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Date: October 30, 2007
Refer To: ENV-RCRA-07-248
LA-UR: 07-7028

Mr. Robert George, Domestic Team Leader
Ground Water Pollution Prevention Section
Ground Water Quality Bureau
New Mexico Environment Department
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, New Mexico 87502-6110

SUBJECT: GROUND WATER DISCHARGE PLAN QUARTERLY REPORT, THIRD QUARTER 2007, TA-50 RADIOACTIVE LIQUID WASTE TREATMENT FACILITY (DP-1132)

Dear Mr. George:

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, September) of 2007. Since the first quarter of 1999, Los Alamos National 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 2007. 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 (NO₃-N), fluoride (F), and total dissolved solids (TDS).

It should be noted that the analytical results for NO₃+NO₂-N, TKN, and NH₃-N at MCO-4B are pending at this time; GEL, in error, canceled these analyses shortly after receiving the samples. However, since GEL had archived the samples, the analyses are still being performed and the results will be reported in the fourth quarter 2007 report.

Analytical results from the sampling of intermediate and regional aquifer wells in Mortandad Canyon can be accessed online at the Laboratory's Water Quality Database (<http://wqdbworld.lanl.gov/>).



RLWTF Effluent Monitoring Results

Table 2.0 presents the analytical results from the weekly composite sampling of the RLWTF's effluent for the period July through September, 2007. 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's analytical laboratory analyzes duplicate FWC samples as part of their operational monitoring program.

All of the FWC results for the third quarter of 2007 were below the NM WQCC ground water standards for fluoride and total dissolved solids. The combined NO₃+NO₂-N concentration in the September 2, 2007, FWC sample was 12.1 mg/L. The NM WQCC ground water standard is for NO₃-N only. Separate NO₃-N and NO₂-N analyses are not performed by GEL due to the short analytical hold-time (48 hrs). However, the analytical laboratory at the TA-50 RLWTF performs individual NO₃-N and NO₂-N analyses on duplicate FWC samples as part of their operational monitoring program. Analytical results from these duplicate samples for the third quarter of 2007 are presented in the following table.

3rd Quarter 2007, FWC Operational Sampling Results, TA-50 RLWTF Analytical Laboratory

Composite Date	Sample ID Number	Units	NITRATE-N (NO ₃ -N)	NITRITE-N (NO ₂ -N)	Sum (NO ₃ +NO ₂ -N)
6/24/2007	7.71325	mg/L	0.5	0.9	1.4
7/1/2007	7.71326	mg/L	0.5	0.7	1.2
7/22/2007	7.71329	mg/L	0.6	1.7	2.3
7/29/2007	7.7133	mg/L	NA	NA	NA
8/26/2007	7.71334	mg/L	6.5	2.2	8.7
9/2/2007	7.71335	mg/L	6.1	5.9	12.0
9/9/2007	7.71336	mg/L	2.0	2.4	4.4

NA means that no data is available for that composite date.
 Composite dates for weeks with no discharge are not listed.

Sample results from September 2, 2007, as presented in the above table, show a NO₃-N concentration of 6.1 mg/L and a NO₂-N concentration of 5.9 mg/L. The sum of these, 12.0 mg/L, is consistent with GEL's combined NO₃-N and NO₂-N result of 12.1 mg/L. Based upon these data, NO₃-N concentrations for the third quarter of 2007 were below the NM WQCC ground water standard of 10 mg/L.

Table 3.0 presents the final monthly composite (FMC) sample results for nitrate-nitrogen, perchlorate (ClO₄, by Method 314.0, Ion Chromatography), fluoride, and total dissolved solids for the third quarter of 2007. 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 nitrate-nitrogen, fluoride, and total dissolved solids.

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

Enclosures: a/s

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**Radioactive Liquid Waste Treatment Facility
Ground Water Discharge Plan (DP-1132) Quarterly Report
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Table 1.0. Mortandad Canyon Alluvial Monitoring Well Sampling, 3rd Quarter, 2007.

Sampling Location	Sample Field Prep (F/UF)	Sample Date	Perchlorate by LC/MS/MS ¹ (ug/L)	NO ₃ +NO ₂ -N (mg/L)	TKN (mg/L)	NH ₃ -N (mg/L)	TDS (mg/L)	F (mg/L)
MCO-3	F ³	9/14/2007	2.59	2.69	0.31	<0.03	227	0.43
MCO-3, Field Duplicate ²	F	9/14/2007	2.51	2.65	0.43	<0.03	227	0.45
MCO-4B	F	8/13/2007	13.3J	results pending ⁶	results pending ⁶	results pending ⁶	378	0.72
MCO-6	F	8/14/2007	25.0	1.72	0.14	<0.3	325	0.85
MCO-6, Field Duplicate ²	F	8/14/2007	25.5	1.76	0.16	<0.3	325	0.88
MCO-7	F	8/28/2007	24.5	2.14	0.11	<0.03	275	1.25
<i>NM WQCC 3103 Ground Water Standards</i>			<i>NA⁴</i>	<i>10 mg/L⁵</i>	<i>NA⁴</i>	<i>NA⁴</i>	<i>1000 mg/L</i>	<i>1.6 mg/L</i>

Notes:

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

²LANL collects duplicate samples as part of its QC program.

³F means the sample was filtered, UF means the sample was not filtered.

⁴NA means that there is no NM WQCC 3103 standard for this analyte.

⁵The NMWQCC Regulation 3103 Ground Water Standard is for NO₃-N.

⁶These results will be reported in the 4th quarter 2007 DP-1132 report.

J means that the analyte is classified as detected but the reported value is expected to be more uncertain than usual.

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Table 2.0. RLWTF Final Weekly Composite (FWC) Effluent Sampling, 3rd Quarter, 2007.

Monitoring Period	Sample Composite Date	RLWTF Final Weekly Composite Results ¹			
		NO ₃ +NO ₂ -N (mg/L)	Perchlorate by LC/MS/MS (ug/L)	Fluoride (mg/L)	TDS (mg/L)
June, 2007	6/24/2007	0.16	0.91J+	0.08J	97
July, 2007	7/1/2007	1.40	1.46	0.14	151
	7/8/2007	No Discharges	No Discharges	No Discharges	No Discharges
	7/15/2007	No Discharges	No Discharges	No Discharges	No Discharges
	7/22/2007	1.94	0.59	0.15	152
	7/29/2007	9.60	2.18J	0.30	317
Aug, 2007	8/5/2007	No Discharges	No Discharges	No Discharges	No Discharges
	8/12/2007	No Discharges	No Discharges	No Discharges	No Discharges
	8/19/2007	No Discharges	No Discharges	No Discharges	No Discharges
	8/26/2007	8.21	0.93	0.053J	95
Sept, 2007	9/2/2007	12.1 ⁶	1.07J-	0.16J+	155
	9/2/07--GEL QC duplicate	11.8 ⁶			
	9/9/2007	5.04	0.37	<0.03	64
	9/16/2007	Results Pending	Results Pending	Results Pending	Results Pending
	9/23/2007	Results Pending	Results Pending	Results Pending	Results Pending
3rd Quarter 2007 Averages³ (mg/L)		5.49	0.89	0.13	147
<i>NM WQCC 3103 Ground Water Standards</i>		<i>10 mg/L⁴</i>	<i>NA⁵</i>	<i>1.6 mg/L</i>	<i>1000 mg/L</i>

Notes:

- ¹All analyses by General Engineering Laboratories, Inc. unless otherwise noted.
- ²No Discharges means that the RLWTF did not discharge any effluent during the 7-day period preceding the composite date.
- ³3rd quarter 2007 averages include the results from June 2007.
- ⁴The NM WQCC Regulation 3103 Ground Water Standard is for nitrate (NO₃-N).
- ⁵NA means that there is no NM WQCC 3103 standard for this analyte.
- ⁶Analysis of a duplicate sample by the TA-50 RLWTF analytical laboratory showed a NO₃-N concentration of 6.1 mg/L.
- 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 value is expected to be more uncertain than usual with a positive bias.
- J- means that the analyte is classified as detected but the reported value is expected to be more uncertain than usual with a negative bias.

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Table 3.0. RLWTF Final Monthly Composite (FMC) Effluent Sampling, 3rd Quarter, 2007.

Monitoring Period	RLWTF FMC Results ¹			
	NO ₃ -N (mg/L)	Perchlorate by IC ² (ug/L)	TDS (mg/L)	F (mg/L)
July, 2007	2.7	<1	187	0.24
August, 2007	6.5	<1	112	<0.01
September, 2007	3.1	<1	40	<0.01
<i>NM WQCC 3103 Ground Water Standards</i>	<i>10 mg/L</i>	<i>NA³</i>	<i>1000 mg/L</i>	<i>1.6 mg/L</i>

Notes:

¹Analyses by the Laboratory's TA-50 RLWTF analytical laboratory.

²IC means EPA Method 314.0, perchlorate analysis by Ion Chromatography.

³NA means that there is no NM WQCC 3103 standard for this analyte.