# 3R - 201

# 2011 AGWMR

# 08/20/2012



# EL PASO CGP COMPANY 1001 LOUISIANA STREET

HOUSTON, TX 77002

# 2011 ANNUAL REPORT PIT GROUNDWATER REMEDIATION VOLUME 2: FEE/STATE LANDS

AUGUST 2012

THE CREATED OCT



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# 2011 ANNUAL GROUNDWATER REPORT NON-FEDERAL SITES VOLUME II

# EL PASO CGP COMPANY

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METER or LINE ID	NMOCD CASE NO	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
03906	3RP-179-0	GCU Com A #142E	29N	12W	25	G
93388	3RP-192-0	*Horton #1E	31N	09W	28	Н
70194	(3RP-201-0)	Johnston Fed #4	31N	09W	33	Н
LD087	3RP-205-0	K-31 Line Drip	25N	06W	16	N
72556	· 3RP-207-0	Knight #1	30N	13W	5	А
94967	3RP-214-0	**Lindrith B #24	24N	03 <u>W</u>	9	N
70445	3RP-074-0	Standard Oil Com #1	29N	09W	36	N
71669	3RP-239-0	State Gas Com N #1	31N	12W	16	Н

\*The Horton #1E site was submitted for closure in 2009 and is pending approval from NMOCD. There were no monitoring activities for this site in 2011.

\*\*The Lindrith B#24 site was submitted for closure in 2006 and is pending approval from NMOCD. There were no monitoring activities for this site in 2011.





# LIST OF ACRONYMS

AMSL	above mean sea level
BTEX	benzene, toluene, ethylbenzene, xylenes
btoc	below top of casing
EPCGP	El Paso CGP Company
ft	foot/feet
GWEL	groundwater elevation
ID	identification
MW	monitoring well
NMWQCC	New Mexico Water Quality Control Commission
TOC	top of casing
NA	not applicable
NMOCD	New Mexico Oil Conservation Division
NS	not sampled
ORC	oxygen-releasing compound
μg/L	micrograms per liter

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### Johnston Fed #4 Meter Code: 70194

<u>SITE DETAILS</u>					
Legal Description:	То	own: 31N F	Range: 09W	<b>Sec:</b> 33	Unit: H
NMOCD Haz Ran	king: 40	Land Type: Fee	Ope	erator: ConocoPhillips	
PREVIOUS AC	<u> TIVITIES</u>	2			
Site Assessment:	8/94	Excavation:	9/94 (60 cy)	Soil Boring:	8/95
Monitor Well:	8/95	Geoprobe:	9/97	Additional MWs:	12/95
Downgradient MWs:	12/95	Replace MW:	NA	Quarterly Initiated:	NA
ORC Nutrient Injection:	NA	<b>Re-Excavation</b> :	NA	PSH Removal Initiated:	9/97
Annual Initiated:	6/01	Quarterly Resumed:	NA	PSH Removal in 2011?	Yes

#### **SUMMARY OF 2011 ACTIVITIES**

- **MW-1:** Annual groundwater sampling (May) and quarterly water level monitoring were performed during 2011.
- **MW-2:** Annual groundwater sampling (May) and quarterly water level monitoring were performed during 2011.
- **MW-3:** Annual groundwater sampling (May) and quarterly free-product recovery were performed during 2011.
- **MW-4:** Annual groundwater sampling (May) and quarterly water level monitoring were performed during 2011.
- **TMW-5:** Annual groundwater sampling (May) and quarterly water level monitoring were performed during 2011.

Site-Wide Activities: No other activities were performed at this Site in 2011.

#### SITE MAP

A Site map (May) is attached as Figure 1.

#### SUMMARY TABLES AND GRAPHS

• Historic analytical and water level data are summarized in Table 1 and presented graphically in Figures 2 through 6. Where applicable, static water level elevations were corrected for measurable thicknesses of free-product (specific gravity of 0.8).

## Johnston Fed #4 Meter Code: 70194

- Historic free-product recovery data are summarized in Table 2 and presented graphically in Figures 2 and 4.
- The 2011 laboratory report is presented in Attachment 1 (included on CD).
- The 2011 field documentation is presented in Attachment 2 (included on CD).

## **GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS**

No subsurface activities were performed at this Site during 2011.

### **DISPOSITION OF GENERATED WASTES**

All purge water was taken to the El Paso Natural Gas Rio Vista Compressor Station. Spent product recovery socks were disposed of as non-hazardous solid waste.

### **ISOCONCENTRATION MAPS**

No isoconcentration maps were prepared for this Site; however, the attached Site map presents the water level and analytical data collected during May 2011.

### **RESULTS**

- The groundwater flow direction at this Site trends toward the east.
- The annual groundwater sample from MW-1 (a former product-containing well) contained elevated concentrations of benzene, toluene, and total xylenes well above their respective NMWQCC standards. The current concentrations appear to be similar to the historic data.
- The benzene concentration in the annual groundwater sample collected at MW-2 was 5.3 µg/L in May 2011. This is the second annual groundwater sample from MW-2 to fully meet the NMWQCC standards; the benzene concentrations in this well have steadily attenuated from a high of 5,900 µg/L in 1996. Toluene and total xylenes concentrations have met the NMWQCC standards since 2001; and the ethylbenzene concentrations have always been below the standard.
- Free-product recovery efforts at MW-3 resulted in the removal of approximately 0.39 gallons of free-phase hydrocarbons during 2011, bringing the cumulative total volume recovered to 11.98 gallons. A groundwater sample collected from MW-3 in May 2011 contained elevated concentrations of benzene, toluene, and total xylenes above their respective NMWQCC standards. These results were similar to the previous sample results from this well.
- Monitoring well MW-4 was sampled for the fifth time in May 2011 and has consistently exhibited non-detect concentrations. This well, installed in late 2006, was intended to be downgradient of the former pit; however, based on the

#### Johnston Fed #4 Meter Code: 70194

subsequent survey and monitoring data, this well appears to be cross-gradient of the pit.

• Temporary monitoring well TMW-5 continues to be significantly impacted with benzene, though it is upgradient of and approximately 60 feet away from the former El Paso pit. The May 2011 benzene concentration of 3,730 µg/L exceeded the NMWQCC standard. For the first time in May 2011 the total xylene concentration of 221 µg/L was below the standard.

The presence of hydrocarbon contamination in TMW-5, which is located upgradient to crossgradient from the former El Paso pit, suggests an alternative source of contamination at the Site. Ongoing environmental work by ConocoPhillips indicates elevated groundwater BTEX concentrations in the well here referred to as ConocoPhillips MW-1, which was installed by Burlington Resources in 1999 near the closed Production Pit #2. The former pit area is upgradient of the TMW-5 area. The benzene concentration in ConocoPhillips MW-1 was 3,500  $\mu$ g/L in September 2010, and it had been as high as 8,700  $\mu$ g/L historically.

#### REMAINING CLOSURE REQUIREMENTS

- This site is being managed per the procedures set forth in the document entitled, "Remediation Plan for Groundwater Encountered during Pit Closure Activities" (El Paso Natural Gas Company / El Paso Field Services Company, 1995). This remediation plan was conditionally approved by the New Mexico Oil Conservation Division (OCD) in correspondence dated November 30, 1995; and the OCD approval conditions were adopted into El Paso's program methods.
- In order to meet the remaining closure requirements at this site, the following conditions must be achieved:
  - 1. The extent of the contaminant plume must be delineated. The site was re-surveyed in 2007, and subsequent gauging events yielded new information regarding the hydraulic gradient. It now appears that a well is needed downgradient (east) of monitor well MW-3. This new understanding of the groundwater flow direction has been confirmed over the last several years.
  - 2. Recoverable free-product must be removed from the subsurface. Generally, this corresponds with an absence of measurable freeproduct in the monitor wells. Currently, product recovery efforts are required at MW-3.
  - 3. Groundwater contaminant concentrations in the monitor wells must meet the NMWQCC standards for at least 4 consecutive quarters. Alternatively, concentrations must be reduced to below background levels; however, there are no established background concentrations

#### Johnston Fed #4 Meter Code: 70194

for the remaining constituents of concern. Currently, MW-1, MW-2, MW-3, and TMW-5 require additional monitoring. The remaining applicable standards are:

	NMWQCC GW
Constituent	Standard (µg/L)
Benzene	10
Toluene	750
Ethylbenzene	750
Total Xylenes	620

#### RECOMMENDATIONS

- EPCGP will continue annual sampling and quarterly water level monitoring at MW-1.
- EPCGP will continue annual sampling and quarterly water level monitoring at MW-2.
- EPCGP will continue quarterly free-product recovery efforts at MW-3; however, the frequency of monitoring may be adjusted based on the amount of product recovered during the monitoring visits. This well will be sampled annually.
- Monitoring wells MW-4 and TMW-5 will be sampled annually in conjunction with MW-1, MW-2, and MW-3.
- EPCGP will install a new monitoring well east of MW-3. With the hydraulic gradient now understood as clearly eastward, additional downgradient delineation of the dissolved phase plume is warranted.
- EPCGP will coordinate with ConocoPhillips and possibly conduct a limited drilling investigation to better delineate potential upgradient impacts affecting the TMW-5 area. Ultimately, a better understanding of the residual impacts will inform potential remedial activities needed to bring the site groundwater into compliance with the NMWQCC standards.



FIGURE 2 SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY JOHNSTON FED #4 (METER #70194) MW-1



\*In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.

## FIGURE 3 SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS JOHNSTON FED #4 (METER #70194) MW-2



#### FIGURE 4 SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY JOHNSTON FED #4 (METER #70194) MW 2

MW-3



\*In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.

## FIGURE 5 SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS JOHNSTON FED #4 (METER #70194) MW-4



FIGURE 6 SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS JOHNSTON FED #4 (METER #70194) TMW-5



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#### SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER JOHNSTON FED #4 (METER #70194)

Monitor Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes	Depth to Water (ft	Corr. GW Elevation (ft
NMWQCC	C GW Std.:	10	750	750	620	BTOC)	AMSL)
B3(48-52)	1/5/2006	12.1	14.6	1.2	10.2	NA	NA
B4(48-52)	1/4/2006	153	381	16.5	130	NA	NA
B5(49-53)	1/4/2006	112	157	14.7	104	NA	NA
B6(46-50)	1/5/2006	7380	11700	841	7960	NA	NA
MW-1	8/8/1995	590	2040	137	1764	50.08	6031.87
MW-1	1/4/1996	7380	20900	1480	14600	50.23	6031.72
MW-1	12/17/1996	762	1930	107	1270	50.50	6031.90
MW-1	3/6/1997	483	1110	66.1	678	50.38	6031.88
MW-1	6/9/2009	1630	3000	268	3880	49.61	6032.34
MW-1	6/7/2010	1320	3130	225	3250	50.12	6031.83
MW-1	5/10/2011	1000	2160	200	2400	50.69	6031.26
MW-2	1/4/1996	1104	5107	479	4640	48.71	6031.91
MW-2	12/17/1996	5900	8970	197	4670	48.84	6031.78
MW-2	3/6/1997	4500	6480	236	4920	48.94	6031.68
MW-2	6/22/2001	2800	180	41	140	48.62	6032.00
MW-2	6/3/2002	370	11	24	18	49.15	6031.47
MW-2	6/18/2003	186	<5.0	34.9	16.8	49.62	6031.00
MW-2	6/22/2004	88.9	24	32.9	15.2	49.82	6030.80
MW-2	6/23/2005	283	9.4	27.7	64.5	49.87	6030.75
MW-2	6/7/2006	92.1	18.4	4.4	5.9	49.67	6030.95
MW-2	6/19/2007	83.0	<1.0	7.3	7.2	49.67	6030.95
MW-2	6/17/2008	201	4.2	16.6	17.9	48.93	6031.69
MW-2	6/9/2009	22.9	1.3	2.8	6.9	48.43	6032.19
MW-2	6/7/2010	5.6	0.99J	<2.0	<6.0	48.98	6031.64
MW-2	5/10/2011	5.3	1.2	0.46J	2.3J	49.45	6031.17
MW-3	3/19/1996	3660	5410	436	3730	49.81	6031.78
MW-3	12/17/1996	3910	8210	530	5020	49.84	6031.75
MW-3	3/6/1997	6670	12700	759	7020	49.87	6031.75
MW-3	6/9/2009	6100	8700	627	6630	49.39	6032.20
MW-3	6/7/2010	7440	10800	578	7170	49.90	6031.85
MW-3	5/10/2011	4180	4990	421	3780	50.46	6031.13
MW-4	6/19/2007	<1.0	<1.0	<1.0	<2.0	50.21	6030.98
MW-4	6/17/2008	<1.0	<1.0	<1.0	<2.0	49.50	6031.69
MW-4	6/9/2009	<1.0	0.47J	<1.0	0.77J	48.94	6032.25

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Monitor Well NMWQCC	Sample Date GW Std.:	Benzene (ug/L) 10	Toluene (ug/L) 750	Ethylbenzene (ug/L) 750	Total Xylenes 620	Depth to Water (ft BTOC)	Corr. GW Elevation (ft AMSL)
MW-4	6/7/2010	<2.0	<2.0	<2.0	<6.0	49.45	6031.74
MW-4	5/10/2011	<1.0	<1.0	<1.0	<3.0	49.98	6031.21
TMW-5	6/19/2007	2730	7.6	680	1160	49.64	6031.15
TMW-5	6/17/2008	3190	217	651	1220	48.87	6031.92
TMW-5	6/9/2009	1540	285	568	784	48.38	6032.41
TMW-5	6/7/2010	1970	207	591	746	48.81	6031.98
TMW-5	5/10/2011	3730	124	459	221	49.41	6031.38

#### SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER JOHNSTON FED #4 (METER #70194)

#### Notes:

Results shown in bold typeface exceed their respective New Mexico Water Quality Control Commission standards.

"J" = result is qualified as estimated. See laboratory report and/or supplemental data validation report for further detail. "<" = analyte was not detected at the indicated reporting limit (some historic data were reported at the detection limit).. Static groundwater elevations have been corrected for product thickness where applicable. Specific gravity of 0.8 used.

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#### SUMMARY OF FREE-PRODUCT REMOVAL JOHNSTON FED #4 (METER #70194)

Monitor Well	Removal Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (feet)	Volume Removed (gallons)	Cumulative Removal (gallons)	Corrected GW Elevation (ft AMSL)
MW-1	12/17/1996	49.94	50.50	0.56		7.65	6031.90
MW-1	3/6/1997	49.99	50.38	0.39		7.65	6031.88
MW-1	6/22/2001	49.82	49.96	0.14	0.10	7.75	6032.10
MW-1	9/4/2001	49.94	50.05	0.11	0.10	7.85	6031.99
MW-1	3/4/2002	50.23	50.40	0.17	0.05	7.90	6031.69
MW-1	6/3/2002	50.31	50.50	0.19	0.25	8.15	6031.60
<b>MW-1</b>	9/10/2002	50.51	50.70	0.19	0.16	8.31	6031.40
MW-1	12/12/2002	50.60	50.83	0.23	0.13	8.44	6031.30
MW-1	3/14/2003	50.73	50.90	0.17	0.26	8.70	6031.19
MW-1	6/18/2003	50.74	51.28	0.54	0.50	9.20	6031.10
MW-1	9/16/2003	50.78	51.70	0.92	1.00	10.20	6030.99 .
MW-1	12/17/2003	50.92	51.15	0.23	0.06	10.26	6030.98
MW-1	3/16/2004	50.98	51.14	0.16	0.06	10.32	6030.94
MW-1	6/22/2004	51.02	51.15	0.13	0.02	10.34	6030.90
MW-1	9/22/2004	51.06	51.18	0.12	0.09	10.43	6030.87
MW-1	12/21/2004	51.08	51.15	0.07	0.06	10.49	6030.86
MW-1	3/23/2005	51.13	51.13	0.00	0.02	10.51	6030.82
MW-1	12/15/2005		51.02	0.00	0.10	10.61	6030.93
MW-1	3/27/2006		51.86	0.00	0.11	10.72	6030.09
MW-1	6/7/2006	-	50.92	0.00	0.02	10.74	6031.03
MW-3	3/6/1997	49.83	49.87	0.04		0.00	6031.75
MW-3	6/22/2001	49.58	49.66	0.08	0.08	0.08	6031.99
MW-3	9/4/2001	49.70	49.76	0.06		0.08	6031.88
MW-3	3/4/2002	49.91	50.35	0.44	0.25	0.33	6031.59
MW-3	6/3/2002	49.96	50.62	0.66	0.50	0.83	6031.50
MW-3	9/10/2002	50.12	50.79	0.67	0.25	1.08	6031.34
MW-3	12/12/2002	50.25	50.95	0.70	1.50	2.58	6031.20
MW-3	3/14/2003	50.34	51.03	0.69	1.00	3.58	6031.11
MW-3	6/18/2003	50.45	51.16	0.71	1.50	5.08	6031.00
MW-3	9/16/2003	50.58	51.30	0.72	0.25	5.33	6030.86
MW-3	12/17/2003	50.60	51.08	0.48	0.35	5.68	6030.89
MW-3	3/16/2004	50.68	51.10	0.42	0.31	5.99	6030.83
MW-3	6/22/2004	50.68	51.22	0.54	0.09	6.08	6030.80
MW-3	9/22/2004	50.69	51.30	0.61	0.50	6.58	6030.78

#### SUMMARY OF FREE-PRODUCT REMOVAL JOHNSTON FED #4 (METER #70194)

Monitor Well	Removal Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (feet)	Volume Removed (gallons)	Cumulative Removal (gallons)	Corrected GW Elevation (ft AMSL)
MW-3	12/21/2004	50.71	51.32	0.61	0.63	7.21	6030.76
MW-3	3/23/2005	50.76	51.85	1.09	0.61	7.82	6030.61
MW-3	6/23/2005	50.76	51.20	0.44		7.82	6030.74
MW-3	12/15/2005	50.92	51.32	0.40		7.82	6030.59
MW-3	3/27/2006	50.58	50.92	0.34	0.22	8.04	6030.94
MW-3	6/7/2006	50.56	51.01	0.45	0.22	8.26	6030.94
MW-3	9/25/2006	50.80	51.27	0.47	0.22	8.48	6030.70
MW-3	12/7/2006	50.77	51.07	0.30	0.20	8.68	6030.76
MW-3	3/28/2007	50.66	50.99	0.33	0.47	9.15	6030.86
MW-3	6/18/2007	50.58	50.97	0.39	0.47	9.62	6030.93
MW-3	9/17/2007	50.78	51.15	0.37	0.39	10.01	6030.74
MW-3	12/17/2007	50.78	51.08	0.30	0.39	10.40	6030.75
MW-3	3/10/2008	50.75	50.90	0.15	0.23	10.63	6030.81
MW-3	6/17/2008	49.89	49.98	0.09	0.20	10.83	6031.68
MW-3	9/10/2008	-	49.77	0.00	0.08	10.91	6031.82
MW-3	12/2/2008		49.58	0.00	0.09	11.00	6032.01
MW-3	3/3/2009		49.55	0.00	0.05	11.05	6032.04
MW-3	6/4/2009	NA	NA	NA	0.06	11.11	NA
MW-3	8/28/2009		49.65	0.00	0.12	11.23	6031.94
MW-3	11/4/2009	2	49.63	0.00	0.06	11.29	6031.96
MW-3	2/11/2010		49.83	0.00	0.05	11.34	6031.76
MW-3	5/24/2010	NA	NA	NA	0.06	11.41	NA
MW-3	6/7/2010	49.70	49.90	0.20		11.41	6031.85
MW-3	9/24/2010		50.19	0.00	0.09	11.50	6031.40
MW-3	11/2/2010		50.26	0.00	0.09	11.59	6031.33
MW-3	2/7/2011		50.40	0.00	0.09	11.69	6031.19
MW-3	5/5/2011	NA	NA	NA	0.08	11.76	NA
MW-3	9/23/2011		50.73	0.00	0.12	11.88	6030.86
MW-3	11/1/2011	-	50.82	0.00	0.10	11.98	6030.77

#### Notes:

"--" indicates either that product was not measurably detected or that product was not recovered.

"NA" indicates that the respective data point is not available.

Groundwater elevations may not be static due to removal of equipment. Corrections for product thickness utilize SG of 0.8.