

# Los Alamos

NATIONAL LABORATORY

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Date: July 31, 2000

In Reply Refer To: ESH-18/WQ&H:00-0248

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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,  
SECOND QUARTER, 2000**

Dear Ms. Bustamante:

This letter and the enclosed attachments are intended to serve as Los Alamos National Laboratory's Ground Water Discharge Plan (DP-1132) quarterly report for the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50 for the period from April 1 through June 30, 2000. Los Alamos National Laboratory has provided your agency with voluntary quarterly reports since January 1999. Each report provides your agency with analytical results from effluent and ground water monitoring and a status report on RLWTF operations.

In the last quarterly report (April 26, 2000, ESH-18/WQ&H:00-0162), the Laboratory announced the successful completion of the Phase I and II upgrades at the RLWTF. By completing these upgrades, the Laboratory has satisfied the commitments it made to your agency in the August 16, 1996, Ground Water Discharge Plan Application. This quarter, the Laboratory is pleased to announce another significant accomplishment, the reduction of nitrate concentrations in Mortandad Canyon's alluvial ground water to below the New Mexico Water Quality Control Commission (NM WQCC) Regulation 3103 standard of 10 mg/L.

Attachment 1.0, Table 1.0, presents the analytical results from sampling conducted at the Laboratory's Mortandad Canyon alluvial monitoring wells on April 17 and June 23, 2000. All of the analytical results from the June 23, 2000, samples from MCO-3, MCO-6, and MCO-7 were below NM WQCC Regulation 3103 standards for nitrate (NO<sub>3</sub>-N), fluoride (F), and total dissolved solids (TDS). 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.

Nitrate concentrations in Mortandad Canyon's alluvial ground water have been steadily declining since March 21, 1999, when nitrate concentrations in the RLWTF's effluent were reduced to less than 10 mg/L. The basis for this decline was first proposed by the respected Laboratory geologist William Purtymun in 1977 and presented by the Laboratory in its 1996 Ground Water Discharge Plan Application; once concentrations of nitrates in the effluent are reduced then concentrations in the alluvial ground water will naturally attenuate due to the relatively rapid turn-over of water and chemicals in storage.

Attachment 2.0, Table 2.0, 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 second quarter 2000 were below NM WQCC Regulation 3103 standards for nitrate (NO<sub>3</sub>-N),

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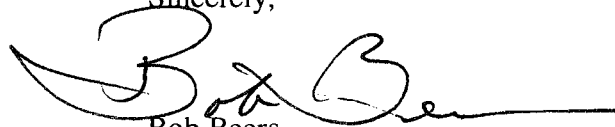
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fluoride (F), and total dissolved solids (TDS) with the exception of an elevated nitrate sample in June (11.4 mg/L). The RLWTF believes that this sample result is not representative of the effluent due to a mix-up during the preparation of the composite sample. The highest nitrate concentration seen in a screening sample (see below) during the same week was 9.3 mg/L. The quarterly average for nitrate in the RLWTF effluent was 1.84 mg/L.

In addition to weekly composite sampling, each batch of effluent is screened for nitrates prior to discharge using a HACH Kit. Operational screening of effluent samples collected during the second quarter 2000 produced the following maximum, minimum, and average results for nitrate (NO<sub>3</sub>-N), respectively: 9.3 mg/L, 1.5 mg/L, and 3.3 mg/L.

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

Sincerely,



Bob Beers

Water Quality and Hydrology Group

BB/tml

Enclosures: a/s

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B. Stine, ALDNW, w/enc., MS A105  
S. Yarbrow, NMT-2, w/enc., MS E511  
T. Stanford, FWO-DO, w/enc., MS K492  
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S. Hanson, FWO-DO, w/enc., MS J595  
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D. Erickson, ESH-DO, w/enc., MS K491  
S. Rae, ESH-18, w/enc., MS K497  
M. Saladen, ESH-18, w/enc., MS K497  
D. Woitte, LC/GL, w/enc., MS A187  
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  
 2nd Quarter, 2000

Table 1.0. Analytical Results, Mortandad Canyon Alluvial Monitoring Wells (mg/L).

| Sampling Location                     | Sample Date: June 23, 2000 |     |      |             |            | Sample Date: April 17, 2000 |     |      |             |            |
|---------------------------------------|----------------------------|-----|------|-------------|------------|-----------------------------|-----|------|-------------|------------|
|                                       | NO3-N                      | TKN | NH3  | TDS         | F          | NO3-N                       | TKN | NH3  | TDS         | F          |
| MCO-3                                 | 3.6                        | 0.5 | <0.2 | 354         | 0.9        | 2.4                         | 0.4 | 0.2  | 370         | 0.8        |
| MCO-4B                                | NS                         | NS  | NS   | NS          | NS         | NS                          | NS  | NS   | NS          | NS         |
| MCO-6                                 | 6.9                        | 0.6 | <0.2 | 374         | 1.1        | 5.6                         | 0.4 | <0.2 | 442         | 1.1        |
| MCO-7                                 | 8.9                        | 0.6 | <0.2 | 376         | 1.3        | 10.8                        | 0.4 | <0.2 | 311         | 1.3        |
| MCO-7 duplicate                       | 9.2                        | 0.6 | <0.2 | 361         | 1.3        |                             |     |      |             |            |
| <i>NM WQCC Ground Water Standards</i> | <i>10</i>                  |     |      | <i>1000</i> | <i>1.6</i> | <i>10</i>                   |     |      | <i>1000</i> | <i>1.6</i> |

Notes:

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

All units: mg/L

Table 2.0. RLWTF Weekly Effluent Monitoring Analytical Results, April-June, 2000.

| Monitoring Period                                 | RLWTF Weekly Effluent Monitoring Analytical Results |             |             |
|---|---|-------------|-------------|
|   | NO3-N (mg/L)  | F (mg/L)    | TDS (mg/L)  |
| APRIL   | 0.26  | 0.08        | 280         |
|   | 0.24  | 0.09        | 536         |
|   | 0.43  | 0.14        | 266         |
|   | 0.95  | 0.14        | 224         |
|   | 0.7   | 0.11        | 214         |
| MAY   | 0.34  | 0.14        | 262         |
|   | 0.16  | 0.09        | 270         |
|   | <0.01 <sup>1</sup>                                  | 0.12        | 130         |
|   | 0.67  | 0.23        | 292         |
| JUNE  | 2.08  | 0.88        | 364         |
|   | 2.89  | 0.07        | 174         |
|   | 1.99  | 0.09        | 108         |
|   | 11.4 <sup>2</sup>                                   | 0.22        | 212         |
| <b>2nd Quarter 2000 Averages (mg/L)</b>           | <b>0.97</b>   | <b>0.18</b> | <b>256</b>  |
| <i>NM WQCC 3103 Ground Water Standards (mg/L)</i> | <i>10</i>   | <i>1.6</i>  | <i>1000</i> |

Notes:

<sup>1</sup>Sample invalidated due to matrix effect.

<sup>2</sup>Sample result is suspect due to sample compositing errors.