



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

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JUL 21 2011



Mr. Clint Marshall  
 New Mexico Environment Department  
 Ground Water Quality Bureau  
 Mining and Environmental Compliance Section  
 P.O. Box 26110  
 Santa Fe, NM 87502

Subject: Semi-Annual Discharge Monitoring Report for January 1 through June 30, 2011

Dear Mr. Marshall:

The purpose of this letter is to transmit to you the Waste Isolation Pilot Plant Discharge Monitoring Report for the period of January 1 through June 30, 2011. This report is required by Discharge Permit 831.

If you have any questions about this report or require any additional information, please contact me at (575) 234-8128.

Sincerely,

Daniel J. Ferguson, Site Regulatory Specialist  
 Carlsbad Field Office

Enclosure

cc: w/o enclosure  
 J. Kieling, NMED \*ED  
 M. Menetrey, NMED ED  
 CBFO M&RC  
 \*ED denotes electronic distribution

**WASTE ISOLATION PILOT PLANT (WIPP)  
SEMI-ANNUAL DISCHARGE MONITORING REPORT FOR  
DISCHARGE PLAN DP-831  
January 1 through June 30, 2011**

**SPECIFIC REPORTING REQUIREMENTS OF DP-831**

**1.0 WIPP SEWAGE TREATMENT FACILITY AND H-19 EVAPORATION POND MONITORING AND REPORTING**

Month	Volume* (gallons)
January	283,377
February	280,135
March	280,819
April	266,722
May	339,634
June	340,466

\*Based on total domestic water use

Facultative Lagoon System Evaporation Pond B: None  
Facultative Lagoon System Evaporation Pond C: None

Month	Volume (gallons)
January	None
February	None
March	1,050
April	1,200
May	1,275
June	None

Table 3 contains a summary of the analytical results for the Sewage Treatment System and the H-19 Evaporation Pond. Miscellaneous non-hazardous water disposed of in the H-19 Evaporation Pond was purged water from groundwater monitoring activities and Waste Shaft sump water.

Analyte	Sample Date	Influent Pond 2A	Pond B	Pond C	H-19
Nitrate (mg/L)	4/19/11	ND	NA	NA	NA
TKN (mg/L)	4/19/11	92	NA	NA	NA
TDS (mg/L)	4/19/11	490	<b>609,000</b>	NS	NS
Sulfate (mg/L)	4/19/11	60	<b>63,000</b>	NS	NS
Chloride (mg/L)	4/19/11	<b>540</b>	<b>280,000</b>	NS	NS

ND: Not detected, analyte below the detection limit

NA: Not analyzed, parameters not required

NS: Not Sampled, pond was dry.

Bold: Concentration exceeds the standards listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply

## 2.0 INFILTRATION CONTROL ACTIVITIES

Due to extreme drought conditions, water levels have been low in all infiltration control ponds and no maintenance has been necessary due to the lack of water erosion. The Salt Pile Evaporation Pond, Evaporation Basin A, and Pond 1 are all dry.

## 3.0 SUMMARY OF ACTIVITIES RELATED TO THE SHALLOW SUBSURFACE WATER (SSW) MONITORING AND SAMPLING PROGRAM

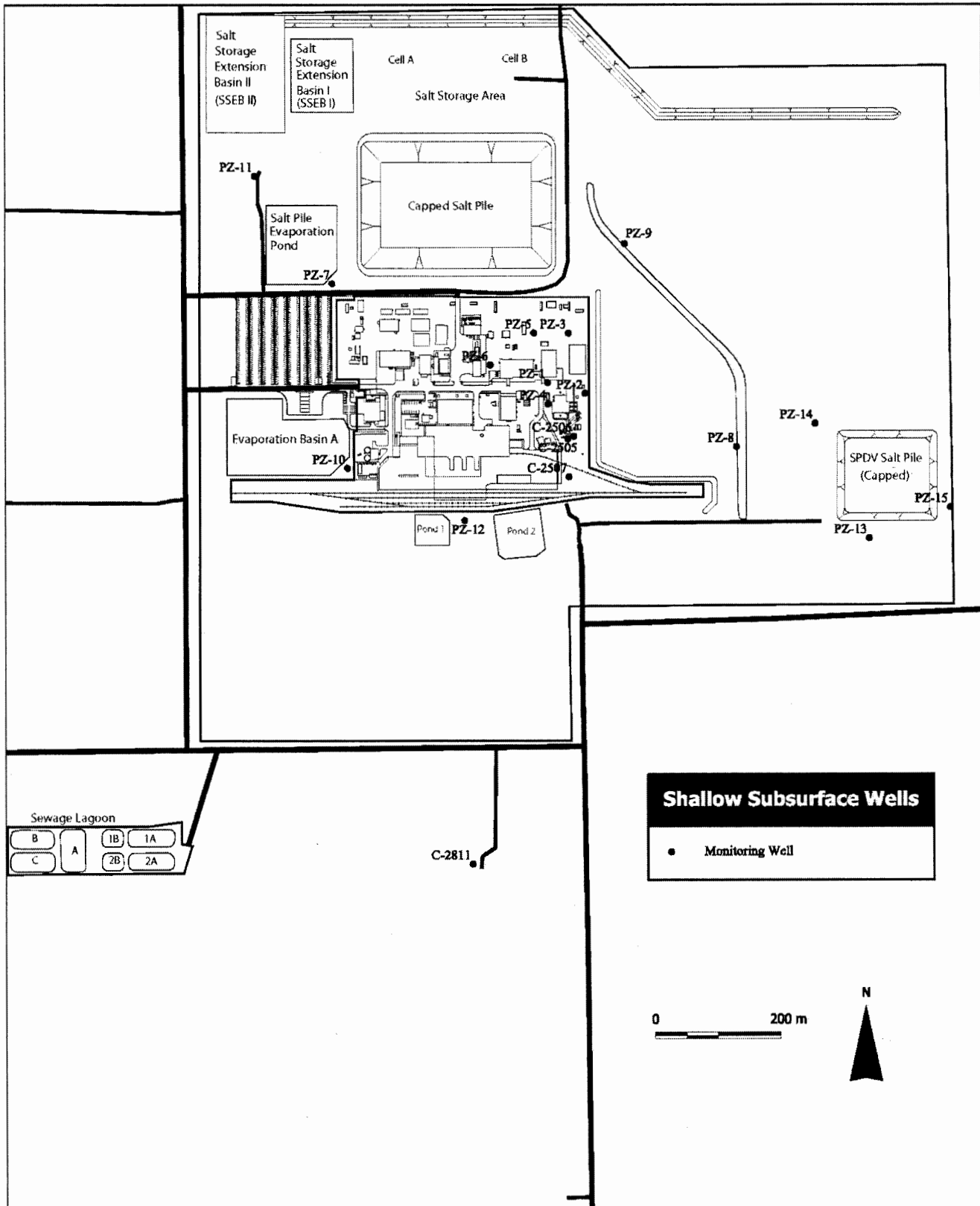
Water levels in the shallow wells (PZ-1 through PZ-15, C-2811, C-2505, C-2506, and C-2507), Figure 1, were obtained March 2-3, 2011, and June 8, 2011, and are included in Table 4. These were taken on the quarterly milestones outlined in the Ground Water Monitoring Schedule, in the September 9, 2008, DP-831 Modification. Total rainfall in the area of WIPP for this reporting period was 0.17 inches compared to 5.81 inches for the same time period in 2010, a difference of 5.64 inches more in 2010. Total rainfall in 2010 was slightly more than the average annual rainfall for the region of 12.92 inches reported by the National Oceanic and Atmospheric Administration.

In the shallow wells monitored 16 of 19 showed decreasing water levels during the reporting period. The largest decrease in water level over this time was 0.94 feet identified in PZ-10, next to Evaporation Basin A. An increase was shown in C-2811, PZ-2, and PZ-3 (average of +0.27 feet); this may be attributed to the lag time from rainfall in 2010. The average groundwater decrease around the lined ponds (PZ-7, PZ-10, PZ-11, and PZ-12) was 0.46 feet for this reporting period.

WQSP-6A was sampled during May 2011. WQSP-6A sampling results are provided in Table 4. Sulfate, nitrate, chloride, and total dissolved solids were detected in WQSP-6A samples at concentrations exceeding standards of 20.6.2.3103 NMAC, *Standards for Ground Water of 10,000 mg/L TDS Concentration or Less for Human Health and Domestic Water Supply*. Although the concentrations were higher than the standards, they are less than background concentrations established in the *Waste Isolation Pilot Plant RCRA Background Groundwater Quality Baseline Report* (DOE/WIPP 98-2285). Total Kjeldahl nitrogen was below the detection limit of one mg/L. The shallow subsurface water (SSW) identified at the WIPP site has not impacted the Dewey Lake groundwater in WQSP-6A based on the consistency of analyzed parameters in WQSP-6A.

The SSW piezometers were sampled for field and general chemistry parameters in May 2011, as required by the September 9, 2008, modification to DP-831. Five piezometers were sampled on May 23, 2011, and six on May 24, 2011. Results for the field sampling parameters and laboratory analyses are presented in Table 4. Chloride concentrations exceeded values listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply in all shallow piezometers sampled. The maximum chloride concentration was 150,000 mg/L in PZ-13, while the minimum concentration was 310 mg/L in PZ-10. Total dissolved solids concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in all shallow piezometers sampled, with the maximum concentration of 248,000 mg/L in PZ-13. Sulfate concentrations exceeded 20.6.2.3103 NMAC values for Human Health and Domestic Water Supply in 9 of 11 piezometers sampled with a maximum concentration of 4,300 mg/L in PZ-9 and a minimum concentration of 350 mg/L in C-2811.

Figure 1 WIPP Site Map



**Table 4  
Shallow Subsurface Water Monitoring Program**

Monitoring Site	Water Level Monitoring (Ft AMSL)		Field Parameters			General Chemistry Parameters					Other
	3/2-3/3/11	6/8/11	pH (SU)	Temp. (°C)	Specific Conductivity @25 °C (µS/cm)	Sample Date	Nitrate (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	TDS (mg/L)	TKN (mg/L)
PZ-1	3,371.60	3,371.22	6.22	29.6	111,000	05/24/11	NA	<b>2,000</b>	<b>51,000</b>	<b>85,200</b>	NA
PZ-2	3,371.04	3,370.67	NS	NS	NS	NS	NS	NS	NS	NS	NS
PZ-3	3,372.29	3,371.99	NS	NS	NS	NS	NS	NS	NS	NS	NS
PZ-4	3,366.06	3,365.42	NS	NS	NS	NS	NS	NS	NS	NS	NS
PZ-5	3,372.79	3,372.38	6.67	28.1	30,330	05/24/11	NA	<b>1,200</b>	<b>10,000</b>	<b>18,400</b>	NA
PZ-6	3,370.23	3,369.72	6.33	29.9	92,400	05/24/11	NA	<b>1,700</b>	<b>37,000</b>	<b>67,700</b>	NA
PZ-7	3,376.91	3,376.71	6.26	29.6	127,000	05/23/11	NA	<b>2,700</b>	<b>60,000</b>	<b>101,000</b>	NA
PZ-8	3,355.61	3,355.57	NA	NA	NA	NS	NA	NS	NS	NS	NS
PZ-9	3,363.74	3,363.60	6.08	26.4	169,900	05/24/11	NA	<b>4,300</b>	<b>83,000</b>	<b>147,000</b>	NA
PZ-10	3,367.62	3,366.90	7.19	27.2	2,464	05/23/11	NA	400	<b>310</b>	<b>1,620</b>	NA
PZ-11	3,374.48	3,374.33	6.44	26.9	104,400	05/23/11	NA	<b>2,000</b>	<b>45,000</b>	<b>80,500</b>	NA
PZ-12	3,357.27	3,356.59	6.80	25.6	17,640	05/23/11	NA	<b>900</b>	<b>5,600</b>	<b>10,900</b>	NA
PZ-13	3,356.28	3,356.16	Bailed			05/24/11	NA	<b>2,700</b>	<b>150,000</b>	<b>248,000</b>	NA
PZ-14	3,353.22	3,353.17	NS	NS	NS	NS	NA	NS	NS	NS	NS
PZ-15	3,383.33	3,382.99	NS	NS	NS	NS	NA	NS	NS	NS	NS
C-2811	3,346.85	3346.52	7.24	23.7	3,958	05/23/11	NA	350	<b>960</b>	<b>2,370</b>	NA
C-2505	3,367.63	3,367.08	NS	NS	NS	NS	NA	NS	NS	NS	NS
C-2506	3,368.18	3,367.62	NS	NS	NS	NS	NA	NS	NS	NS	NS
C-2507	3,364.73	3,364.34	6.75	25.7	10,820	05/24/11	NA	<b>790</b>	<b>3,200</b>	<b>6,190</b>	NA
WQSP-6a	3,196.81	3,196.99	7.48	23.2	3,838	05/26/11	6.5	<b>2,100</b>	<b>270</b>	<b>3,480</b>	<1.0

**Explanation:** NA: Not Analyzed, parameter not required, per permit conditions  
 NS: Not Sampled, not required per permit conditions  
 PZ-13 Field Parameters were not measured since a bailer was used to collect the sample due to difficulty using Low-Flow pumps  
 "Bold" concentrations exceed standards listed in 20.6.2.3103 NMAC for Human Health and Domestic Water Supply