133.4	2.5	10	9/17/2007	36	564	<0.002	<0.002	<0.002	<0.006	201	Sand to Clear No Odor
3	118.23	133.4	2.4	10	11/13/2007	32	537	<0.001	<0.001	<0.001	<0.003	223	Sand to clear No odor
3	118.08	133.4	2.5	10	2/23/2008	32	548	<0.001	<0.001	<0.001	<0.003	157	Sand to clear No odor
3	117.98	133.4	2.5	10	5/21/2008	32	519	<0.002	<0.002	<0.002	<0.006	156	Sand to clear No odor
3	118.14	134.3	2.6	10	6/15/2009	36	591	<0.001	<0.001	<0.001	<0.003	145	Sand to Clear No Odor
3	118.13	133.4	2.4	10	8/27/2008	32	544	<0.001	<0.001	<0.001	<0.003	183	Sand to clear No odor
3	118.26	133.4	2.4	10	12/1/2008	36	577	<0.001	<0.001	<0.001	<0.003	177	Sand to clear No odor
3	118.11	134.3	2.6	10	2/25/2009	36	543	<0.001	<0.001	<0.001	<0.003	169	Sand to clear No odor

3	118.04	134.3	2.6	10	9/4/2009	36	588	<0.001	<0.001	<0.001	<0.003	172	Sand to clear No odor
3	118.13	134.3	2.6	10	11/16/2009	48	527	<0.001	<0.001	<0.001	<0.003	142	Sand to clear No odor
3	117.88	134.31	2.6	10	3/5/2010	36	565	<0.001	<0.001	<0.001	<0.003	202	Sand to clear No odor
3	117.93	134.31	2.6	10	6/1/2010	32	567	<0.001	<0.001	<0.001	<0.003	178	Sand to clear No odor
3	117.92	134.31	2.6	10	8/23/2010	36	560	<0.001	<0.001	<0.001	<0.003	180	Sand to clear No odor
3	117.83	134.31	2.6	10	11/19/2010	36	552	<0.001	<0.001	<0.001	<0.003	206	Sand to clear No odor
3	117.98	134.33	2.6	10	3/7/2011	36	551	<0.001	<0.001	<0.001	<0.003	166	Sand to clear No odor
3	117.78	134.33	2.6	10	6/7/2011	48	543	<0.001	<0.001	<0.001	<0.003	170	Sand to clear No odor
3	117.79	134.33	2.6	10	9/13/2011	40	534	<0.001	<0.001	<0.001	<0.003	189	Sand to clear No odor
3	117.91	134.33	2.6	10	12/7/2011	36	554	<0.001	<0.001	<0.001	<0.003	190	Sand to clear No odor
3	117.69	134.33	2.7	10	3/7/2012	32	563	XXX	XXX	XXX	XXX	187	Sand to clear No odor
3	117.73	134.33	2.7	10	6/4/2012	32	556	XXX	XXX	XXX	XXX	172	Sand to clear No odor
3	117.68	134.33	2.7	10	9/19/2012	36	566	<0.001	<0.001	<0.001	<0.003	164	Sand to clear No odor
3	117.74	134.33	2.7	10	11/26/2012	40	558	XXX	XXX	XXX	XXX	147	Sand to clear No odor
3	117.83	134.33	2.6	10	2/26/2013	36	538	XXX	XXX	XXX	XXX	177	Sand to clear No odor
3	117.59	134.33	2.7	10	6/13/2013	36	557	XXX	XXX	XXX	XXX	179	Sand to clear No odor
3	117.68	134.33	2.7	10	9/13/2013	36	569	XXX	XXX	XXX	XXX	160	Sand to Clear No Odor
3	117.53	134.33	2.7	10	11/20/2013	36	540	XXX	XXX	XXX	XXX	183	Sand to clear No odor

ROC - Justis H-2 (AP-49)

Unit Letter H, Section 2, T26S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
4	122.12	137	XXX	30	3/11/2004	35.4	610	<0.001	<0.001	<0.001	<0.001	174	
4	121.96	137	XXX	30	6/28/2004	57.6	596	0.00749	<0.001	<0.001	<0.001	225	
4	121.93	137	XXX	25	9/23/2004	53.2	648	<0.001	<0.001	<0.001	<0.001	180	
4	121.88	137	XXX	8	12/21/2004	59.1	865	0.00275	<0.001	<0.001	<0.001	210	calculated TDS
4	121.66	137	XXX	25	3/29/2005	55.7	506	<0.001	<0.001	<0.001	<0.001	186	
4	121.8	137	XXX	30	6/16/2005	49.8	543	<0.001	<0.001	<0.001	<0.001	179	
4	XXX	XXX	XXX	XXX	9/15/2005	48.2	634	<0.001	<0.001	<0.001	<0.001	135	
4	121.81	141.4	3.1	20	12/5/2005	29.1	496	<0.001	<0.001	<0.001	<0.001	136	
4	121.59	141.4	3.2	20	2/27/2006	29.1	542	<0.001	<0.001	<0.001	<0.001	136	
4	121.61	141.4	3.2	15	6/14/2006	39.6	564	<0.001	<0.001	<0.001	<0.001	157	
4	121.63	141.4	3.2	15	12/5/2006	30	476	<0.001	<0.001	<0.001	<0.001	176	Clear with no odor
4	121.65	140.95	3.1	15	3/15/2007	40.8	514	<0.001	<0.001	<0.001	<0.001	211	clear
4	121.58	140.95	3.1	15	6/13/2007	30.3	534	<0.001	<0.001	<0.001	<0.001	149	Clear with no odor
4	121.45	140.95	3.1	15	9/17/2007	40	612	<0.002	<0.002	<0.002	<0.006	220	Clear No Odor
4	121.64	140.95	3.1	15	11/13/2007	36	547	<0.001	<0.001	<0.001	<0.003	222	Clear No odor
4	121.45	140.95	3.1	15	2/23/2008	36	585	<0.001	<0.001	<0.001	<0.003	190	Clear No odor
4	121.31	140.95	3.1	15	5/21/2008	36	533	<0.002	<0.002	<0.002	<0.006	169	Clear No odor
4	121.53	140.89	3.1	15	6/15/2009	40	593	<0.001	<0.001	<0.001	<0.003	169	Clear No Odor
4	121.53	140.95	3.1	15	8/27/2008	36	581	<0.001	<0.001	<0.001	<0.003	181	Clear No odor
4	121.65	140.95	3.1	15	12/1/2008	36	621	<0.001	<0.001	<0.001	<0.003	187	Clear No odor
4	121.48	140.89	3.1	15	2/25/2009	36	540	<0.001	<0.001	<0.001	<0.003	180	Clear No odor

4	121.39	140.89	3.1	15	9/4/2009	36	580	<0.001	<0.001	<0.001	<0.003	169	Clear No odor
4	121.56	140.89	3.1	15	11/16/2009	36	471	<0.001	<0.001	<0.001	<0.003	148	Clear No odor
4	121.22	140.9	3.1	15	3/5/2010	36	562	<0.001	<0.001	<0.001	<0.003	197	Clear No odor
4	121.28	140.9	3.1	15	6/1/2010	32	579	<0.001	<0.001	<0.001	<0.003	176	Clear No odor
4	121.31	140.9	3.1	15	8/23/2010	40	600	<0.001	<0.001	<0.001	<0.003	186	Clear No odor
4	121.14	140.9	3.2	15	11/19/2010	36	534	<0.001	<0.001	<0.001	<0.003	214	Clear No odor
4	121.44	140.9	3.1	15	3/7/2011	36	559	<0.001	<0.001	<0.001	<0.003	182	Clear No odor
4	121.21	140.9	3.2	15	6/7/2011	40	564	<0.001	<0.001	<0.001	<0.003	177	Clear No odor
4	121.22	140.9	3.1	15	9/13/2011	116	659	<0.001	<0.001	<0.001	<0.003	199	Clear No odor
4	121.32	140.9	3.1	15	12/7/2011	36	558	<0.001	<0.001	<0.001	<0.003	209	Clear No odor
4	121.05	140.9	3.2	15	3/7/2012	36	582	XXX	XXX	XXX	XXX	206	Clear No odor
4	121.17	140.9	3.2	15	6/4/2012	268	908	XXX	XXX	XXX	XXX	175	Clear No odor
4	121.02	140.9	3.2	15	9/19/2012	36	587	<0.001	<0.001	<0.001	<0.003	201	Clear No odor
4	121.16	140.9	3.2	15	11/26/2012	32	548	XXX	XXX	XXX	XXX	146	Clear No odor
4	121.29	140.9	3.1	15	2/26/2013	40	573	XXX	XXX	XXX	XXX	194	Clear No odor
4	121.05	140.9	3.2	15	6/13/2013	40	569	XXX	XXX	XXX	XXX	187	Clear No odor
4	121.02	140.9	3.2	15	9/13/2013	40	568	XXX	XXX	XXX	XXX	185	Clear with No Odor
4	120.92	140.9	3.2	15	11/20/2013	36	556	XXX	XXX	XXX	XXX	193	Clear with no odor

ROC - Justis H-2 (AP-49)

Unit Letter H, Section 2, T26S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
5	120.15	135	XXX	30	3/11/2004	195	894	<0.001	<0.001	<0.001	<0.001	198	
5	120.04	135	XXX	30	6/28/2004	310	1130	0.0105	<0.001	0.00108	<0.001	238	
5	119.98	135	XXX	25	9/23/2004	160	792	<0.001	<0.001	<0.001	<0.001	224	
5	119.93	135	XXX	8	12/21/2004	165	1072	0.00292	<0.001	<0.001	<0.001	224	calculated TDS
5	119.73	135	XXX	25	3/29/2005	202	636	<0.001	<0.001	<0.001	<0.001	201	
5	119.88	135	XXX	30	6/16/2005	172	767	<0.001	<0.001	<0.001	<0.001	187	
5	XXX	XXX	XXX	XXX	9/15/2005	147	852	<0.001	<0.001	<0.001	<0.001	136	
5	119.8	140	3.2	20	12/5/2005	159	662	<0.001	<0.001	<0.001	<0.001	142	
5	119.68	140	3.3	20	2/27/2006	167	696	<0.001	<0.001	<0.001	<0.001	139	
5	119.65	140	3.3	15	6/14/2006	197	786	<0.001	<0.001	<0.001	<0.001	152	
5	119.74	140	3.2	15	12/5/2006	186	748	<0.001	<0.001	<0.001	<0.001	173	Clear with no odor
5	119.72	138.8	3.1	15	3/15/2007	255	766	<0.001	<0.001	<0.001	<0.001	220	clear with no odor
5	119.65	138.8	3.1	15	6/13/2007	189	842	<0.001	<0.001	<0.001	<0.001	156	clear with no odor
5	119.53	138.8	3.1	15	9/17/2007	68	668	<0.002	<0.002	<0.002	<0.006	227	Clear No Odor
5	119.7	138.8	3.1	15	11/13/2007	100	669	<0.001	<0.001	<0.001	<0.003	234	Clear No odor
5	119.55	138.8	3.1	15	2/23/2008	216	900	<0.001	<0.001	<0.001	<0.003	198	Clear No odor
5	119.41	138.8	3.1	15	5/21/2008	208	877	<0.002	<0.002	<0.002	<0.006	177	Clear No odor
5	119.55	138.75	3.1	15	6/15/2009	204	894	<0.001	<0.001	<0.001	<0.003	179	Clear No Odor
5	119.59	138.8	3.1	15	8/27/2008	200	945	<0.001	<0.001	<0.001	<0.003	198	Clear No odor
5	119.7	138.8	3.1	15	12/1/2008	200	885	<0.001	<0.001	<0.001	<0.003	189	Clear No odor

5	119.54	138.75	3.1	15	2/25/2009	184	747	<0.001	<0.001	<0.001	<0.003	185	Clear No odor
5	119.46	138.75	3.1	15	9/4/2009	204	873	<0.001	<0.001	<0.001	<0.003	181	Clear No odor
5	119.61	138.75	3.1	15	11/16/2009	192	741	<0.001	<0.001	<0.001	<0.003	157	Clear No odor
5	119.27	138.75	3.1	15	3/5/2010	140	721	<0.001	<0.001	<0.001	<0.003	210	Clear No odor
5	119.34	138.75	3.1	15	6/1/2010	172	855	<0.001	<0.001	<0.001	<0.003	190	Clear No odor
5	119.29	138.75	3.1	15	8/23/2010	144	788	<0.001	<0.001	<0.001	<0.003	196	Clear No odor
5	119.23	138.75	3.1	15	11/19/2010	184	749	<0.001	<0.001	<0.001	<0.003	226	Clear No odor
5	119.45	138.75	3.1	15	3/7/2011	124	699	<0.001	<0.001	<0.001	<0.003	181	Clear No odor
5	119.19	138.75	3.1	15	6/7/2011	156	714	<0.001	<0.001	<0.001	<0.003	174	Clear No odor
5	119.2	138.75	3.1	15	9/13/2011	168	750	<0.001	<0.001	<0.001	<0.003	199	Clear No odor
5	119.34	138.75	3.1	15	12/7/2011	168	731	<0.001	<0.001	<0.001	<0.003	214	Clear No odor
5	119.06	138.75	3.2	15	3/7/2012	256	879	XXX	XXX	XXX	XXX	189	Clear No odor
5	119.22	138.75	3.1	15	6/4/2012	268	908	XXX	XXX	XXX	XXX	175	Clear No odor
5	119.09	138.75	3.1	15	9/19/2012	364	1060	<0.001	<0.001	<0.001	<0.003	172	Clear No odor
5	119.23	138.75	3.1	15	11/26/2012	432	1120	XXX	XXX	XXX	XXX	154	Clear No odor
5	119.31	138.75	3.1	15	2/26/2013	432	1010	XXX	XXX	XXX	XXX	146	Clear No odor
5	119.08	138.75	3.1	15	6/13/2013	344	1080	XXX	XXX	XXX	XXX	173	Clear No odor
5	119.07	138.75	3.1	15	9/13/2013	344	1030	XXX	XXX	XXX	XXX	163	Clear with no odor
5	118.94	138.75	3.2	15	11/20/2013	343	1020	XXX	XXX	XXX	XXX	179	Clear No odor

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

December 05, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: JUSTIS H-2 SWD

Enclosed are the results of analyses for samples received by the laboratory on 11/21/13 14:13.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/21/2013	Sampling Date:	11/20/2013
Reported:	12/05/2013	Sampling Type:	Water
Project Name:	JUSTIS H-2 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Celey D. Keene
Project Location:	T26S-R37E-SEC2 H - LEA CTY., NM		

Sample ID: MONITOR WELL #2 R (H302858-01)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**1600**	4.00	11/25/2013	ND	104	104	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**140**	25.0	12/05/2013	ND	20.3	102	20.0	4.58	

TDS 160.1 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**3480**	5.00	12/02/2013	ND	248	103	240	1.34	

Sample ID: MONITOR WELL #3 (H302858-02)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**36.0**	4.00	11/25/2013	ND	104	104	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**183**	25.0	12/05/2013	ND	20.3	102	20.0	4.58	

TDS 160.1 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**540**	5.00	12/02/2013	ND	248	103	240	1.34	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/21/2013	Sampling Date:	11/20/2013
Reported:	12/05/2013	Sampling Type:	Water
Project Name:	JUSTIS H-2 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Celey D. Keene
Project Location:	T26S-R37E-SEC2 H - LEA CTY., NM		

Sample ID: MONITOR WELL #4 (H302858-03)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**36.0**	4.00	11/25/2013	ND	104	104	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**193**	25.0	12/05/2013	ND	20.3	102	20.0	4.58	

TDS 160.1 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**556**	5.00	12/02/2013	ND	248	103	240	1.34	

Sample ID: MONITOR WELL #5 (H302858-04)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**343**	4.00	11/25/2013	ND	104	104	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**179**	25.0	12/05/2013	ND	20.3	102	20.0	4.58	

TDS 160.1 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**1020**	5.00	12/02/2013	ND	248	103	240	1.34	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Hack Conder	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575)397-1471
Project #:	Project Name: Justis H-2 SWD
Project Location: T26S-R37E-Sec2 H ~ Lea County - New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

LAB # (LAB USE ONLY H302858)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2013)	TIME
1	Monitor Well #2R	G	1	X								1		11-20	14:10
2	Monitor Well #3	G	1	X								1		11-20	9:50
3	Monitor Well #4	G	1	X								1		11-20	11:00
4	Monitor Well #5	G	1	X								1		11-20	12:05

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
																		X	X	X	
																		X	X	X	
																		X	X	X	
																		X	X	X	

Relinquished by: Rozanne Johnson	Date: 11-21-2013	Time: 14:12	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: (Laboratory Staff)	Date: 11-21-2013	Time: 14:13

Phone Results		Yes		No
Fax Results		Yes		No Additional Fax Number:

Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool Yes / No; Intact Yes / No	CHECKED BY: (Initials)

REMARKS:

Email Results to: hconder@riceswd.com, lweinheimer@rice-ecs.com, kjones@riceswd.com, rozanne11@windstream.net

#54