1R - 299

2011 AGWMR

04/03/2013



3 April 2013

Mr. Glen Von Gonten, Senior Hydrologist New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505

Re:

2011 Annual Groundwater Monitoring and Closure Report Shell Oil Products US - Penrose 'A' (Winnie Kennan Ranch)

Case Number: 1R299

Dear Mr. Von Gonten:

The attached report documents the annual groundwater monitoring activities conducted at the above-referenced site. Based on field and analytical data collected during 2011 and analytical results collected previously from the groundwater monitoring well network and results of the NMOCD facility meeting held on August 10, 2010, the following recommendations are made:

- 1. The case be closed by the NMOCD; and,
- 2. The groundwater monitoring wells be abandoned and the site restored as close to original condition as possible.

Should you have any questions or concerns, please feel free to contact me at (602) 648-2402 or via e-mail at <u>iain_olness@urscorp.com</u>. All official correspondence should be submitted to Mr. Ken Springer with Shell Oil Products US at the following address:

Mr. Ken Springer, Staff Project Manager Shell Oil Products US P. O. Box 1087 Huffman, TX 77336

(281) 324-5921

Kenneth.Springer@shell.com

Sincerely,

URS Corporation

Iain Olness, P.G. Senior Geologist

Enclosure:

2011 Annual Groundwater Monitoring Report

cc:

Ken Springer, SOPUS – Houston Larry Johnson, NMOCD – Hobbs 97 : Z d b - YdV E102

RECEIVED OCD

URS Corporation 7720 North 16th Street, Suite 100 Phoenix, AZ 85020 Tel: 602.371.1100 Fax: 602.371.1615

URS

2011 ANNUAL GROUNDWATER MONITORING REPORT AND CLOSURE REQUEST

PENROSE 'A' LEASE (WINNIE KENNAN RANCH) CASE NUMBER: 1R299 INCIDENT NUMBER: 300108 SW¼ SE¼, SEC. 3, T23S, R37E LEA COUNTY, NEW MEXICO

Prepared for: SHELL OIL PRODUCTS US

URS Job No. 49233381 26 November 2012

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49233381 URS CORPORATION

1.0 INTRODUCTION

This Annual Report has been prepared to document the results of groundwater monitoring, sampling and remediation activities conducted during 2011 at the Penrose 'A' Lease (Winnie Kennan Ranch) located approximately seven miles southeast of Eunice, off New Mexico State Highway 18, in Lea County, New Mexico (reference Figures 1 and 2). The subject-property is located in the SW¼ of the SE¼ of Section 3, Township 23 South, Range 37 East. A review of the New Mexico Office of the State Engineer website in 2007 and the United States Geological Survey (USGS) database revealed the presence of ten water supply wells within a one-mile radius of the point of release (reference Figure 2 and Table 1). No wells were found to be located within a 1,000-foot radius of the point of release, with the nearest wells being located approximately 1,800 feet northwest of the point of release.

This report complies with the New Mexico Oil Conservation Division (NMOCD) requirements and addresses all activities performed during the annual period of 2011. Groundwater and light non-aqueous phase liquid (LNAPL) level measurements were collected approximately quarterly throughout 2011. In addition, the LNAPL skimmer pump that was reinstalled in groundwater monitoring well MW-1 on May 30, 2010 was used for LNAPL abatement activities. The monitoring events were performed by H₂A Environmental, Ltd. (H₂A), under the direction of URS Corporation (URS).

2.0 **CHRONOLOGY OF EVENTS**

A summary of significant events and activities performed at the site is presented below.

March 2000 Shell and Enercon perform a site walk of the property in an area of historic

crude oil releases of an unknown amount.

October to

Enercon was onsite to excavate approximately 10,800 cubic yards of soil, which November 2000 were transported and landfarmed offsite. The site was excavated to a depth of

40 feet below ground surface (bgs) with TPH exceeding NMOCD standards at that depth. The NMOCD agreed with Shell that for safety purposes further

excavation should be halted.

May 2001 Enercon submits the excavation report to the NMOCD.

November 2001 NMOCD requests installation of a soil boring/monitor well in center of

excavation to determine amount of remaining hydrocarbon impacts to the

soils/groundwater.

January 2002 Enercon was onsite to advance one soil boring within the open excavation from

> a depth of 40 feet bgs to groundwater located at approximately 75 feet bgs. The soil boring was converted to temporary monitor well TMW-1. Soils exceeded NMOCD standards of 1,000 milligrams per kilogram (mg/Kg) TPH. LNAPL in

the form of crude oil was measured in TMW-1.

April 2002 Enercon submits Workplan for Soil Remediation and Monitor Well Installation

to NMOCD. The Work Plan included installation of clay liner over remaining

hydrocarbon impacted soils.

May 2002 Enercon submits Report Detailing the Installation of Temporary Monitor Well

TMW-1 to NMOCD.

April 2004 NMOCD agrees to work plan design and installation of additional monitor wells

to delineate site groundwater impacts.

June 2004 Enercon places a 4-foot clay liner above remaining hydrocarbon impacted soils

and backfills excavation with soils from surrounding sand dunes. Temporary

monitor well TMW-1 is converted to monitor well MW-1.

July 2004 Enercon advances four soil borings to approximately 80-feet bgs and converts

soil borings to monitor wells (MW-2 through MW-5). Monthly LNAPL

recovery from MW-1 initiated.

November 2004 Enercon submits Phase II Backfilling Activities with Site Groundwater/Soil

Characterization to NMOCD.

January 2005 Continued monthly LNAPL recovery from MW-1.

March 2005 Enercon submits 2004 Annual Groundwater Monitoring Report to the NMOCD.

Enercon installs one Clean Environments CEE[©] Product Only Pump in monitor September 2005

well MW-1.

January 2006	Site maintenance and environmental management of property transitioned from Enercon to Conestoga-Rovers and Associates (CRA). Continued monthly LNAPL recovery from MW-1.
April 2006	CRA submits 2005 Annual Groundwater Monitoring Report to Shell Oil Products US (SOPUS) and the NMOCD.
October 10, 2006	Site maintenance and environmental management of property transitioned from CRA to URS Corporation.
January 2007	Continued monthly LNAPL recovery from MW-1.
March 2007	URS Corporation submits 2006 Annual Groundwater Monitoring Report to SOPUS and the NMOCD, recommending the sampling schedule be reduced from quarterly to semi-annual.
March 23, 2007	H ₂ A conducts semi-annual sampling activities.
November 2, 2007	H ₂ A conducts semi-annual sampling activities.
January 2008	Continued monthly LNAPL recovery from MW-1.
March 2008	URS submits 2007 Annual Groundwater Monitoring Report to SOPUS and the NMOCD.
March 14, 2008	H ₂ A conducts semi-annual sampling activities.
November 17, 2008	H ₂ A conducts semi-annual sampling activities.
January 2009	Continued monthly LNAPL recovery from MW-1.
March 2009	URS submits 2008 Annual Groundwater Monitoring Report to SOPUS and the NMOCD.
May 7, 2009	H ₂ A conducts semi-annual sampling activities.
July 2009	The LNAPL skimmer pump is removed from groundwater monitoring/recovery well MW/RW-1in an attempt to monitor for LNAPL rebound.
December 12, 2009	H ₂ A conducts semi-annual sampling activities.
March 2010	URS submits 2009 Annual Groundwater Monitoring Report to SOPUS and the NMOCD. Groundwater sampling activities terminated.
May 2010	The LNAPL skimmer pump is reinstalled in groundwater monitoring/recovery well MW/RW-1.
August 2010	Representatives from NMOCD, SOPUS, URS Corporation, and H2A meet to discuss the status of the site and develop a plan to move the site toward closure.
March 2011	$\rm H_2A$ conducts semi-annual sampling activities of MW-1 and background well MW-4.

August 2011 H₂A conducts semi-annual sampling activities of MW-1 and background well MW-4.

concentrations for TDS and chloride were both reported above the respective NMWQCC standard of 1,000 mg/L (TDS) and 250 mg/L (chloride).

Analytical results for the sample collected from groundwater monitoring well MW-4 on March 13, 2011 reported TDS concentrations of 3,930 mg/L, above the NMWQQC standard of 1,000 mg/L.

Analytical results for the sample collected from groundwater monitoring well MW-1 on August 26, 2011 indicated the presence of benzene (1.9 μ g/L), toluene (1.0 μ g/L), ethylbenzene (44.0 μ g/L), and total xylenes (59.9 μ g/L). Concentrations were all below the respective NMWQCC standards. The analytical results also reported TDS at a concentration of 3,560 mg/L, chlorides at a concentration of 382 mg/L, and pH was reported at 7.32. The concentrations for TDS and chloride were both reported above the respective NMWQCC standard of 1,000 mg/L (TDS) and 250 mg/L (chloride).

Analytical results for the sample collected from background groundwater monitoring well MW-4 on August 23, 2011 reported TDS concentrations of 4,110 mg/L, above the NMWQQC standard of 1,000 mg/L.

Historic data are presented in Table 3.

3.0 2011 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES

3.1 FIELD PROCEDURES

Groundwater monitoring events were performed on March 1, March 13, April 30, June 12, June 28, July 31, August 26, and September 28, 2011. Groundwater monitoring well locations and site details are illustrated in Figure 3. During these events, fluid levels were measured in each well and the information documented on field monitoring forms. Groundwater samples were collected from monitoring wells MW-1 and MW-4 during the March 13 and August 26, 2011, monitoring events.

3.2 GROUNDWATER GAUGING DATA

During 2011, depth to groundwater across the site ranged from 70.76 feet to 73.61 feet below the top of the casing, with an average groundwater gradient of approximately 0.0053 ft/ft to the southwest. Groundwater gauging data are summarized in Table 2 and illustrated in Figure 4. These observations are consistent with historical data collected at the site. Average groundwater elevations at the site, adjusted for LNAPL, during the March 1 and September 28, 2011 gauging events were 3,226.12 feet, and 3,226.02 feet above mean sea level, respectively. These data indicate the average groundwater elevation at the site decreased approximately 0.1 feet between December 31, 2010 and September 28, 2011. Groundwater gradient maps for the March 13 and September 28, 2011 monitoring events are illustrated on Figures 5 and 7, respectively.

3.3 ANALYTICAL RESULTS

Groundwater sampling activities during 2011 were limited only to monitoring wells MW-1 and MW-4 as outlined during the NMOCD Facility Meeting on August 10, 2010. MW-1 was monitored for benzene, toluene, ethylbenzene and total xylenes (BTEX) via EPA Method 8260B as well as total dissolved solids (TDS) via Standard Method (SM) 2540C, pH via SM4500H B, and chlorides via EPA Method E300.0. MW-4 was sampled as a background well and was analyzed for TDS only via SM 2540C.

Analytical results for the sample collected from groundwater monitoring well MW-1 on March 13, 2011 indicated the presence of benzene (3.9 micrograms per liter $[\mu g/L]$), ethylbenzene (29.2 $\mu g/L$) and total xylenes (38.2 $\mu g/L$). Analytical results for this sample reported toluene as non-detectable at or above the laboratory reporting limit (LRL) of 1.0 $\mu g/L$. Concentrations were all below the respective New Mexico Water Quality Control Commission (NMWQCC) standards. The analytical results also reported TDS at a concentration of 2,310 milligrams per liter (mg/L) and chlorides at a concentration of 863 mg/L. The sample was not analyzed for pH due to holding time limitations. The

4.0 LNAPL RECOVERY ACTIVITIES

During the 2011 monitoring period, measurable LNAPL in the form of crude oil was present in groundwater monitoring well MW-1 with an average thickness of 0.16 feet (reference Table 2). Historically, from July 2004 through December 2009, the LNAPL thickness averaged 0.58 feet in MW-1. LNAPL abatement activities were performed by utilizing a Clean Environments CEE[©] Product Only Pump, installed in groundwater monitoring/recovery well MW/RW-1. LNAPL recovery from the onsite remediation system is summarized on Table 2. As of September 28, 2011, an approximate total of 44.5 gallons of LNAPL has been recovered at the site. Of this, approximately 9.5 gallons of LNAPL have been recovered by hand bailing, and 35 gallons by the onsite remediation system. Recovered LNAPL is stored in a 55-gallon steel drum within a fiberglass secondary containment adjacent to groundwater monitoring well MW-1, situated within a poly lined earthen berm.

5.0 <u>NMOCD FACILITY MEETING</u>

On August 10, 2010, representatives from the NMOCD, SOPUS, URS Corporation and H₂A met to discuss the status of the site and define a path moving towards closure. Representatives from the NMOCD, Mr. Glenn Von Gonten and Mr. Jim Griswold, agreed that SOPUS had aggressively remediated the site and that these activities would be beneficial when proposing alternative abatement standards. Results of the meeting included the development of a plan to move the site toward closure, under either a *Technical Infeasibility* option as outlined in Subsection F of 19.15.30.9 of the New Mexico Administrative Code (NMAC) or providing alternative abatement standards. The plan included the following:

- Determine the TDS in the source well (i.e. MW-1) and a background well (i.e., MW-3 or MW-4);
- O Collect a water sample from groundwater monitoring well MW-1 to determine petroleum constituent concentrations, if present. The sample should be submitted for quantification of the following constituents:
 - Benzene, toluene, ethylbenzene and total xylenes via EPA Method 8260B; and,
 - Total Dissolved Solids (TDS) via Standard Method (SM) 2540C, pH via SM4500H
 B, and chlorides via EPA Method E300.0.
- o Should analytical results indicate no detectable concentrations of petroleum constituents or levels below the water quality standards as set forth in 20.6.2.3103 NMAC, then an additional sample should be collected to confirm results. If the second round confirms no petroleum constituents are present at or above the water quality standards, the site may be eligible for closure although LNAPL is present on the water table.
- Prepare and submit a closure request package;
- Should analytical results indicate detectable concentrations of petroleum constituents at levels exceeding water quality standards as set forth in 20.6.2.3103, continue site monitoring to confirm stable/declining trends in samples collected from groundwater monitoring well MW-1 to ensure a stable / declining overall trend exists.

In addition to the aforementioned plan, discussions included looking at the option of completing a *Stage II Abatement Plan* and proposing alternative abatement standards. A *Stage II Abatement Plan* would have to be submitted for public review; however, the NMOCD representatives indicated they could support alternative abatement standards based on work previously completed by SOPUS.

6.0 SUMMARY OF FINDINGS

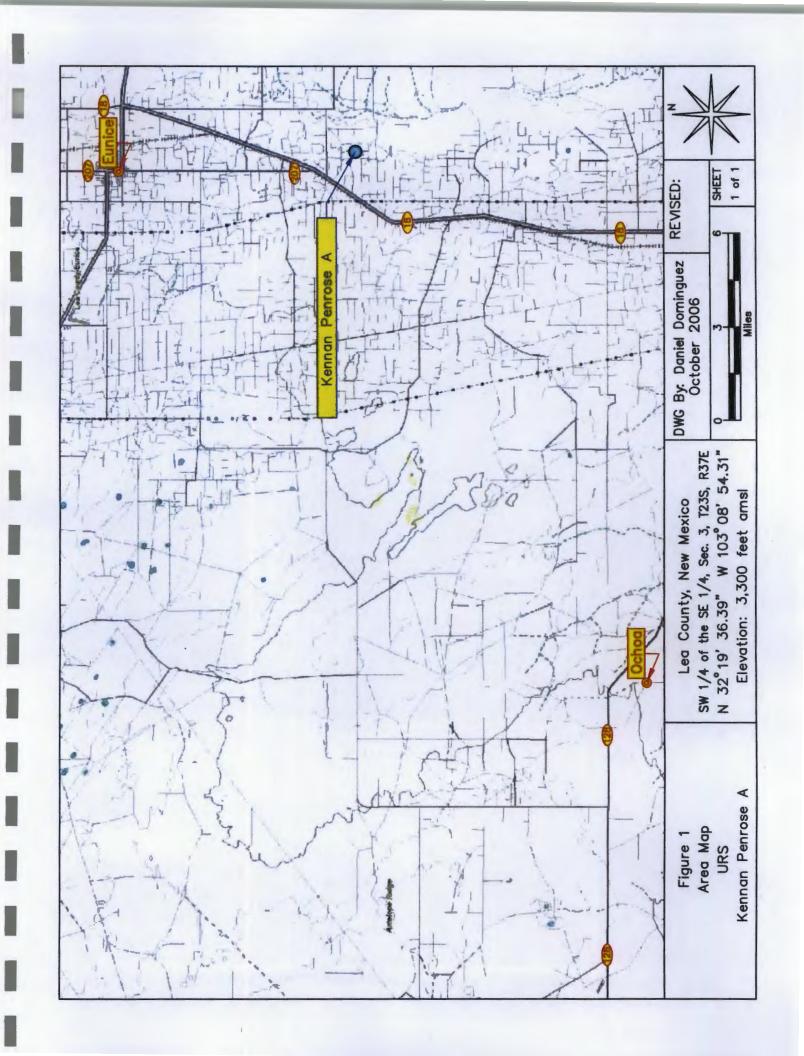
Key findings based on the assessment/remediation activities conducted during 2011 are presented below:

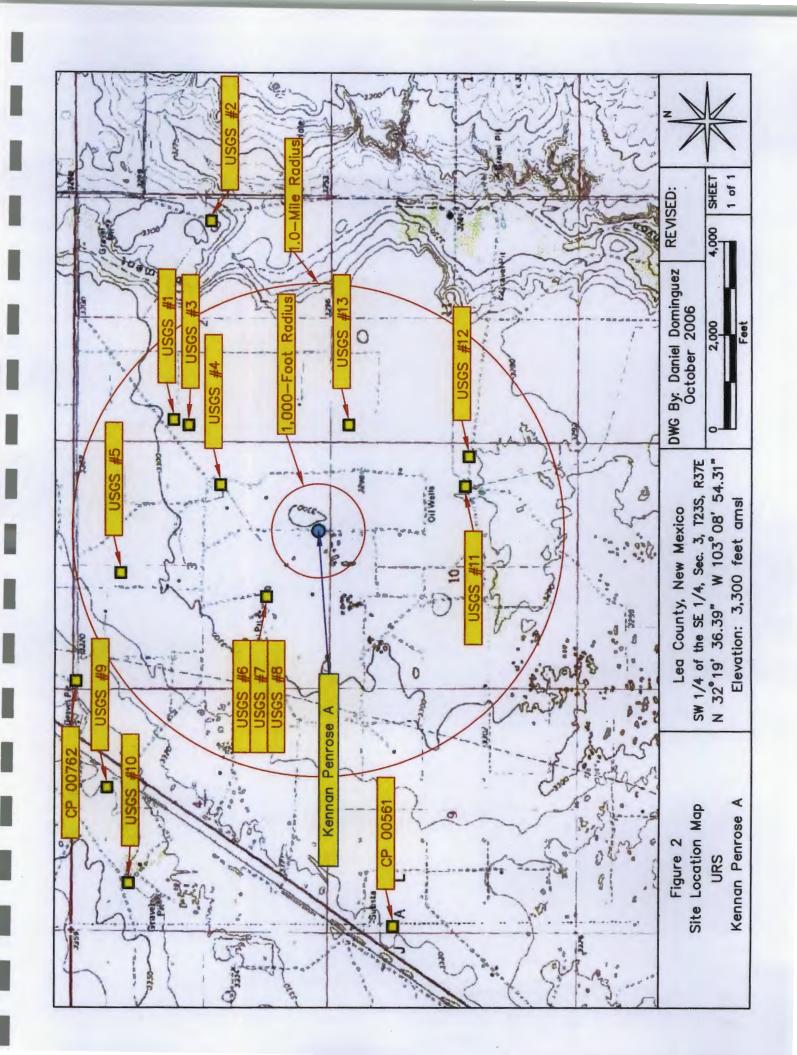
- The groundwater gradient remains relatively constant at approximately 0.0053 ft/ft to the southwest.
- LNAPL was present throughout 2011 in groundwater monitoring well MW-1 with an average thickness of 0.16 feet.
- A CEE[®] Product Only Pump was installed in groundwater monitoring well MW-1 in September 2005 to enhance recovery of LNAPL and has recovered approximately 35 gallons since installation.
- Groundwater sampling activities in MW-2 through MW-5 were terminated at the end of 2009 due
 to the absence of constituents of concern in these groundwater monitoring wells.
- Analytical results for the groundwater samples collected from monitoring well MW-1 on March 13 and August 23, 2011 indicated constituents of concern were below NMWQCC standards for both sampling events.
- These results clearly show that the residual NAPL is not contributing to dissolved impacts.

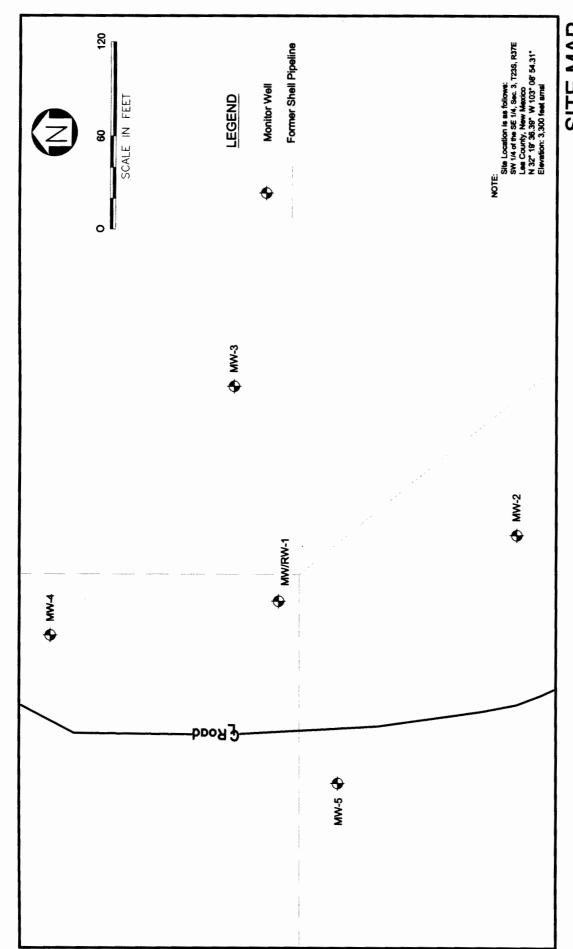
7.0 RECOMMENDATIONS

Based on field and analytical data collected during the past year and analytical results for samples collected previously from the groundwater monitoring well network and results of the NMOCD facility meeting held on August 10, 2010, the following recommendations are made:

- 1) The case be closed by the NMOCD; and,
- 2) The groundwater monitoring wells be abandoned and the site restored as close to original condition as practical.







SITE MAP KENNAN PENROSE "A" 28 FEBRUARY 2006

GRS

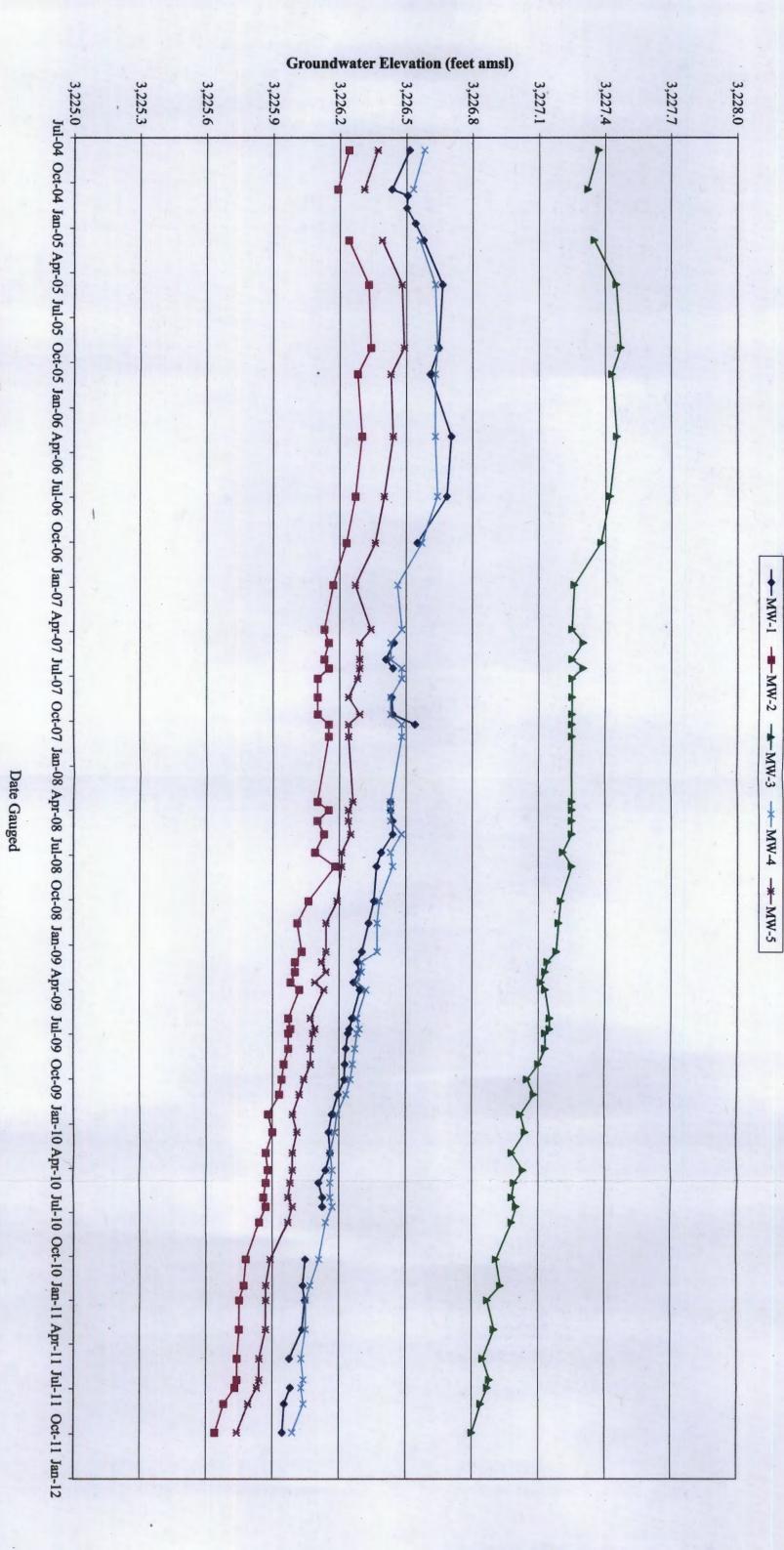
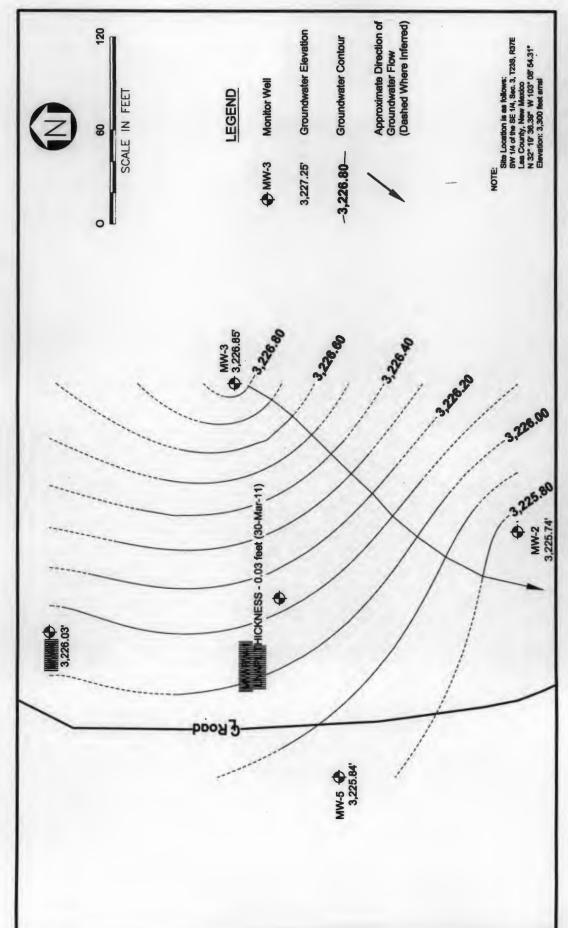
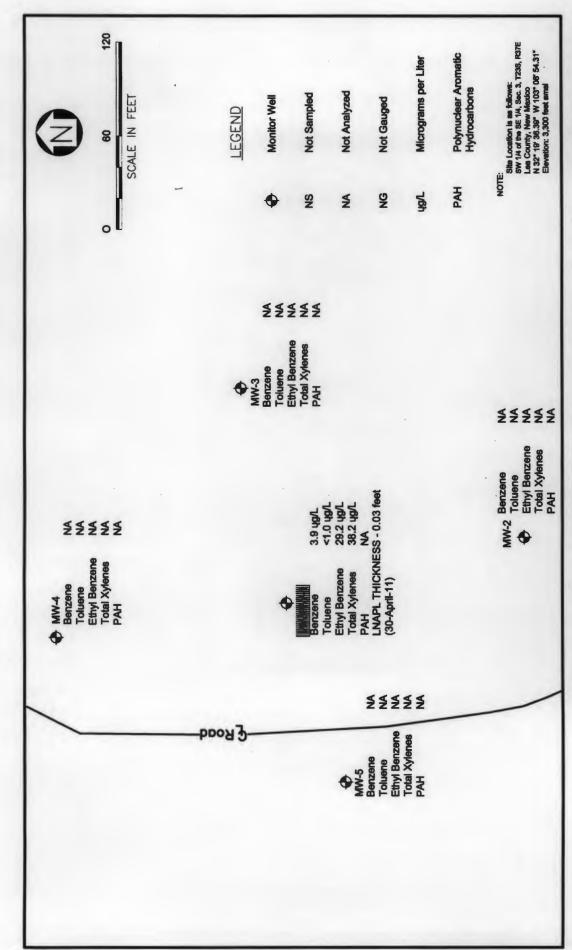


Figure 4: Hydrograph for Groundwater Monitoring Wells MW-1 through MW-5, Shell Oil Products US Kennan Penrose "A" Lease, Lea County, New Mexico, from 07-26-04 through 09-28-11.



Kennan Penrose "A" Groundwater Elevation Contour Map - 30 April 2011

URS



Groundwater BTEX and PAH Analytical Results - 13 March 2011

Kennan Penrose "A"

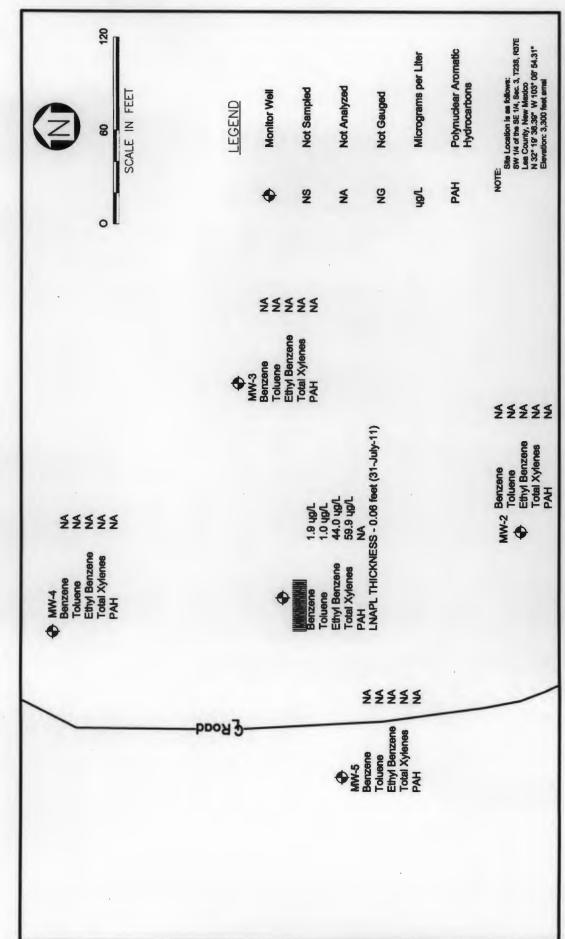


Groundwater Elevation Contour Map - 31 July 2011

Kennan Penrose "A"



Figure 7



Groundwater BTEX and PAH Analytical Results - 26 August 2011

Kennan Penrose "A"



TABLE 1

Well Data

URS - Kennan Penrose A (EPI Ref. #350001)

Depth to Water	(ft bgs)	100	09	71.18R	63.09	64.34	70.56	69.85	107.85	66.20	70.52	78.90	83.25	65.93	68.74	68.55	10.01	51.01	40.07	107.00	17/4	The second second
Surface Elevation ^B		3,319	3,325	3,299	3,300	3,298	3,296	3,305	3,297	3,297	3,297	3,340	3,340	3,291	3,291	3,298	The state of the s		The state of the s	9	4	CHARLES A. W. CAN'D S. LOWING.
Date		09-May-91	29-Dec-76	18-Dec-70	29-Feb-96	19-Mar-81	16-Jan-76	21-Feb-96	19-Mar-81	27-Oct-65	16-May-91	20-Mar-86	19-Mar-86	21-Feb-96	21-Mar-86	21-Feb-96	Plus the spirit	18-40-61	16-14-57	175-14tar-816		The state of the state of
Longitude		W103° 10' 33.43"	W103° 09' 31.85"																A Commence of the State of the		All the state of t	The the state of the control of the property of the state of the control of the c
Lattude		N32° 19' 20.79"	N32° 20' 27.50"														The state of the s	the state of the s	Company of the second s	Part of the same o	The same of the sa	and the state of t
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Use		PRO	STK															6			41	Parent of the Pa
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Well Number		CP 00762	CP 00561	USGS #1	USGS #2	USGS #3	USGS #4	USGS #5	USGS #6	USGS #7	USGS #8	USGS #9	USGS #10	USGS #11	USGS #12	USGS #13	A British Commence of the Comm	TIES PAGE	MEGSICH. K.	TI ACTION TO	S Hills of the	Control (Section 2) and the Control of the Control

* = Data obtained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet1) and USGS Database.

A = in acre feet per annum

B= Elevation interpolated from USGS topographical map based on referenced location. PRO = 72-12-1 Prospecting or development of natural resource STK = 72-12-1 Livestock watering quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest Shaded area indicates wells not shown in Figure 2

Well information data provided by EPI Consultants in December 2006

Well ID TOC Elevation	Date	Casing Diameter (in)	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Groundwater Elevation ¹ (ft amsl)	LNAPL Thickness (ft)	LNAPL Recovery (gallons)	LNAPL Cumulative Recovery (gallons)	Type of Recovery
MW-1	26-Jul-04	2	69.94	72.90	3,226.51	2.96	0.50	0.50	Hand Bail
3,296.75	14-Oct-04		70.10	72.26	3,226.43	2.16	0.00	0.50	Hand Bail
	27-Oct-04		69.99	72.54	3,226.51	2.55	2.00	2.50	Hand Bail
	21-Nov-04		69.98	72.67	3,226.50	2.69	1.50	4.00	Hand Bail
	22-Dec-04		70.01	72.01	3,226.54	2.00	1.50	5.50	Hand Bail
	25-Jan-05		69.89	72.72	3,226.58	2.83	2.00	7.50	Hand Bail
	25-Apr-05		69.91	71.68	3,226.66	1.77	2.00	9.50	Hand Bail
	01-Sep-05		69.91	71.85	3,226.65	1.94	2.00	11.50	System installed
	25-Oct-05		70.08	70.71	3,226.61	0.63	7.00	18.50	Adjusted pump
	28-Feb-06		69.83	72.00	3,226.70	2.17	NR		Skimmer Pump
	30-Jun-06		69.88	71.75	3,226.68	1.87	NR		Skimmer Pump
	03-Oct-06		70.11	71.01	3,226.55	0.90	0.83	19.33	Skimmer Pump
	28-Dec-06			NOTO	AUGED		NO		None
	28-Mar-07			NOT	AUGED		NR		Skimmer Pump
	24-Apr-07		70.20	71.25	3,226.45	1.05	NR		Skimmer Pump
	28-May-07		70.33	70.45	3,226.41	0.12	2.68	22.01	Skimmer Pump
	15-Jun-07		70.30	70.40	3,226.44	0.10	1.03	23.05	Skimmer Pump
	06-Jul-07		NO	T GAUGED - B	ird Nest in Vaul	t Cap	0.41	23.46	Skimmer Pump
	13-Aug-07		70.30	70.45	3,226.44	0.15	5.16	28.62	Skimmer Pump
	17-Sep-07		70.30	70.41	3,226.44	0.11	2.06	30.68	Skimmer Pump
	08-Oct-07		70.20	70.30	3,226.54	0.10	1.03	31.71	Skimmer Pump
	02-Nov-07			NOTO	AUGED		0.62	32.33	Skimmer Pump
	14-Mar-08		70.31	70.41	3,226.43	0.10	2.06	34.40	Skimmer Pump
	31-Mar-08		70.30	70.50	3,226.43	0.20	1.03	35.43	Skimmer Pump
	22-Apr-08		70.30	70.40	3,226.44	0.10	0.62	36.05	Skimmer Pump
	19-May-08	1	70.30	70.40	3,226.44	0.10	0.00	36.05	Skimmer Pump
	25-Jun-08	1	70.36	70.38	3,226.39	0.02	0.41	36.46	Skimmer Pump
	24-Jul-08		70.38	70.41	3,226.37	0.03	1.03	37.49	Skimmer Pump
	03-Oct-08	1	70.38	70.52	3,226.36	0.14	0.00	37.49	Skimmer Pump
	17-Nov-08		70.40	70.58	3,226.33	0.18	0.00	37.49	Skimmer Pump
	14-Jan-09		70.42	70.70	3,226.30	0.28	0.00	37.49	Skimmer Pump
	04-Feb-09		70.46	70.55	3,226.28	0.09	0.00	37.49	Skimmer Pump
	24-Feb-09		70.45	70.55	3,226.29	0.10	0.00	37.49	Skimmer Pump
	17-Mar-09		70.48	70.53	3,226.27	0.05	0.00	37.49	Skimmer Pump
	01-Apr-09		70.45	70.52	3,226.29	0.07	0.00	37.49	Skimmer Pump
	29-May-09		70.49	70.51	3,226.26	0.02	0.00	37.49	Skimmer Pump
	20-Jun-09		70.50	70.54	3,226.25	0.04	0.42	37.91	Skimmer Pump
	29-Jun-09		70.51	70.52	3,226.24	0.01	0.00	37.91	Skimmer Pump
	30-Jul-09		70.51	70.61	3,226.23	0.10	0.00	37.91	Pump Removed
	31-Aug-09		70.50	70.75	3,226.23	0.25	0.00	37.91	Pump Removed
	01-Oct-09		70.51	70.68	3,226.22	0.17	0.00	37.91	Pump Removed
	01-Nov-09		70.54	70.70	3,226.19	0.16	0.00	37.91	Pump Removed
	12-Dec-09		70.56	70.79	3,226.17	0.23	0.00	37.91	Pump Removed
	17-Jan-10		70.58	70.75	3,226.15	0.17	0.00	37.91	Pump Removed
	28-Feb-10		70.57	70.77	3,226.16	0.20	0.00	37.91	Pump Removed
	04-Apr-10		70.59	70.79	3,226.14	0.20	0.00	37.91	Pump Removed
	30-Apr-10		70.62	70.83	3,226.11	0.21	0.00	37.91	Pump Removed

Well ID TOC Elevation	Date	Casing Diameter (in)	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Groundwater Elevation ¹ (ft amsl)	LNAPL Thickness (ft)	LNAPL Recovery (gallons)	LNAPL Cumulative Recovery (gallons)	Type of Recover	
MW-1	30-May-10	2	70.60	70.85	3,226.13	0.25	0.00	37.91	Pump Reinserted	
(cont.)	18-Jun-10		70.60	70.85	3,226.13	0.25	0.62	38.53	Skimmer Pump	
3,296.75	20-Jul-10		NOT	GAUGED - Wa	sps Around We	ll Head	NR	38.53	Skimmer Pump	
	06-Oct-10	1	70.70	70.72	3,226.05	0.02	4.15	42.68	Skimmer Pump	
	30-Nov-10		70.71	70.74	3,226.04	0.03	NR	42.68	Skimmer Pump	
	31-Dec-10		70.70	70.74	3,226.05	0.04	NR	42.68	Skimmer Pump	
	0.42.11	Amonth Promote	70.72	711.76	2.076.04	0.05	0.10	4270	Skimmer Puny	
	30-Apr-13		1017	79.60	1.259	0.03	0.42	43.20	Skimmer Family	
	12-inc-71		BACITO	ADE D-14	fore Profes 1001	and less	NR	43.23	Shower Proper	
	26 Jun-17		70.76	70.65	3.235.00	0.00	0.42	43.62	Schools Press	
	31-Jol-11		58.29	70.85	2.225.95	0.06	0.00	43.62	Skimmer T	
	28 Gep-11		70.75	71.30	8,775.05	0.55	0.83	44.45	Skimmer P	
MW-2 3,299,25	26-Jul-04	4		73.01	3,226.24	0.00		-	-	
	14-Oct-04		_	73.06	3,226.19	0.00	_	_	_	
-,	27-Oct-04				-,,-	NOT GAU	GED			
	21-Nov-04									
	22-Dec-04					NOT GAU				
	25-Jan-05			73.01	3,226.24	0.00	_	_		
	25-Apr-05			72.92	3,226.33	0.00		-	_	
	01-Sep-05			72.91	3,226.34	0.00				
	25-Oct-05			72.97	3,226.28	0.00		_		
	28-Feb-06			72.95	3,226.30	0.00	_	-	_	
	30-Jun-06			72.98	3,226.27	0.00	_			
	03-Oct-06			73.02	3,226.23	0.00				
	28-Dec-06				73.08	3,226.17	0.00		_	
	28-Mar-07					73.12	3,226.13	0.00		-
	24-Apr-07			73.10	3,226.15	0.00				
	28-May-07			73.12	3,226.13	0.00		-		
	15-Jun-07			73.10	3,226.15	0.00			_	
	06-Jul-07		-	73.15	3,226.10	0.00				
	13-Aug-07		-	73.15	3,226.10	0.00		_		
	17-Sep-07			73.15	3,226.10	0.00		_		
	08-Oct-07	1	_	73.10	3,226.15	0.00	_		_	
	02-Nov-07		_	73.10	3,226.15	0.00	quadras	-		
	14-Mar-08			73.15	3,226.10	0.00				
	31-Mar-08			73.10	3,226.15	0.00	_		_	
	22-Apr-08			73.15	3,226.10	0.00		_		
	19-May-08		_	73.12	3,226.13	0.00			_	
	25-Jun-08			73.16	3,226.09	0.00	_		_	
	24-Jul-08			73.07	3,226.18	0.00	******	_		
	03-Oct-08		-	73.19	3,226.06	0.00		-	_	
	17-Nov-08	1	-	73.24	3,226.01	0.00		-		
	14-Jan-09	1	_	73.22	3,226.03	0.00		_	_	
	04-Feb-09			73.25	3,226.00	0.00				
	24-Feb-09	1		73.25	3,226.00	0.00	_	-	_	
	17-Mar-09	1		73.27	3,225.98	0.00		_	_	
	01-Apr-09	1		73.23	3,226.02	0.00		_		
	29-May-09	1		73.28	3,225.97	0.00	-	-		

Well ID TOC Elevation	Date	Casing Diameter (in)	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Groundwater Elevation ¹ (ft amsi)	LNAPL Thickness (ft)	LNAPL Recovery (gallons)	LNAPL Cumulative Recovery (gallons)	Type of Recovery					
MW-2	20-Jun-09	4		73.27	3,225.98	0.00		-	_					
(cont.)	29-Jun-09		_	73.28	3,225.97	0.00			_					
3,299.25	30-Jul-09			73.28	3,225.97	0.00			A1000					
	31-Aug-09			73.30	3,225.95	0.00		-						
	01-Oct-09			73.31	3,225.94	0.00		_	_					
	01-Nov-09			73.32	3,225.93	0.00		_	_					
	12-Dec-09			73.37	3,225.88	0.00								
	17-Jan-10			73.35	3,225.90	0.00								
	28-Feb-10		-	73.38	3,225.87	0.00		-	_					
	04-Apr-10			73.37	3,225.88	0.00			_					
	30-Apr-10		_	73.38	3,225.87	0.00		-	_					
	30-May-10		_	73.39	3,225.86	0.00		_	_					
	18-Jun-10		_	73.38	3,225.87	0.00			_					
	20-Jul-10		_	73.41	3,225.84	0.00			_					
	06-Oct-10			73.47	3,225.78	0.00			_					
	30-Nov-10			73.48	3,225.77	0.00		_	_					
	31-Dec-10			73.50	3,225.75	0.00	_		-					
	CHARLETT.			73.51	9.25.15	600	-		_					
	30 Apr. 11	g g	- park	TRIV	3,255,74	0.00	-	-	-					
	123 - 11		inter	78.M	3.255.74	ato		-						
	28 km 11			71.00	3.7%.73	CIN	- marin	-	225.					
	21.52.11			7857	3.25548	310)	_							
	29-Sep.11			73.63	32564	0.00		-						
MW-3	26-Jul-04	4	A second A	71.88	3,227.37	0.00								
3,299.25	14-Oct-04	-		71.93	3,227.32	0.00								
0,200.20	27-Oct-04			71.50	0,221.02	NOT GAU	CED							
	21-Nov-04		-	NOT GAUGED										
	22-Dec-04		NOT GAUGED NOT GAUGED											
	25-Jan-05			71.90	3,227.35	0.00	_		_					
	25-Apr-05			71.80	3,227.45	0.00								
	01-Sep-05			71.78	3,227.47	0.00	-		_					
	25-Oct-05			71.78	3,227.43	0.00			_					
	28-Feb-06			71.82	3,227.45	0.00								
	30-Jun-06			71.83	3,227.42	0.00		_						
	03-Oct-06			71.87	3,227.38	0.00	_		_					
	28-Dec-06			71.99	3,227.26	0.00		_						
	28-Mar-07			72.00	3,227.25	0.00		-						
	24-Apr-07		_	71.95	3,227.30	0.00	_		_					
	28-May-07			72.00	3,227.25	0.00			_					
	15-Jun-07			71.95	3,227.30	0.00								
	06-Jul-07			_	72.00	3,227.25	0.00		_	_				
	13-Aug-07			72.00	3,227.25	0.00								
	17-Sep-07			72.00	3,227.25	0.00			_					
	08-Oct-07		_			0.00	_		_					
	02-Nov-07			72.00	3,227.25			-						
	UZ-140V-U/			72.00	3,227.25	0.00			_					
	14-Mar-08			72.00	3,227.25	0.00	-	_						

Well ID TOC Elevation	Date	Casing Diameter (in)	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Groundwater Elevation ¹ (ft amsl)	LNAPL Thickness (ft)	LNAPL Recovery (gallons)	LNAPL Cumulative Recovery (gallons)	Type of Recovery				
MW-3	22-Apr-08	4	_	72.00	3,227.25	0.00	- Auto-	_	_				
(cont.)	19-May-08			72.00	3,227.25	0.00	-	_	_				
3,299.25	25-Jun-08		-	72.04	3,227.21	0.00	_		_				
	24-Jul-08			72.00	3,227.25	0.00		_					
	03-Oct-08			72.05	3,227.20	0.00		_	_				
	17-Nov-08		_	72.06	3,227.19	0.00		-	-				
	14-Jan-09		_	72.07	3,227.18	0.00		_					
	04-Feb-09		_	72.11	3,227.14	0.00			_				
	24-Feb-09		_	72.12	3,227.13	0.00		-					
	17-Mar-09			72.14	3,227.11	0.00	_		_				
	01-Apr-09			72.12	3,227.13	0.00		_	_				
	29-May-09		_	72.10	3,227.15	0.00			_				
	20-Jun-09		_	72.10	3,227.15	0.00	_	_	_				
	29-Jun-09			72.12	3,227.13	0.00		-					
	30-Jul-09			72.12	3,227.13	0.00		_	-				
	31-Aug-09			72.15	3,227.10	0.00			_				
	01-Oct-09			72.20	3,227.05	0.00		_	_				
	01-Nov-09	,		72.17	3,227.08	0.00	_	_					
	12-Dec-09		_	72.23	3,227.02	0.00	_		_				
	17-Jan-10		_	72.21	3,227.04	0.00		_	_				
	28-Feb-10			72.27	3,226.98	0.00							
	04-Apr-10			72.22	3,227.03	0.00		_					
	30-Apr-10			72.26	3,226.99	0.00			_				
	30-May-10					72.27	3,226.98	0.00					
	18-Jun-10										72.25	3,227.00	0.00
	20-Jul-10			72.27	3,226.98	0.00	_						
	06-Oct-10		_	72.34	3,226.91	0.00	_		-				
	30-Nov-10			72.32	3,226.93	0.00							
	31-Dec-10			72.38	3,226.87	0.00		-					
	01-Dec-10	A Street Street Street		72.00	3,220.07	0.00		200	-				
	MADE IN	PORT !		72.40	STATE OF	0.00							
	123-11		7	72.37	3226	000							
	28-Tre-11		-	72.5	32847	0.00	-	1					
	. S1-pil-11			7241	327.5	(3,00)	-	-					
	28-9-11	THE PARTY	-	772-65	327-57	- 0.00							
MW-4	26-Jul-04	4	-	70.85	3,226.58	0.00	_		and the same of				
3,297.43	14-Oct-04	1		70.90	3,226.53	0.00		_					
0,207.20	27-Oct-04			70.50	0,220.00	NOT GAU	GED.						
	21-Nov-04				-	NOT GAU							
	22-Dec-04		-			NOT GAU							
	25-Jan-05			70.87	3,226.56	0.00			I -				
	25-Apr-05			70.80	3,226.63	0.00	_	-	_				
	01-Sep-05			70.79	3,226.64	0.00			_				
	25-Oct-05		_	70.80	3,226.63	0.00		_	_				
	28-Feb-06		_	70.80	3,226.63	0.00	_	_					
	30-Jun-06		_	70.79	3,226.64	0.00	_	-					
	03-Oct-06		_	70.86	3,226.57	0.00			_				
	28-Dec-06			70.97	3,226.46	0.00	_	-	_				

TABLE 2

Well ID TOC Elevation	Date	Casing Diameter (in)	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Groundwater Elevation ¹ (ft amsl)	LNAPL Thickness (ft)	LNAPL Recovery (gallons)	LNAPL Cumulative Recovery (gallons)	Type of Recovery									
MW-4	28-Mar-07	4		70.95	3,226.48	0.00	_		_									
(cont.)	24-Apr-07		_	71.00	3,226.43	0.00												
3,297.43	28-May-07			71.00	3,226.43	0.00												
	15-Jun-07			70.95	3,226.48	0.00		-										
	06-Jul-07			70.95	3,226.48	0.00			_									
	13-Aug-07		_	71.00	3,226.43	0.00	_	-	_									
	17-Sep-07			71.00	3,226.43	0.00			_									
	08-Oct-07		_	70.95	3,226.48	0.00		-	_									
	02-Nov-07			70.95	3,226.48	0.00		_	_									
	14-Mar-08			71.00	3,226.43	0.00	_	_	_									
	31-Mar-08			71.00	3,226.43	0.00	-											
	22-Apr-08			71.00	3,226.43	0.00												
	19-May-08			70.95	3,226.48	0.00												
	01-Jun-08			71.00	3,226.43	0.00		_	_									
	24-Jul-09			70.99	3,226.44	0.00			_									
	03-Oct-08		_	71.05	3,226.38	0.00		_	_									
	17-Nov-08		_	71.06	3,226.37	0.00		-										
	14-Jan-09			71.06	3,226.37	0.00		-										
	04-Feb-09		_	71.13	3,226.30	0.00		_	_									
	24-Feb-09			71.13	3,226.30	0.00												
	17-Mar-09			71.15	3,226.28	0.00												
	01-Apr-09			71.13	3,226.32	0.00												
	29-May-09				_	71.11	3,226.28	0.00			_							
	20-Jun-09												71.13	3,226.29	0.00			_
	29-Jun-09											71.14	3,226.28	0.00	_	-	-	
	30-Jul-09									_	-	_						
				71.16 71.17	3,226.27	0.00		-	_									
	31-Aug-09 01-Oct-09				-	0.00		_										
				71.18	3,226.25													
	01-Nov-09 12-Dec-09			71.20	3,226.23	0.00												
				71.24	3,226.19	0.00		-	_									
	17-Jan-10			71.25	3,226.18	0.00	-	-										
	28-Feb-10		_	71.27	3,226.16	0.00		-										
	04-Apr-10			71.26	3,226.17	0.00		-	-									
	30-Apr-10			71.27	3,226.16	0.00												
	30-May-10			71.27	3,226.16	0.00												
	18-Jun-10 20-Jul-10			71.26 71.29	3,226.17 3,226.14	0.00	200	-	_									
	06-Oct-10			71.29	3,226.11	0.00	,											
							****		_									
	30-Nov-10 31-Dec-10			71.36	3,226.07	0.00		-	-									
	31-Dec-10			71.38	3,226.05	0.00		-	-									
	- 30 d - 97			71.40	3280	_		-	-									
	- State of					0.00		-	-									
	45 - 11 -		-	71.99	3,236.04	0.00		-	-									
	in the same		-	746	3,250	0.00			-									
	September 1			7144.	3,220.01	0.00	-											

Well ID TOC Elevation	Date	Casing Diameter (in)	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Groundwater Elevation ¹ (ft amsl)	LNAPL Thickness (ft)	LNAPL Recovery (gallons)	LNAPL Cumulative Recovery (gallons)	Type of Recovery
MW-5	26-Jul-04	4	_	72.97	3,226.37	0.00	_	_	-
3,299.34	14-Oct-04			73.03	3,226.31	0.00		_	
	27-Oct-04					NOT GAU	GED		
	21-Nov-04					NOT GAU	GED		
	22-Dec-04					NOT GAU	GED		
	25-Jan-05			72.95	3,226.39	0.00		-	_
	25-Apr-05			72.86	3,226.48	0.00	-	_	_
	01-Sep-05		****	72.85	3,226.49	0.00	_	-	-
	25-Oct-05		_	72.91	3,226.43	0.00		-	_
	28-Feb-06		_	72.90	3,226.44	0.00	_	-	_
	30-Jun-06		_	72.94	3,226.40	0.00	-	_	
	03-Oct-06			72.98	3,226.36	0.00		_	_
	28-Dec-06		-	73.07	3,226.27	0.00	-		-
	28-Mar-07		_	73.00	3,226.34	0.00	_	_	
	24-Apr-07		_	73.05	3,226.29	0.00			_
	28-May-07			73.05	3,226.29	0.00	-		-
	15-Jun-07			73.05	3,226.29	0.00		_	
	06-Jul-07		_	73.06	3,226.28	0.00			_
	13-Aug-07			73.10	3,226.24	0.00	_	-	_
	17-Sep-07			73.05	3,226.29	0.00	_		
	08-Oct-07		_	73.10	3,226.24	0.00	_		
	02-Nov-07		_	73.10	3,226.24	0.00	_		
	14-Mar-08		_	73.08	3,226.26	0.00			-
	31-Mar-08		_	73.10	3,226.24	0.00			_
	22-Apr-08		_	73.10	3,226.24	0.00	_	_	
	19-May-08		_	73.09	3,226.25	0.00			_
	25-Jun-08		_	73.13	3,226.21	0.00	-	-	
	24-Jul-08			73.13	3,226.21	0.00			_
	03-Oct-08		_	73.15	3,226.19	0.00	-		-
	17-Nov-08			73.20	3,226.14	0.00	-	-	
	14-Jan-09		-	73.20	3,226.14	0.00		-	-
	04-Feb-09			73.22	3,226.12	0.00	1		
	24-Feb-09			73.20	3,226.14	0.00	_	_	_
	17-Mar-09		-	73.25	3,226.09	0.00	_		
	01-Apr-09		_	73.21	3,226.13	0.00		_	
	29-May-09		_	73.27	3,226.07	0.00	-	_	_
	20-Jun-09		_	73.25	3,226.09	0.00		_	_
	29-Jun-09		_	73.26	3,226.08	0.00	-		_
	30-Jul-09		-	73.27	3,226.07	0.00	_	-	_
	31-Aug-09			73.27	3,226.07	0.00		-	_
	01-Oct-09		_	73.30	3,226.04	0.00			
	01-Nov-09			73.32	3,226.02	0.00	_	_	_
	12-Dec-09			73.35	3,225.99	0.00			_
	17-Jan-10		_	73.33	3,226.01	0.00		_	_
	28-Feb-10			73.35	3,225.99	0.00	_	_	_
	04-Apr-10		_	73.35	3,225.99	0.00		-	_
	30-Apr-10		_	73.36	3,225.98	0.00		_	_

SUMMARY OF GROUNDWATER ELEVATION DATA SHELL OIL PRODUCTS US PENROSE "A" LEASE (WINNIE KENNAN RANCH) LEA COUNTY, NEW MEXICO

Well ID TOC Elevation	Date	Casing Diameter (in)	Depth to LNAPL (ft BTOC)	Depth to Groundwater (ft BTOC)	Groundwater Elevation ¹ (ft amsl)	LNAPL Thickness (ft)	LNAPL Recovery (gallons)	LNAPL Cumulative Recovery (gallons)	Type of Recovery
MW-5	30-May-10	4	-	73.37	3,225.97	0.00		-	-
(cont.)	18-Jun-10		-	73.35	3,225.99	0.00			-
3299.34	20-Jul-10		_	73.37	3,225.97	0.00	_		
	06-Oct-10			73.45	3,225.89	0.00		-	_
	30-Nov-10		-	73.47	3,225.87	0.00	_	-	-
	31-Dec-10		-	73.47	3,225.87	0.00		_	_
	01-Mar-11	10000	-	73.47	3,225.87	0,00			
	30-Apr-11		-	73.50	3,225.84	0,00	3	المستراج المستراج	200 - 500
	12-jun-11		des	73.50	3,225.84	0.00	_	-	
	28-jun-11		-	73.51	3,225.83	0.00		-	
	31-Jul-11	- 3	-	73.55	3,225.79	0.00		-	
	28-Sep-11			73.60	3,225.74	0.00		-	+5'

Total Recovered LNAPL is 44.45 gallons

Notes:

1. Corrected groundwater elevations. Calculated using an LNAPL specific gravity of 0.90 per previously reported data.

TOC - Top of Casing.

BTOC - Below Top of Casing.

LNAPL - Light non-aqueous phase liquid.

amsl = above mean sea level

NR - Not Recorded

NO - Not Operating

Shaded cells include data for reporting period.

Data collected prior to December 2006 by Enercon and Conestoga-Rovers and Associates (CRA)

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - BTEX SHELL OIL PRODUCTS US PENROSE "A" LEASE LEA COUNTY, NEW MEXICO

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTE							
			NMW	QCC Standard 20.	6.2.3103.A,B.								
		10	750	750	620	A							
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)							
MW-1	26-Jul-04			LNAPL Presen	ıt								
	14-Oct-04			LNAPL Presen	t								
	25-Jan-05			LNAPL Presen	t								
	25-Apr-05	LNAPL Present											
	01-Sep-05	LNAPL Presen	ıt										
	25-Oct-05			LNAPL Presen	t								
	28-Feb-06			LNAPL Presen	it								
	30-Jun-06			LNAPL Presen	t ·								
	03-Oct-06			LNAPL Presen									
	28-Dec-06	LNAPL Present											
	28-Mar-07			LNAPL Presen									
	02-Nov-07	LNAPL Present											
	14-Mar-08			LNAPL Presen									
	17-Nov-08	LNAPL Present											
	07-May-09		No Cample										
	12-Dec-09	No Sample Submitted Due to LNAPL Present No Sample Submitted Due to LNAPL Present											
	13-Mar-11	3.9 4.0 29.2 38.2 <72.3											
	26-Aug-11	1.9	1.0	44.0	39.9	106.8							
MW-2	26-Jul-04	<1.0	<1.0	<1.0	<1.0	<1.0							
14144-7	14-Oct-04	<5.0	<5.0	<5.0	<5.0	<5.0							
	25-Jan-05	<1.0	<1.0	<1.0	<1.0	<1.0							
	25-Apr-05	<1.0	<1.0	<1.0	<1.0	<1.0							
	01-Sep-05	<1.0	<1.0	<1.0	<1.0	<1.0							
	25-Oct-05	<1.0	<1.0	<1.0	<1.0	<1.0							
	28-Feb-06	<0.440	< 0.540	<0.410	<1.23	<2.62							
	30-Jun-06	0.510	0.730	2.32	4.63	8.19							
	03-Oct-06			NOT ANALYZI									
	28-Dec-06	11	<2.0	<2.0	<3.0	<18							
	28-Mar-07	<1.0	<2.0	<2.0	<3.0	<8.0							
	02-Nov-07	<1.0	<2.0	<2.0	<3.0	<8.0							
	14-Mar-08	<1.0	<1.0	<1.0	<3.0	<6.0							
	17-Nov-08	<1.0	<1.0	<1.0	<3.0	<6.0							
	07-May-09	<1.0	<1.0	<1.0	<1.0	<1.0							
	12-Dec-09 13-Mar-11	<1.0	<1.0	<1.0 NOT ANALYZI	<1.0	<1.0							
	And the second s			NOT ANALYZI									
MIAZ 2	26-Aug-11	-10	-10		<1.0	40							
MW-3	26-Jul-04 14-Oct-04	<1.0 <5.0	<1.0 <5.0	<1.0 <5.0	<1.0 <5.0	<1.0 <5.0							

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - BTEX SHELL OIL PRODUCTS US PENROSE "A" LEASE LEA COUNTY, NEW MEXICO

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX
	-		NMW	QCC Standard 20.	6.2.3103.A _x B.	
		10	750	750	620	
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-3	25-Jan-05	<1.0	<1.0	<1.0	<1.0	<1.0
(cont.)	25-Apr-05	<1.0	<1.0	<1.0	<1.0	<1.0
,	01-Sep-05	<1.0	<1.0	<1.0	<1.0	<1.0
	25-Oct-05	<1.0	<1.0	<1.0	<1.0	<1.0
	28-Feb-06	<0.440	< 0.540	<0.410	<1.23	<2.62
	30-Jun-06	0.320	<0.280	<0.340	<0.820	0.320
	03-Oct-06			NOT ANALYZI	ED	
	28-Dec-06	4.8	<2.0	<2.0	<3.0	4.8
	28-Mar-07	<1.0	<2.0	<2.0	<3.0	<8.0
	02-Nov-07	<1.0	<2.0	<2.0	<3.0	<8.0
	14-Mar-08	<1.0	<1.0	<1.0	<3.0	<6.0
	17-Nov-08	<1.0	<1.0	<1.0	<3.0	<6.0
	07-May-09	<1.0	<1.0	<1.0	<1.0	<1.0
	12-Dec-09	<1.0	<1.0	<1.0	<1.0	<1.0
	13-Mar-11			NOT ANALYZI		
	26-Aug-11	1		NOT ANALYZI		
MW-4	26-Jul-04	<1.0	<1.0	<1.0	<1.0	<1.0
	14-Oct-04	<5.0	<5.0	<5.0	<5.0	<5.0
	25-Jan-05	<1.0	<1.0	<1.0	<1.0	<1.0
	25-Apr-05	<1.0	<1.0	<1.0	<1.0	<1.0
	01-Sep-05	<1.0	<1.0	<1.0	<1.0	<1.0
	25-Oct-05	<1.0	<1.0	<1.0	<1.0	<1.0
	28-Feb-06	< 0.440	0.710	<0.410	<1.23	<2.79
	30-Jun-06	< 0.290	<0.280	<0.340	<0.820	<1.73
	03-Oct-06			NOT ANALYZI		
	28-Dec-06	<1.0	<2.0	<2.0	<3.0	<8.0
	28-Mar-07	<1.0	<2.0	<2.0	<3.0	<8.0
	02-Nov-07	<1.0	<2.0	<2.0	<3.0	<8.0
	14-Mar-08	<1.0	<1.0	<1.0	<3.0	<6.0
	17-Nov-08 07-May-09	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<3.0 <1.0	<6.0 <1.0
	12-Dec-09	<1.0	<1.0	<1.0	<1.0	<1.0
	13-Mar-11	\1.0	1.0	NOT ANALYZI		1.0
	26-Aug-11			NOT ANALYZI		
MW-5	26-Jul-04	<1.0	<1.0	<1.0	<1.0	<1.0
11111-0	14-Oct-04	<5.0	<5.0	<5.0	<5.0	<5.0
	25-Jan-05	<1.0	<1.0	<1.0	<1.0	<1.0
		<1.0		<1.0	<1.0	<1.0
	25-Apr-05		<1.0			
	01-Sep-05	<1.0	<1.0	<1.0	<1.0	<1.0

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - BTEX SHELL OIL PRODUCTS US PENROSE "A" LEASE LEA COUNTY, NEW MEXICO

Sample ID	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	
		NMWQCC Standard 20.6.2.3103.A,B.					
		10 (µg/L)	750 (µg/L)	750 (µg/L)	620 (µg/L)	 (μg/L)	
MW-5	25-Oct-05	<1.0	<1.0	<1.0	<1.0	<1.0	
(cont.)	28-Feb-06	<0.440	<0.540	<0.410	<1.23	<2.62	
	30-Jun-06	<0.290	0.710	<0.340	4.59	4.59	
	03-Oct-06		5.300				
	28-Dec-06	4.0	<2.0	<2.0	<3.0	4.0	
	28-Mar-07	<1.0	<2.0	<2.0	<3.0	<8.0	
	02-Nov-07	<1.0	<2.0	<2.0	<3.0	<8.0	
	14-Mar-08	<1.0	<1.0	<1.0	<3.0	<6.0	
	17-Nov-08	<1.0	<1.0	<1.0	<3.0	<6.0	
	07-May-09	<1.0	<1.0	<1.0	<1.0	<1.0	
	12-Dec-09	<1.0	<1.0	<1.0	<1.0	<1.0	
	13-Mar-11	NOT ANALYZED					
	26-Aug-11	NOT ANALYZED					

Notes:

- * NMWQCC New Mexico Water Quality Control Commission Standard 20.6.2.3103.A,B.
- BTEX analysis by EPA Method 8260B.
- LNAPL Light non-aqeous phase liquids.
- Data prior to December 2006 collected by Enercon and Conestoga-Rovers and Associates (CRA).
- Analytical results for samples collected on 28-Dec-06 are anomolous as the ydo not correspond to either historical or subsequent analytical results and could be the result of either field and/or laboratory contaminants.
- * Shaded cells include data for reporting period.

SUMMARY OF ANALYTICAL RESULTS-Chloride, TDS, and pH SHELL OIL PRODUCTS US

PENROSE "A" LEASE (WINNIE KENNAN RANCH)

LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Chloride	Total Dissolved Solids	рН	
NMWQCC Standard 20.6.2.3103 A.B.		250.0	1,000.0	6-9	
		(mg/L)	(mg/L)	pН	
MW-1	3/13/2011	863	2,310	Not Analyzed	
	8/26/2011	382	3,560	7.32	
MW-2	3/13/2011	Not Analyzed			
	8/26/2011	Not Analyzed			
MW-3	3/13/2011	Not Analyzed			
	8/26/2011	Not Analyzed			
MW-4	3/13/2011	Not Analyzed	3,930	Not Analyzed	
	8/26/2011	Not Analyzed	4,110	Not Analyzed	
MW-5	3/13/2011	Not Analyzed			
	8/26/2011	Not Analyzed			

Notes:

TDS - Total Dissolved Solids

NMWQCC - New Mexico Water Quality Control Commission Standard 20.6.2.3103.A,B.

mg/L - milligrams per Liter.

APPENDIX A CERTIFIED LABORATORY REPORTS

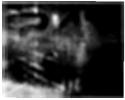
&

CHAIN-OF-CUSTODY DOCUMENTATION



03/28/11





Technical Report for

Shell Oil Products

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Accutest Job Number: C15071

Sampling Date: 03/13/11

Report to:

URS Corporation 7720 North 16th Avenue, Suite 100 Phoenix, AZ 85020 Iain_Olness@urscorp.com

ATTN: Iain Olness

Total number of pages in report: 18



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Laurie Glantz-Murphy Laboratory Director

Laurie Sten Musky

Client Service contact: Simon Hague 408-588-0200

Certifications: CA (08258CA) AZ (AZ0762) DoD/ISO/IEC 17025:2005 (L2242)
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

Shell Oil Products

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Job No:

C15071

Sample Number	Collected Date Time I	Matrix By Received Code Type	Client Sample ID
C15071-1	03/13/11 11:15 J	S 03/15/11 AQ Ground Water	MW-01
C15071-2	03/13/11 10:27 J	S 03/15/11 AQ Ground Water	MW-04





Client Sample ID: MW-01

Lab Sample ID: C

C15071-1

Matrix:

AQ - Ground Water

SW846 8260B

Date Sampled: 03/13/11 **Date Received:** 03/15/11

Percent Solids: n/a

Method: Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

File ID DF Analyzed By Pre

File ID DF **Prep Date Prep Batch Analytical Batch** Analyzed $\mathbf{B}\mathbf{y}$ Run #1 Q940.D 03/18/11 VQ32 1 BDn/a n/a Run #2

Purge Volume

Run #1 Run #2

10.0 ml

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7	Benzene Toluene Ethylbenzene Xylene (total)	3.9 ND 29.2 38.2	1.0 1.0 1.0 2.0	0.30 0.50 0.30 0.70	ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	98% 104% 110%		60-1 60-1 60-1	30%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound





Page 1 of 1

Client Sample ID: MW-01

Lab Sample ID: C15071-1 Matrix: AQ - Grow

Percent Solids: n/a

Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Ву	Method
Chloride	863	50	mg/l	100	03/16/11 17:30	RL	EPA 300/SW846 9056A
Solids, Total Dissolved	2310	10	mg/l	I	03/16/11	MF	SM18 2540C

Page 1 of 1

Client Sample ID: MW-04

Lab Sample ID: C15071-2

Matrix: AQ - Ground Water

Date Sampled: 03/13/11 **Date Received:** 03/15/11

Percent Solids: n/a

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	3930	10	mg/l	1	03/16/11	MF	SM18 2540C



Misc. Forms
Custody Documents and Other Forms
Includes the following where applicable: • Chain of Custody

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) ACCUTE	:			Undy Av 88-0200	ve, Sar	Jose		9513	11	Υ		FEO-EX 1		,			Acc	SHE Order Conf stest NC	Job #: C	C15	71
	LABORA													AND	79/1	19						
Company N	Client / Reporting Information	277.2002		Pro	ect Infor	mation		X-17.	V.55	20.00	260	XW.	30014	86. SE	2,012	27,753	Re	quested	Analysis		200	Matrix Codes WAY- Wastewater
Company N	URS Corporation		Project N	eme: Pen	100	Pear	048	^A	f "							- 1						GVA Ground Water
Address	URS Corporation 7720 N. 16th Street	ST£ 100	Street		7.7.	,,,,,								,	ó							SW- Surface Water SO- Sorf
City Ph	7720 N. 16th Street State Denix A2 8 Haci Diness	ZIP (5020	City	Store Lunice Van Project & June Project &								8	5m 2540c	300.							OI-OI WP-Wpe	
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1 6	クレス -678 - ayoL		EMAIL:	Olness	@1	Irs c	orp	· Co	<u> </u>				8260	54	.5							AIR
Samplers's	Name John Square		Citent Pu	rchase Order	•		,						X		10						1	OW Drinking Vieter (Perchitorate Only)
Accutest		1	Collecti	on			Num	pet of	pres	erve	d Bol	tles	BTEX	8	Chlori							
Sample	Sample ID / Field Point / Point of Collection	Date	Time	Sampled by	Matsix	# of	اا	ğ ş	ş	8	8	COR	8	TDS	2							LAB USE ONLY
(~1)	MW-01	3-13-11	_	J 3	GW	4	χ̈́	7	1	χ̈́	-41	1	Х	X	Х	\top	\top		1			250001 DON MP
-2	MW-04	3-13-11		175	сw	1	П	\top	T	χ	7			χ		_					;	Asom Per NP
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		roved By:/De	le:		nerclat * A			•														
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	3 Day (125% markup)			-	- Lavel 4		-	-	CINTO	marog	rame											
	2 Day (150% markup)				or Geolia				orma	t												
	1 Day (200% markup)			Provide	EDF Glo	bal ID _																
	Same Day (300% markup)			Provide	EDF Log	code: _							1									
	gency T/A data available VIA Lablink													L								
Bellaculah	' Sample Custody n	Date Times		d below ead		amples	char	ge po	Davis	ouls h	-4 By				Dale Time			Rocal	G-TM-5			W. 1985 S. 1985
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3	FedEX	colsel	-1.73	,	ارم	han	/				-							4				
Relinguish		Oals Time		Received By:			_		Cust	ody Se	al #		Appropri	ete Bolu	Pres. (1	ļu .	Headspa	* Y/E		On Ice YV		Cooler Temp.
5				5					<u> </u>				i.at:ats m	atch Coo	: (∕⁄)′ 'n	54	parate Res	elving Che	ck List used	d: ((): M	4.	940.5=5.40

C15071: Chain of Custody

Page 1 of 2

Accutest Laboratories Northern California Sample Rece	iving Check	List Job#: C	15071	Initial: <u>E</u> k
Review Chain of Custody Chain of Custody is to be comp	lete and logible.			
Are these regulatory (NPDES) samples? CWA	(es) No	Client Sample ID	pH Check	Other Comments/Issues
ots pH requested?	Yes / No	Cuent Samble ID	pri Check	Other Comments/issues
a Was Client informed that hold time is 15 mln? Yes / No Continue	Yes / No			
Was ortho-Phosphate filtered with in 15 min? Yes / No Continue	Yes / No			
Are sample within hold time?	Yes)/ No			
Are sample in danger of exceeding hold-time	Yes / (10)			
DExisting Client? (Feg./ No Existing Project?	Yes / No			
If No: Is Report to info complete and legible, including;				
varideliverable c Name p Address & phone pe-mail				
Is Bill to info complete and legible, including;				
u PO# a Credit card n Contact paddress a phone o e-mail				
Is Contact and/or Project Manager Identified, Including;				
p.phone tare-mail				
p.Project name / number				
	Yes /No			
g Sample IDs / date & time of collection provided?	No No			
sals Matrix listed and correct?	No No			
p Analyses listed, we do, or client has authorized a subcontract?	Xes/ No			
Chain is signed and dated by both client and sample custodian?	Yes/ No			
p TAT requested available? Fee No Approved by PM	9			
Review Coolers:				
pWere all Coolers temperatures measured at ≤6°C? 5 · 4°C	(Yes/ No			
y if cooler is outside the ≤6°C; note down the affected bottles in that cooler on the left				
Are samples on Ice?	(Peg)/No			
Note that ANC does NOT accept evidentiary samples. (We do not lock refrigerators)	_			
/ Fale:				
Shipment Received Mathod Fedex				
custody Seals: Present: Yes / (10) if Yes; Unbroken:	Yes / No			
· ·				
Review of Sample Bottles: If you answer no, explain to the side				
Chain malches bottle labels? (c) / No Cample bottle intact?	No No			
of sthere enough sample volume in proper bottle for requested analyses?	res No			
Proper Preservatives? (Yes) No				
Check pH on preserved samples except 1664, 625, 8270 and VOAs; make notes on left.				
Meadspace-VOAs? Greater than 6mm in diameter	Yes /(No)			
List sample ID and affected container				

Non-Compliance issues and discrepancies on the COC are forwarded to Project Management

 $\label{label} \begin{tabular}{ll} $$ \Accuracy accutes t. com/depts/qalsops/sop_complete list_2010/current_active_sop_oct_2010/sc001f1_0_form1_sample control_sample receiving checklist_2009-01-01.doc. \end{tabular}$

C15071: Chain of Custody Page 2 of 2



GC/MS Volatiles	<u> </u>
QC Data Summaries	
Includes the following where applicable	:

Method Blank Summaries Blank Spike Summaries

• Matrix Spike and Duplicate Summaries



Method Blank Summary Job Number: C15071

Account:

SHELLWIC Shell Oil Products

Project:

URSAZP: INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed 03/18/11	By	Prep Date	Prep Batch	Analytical Batch
VQ32-MB	Q927.D	1		BD	n/a	n/a	VQ32

The QC reported here applies to the following samples:

Method: SW846 8260B

C15071-1

CAS No.	Compound	Result	RL	MDL	Units Q	•
71-43-2	Benzene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.70	ug/l	
CAS No. Surrogate Recoveries			Limi	ts		
.0.40. 50. 5	72.11	000/	60.10	100/		
1868-53-7	Dibromofluoromethane	98%	60-13	30%		
2037-26-5	Toluene-D8	102%	60-13	30%		
460-00-4	4-Bromofluorobenzene	98%	60-13	30%		

Page 1 of 1

Page 1 of 1

Method Blank Summary Job Number: C15071

Account:

SHELLWIC Shell Oil Products

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed 03/21/11	By	Prep Date	Prep Batch	Analytical Batch
VQ32-MB2	Q955.D	1		BD	n/a	n/a	VQ32

The QC reported here applies to the following samples:

Method: SW846 8260B

C15087-1MS, C15087-1MSD

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	1.0 1.0 1.0 2.0	0.30 0.30 0.50 0.70	ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries		Limits			
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	96% 103% 100%	60-130 ⁶ 60-130 ⁶	%		



Blank Spike/Blank Spike Duplicate Summary Job Number: C15071

Account:

SHELLWIC Shell Oil Products

Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
VQ32-BS	Q928.D	1	03/18/11	BD	n/a	n/a	VQ32
VQ32-BSD	Q929.D	1	03/18/11	BD	n/a	n/a	VQ32

The QC reported here applies to the following samples:

C15071-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	20	18.8	94	17.9	90	5	60-130/30
100-41-4	Ethylbenzene	20	18.3	92	17.8	89	3	60-130/30
108-88-3	Toluene	20	17.7	89	17.3	87	2	60-130/30
1330-20-7	Xylene (total)	60	53.5	89	52.0	87	3	60-130/30
CAS No.	Surrogate Recoveries	BSP	BS	D	Limits			
1868-53-7	Dibromofluoromethane	103%	100	0%	60-130	%		
2037-26-5	Toluene-D8	98%	989	%	60-130	%		
460-00-4	4-Bromofluorobenzene	99%	979	%	60-130	%		

Page 1 of 1

Method: SW846 8260B



Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: C15071

Account:

SHELLWIC Shell Oil Products

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
C15087-1MS	Q961.D	5	03/21/11	BD	n/a	n/a	VQ32
C15087-1MSD	Q962.D	5	03/21/11	BD	n/a	n/a	VQ32
C15087-1	Q956.D	5	03/21/11	BD	n/a	n/a	VQ32

The QC reported here applies to the following samples:

Method: SW846 8260B

C15071-1

CAS No.	Compound	C15087-1 ug/l	1 Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2 100-41-4	Benzene Ethylbenzene	185 3.6	J	100 100	279 103	94 99	283 107	98 103	1 4	60-130/25 60-130/25
108-88-3 1330-20-7	Toluene Xylene (total)	ND ND		100 300	97.3 297	97 99	101 312	101 104	4 5	60-130/25 60-130/25
CAS No.	Surrogate Recoveries	MS		MSD	Ci	15087-1	Limits			
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	100% 94% 97%		99% 100% 100%		% 4% 4%	60-130% 60-130% 60-130%	6		



General Chemistry

QC Data Summaries

Includes the following where applicable:

- · Method Blank and Blank Spike Summaries
- Duplicate Summaries
- · Matrix Spike Summaries

65

METHOD BLANK AND SPIKE RESULTS SUMMARY GENERAL CHEMISTRY

Login Number: C15071
Account: SHELLWIC - Shell Oil Products
Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP2481/GN5470	0.50	0.0	mg/l	5	5.01	100.2	90-110%
Nitrogen, Nitrate	GP2481/GN5470	0.10	0.0	mg/l	5	4.95	99.0	90-110%
Solids, Total Dissolved	GN5466	10	0.0	mg/l				
Sulfate	GP2481/GN5470	0.50	0.0	mg/l	5	4.77	95.4	90-110%

Associated Samples: Batch GN5466: C15071-1, C15071-2 Batch GP2481: C15071-1

(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login Number: C15071
Account: SHELLWIC - Shell Oil Products
Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Total Dissolved	GN5466	C15089-1	mg/l	3970	3970	0.0	0-%

Associated Samples: Batch GN5466: C15071-1, C15071-2 (*) Outside of QC limits



09/15/11





Technical Report for

Shell Oil Products

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Accutest Job Number: C17659

Sampling Date: 08/26/11

Report to:

URS Corporation 7720 North 16th Avenue, Suite 100 Phoenix, AZ 85020 iain_olness@urscorp.com

ATTN: Iain Olness

Total number of pages in report: 21



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Kesavalu M. Bagawandoss, Ph.D., J.D., Lab Director

cogameters?

Client Service contact: Laurie Glantz-Murphy 408-588-0200

Certifications: CA (08258CA) AZ (AZ0762) DoD/ISO/IEC 17025:2005 (L2242)
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Section 5: General Chemistry - QC Data Summaries	
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5.2: Blank Spike Duplicate Results Summary	
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Sample Summary

Shell Oil Products

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Job No:

C17659

Sample Number	Collected Date T	Γime By	Matrix Received Code Type		Client Sample ID		
C17659-1	08/26/11 0	7:57 JS	08/27/11	AQ	Ground Water	MW-1	
C17659-2	08/26/11 0	7:24 JS	08/27/11	AQ	Ground Water	MW-4	







Sample Results	 	
Report of Analysis		

Client Sample ID: MW-1

File ID

10.0 ml

L10436.D

Lab Sample ID:

C17659-1

Date Sampled: 08/26/11

Matrix:

AQ - Ground Water SW846 8260B

Percent Solids: n/a

Date Received: 08/27/11

Method:

09/07/11

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Run #1

DF 1

Analyzed By TF **Prep Date** n/a

Prep Batch n/a

Analytical Batch VL326

Run #2

Purge Volume

Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3	Benzene Toluene	1.9	1.0	0.30 0.50	ug/l ug/l	
100-41-4 1330-20-7	Ethylbenzene Xylene (total)	44.0 59.9	1.0	0.30 0.70	ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	102% 106% 99%		60-1	30% 30% 30%	

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



Page 1 of 1

Client Sample ID: MW-1

C17659-1

Lab Sample ID: Matrix:

AQ - Ground Water

Date Sampled: 08/26/11

Date Received: 08/27/11

Percent Solids: n/a

Project:

URSAZP: INC#300108, Kennan Penrose A, Eunice, NM

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	Ву	Method
Chloride	382	25	mg/l	50	08/29/11 17:15	RL	EPA 300/SW846 9056A
Solids, Total Dissolved	3560	10	mg/l	1	08/29/11	AC	SM18 2540C

Page 1 of 1

Client Sample ID: MW-4

Lab Sample ID:

C17659-2

Date Sampled: 08/26/11

Matrix:

AQ - Ground Water

Date Received: 08/27/11

Percent Solids: n/a

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	4110	10	mg/l	1	08/29/11	AC	SM18 2540C



Wilsc. Forms
Custody Documents and Other Forms
Includes the following where applicable: • Chain of Custody

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Company	URS Co-poration		Project N	ame: K	211141	n Pa	onre	×C.	<u> </u>	1"	·													GIY- Ground Water	
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C17659: Chain of Custody

Page 1 of 2

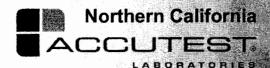
Accutest Laboratories Northern California Sample Rece	iving Check	List Job#: C	17659	Initial: SH
Review Chain of Custody Chain of Custody is to be comp				
Are these regulatory (NPDES) samples? CWA-	(BS)/ No	Client Sample ID	pH Check	Other Commente/Issues
o∕ls pH requested?	Yes/(©			
	Yes / No			
	Yes / No			
Are sample within hold time?	€ No			
Are sample in danger of exceeding hold-time	Yes /(No)			
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is Bill to info complete and legible, including;				
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a Special requirements?	Yes //No			
Sample 10s / date & time of collection provided?	(OB) No			
p/is Matrix listed and correct?	Yes Y No			
Analyses listed, we do, or client has authorized a subcontract?	(reg) No			
Chain is signed and dated by both client and sample custodian?	(189)/ No			
p/AT requested available? (Fest No. Approved by PM.	9			
5 M Tolasto Branco. (105 Hb		 		
Review Coolers:				
Were all Coolors temperatures measured at ≤6°C?	(Yes / No			
• If cooler is outside the 66°C; note down the affected bottles in that cooler on the left	1037.110			
Are samples on ice?	Yes No			
Note that ANC does NOT accept evidentiary samples. (We do not lock refrigerators)				
Shipment Received Method FedEX (Saturday Delivery)				
proustody Seals: Present; Yes / (No.) If Yes; Unbroken;	Yes / No			
A district of district of the	103, 110			
Review of Sample Bottles: if you answer no, explain to the side				
	€ Nu			
	(es) No			
of sthere enough sample volume in proper bottle for requested analyses?	(Yes) No			
Proper Preservatives? (res) No				
Check pH on preserved samples except 1664, 625, 8270 and VOAs; make notes on left	_			
p/fleadspace-VOAs? Greater than 6mm in diameter List sample ID and affected container	Yes /200			
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Non-Compliance issues and discrepancies on the COC are forwarded to Project Management

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C17659: Chain of Custody Page 2 of 2





GC/MS Volatiles	witness
QC Data Summaries	
Includes the following where applied	cable:

- Method Blank Summaries Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary Job Number: C17659

Account:

SHELLWIC Shell Oil Products

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed 09/07/11	By	Prep Date	Prep Batch	Analytical Batch
VL326-MB	L10423.D	1		TF	n/a	n/a	VL326

The QC reported here applies to the following samples:

Method: SW846 8260B

C17659-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 100-41-4	Benzene Ethylbenzene	ND ND	1.0	0.30 0.30	ug/l ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	2.0	0.70	ug/l	
CAS No.	Surrogate Recoveries		Limit	s		
	g.	1020/	(0.10	-		
1868-53-7	Dibromofluoromethane	102%	60-13	0%		
2037-26-5	Toluene-D8	103%	60-13	0%		
460-00-4	4-Bromofluorobenzene	97%	60-13	0%		



Page 1 of 1

Blank Spike Summary Job Number: C17659

1868-53-7 Dibromofluoromethane

Toluene-D8

4-Bromofluorobenzene

Account:

SHELLWIC Shell Oil Products

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
VL326-BS1	L10427.D	ì	09/07/11	TF	n/a	n/a	VL326

60-130%

60-130%

60-130%

The QC reported here applies to the following samples:

Method: SW846 8260B

C17659-1

2037-26-5

460-00-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
CAS No.	Surrogate Recoveries	BSP	Li	mits	

101%

104%

98%



Blank Spike/Blank Spike Duplicate Summary Job Number: C17659

Account:

SHELLWIC Shell Oil Products

Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VL326-BS	L10425.D	1	09/07/11	TF	n/a	n/a	VL326
VL326-BSD	L10426.D	1	09/07/11	TF	n/a	n/a	VL326

The QC reported here applies to the following samples:

C17659-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	20	19.7	99	17.9	90	10	60-130/30
100-41-4	Ethylbenzene	20	21.0	105	19.1	96	9	60-130/30
108-88-3	Toluene	20	20.9	105	19.2	96	8	60-130/30
1330-20-7	Xylene (total)	60	63.5	106	58.0	97	9	60-130/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	104%	103%	60-130%
2037-26-5	Toluene-D8	104%	105%	60-130%
460-00-4	4-Bromofluorobenzene	99%	99%	60-130%

Page 1 of 1

Method: SW846 8260B

Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: C17659

Account:

SHELLWIC Shell Oil Products

Project:

URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Sample	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
C17677-2MS	L10442.D	1	09/07/11	TF	n/a	n/a	VL326
C17677-2MSD	L10443.D	1	09/07/11	TF	n/a	n/a	VL326
C17677-2	L10432.D	1	09/07/11	TF	n/a	n/a	VL326
		-	0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				. 2020

The QC reported here applies to the following samples:

Method: SW846 8260B

C17659-1

CAS No.	Compound	C17677-2 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2 100-41-4 108-88-3 1330-20-7	Benzene Ethylbenzene Toluene Xylene (total)	ND ND ND ND	20 20 20 60	18.1 18.5 18.5 56.2	91 93 93 94	17.7 18.2 18.2 55.3	89 91 91 92	2 2 2 2	60-130/25 60-130/25 60-130/25 60-130/25
CAS No.	Surrogate Recoveries	MS	MSD	CI	7677-2	Limits			
1868-53-7 2037-26-5 460-00-4	Dibromofluoromethane Toluene-D8 4-Bromofluorobenzene	106% 101% 99%	105% 103% 99%	101 103 99%	%	60-130% 60-130% 60-130%	ó		





- · Method Blank and Blank Spike Summaries
- · Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY GENERAL CHEMISTRY

Login Number: C17659
Account: SHELLWIC - Shell Oil Products
Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride Solids, Total Dissolved	GP2964/GN6504 GN6497	0.50 10	0.0	mg/l mg/l	5	4.64	92.8	90-110%

Associated Samples:

Batch GN6497: C17659-1, C17659-2 Batch GP2964: C17659-1

(*) Outside of QC limits

BLANK SPIKE DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login Number: C17659 Account: SHELLWIC - Shell Oil Products

	ACCOUNT: SHEEDWIC	- Suerr	OII FIGUREES	
Project:	URSAZP: INC#300108,	, Kennan	Penrose A, Eunice	, NM

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
Chloride	GP2964/GN6504	mg/l	5	4.71	1.5	25%

Associated Samples: Batch GP2964: C17659-1 (*) Outside of QC limits 2

DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login Number: C17659 Account: SHELLWIC - Shell Oil Products Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Solids, Total Dissolved	GN6497	C17659-2	mg/l	4110	4010	2.5	0-%

Associated Samples: Batch GN6497: C17659-1, C17659-2 (*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY GENERAL CHEMISTRY

Login Number: C17659
Account: SHELLWIC - Shell Oil Products
Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP2964/GN6504	C17623-1	mg/l	25.7	20	46.3	103.0	80-120%

Associated Samples: Batch GP2964: C17659-1 (*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY GENERAL CHEMISTRY

Login Number: C17659 Account: SHELLWIC - Shell Oil Products Project: URSAZP:INC#300108, Kennan Penrose A, Eunice, NM

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chloride	GP2964/GN6504	C17623-1	mg/1	25.7	20	46.2	0.2	

Associated Samples: Batch GP2964: C17659-1 (*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits