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*Environmental Protection Division*  
*Water Quality & RCRA (ENV-RCRA)*  
P.O. Box 1663, Mail Stop K490  
Los Alamos, New Mexico 87545  
(505) 667-7969/FAX: (505) 665-9344

Date: October 30, 2008  
Refer To: ENV-RCRA-08-218  
LA-UR: 08-06697

Mr. William C. Olson, Bureau Chief  
Ground Water Quality Bureau  
New Mexico Environment Department  
Harold Runnels Building, Room N2261  
1190 St. Francis Drive  
P.O. Box 26110  
Santa Fe, NM 87502

Dear Mr. Olson:

**SUBJECT: GROUND WATER DISCHARGE PLAN QUARTERLY REPORT, THIRD QUARTER 2008, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY (DP-1132)**

This letter is intended to serve as Los Alamos National Laboratory's quarterly Ground Water Discharge Plan (DP-1132) Report for the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF) for the third quarter (July, August, and September) of 2008. Since the first quarter of 1999, Los Alamos National Laboratory (Laboratory) has provided your agency with voluntary quarterly reports containing analytical results from effluent and ground water monitoring.

Quarterly Monitoring Results, Mortandad Canyon Alluvial Ground Water Wells

Table 1.0 presents the analytical results from sampling conducted at four Mortandad Canyon alluvial wells, MCO-3, MCO-4B, MCO-6, and MCO-7, during the third quarter of 2008. Samples are submitted to General Engineering Laboratories (GEL), Charleston, SC, for analysis. All of the analytical results were below the New Mexico Water Quality Control Commission (NM WQCC) Regulation 3103 standards for nitrate-nitrogen (NO<sub>3</sub>-N), fluoride (F), and total dissolved solids (TDS).

Analytical results from the sampling of intermediate and regional aquifer wells in Mortandad Canyon can be accessed online at the Water Quality Database (<http://wqdbworld.lanl.gov/>) and the Risk Analysis, Communication, Evaluation and Reduction (RACER) Web site ([www.racernm.com](http://www.racernm.com)).



RLWTF Effluent Monitoring Results

Table 2.0 presents the analytical results from the weekly composite sampling of the RLWTF's effluent for the second quarter and third quarters of 2008 (Note: late-second quarter results are included in this report because the analytical results were pending when the second quarter report was prepared). The final weekly composite (FWC) samples are flow-proportioned composite samples prepared from each tank of effluent generated by the RLWTF during a 7-day period. Samples are submitted to GEL for analysis. In addition, the TA-50 RLWTF analytical laboratory analyzes duplicate FWC samples as part of the Laboratory's compliance monitoring program.

All of the FWC results presented in Table 2.0 are below the NM WQCC ground water standards for NO<sub>3</sub>-N, F, and TDS. The combined nitrate-nitrogen (NO<sub>3</sub>-N) and nitrite-nitrogen (NO<sub>2</sub>-N) concentrations in four FWC samples—6/10/08, 6/16/08, 8/18/08, and 8/26/08—were greater than 10 mg/L. The NM WQCC ground water standard of 10 mg/L is for NO<sub>3</sub>-N only. Separate NO<sub>3</sub>-N and NO<sub>2</sub>-N analyses are not performed by GEL due to the short analytical hold-time (48 hrs). However, the TA-50 RLWTF analytical laboratory performs individual NO<sub>3</sub>-N and NO<sub>2</sub>-N analyses on duplicate FWC samples. Duplicate sample results from the TA-50 RLWTF analytical laboratory show that all NO<sub>3</sub>-N concentrations were below the NM WQCC ground water standard of 10 mg/L.

Table 3.0 presents the final monthly composite (FMC) sample results for NO<sub>3</sub>-N, perchlorate (ClO<sub>4</sub>), F, and TDS for the second and third quarters of 2008. The FMC samples are flow-proportioned composite samples prepared from each tank of effluent generated by the RLWTF during the month. Analysis is by the TA-50 RLWTF analytical laboratory. All of the analytical results were below the NM WQCC Regulation 3103 standards for NO<sub>3</sub>-N, F, and TDS.

Please contact me at (505) 667-7969 if you would like additional information regarding this quarterly report.

Sincerely,



Bob Beers  
Water Quality & RCRA Group (ENV-RCRA)

BB/lm

Cy: Glenn Saums, NMED/SWQB, Santa Fe, NM  
James Bearzi, NMED/HWB, Santa Fe, NM  
Steve Yanicak, NMED/OB/LASO, J993  
Hai Shen, LASO/EO, A316  
Gene Turner, LASO/EO, A316  
Michael Mallory, PADOPS, A102  
Richard S. Watkins, ADESHQ, K491

Cy (continued):

Susan G. Stiger, ADEP, M991  
Mike Saladen, ENV-RCRA, K490  
Craig Douglass, RLW, E518  
Peter J. Rice, FMO-STO, E518  
Pete Worland, EWMO-RLW, E518  
Chris Del Signore, EWMO-RLW, E518  
Steve Hanson, EWMO-RLW, E518  
Jeffery R. Theesfeld, OS-BSI, MS P901  
ENV-DO, File, J978  
ENV-RCRA, File, w/enc., K490  
IRM-RMMSO, w/enc., A150

**Radioactive Liquid Waste Treatment Facility**  
**Ground Water Discharge Plan (DP-1132) Quarterly Report**  
**3rd Quarter, 2008**

**Table 1.0. Mortandad Canyon Alluvial Well Sampling, 3rd Quarter, 2008.**

Sampling Location	Sample Field Prep (F/UF)	Sample Date	Perchlorate by LC/MS/MS (ug/L)	NO <sub>3</sub> -N (mg/L)	TKN (mg/L)	NH <sub>3</sub> -N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F	8/15/2008	4.15	3.08	0.13	<0.05	330	0.39J-
MCO-4B	F	8/18/2008	6.97	0.82	<0.10	<0.05	341	0.63
MCO-6	F	8/19/2008	7.39	0.75	0.08J	<0.05	351	0.89
MCO-7	F	8/19/2008	10.1J	1.13	0.09J	<0.05	262	1.39
<i>NM WQCC 3103 Ground Water Standards</i>			<i>NA<sup>3</sup></i>	<i>10 mg/L<sup>4</sup></i>	<i>NA<sup>3</sup></i>	<i>NA<sup>3</sup></i>	<i>1000 mg/L</i>	<i>1.6 mg/L</i>

**Notes:**

<sup>1</sup>LC/MS/MS means perchlorate analysis by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry.

<sup>2</sup>All samples filtered with the exception of TKN.

<sup>3</sup>NA means that there is no NM WQCC 3103 standard for this analyte.

<sup>4</sup>The NMWQCC Regulation 3103 Ground Water Standard is for NO<sub>3</sub>-N.

J means the reported value is greater than the Method Detection Limit (MDL) but less than the Reporting Limit (RL).

J- means that the analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual with a potential negative bias.

**Radioactive Liquid Waste Treatment Facility  
Ground Water Discharge Plan (DP-1132) Quarterly Report  
3rd Quarter, 2008**

**Table 2.0. RLWTF Final Weekly Composite (FWC) Effluent Sampling, 3rd Quarter, 2008.**

Monitoring Period	Sample Composite Date	Sample ID#	Analysis by RLWTF <sup>1</sup>		Analysis by General Engineering Laboratories, Inc. <sup>2</sup>			
			NO <sub>3</sub> -N (mg/L)	NO <sub>2</sub> -N (mg/L)	NO <sub>3</sub> -NO <sub>2</sub> -N (mg/L)	Perchlorate by LC/MS/MS (ug/L)	Fluoride (mg/L)	TDS (mg/L)
Jun-08	06/10/08	GU080600THE02	7.77	2.37	10.5	0.185J	0.95	721
	06/16/08	GU080600THE03	8.30	3.10	14.9	3.07J	1.06	795H,J
	06/24/08	No Discharge <sup>2</sup>	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
Jul-08	07/01/08	GU080600THE04	6.85	1.75	6.08	0.13J	0.94	568
	07/09/08	GU080700THE01	4.70	<0.01	5.9	0.0825J	0.69	489
	07/14/08	GU080700THE02	3.59	3.34	7.4	0.157J	0.67	507
	07/21/08	GU080700THE03	6.70	1.46	8.15	0.229J-	0.72	414
	07/27/08	GU080700THE04	5.10	2.65	6.78	1.12J	0.83	457H,J
Aug-08	08/04/08	GU080800THE01	0.66	4.50	3.46	0.34	0.75	262
	08/11/08	GU080800THE02	2.30	6.98	6.75	<0.05	0.79	361
	08/18/08	GU080800THE03	7.80	14.0	15.4	<0.05	0.90	460
	08/26/08	GU080800THE04	9.20	6.30	14.2	<0.05	1.03	462
Sep-08	09/02/08	GU080900THE01	4.60	2.60	7.25	<0.05	0.24	147
	09/09/08	GU080900THE02	1.69	0.48	2.21	<0.05	0.046J	46H
	09/15/08	GU080900THE03	2.73	0.16	3.32	<0.05	0.054J	45
	09/22/08	GU080900THE04	2.29	0.50	2.95	<0.05	0.089J	53H
	09/29/08	No Discharge <sup>2</sup>	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge	No Discharge
<b>3rd Quarter 2008 Averages<sup>3</sup> (mg/L)</b>			<b>5.0</b>	<b>3.3</b>	<b>7.7</b>	<b>0.38</b>	<b>0.65</b>	<b>386</b>
<i>NM WQCC 3103 Ground Water Standards</i>			<i>10 mg/L</i>	<i>NA<sup>5</sup></i>	<i>10 mg/L<sup>4</sup></i>	<i>NA<sup>5</sup></i>	<i>1.6 mg/L</i>	<i>1000 mg/L</i>

**Notes:**

<sup>1</sup>Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's analytical laboratory.

<sup>2</sup>No Discharges means that the RLWTF did not discharge any effluent during the 7-day period preceding the composite date.

<sup>3</sup>3rd quarter 2008 averages include the results from June 2008.

<sup>4</sup>The NM WQCC Regulation 3103 Ground Water Standard is for nitrate (NO<sub>3</sub>-N).

<sup>5</sup>NA means that there is no NM WQCC 3103 standard for this analyte.

J means the reported value is greater than the Method Detection Limit (MDL) but less than the Reporting Limit (RL).

H means that the analytical hold time was exceeded.

J- means that the analyte is classified as detected but the reported concentration value is expected to be more uncertain than usual with a potential negative bias.

*Radioactive Liquid Waste Treatment Facility  
Ground Water Discharge Plan (DP-1132) Quarterly Report  
3rd Quarter, 2008*

**Table 3.0. RLWTF Final Monthly Composite (FMC) Effluent Sampling, 2nd & 3rd Quarters, 2008.**

2008 Monitoring Period	RLWTF FMC Results <sup>1</sup>			
	NO <sub>3</sub> -N (mg/L)	Perchlorate by IC <sup>2</sup> (µg/L)	TDS (mg/L)	F (mg/L)
April	0.30	<1	470	0.87
May	2.50	<1	474	1.2
June	6.90	<1	765	1.1
July	4.95	<1	450	0.83
August	3.80	<1	308	0.60
September	2.20	<1	27	<0.01
<i>NM WQCC 3103 Ground Water Standards</i>	<i>10 mg/L</i>	<i>NA<sup>3</sup></i>	<i>1000 mg/L</i>	<i>1.6 mg/L</i>

**Notes:**

<sup>1</sup>Analyses by the Laboratory's TA-50 RLWTF analytical laboratory.

<sup>2</sup>IC means EPA Method 314.0, perchlorate analysis by Ion Chromatography.

<sup>3</sup>NA means that there is no NM WQCC 3103 standard for this analyte.