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LA-UR: 09-00270

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, FOURTH 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 fourth quarter (October, November, and December) 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 fourth 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 fourth quarter of 2008. 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 two FWC samples—10/6/08, and 11/10/08—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 fourth quarter 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 presented in Table 3.0 were below the NM WQCC Regulation 3103 standards for NO<sub>3</sub>-N, F, and TDS. The November FMC perchlorate result and all of the December FMC results were not available at the time this report was prepared. These data will be reported to your agency in the next quarterly discharge plan report (April 30, 2009).

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

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**Radioactive Liquid Waste Treatment Facility  
Ground Water Discharge Plan (DP-1132) Quarterly Report  
4th Quarter, 2008**

**Table 1.0. Mortandad Canyon Alluvial Well Sampling, 4th Quarter, 2008.**

Sampling Location	Sample Field Prep (F/UF) <sup>2</sup>	Sample Date	Perchlorate by LC/MS/MS <sup>1</sup> (ug/L)	NO <sub>3</sub> +NO <sub>2</sub> -N (mg/L)	TKN <sup>2</sup> (mg/L)	NH <sub>3</sub> -N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F	11/6/2008	0.971	2.8	3.65	<0.05	256	0.35
MCO-4B	F	11/10/2008	10.6	0.99	0.049J	<0.05	278	0.75
MCO-6	F	11/11/2008	9.51	1.0	<0.10	<0.05	313	0.87
MCO-7	F	11/11/2008	10.3	1.1	0.074J	<0.05	252	1.3
<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 NM WQCC 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).

**Radioactive Liquid Waste Treatment Facility  
Ground Water Discharge Plan (DP-1132) Quarterly Report  
4th Quarter, 2008**

**Table 2.0. RLWTF Final Weekly Composite (FWC) Effluent Sampling, 4th Quarter, 2008.**

Monitoring Period	Sample Composite Date	Sample ID#	Analysis by RLWTF <sup>1</sup>		Analysis by General Engineering Laboratories, Inc.			
			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)
October	10/06/08	GU080900OTHE05	7.2	4.1	11.2	<0.05	0.27	296
	10/14/08	GU081000OTHE01	3.7	2.5	8.1J	<0.05	0.21	220
	10/20/08	GU081000OTHE02	4.1	4.4	8.48	<0.05	0.32	352
	10/27/08	GU081000OTHE03	8.5	0.37	8.33	<0.05	0.28	303HJ
November	11/03/08	No Discharge <sup>2</sup>						
	11/10/08	GU081100OTHE01	4.6	6.3	11.5	<0.05	0.31	255
	11/17/08	GU081100OTHE02	7.9	<0.01	7.63	<0.05	0.21	193
	11/24/08	GU081100OTHE03	4.4	<0.01	4.53	<0.05	0.22	136
December	12/01/08	GU081200OTHE01	8.0	<0.01	8.33	<0.05	0.24	224
	12/08/08	No Discharge						
	12/15/08	GU081200OTHE02	pending <sup>6</sup>	pending	pending	pending	pending	pending
	12/22/08	GU081200OTHE03	pending	pending	pending	pending	pending	pending
	12/29/08	No Discharge						
<b>4th Quarter 2008 Averages<sup>3</sup> (mg/L)</b>			<b>6.1</b>	<b>2.2</b>	<b>8.51</b>	<b>0.05</b>	<b>0.26</b>	<b>247</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 Discharge means that the RLWTF did not discharge any effluent during the 7-day period preceding the composite date.

<sup>3</sup>4th quarter 2008 averages include the results from September 2008, if applicable.

<sup>4</sup>The NM WQCC 3103 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.

<sup>6</sup>Pending means that the analytical results were not available at the time this report was prepared.

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.

**Radioactive Liquid Waste Treatment Facility  
Ground Water Discharge Plan (DP-1132) Quarterly Report  
4th Quarter, 2008**

**Table 3.0. RLWTF Final Monthly Composite (FMC) Effluent Sampling, 4th Quarter, 2008.**

Monitoring Period	RLWTF FMC Results <sup>1</sup>			
	NO <sub>3</sub> -N (mg/L)	Perchlorate by IC <sup>2</sup> (ug/L)	TDS (mg/L)	F (mg/L)
October	6.2	<1	277	0.16
November	7.7	pending <sup>4</sup>	167	0.18
December	pending	pending	pending	pending
<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>Analysis by the TA-50 Radioactive Liquid Waste Treatment Facility's 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.

<sup>4</sup>Pending means that the analytical results were not available at the time this report was prepared.