



**Department of Energy**  
 Carlsbad Field Office  
 P. O. Box 3090  
 Carlsbad, New Mexico 88221

**OCT 11 2011**



Mr. John Kieling, Acting Chief  
 Hazardous Waste Bureau  
 New Mexico Environment Department  
 2905 Rodeo Park Drive East, Building 1  
 Santa Fe, New Mexico 87505-6303

Subject: Waste Isolation Pilot Plant Groundwater Level Measurements for  
 September 2011

Dear Mr. Kieling:

The purpose of this letter is to submit the Waste Isolation Pilot Plant Groundwater Level Measurements for September 2011, as required by Permit Part 5, Permit Condition 5.10.2.2. of Hazardous Waste Facility Permit No. NM4890139088-TSDF.

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Please feel free to contact Mr. Daniel J. Ferguson at (575) 234-7018 if you have any questions regarding this data transmittal.

Edward Ziemianski, Interim Manager  
 Carlsbad Field Office

Sincerely,

M. F. Sharif, General Manager  
 Washington TRU Solutions LLC

Enclosure

cc: w/enclosure  
 J. Davis, NMED \*ED  
 R. Maestas, NMED ED  
 C. Walker, Trinity Engineering ED  
 CBFO M&RC

\*ED denotes electronic distribution



SUMMARY COMMENTS FOR THE WATER LEVEL MEASUREMENTS FOR THE  
MONTH OF SEPTEMBER, 2011

1. The WIPP Hazardous Waste Facility Permit (Permit), Attachment L, Section L-4c (1) requires reporting of cumulative fluctuations noted in the Detection Monitoring Program (DMP) wells of more than two feet in the course of one year which are not attributable to site tests and subsequent stabilization. The Calendar Year 2010 Annual Site Environmental Report (ASER) was submitted to the New Mexico Environment Department in compliance with the Permit, and summarizes and discusses DMP water level changes greater than two feet for calendar year 2010.
2. Calculations used to derive water level and fresh water head elevations in Table 1:
  - $\text{Adjusted Depth to Water(ft)} = \text{Depth to Water from Measuring Point(ft)} - \text{Adjustment(ft)}$
  - $\text{Water Level(ft amsl)} = \text{Top of Surveyed Casing Elevation(ft amsl)} - \text{Adjusted Depth to Water(ft)}$
  - $\text{Column Height(ft)} = \text{Water Level(ft amsl)} - \text{Culebra Midpoint Elevation(ft amsl)}$
  - $\text{Fresh-water Head(ft amsl)} = \text{Specific Gravity} \times \text{Column Height(ft)} + \text{Culebra Midpoint Elevation(ft amsl)}$
3. For production-injection packers (PIPs) installed on tubing or Water Quality Sampling Program wells with tubing access ports, an adjustment is necessary to reference the water level to the surveyed fixed permanent casing [Top of Casing(TOC)]. If the measuring point is above the TOC, the depth to water relative to TOC is less. If the measuring point is below the TOC, the depth to water relative to TOC is greater (ref: WP 02-EM1014, Rev 6).
4. Groundwater level measurements were taken at H-09bR. However, fluid density for this well has not been measured since construction; therefore the equivalent freshwater head cannot be calculated. The fluid density for this well will be determined when the 2011 Pressure Density Survey is completed.

## Groundwater Level Measurements for September 2011

Table 1

Well Number	Zone	Top of Surveyed Casing Elevation (ft amsl)	Date	Time	Depth to Water from Measuring Point (feet)	Adjustment (feet)	Adjusted Depth to Water (feet)	Adjusted Depth to Water (m)	Water Level (ft amsl)	Water Level (m amsl)	Fresh-water Head (ft amsl)	Culebra Midpoint Elevation (ft amsl)	Specific Gravity	Column Height (feet)	Notes
AEC-7	CUL	3657.06	09/13/11	07:11	612.48	0.00	612.48	186.68	3044.58	927.99	3064.86	2784.60	1.078	259.98	N/A
C-2737 (PIP)	CUL	3400.76	09/15/11	07:54	386.32	-0.60	386.92	117.93	3013.84	918.62	3022.05	2709.70	1.027	304.14	N/A
ERDA-9	CUL	3410.17	09/14/11	09:56	398.31	-0.03	398.34	121.41	3011.83	918.01	3034.79	2693.00	1.072	318.83	N/A
H-02b2	CUL	3378.36	09/15/11	07:18	335.83	0.00	335.83	102.36	3042.53	927.36	3046.43	2742.80	1.013	299.73	N/A
H-03b2	CUL	3389.91	09/15/11	08:15	388.62	0.00	388.62	118.45	3001.29	914.79	3014.15	2702.20	1.043	299.09	N/A
H-04bR	CUL	3334.64	09/14/11	12:00	330.66	0.00	330.66	100.79	3003.98	915.61	3007.17	2826.76	1.018	177.22	N/A
H-05b	CUL	3506.78	09/13/11	09:06	465.96	0.00	465.96	142.02	3040.82	926.84	3082.14	2596.50	1.093	444.32	N/A
H-06bR	CUL	3349.22	09/14/11	08:21	290.45	0.00	290.45	88.53	3058.77	932.31	3070.86	2731.90	1.037	326.87	N/A
H-07b1	CUL	3163.72	09/13/11	12:35	168.27	0.00	168.27	51.29	2995.45	913.01	2996.06	2893.80	1.006	101.65	1
H-10c	CUL	3688.40	09/13/11	07:18	719.54	0.00	719.54	219.32	2968.86	904.91	3028.24	2316.30	1.091	652.56	N/A
H-11b4	CUL	3410.79	09/12/11	12:12	425.11	0.00	425.11	129.57	2985.68	910.04	3001.55	2674.60	1.051	311.08	N/A
H-12	CUL	3427.33	09/13/11	06:33	456.86	0.00	456.86	139.25	2970.47	905.40	3011.30	2588.90	1.107	381.57	N/A
H-15R	CUL	3482.02	09/14/11	10:23	507.66	0.00	507.66	154.73	2974.36	906.58	3017.80	2609.30	1.119	365.06	N/A
H-16	CUL	3410.06	09/15/11	10:57	373.74	0.00	373.74	113.92	3036.32	925.47	3048.93	2695.63	1.037	340.69	N/A
H-17	CUL	3385.24	09/12/11	12:41	418.46	0.00	418.46	127.55	2966.78	904.27	3007.85	2664.80	1.136	301.98	N/A
H-19b0	CUL	3418.33	09/14/11	11:08	426.49	0.00	426.49	129.99	2991.84	911.91	3014.11	2664.40	1.068	327.44	N/A
H-19b2	CUL	3418.93	09/14/11	11:00	427.90	0.00	427.90	130.42	2991.03	911.67	3013.95	2662.90	1.070	328.13	N/A
H-19b3	CUL	3419.02	09/14/11	11:13	428.06	0.00	428.06	130.47	2990.96	911.64	3014.27	2664.40	1.071	326.56	N/A
H-19b4	CUL	3418.98	09/14/11	11:30	427.32	0.00	427.32	130.25	2991.66	911.86	3012.85	2664.40	1.065	327.26	N/A
H-19b5	CUL	3418.58	09/14/11	11:22	427.27	0.00	427.27	130.23	2991.31	911.75	3013.62	2664.40	1.068	326.91	N/A
H-19b6	CUL	3419.02	09/14/11	11:17	427.99	0.00	427.99	130.45	2991.03	911.67	3015.54	2664.40	1.075	326.63	N/A
H-19b7	CUL	3418.94	09/14/11	11:05	427.98	0.00	427.98	130.45	2990.96	911.64	3014.72	2664.40	1.073	326.56	N/A
I-461	CUL	3283.61	09/13/11	11:50	240.93	0.00	240.93	73.44	3042.68	927.41	3043.36	2907.10	1.005	135.58	N/A
SNL-01	CUL	3512.84	09/13/11	09:50	434.51	0.00	434.51	132.44	3078.33	938.27	3083.32	2900.00	1.028	178.33	N/A
SNL-02	CUL	3323.06	09/13/11	11:02	253.87	0.00	253.87	77.38	3069.19	935.49	3071.14	2852.30	1.009	216.89	N/A
SNL-03	CUL	3490.35	09/13/11	09:33	418.98	0.00	418.98	127.71	3071.37	936.15	3081.10	2723.80	1.028	347.57	N/A
SNL-05	CUL	3379.98	09/13/11	10:50	308.64	0.00	308.64	94.07	3071.34	936.14	3074.06	2731.00	1.008	340.34	N/A
SNL-06	CUL	3646.11	09/14/11	06:25	666.89	0.00	666.89	203.27	2979.22	908.07	3135.64	2307.90	1.233	671.32	2
SNL-08	CUL	3555.73	09/13/11	08:54	543.34	0.00	543.34	165.61	3012.39	918.18	3052.47	2586.00	1.094	426.39	N/A
SNL-09	CUL	3360.96	09/14/11	08:00	311.73	0.00	311.73	95.02	3049.23	929.41	3053.83	2793.80	1.018	255.43	N/A
SNL-10	CUL	3377.59	09/15/11	07:38	326.55	0.00	326.55	99.53	3051.04	929.96	3053.62	2764.10	1.009	286.94	N/A
SNL-12	CUL	3339.46	09/12/11	14:58	338.26	0.00	338.26	103.10	3001.20	914.77	3002.36	2768.60	1.005	232.60	N/A
SNL-13	CUL	3294.22	09/12/11	13:18	277.07	0.00	277.07	84.45	3017.15	919.63	3020.00	2893.10	1.023	124.05	3
SNL-14	CUL	3368.41	09/12/11	12:32	377.59	0.00	377.59	115.09	2990.82	911.60	3004.25	2698.90	1.046	291.92	N/A
SNL-15	CUL	3479.93	09/13/11	08:30	566.33	0.00	566.33	172.62	2913.60	888.07	2994.88	2557.10	1.228	356.50	4
SNL-16	CUL	3133.00	09/13/11	12:15	125.40	0.00	125.40	38.22	3007.60	916.72	3008.33	2926.70	1.009	80.90	N/A
SNL-17	CUL	3238.06	09/13/11	13:00	233.22	0.00	233.22	71.09	3004.84	915.88	3005.31	2888.50	1.004	116.34	N/A
SNL-18	CUL	3375.44	09/13/11	10:21	302.65	0.00	302.65	92.25	3072.79	936.59	3074.28	2824.20	1.006	248.59	N/A
SNL-19	CUL	3222.65	09/13/11	11:18	152.61	0.00	152.61	46.52	3070.04	935.75	3071.25	2867.60	1.006	202.44	N/A
WIPP-11	CUL	3427.78	09/15/11	06:10	363.99	0.00	363.99	110.94	3063.79	933.84	3082.06	2570.00	1.037	493.79	N/A
WIPP-13	CUL	3405.67	09/15/11	06:57	344.01	0.00	344.01	104.85	3061.66	933.19	3078.00	2690.30	1.044	371.36	N/A
WIPP-19	CUL	3435.11	09/14/11	09:39	390.11	0.00	390.11	118.91	3045.00	928.12	3064.38	2665.00	1.051	380.00	N/A
WQSP-1	CUL	3419.25	09/14/11	08:57	360.20	0.18	360.02	109.73	3059.23	932.45	3076.56	2705.60	1.049	353.63	N/A
WQSP-2	CUL	3463.87	09/14/11	09:09	399.88	0.20	399.68	121.82	3064.19	933.97	3084.18	2638.80	1.047	425.39	N/A
WQSP-3	CUL	3480.14	09/14/11	09:21	463.73	0.19	463.54	141.29	3016.60	919.46	3074.86	2620.30	1.147	396.30	N/A

Groundwater Level Measurements for September 2011

Table 1

Well Number	Zone	Top of Surveyed Casing Elevation (ft amsl)	Date	Time	Depth to Water from Measuring Point (feet)	Adjustment (feet)	Adjusted Depth to Water (feet)	Adjusted Depth to Water (m)	Water Level (ft amsl)	Water Level (m amsl)	Fresh-water Head (ft amsl)	Culebra Midpoint Elevation (ft amsl)	Specific Gravity	Column Height (feet)	Notes
WQSP-4	CUL	3433.09	09/14/11	10:44	443.91	0.18	443.73	135.25	2989.36	911.16	3015.66	2652.20	1.078	337.16	N/A
WQSP-5	CUL	3384.38	09/14/11	12:40	378.83	0.20	378.63	115.41	3005.75	916.15	3013.59	2725.70	1.028	280.05	N/A
WQSP-6	CUL	3364.72	09/14/11	12:21	343.45	0.19	343.26	104.63	3021.46	920.94	3025.52	2767.60	1.016	253.86	N/A
C-2737 (ANNULUS)	MAG	3400.76	09/15/11	08:00	256.66	0.00	256.66	78.23	3144.10	958.32	N/A	N/A	N/A	N/A	N/A
H-02b1	MAG	3378.49	09/15/11	07:13	259.11	0.00	259.11	78.98	3119.38	950.79	N/A	N/A	N/A	N/A	N/A
H-03b1	MAG	3390.72	09/15/11	08:18	244.07	0.00	244.07	74.39	3146.65	959.10	N/A	N/A	N/A	N/A	N/A
H-04c	MAG	3334.28	09/14/11	11:42	188.51	0.00	188.51	57.46	3145.77	958.83	N/A	N/A	N/A	N/A	N/A
H-06c	MAG	3348.69	09/14/11	08:28	277.64	0.00	277.64	84.62	3071.05	936.06	N/A	N/A	N/A	N/A	N/A
H-08a	MAG	3433.28	09/12/11	14:05	407.76	0.00	407.76	124.29	3025.52	922.18	N/A	N/A	N/A	N/A	N/A
H-09c	MAG	3407.05	09/12/11	14:30	269.26	0.00	269.26	82.07	3137.79	956.40	N/A	N/A	N/A	N/A	N/A
H-10a	MAG	3688.45	09/13/11	07:37	575.93	0.00	575.93	175.54	3112.52	948.70	N/A	N/A	N/A	N/A	N/A
H-11b2	MAG	3411.86	09/12/11	12:18	276.10	0.00	276.10	84.16	3135.76	955.78	N/A	N/A	N/A	N/A	5
H-14	MAG	3347.08	09/12/11	13:30	209.78	0.00	209.78	63.94	3137.30	956.25	N/A	N/A	N/A	N/A	N/A
H-15	MAG	3483.50	09/14/11	10:30	340.14	0.00	340.14	103.67	3143.36	958.10	N/A	N/A	N/A	N/A	N/A
H-18	MAG	3414.21	09/14/11	08:47	259.68	0.00	259.68	79.15	3154.53	961.50	N/A	N/A	N/A	N/A	N/A
WPP-18	MAG	3457.57	09/14/11	09:33	307.64	0.00	307.64	93.77	3149.93	960.10	N/A	N/A	N/A	N/A	N/A
WQSP-6a	DL	3364.05	09/14/11	12:30	167.59	0.25	167.34	51.01	3196.71	974.36	N/A	N/A	N/A	N/A	N/A
CB-1	B/C	3329.12	09/12/11	12:59	312.41	0.00	312.41	95.22	3016.71	919.49	N/A	N/A	N/A	N/A	N/A
DOE-2	B/C	3419.18	09/15/11	06:35	352.07	0.00	352.07	107.31	3067.11	934.86	N/A	N/A	N/A	N/A	N/A
C-2505	SR/DL	3412.93	09/15/11	10:09	46.59	0.00	46.59	14.20	3366.34	1026.06	N/A	N/A	N/A	N/A	N/A
C-2506	SR/DL	3412.84	09/15/11	10:05	45.97	0.00	45.97	14.01	3366.87	1026.22	N/A	N/A	N/A	N/A	N/A
C-2507	SR/DL	3409.91	09/15/11	10:00	46.20	0.00	46.20	14.08	3363.71	1025.26	N/A	N/A	N/A	N/A	N/A
C-2811	SR/DL	3398.84	09/15/11	08:05	53.40	0.00	53.40	16.28	3345.44	1019.69	N/A	N/A	N/A	N/A	N/A
PZ-01	SR/DL	3413.28	09/15/11	10:37	42.60	0.00	42.60	12.98	3370.68	1027.38	N/A	N/A	N/A	N/A	N/A
PZ-02	SR/DL	3413.36	09/15/11	10:15	44.43	0.00	44.43	13.54	3368.93	1026.85	N/A	N/A	N/A	N/A	N/A
PZ-03	SR/DL	3416.12	09/15/11	10:19	44.69	0.00	44.69	13.62	3371.43	1027.61	N/A	N/A	N/A	N/A	N/A
PZ-04	SR/DL	3412.01	09/15/11	10:44	47.40	0.00	47.40	14.45	3364.61	1025.53	N/A	N/A	N/A	N/A	N/A
PZ-05	SR/DL	3415.24	09/15/11	10:22	43.44	0.00	43.44	13.24	3371.80	1027.72	N/A	N/A	N/A	N/A	N/A
PZ-06	SR/DL	3413.33	09/15/11	10:27	44.28	0.00	44.28	13.50	3369.05	1026.89	N/A	N/A	N/A	N/A	N/A
PZ-07	SR/DL	3413.84	09/15/11	08:51	37.70	0.00	37.70	11.49	3376.14	1029.05	N/A	N/A	N/A	N/A	N/A
PZ-08	SR/DL	3418.19	09/14/11	10:02	62.92	0.00	62.92	19.18	3355.27	1022.69	N/A	N/A	N/A	N/A	N/A
PZ-09	SR/DL	3421.09	09/14/11	09:48	57.71	0.00	57.71	17.59	3363.38	1025.16	N/A	N/A	N/A	N/A	N/A
PZ-10	SR/DL	3405.73	09/15/11	08:43	38.60	0.00	38.60	11.77	3367.13	1026.30	N/A	N/A	N/A	N/A	N/A
PZ-11	SR/DL	3418.78	09/15/11	08:56	45.36	0.00	45.36	13.83	3373.42	1028.22	N/A	N/A	N/A	N/A	N/A
PZ-12	SR/DL	3408.92	09/15/11	08:35	53.25	0.00	53.25	16.23	3355.67	1022.81	N/A	N/A	N/A	N/A	N/A
PZ-13	SR/DL	3422.24	09/14/11	10:08	66.21	0.00	66.21	20.18	3356.03	1022.92	N/A	N/A	N/A	N/A	N/A
PZ-14	SR/DL	3420.58	09/14/11	10:16	67.47	0.00	67.47	20.56	3353.11	1022.03	N/A	N/A	N/A	N/A	N/A
PZ-15	SR/DL	3430.86	09/14/11	10:11	48.01	0.00	48.01	14.63	3382.85	1031.09	N/A	N/A	N/A	N/A	N/A
H-09bR	CUL	3408.34	09/12/11	14:35	413.10	0.00	413.10	125.91	2995.24	912.95	N/A	N/A	N/A	N/A	N/A

Notes

1. Change in water level due to pumping on H-07c.
  2. Recovering from development 09/2005 and bailing 01/2007.
  3. Rise in water level due to oil field activity.
  4. Recovering from pumping 04/2007.
  5. Change due to drilling of replacement well Aug-Sep 2011.
- N/A = Not applicable

B/C= Bell Canyon  
 CUL= Culebra  
 MAG= Magenta  
 DL= Dewey Lake