

Los Alamos

NATIONAL LABORATORY

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Date: April 26, 2000
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Ms. Phyllis Bustamante
Ground Water Quality Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

**SUBJECT: GROUND WATER DISCHARGE PLAN (DP-1132), QUARTERLY REPORT,
FIRST QUARTER, 2000**

Dear Ms. Bustamante:

This letter and the enclosed attachments are intended to serve as Los Alamos National Laboratory's quarterly Ground Water Discharge Plan (DP-1132) report for the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50 for the period from January 1 through March 31, 2000. In December 1998, the Laboratory proposed to submit quarterly reports to the New Mexico Environment Department's Ground Water Quality Bureau on a voluntary basis. These quarterly reports include effluent and monitoring well analytical results as well as a progress report on the planned upgrades to the RLWTF.

Attachment 1.0, Table 1.0, presents the analytical results from weekly monitoring of the RLWTF's effluent holding tank. The weekly samples are flow-proportioned composite samples prepared from each batch of effluent generated by the RLWTF during a 7-day period. All sample results shown for the first quarter of 2000 were below New Mexico Water Quality Control Commission (NM WQCC) Regulation 3103 standards for nitrate (NO₃-N), fluoride (F), and total dissolved solids (TDS).

In addition to weekly composite sampling, the RLWTF also conducts operational screening (using a HACH Kit) for nitrates (NO₃-N) in each batch of effluent. Operational screening of effluent samples collected during the first quarter of 2000 produced the following maximum, minimum, and average results for nitrate (NO₃-N), respectively: 6.0 mg/L, 0.4 mg/L, and 1.5 mg/L.

Attachment 2.0, Table 2.0, presents the analytical results from sampling at the Laboratory's Mortandad Canyon alluvial monitoring wells on February 24, 2000. All of the sample results from MCO-3, MCO-6, and MCO-7 were below NM WQCC Regulation 3103 standards for nitrate (NO₃-N), fluoride (F), and total dissolved solids (TDS) with the exception of the nitrate result at MCO-7 (12.5 mg/L). No sample results are available for MCO-4B because insufficient water was available for sample collection. MCO-4B has not had sufficient water for sampling since October 1999. Attachment 3.0, Figure 1.0, has been presented to illustrate the decline in nitrate concentrations in Mortandad Canyon alluvial ground water since March 21, 1999, when nitrate restrictions were initiated at the Laboratory.



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Since the RO treatment unit returned to service on December 10, 1999, the RLWTF's effluent has consistently met the U.S. Department of Energy's Derived Concentration Guide (DCG) for gross alpha particle activity of 30 pCi/L. Worth noting, in February 2000 the RLWTF discharged a batch of effluent from the Reverse Osmosis (RO) treatment unit with a gross alpha particle activity of 0 pCi/L (+/- 2 pCi/L).

In January 2000, the Electrodialysis Reversal (EDR) treatment unit completed its start-up phase and was placed into permanent service. The feed water to the EDR is the reject stream from the RO treatment unit. The EDR houses a series of charge-sensitive membranes sandwiched between plates that produce an electric field. The electric field drives ions through the membranes. As a result, the EDR is capable of achieving a 5-6 fold concentration of the RO reject stream. The reject stream from the EDR is transferred to storage for eventual treatment by the interim mechanical evaporator.

On January 31, 2000, the interim mechanical evaporator at the RLWTF was placed into service. The interim evaporator treats the EDR reject water by reducing the volume 4:1 (e.g., 80,000 gallons of EDR reject water is reduced to 20,000 gallons of evaporator bottoms). The distillate from the evaporator is being stored in the two 20,000 gallon temporary storage tanks recently installed at the RLWTF. To date, all discharges from the distillate tanks through NPDES Outfall 051 have met all NPDES, NMWQCC, and Department of Energy's DCG limits.

With the completion of the interim mechanical evaporator, the RLWTF has finished the second phase of a two-phased project to upgrade the facility's treatment units. Phase I, installation of the Tubular Ultrafiltration (TUF) and Reverse Osmosis (RO) treatment units, was completed in March 1999. The Phase I upgrades were critical steps towards compliance with U.S. Department of Energy's DCG limits. The Phase II upgrade, installation of the interim mechanical evaporator, was a critical step towards compliance with New Mexico Water Quality Control Commission Regulation 3103 ground water standards and the Laboratory's future goal of zero liquid discharge.

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

Sincerely,



Bob Beers

Water Quality and Hydrology Group

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Enclosures: a/s

Cy: S. Wilson, USEPA, Region 6, Dallas, Texas, w/enc.
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Cy (continued):

M. Johansen, DOE/LAAO, w/enc., MS A316
T. Gunderson, DLDOPS, w/enc., MS A100
B. Stine, ALDNW, w/enc., MS A105
D. Erickson, ESH-DO, w/enc., MS K491
S. Rae, ESH-18, w/enc., MS K497
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D. Moss, FWO-RLW, w/enc., MS E518
P. Worland, FWO-RLW, w/enc., MS E518
R. Alexander, FWO-WFM, w/enc., MS E518
D. Woitte, LC/GL, w/enc., MS A187
S. Yarbro, NMT-2, w/enc., MS E511
WQ&H File, w/enc., MS K497
CIC-10, w/enc., MS A150

*Radioactive Liquid Waste Treatment Facility
Ground Water Discharge Plan (DP-1132) Quarterly Report
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Table 1.0. RLWTF Weekly Effluent Monitoring Analytical Results, January-March, 2000.

Monitoring Period	RLWTF Weekly Effluent Monitoring Analytical Results		
	NO3-N (mg/L)	F (mg/L)	TDS (mg/L)
JANUARY	0.10	0.00	2
	0.07	0.00	54
	0.36	0.01	48
	0.29		70
FEBRUARY	0.22	0.02	116
	0.13	0.09	58
	0.19	0.04	72
	0.27	0.05	92
	0.17	0.05	83
MARCH	0.51	0.04	96
	0.25	0.03	100
	1.05	0.19	458
	0.29	0.07	472
1st Quarter 2000 Averages (mg/L)	0.30	0.05	147
<i>NM WQCC 3103 Ground Water Standards (mg/L)</i>	<i>10</i>	<i>1.6</i>	<i>1000</i>

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Table 2.0. Analytical Results, Mortandad Canyon Alluvial Monitoring Wells (mg/L)

Sampling Location	Sample Date: February 24, 2000				
	NO3-N	TKN	NH3	TDS	F
MCO-3	1.4	<0.2	<0.2	211	0.7
MCO-4B	NS	NS	NS	NS	NS
MCO-6	5.4	0.3	<0.2	392	1.1
MCO-7	12.5	0.3	<0.2	365	1.4
<i>NM WQCC Ground Water Standards</i>	<i>10</i>			<i>1000</i>	<i>1.6</i>

Notes:

NA means that no sample was collected during this sampling event.

NS means that no sample was collected at this well due to insufficient water.

All units: mg/L.

