aquifer contained an average of 2.2 × 20^{-6} μCi/mL of ^{238}Pu and 0.28 × 10^{-6} μCi/mL of ^{239,240}Pu at Well MCO-6. Results of the analyses of cores indicate no significant concentrations of ^{238}Pu in silts and clay of the alluvium aquifer or underlying tuff (Table XXIII). A comparison of the ^{239,240}Pu

TABLE XXIII. Average Plutonium Concentration in Soil Cores from Mortandad Canyon

	$\bar{x}$ + 2 s	
Location	**^{238}Pu (pCi/g)**	**^{239}Pu (pCi/g)**
Core Hole 1	0.001 ± 0.005	0.004 ± 0.009
Core Hole 2	0.0000 ± 0.003	0.011 ± 0.025
Core Hole 3	−0.001 ± 0.003	0.006 ± 0.015
Core Hole 4 (Control)	−0.001 ± 0.002	0.000 ± 0.006
Core Hole 5 (Control)	−0.001 ± 0.002	−0.002 ± 0.003

concentrations are low, being much lower than those found in solution in the aquifer or attached to sediments in the stream channel.

Summary

In summary, a study of the distribution of moisture, tritium, and plutonium in the Mortandad Canyon aquifer indicates some infiltration of water into the underlying tuff. This infiltration was accompanied by similar movement of tritium. The concentrations of plutonium on the sediments in the aquifer were low when compared with the high concentrations in solution in an ionic complex that does not readily exchange or is adsorbed by clay minerals in the alluvium.

References

1. W. D. Purtyman, W. R. Hansen, and R. J. Peters, "Radiochemical Quality of Water in the Shallow Aquifer in Mortandad Canyon 1967–1978," Los Alamos National Laboratory report LA-9675-MS (March 1983).
2. W. D. Purtyman, J. R. Buchholz, and T. E. Hakonson, "Chemical Quality of Effluents and Their Influence on Water Quality in a Shallow Aquifer," *Journal of Environmental Quality* 6 (1) (1977).

TRANSPORT OF RADIONUCLIDES FROM THE LAMPF LAGOONS

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Monitoring of the discharge water from the Los Alamos Meson Physics Facility lagoons continued during 1983. Sampling frequency has been reduced to twice a year, in June and December. The list of radionuclides being monitored has been expanded so that it now includes ^{7}Be, ^{57}Co, ^{134}Cs, ^{3}H, ^{54}Mn, ^{22}Na, and ^{83}Rb. The sampling locations are shown in Fig. 21 and the data obtained to date are shown in Table XXIV. Movement of radionuclides around the lagoons has been described in a previous report.[1]

Reference

1. Environmental Surveillance Group, "Environmental Surveillance at Los Alamos During 1982," Los Alamos National Laboratory report LA-9762-ENV (April 1983).

TABLE XXIV. Most Recent Available Data from Samples Taken Below Los Alamos Meson Physics (TA-53) Lagoons

Analysis	Units	1983 Sampling Date	Sampling Location[a] 1	2	3	4	5	6	7	8
					Sediment					
^{7}Be	pCi/g	June	1500 ± 150	3100 ± 310	14 000 ± 1400	660 ± 70	1700 ± 170	560 ± 60	11 ± 1.2	-0.10 ± 0.25
^{7}Be	pCi/g	December	1900 ± 190	2700 ± 270	4300 ± 430	1700 ± 170	180 ± 18	40 ± 4	7.5 ± 0.8	0.59 ± 0.06
^{57}Co	pCi/g	June	97 ± 10	460 ± 46	450 ± 46	13 ± 1.3	110 ± 11	96 ± 10	3.7 ± 0.4	0.03 ± 0.02
^{57}Co	pCi/g	December	300 ± 30	550 ± 55	680 ± 68	250 ± 25	120 ± 12	30 ± 3.0	7.9 ± 0.8	0.14 ± 0.01
^{134}Cs	pCi/g	June	330 ± 32	470 ± 48	1220 ± 120	150 ± 15	550 ± 55	180 ± 18	8.0 ± 0.8	0.03 ± 0.03
^{134}Cs	pCi/g	December	340 ± 34	580 ± 58	1100 ± 110	180 ± 18	270 ± 27	67 ± 6.7	5.5 ± 0.6	0.18 ± 0.02
^{3}H	10^{-4} µCi/mL	June	4.3 ± 0.4	4.2 ± 0.4	4.3 ± 0.4	4.2 ± 0.4	2.4 ± 0.2	0.88 ± 0.09	0.18 ± 0.02	0.028 ± 0.004
^{3}H	10^{-4} µCi/mL	December	11 ± 1.1	10 ± 1.0	11 ± 1.1	9.7 ± 1.0	1.5 ± 0.2	0.035 ± 0.004	0.03 ± 0.004	0.042 ± 0.005
^{54}Mn	pCi/g	June	110 ± 11	240 ± 24	730 ± 73	150 ± 15	340 ± 34	86 ± 8.7	3.3 ± 0.3	0.061 ± 0.028
^{54}Mn	pCi/g	December	190 ± 19	350 ± 35	320 ± 32	82 ± 8.2	91 ± 9.1	32 ± 3.2	6.2 ± 0.6	0.19 ± 0.02
^{22}Na	pCi/g	June	5.4 ± 0.5	15 ± 1.6	5.5 ± 0.6	3.5 ± 0.4	6.7 ± 0.7	2.7 ± 0.3	0.92 ± 0.10	-0.22 ± 0.03
^{22}Na	pCi/g	December	4.4 ± 0.4	15 ± 1.5	4.8 ± 0.5	8.1 ± 0.8	7.4 ± 0.7	1.0 ± 0.1	1.1 ± 0.1	0.095 ± 0.010
^{83}Rb	pCi/g	June	200 ± 20	360 ± 36	230 ± 23	160 ± 16	350 ± 35	80 ± 8.0	2.0 ± 0.2	0.082 ± 0.040
^{83}Rb	pCi/g	December	43 ± 4.3	100 ± 10	52 ± 5.2	57 ± 5.7	55 ± 5.5	14 ± 1.4	6.3 ± 0.6	0.31 ± 0.03
					Water					
^{7}Be	10^{-6} µCi/mL	June	160 ± 16	1600 ± 160	460 ± 46	Dry	Dry	Dry	Dry	-0.043 ± 0.004
^{7}Be	10^{-6} µCi/mL	December	510 ± 51	520 ± 52	440 ± 44	420 ± 42	Dry	Dry	Dry	Dry
^{57}Co	10^{-6} µCi/mL	June	24 ± 2.4	130 ± 13	59 ± 6	Dry	Dry	Dry	Dry	-0.012 ± 0.001
^{57}Co	10^{-6} µCi/mL	December	15 ± 1.5	15 ± 1.6	14 ± 1.4	11 ± 1.1	Dry	Dry	Dry	Dry
^{134}Cs	10^{-6} µCi/mL	June	13 ± 1	100 ± 10	120 ± 12	Dry	Dry	Dry	Dry	-0.008 ± 0.001
^{134}Cs	10^{-6} µCi/mL	December	6.7 ± 0.7	9.5 ± 1.0	5.0 ± 0.5	3.1 ± 0.3	Dry	Dry	Dry	Dry
^{3}H	10^{-4} µCi/mL	June	4.3 ± 0.4	4.3 ± 0.4	4.3 ± 0.4	Dry	Dry	Dry	Dry	0.026 ± 0.004
^{3}H	10^{-4} µCi/mL	December	11 ± 1.1	11 ± 1.1	11 ± 1.1	11 ± 1.1	Dry	Dry	Dry	Dry
^{54}Mn	10^{-6} µCi/mL	June	24 ± 2.4	150 ± 15	60 ± 6	Dry	Dry	Dry	Dry	0.045 ± 0.005
^{54}Mn	10^{-6} µCi/mL	December	2.7 ± 0.3	3.7 ± 0.4	2.6 ± 0.3	2.2 ± 0.2	Dry	Dry	Dry	Dry
^{22}Na	10^{-6} µCi/mL	June	7.7 ± 0.8	8.3 ± 0.8	8.9 ± 0.9	Dry	Dry	Dry	Dry	0.001 ± 0.0001
^{22}Na	10^{-6} µCi/mL	December	6.5 ± 0.7	5.5 ± 0.6	5.9 ± 0.6	5.6 ± 0.6	Dry	Dry	Dry	Dry
^{83}Rb	10^{-6} µCi/mL	June	9.9 ± 1.0	50 ± 5	10 ± 1	Dry	Dry	Dry	Dry	0.010 ± 0.001
^{83}Rb	10^{-6} µCi/mL	December	2.0 ± 0.2	1.8 ± 0.2	1.8 ± 0.2	1.5 ± 0.2	Dry	Dry	Dry	Dry

[a]See Fig. 21 for map of sampling locations. One sample per location.
[b]The ± value is the uncertainty (10%) of the analytical result.