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State of New Mexico
ENVIRONMENT DEPARTMENT
DOE OVERSIGHT BUREAU
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6 December 1995

Scan 1st page LANL: DATA: ES: Surface Water
RF-5
Springs

Mr. Ivan Trujillo, LAO AIP
Point of Contact
Department of Energy
Los Alamos Area Office
MS A316
Los Alamos, NM 87544

RE: Ground-water and surface-water flow measurements and
recommendations, Los Alamos National Laboratory, New
Mexico

Dear Mr. Trujillo:

The New Mexico Environment Department (NMED) Department of Energy Oversight Bureau (DOE OB) staff conducted quantitative and visual estimate flow measurements (Tables 1 and 2) in Pajarito Canyon, Canon de Valle, Threemile Canyon, Water Canyon and two (2) unnamed tributaries (Drop Tower and Fish Ladder Canyons) during 1994 and 1995 (Figure 1). Flow data were obtained by measuring the volume of water collected via natural or man-made water fall (e.g., culvert) or temporary water-diversion structure during a given time interval and by visual estimations. Water was collected in either a 1 or 5 gallon plastic container and timed using a stopwatch. Mean flow measurements at each location were calculated using multiple measurements. The number of flow measurements taken at each station varied from three to nine. Our measurements indicate that several perennial reaches and springs or seeps exist within the laboratory boundary. Surface-water flow from a number of the perennial springs is lost within several hundred feet; however, some of the perennial springs support surface-water flow at distances greater than one mile.

It should be noted that these perennial reaches and springs are viable recharge zones for perched ground water within the canyon alluvium and possibly deeper ground-water zones. Hence, these possible perched zones should be characterized.



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Perennial Flow at LANL
December 6, 1995

NMED DOE OB is recommending monitoring (e.g., flow measurements, water quality) of the springs and surface waters within the referenced canyons. The attached data are being submitted for your thirty-day review as stated in the Agreement-in-Principle Umbrella Protocol. After you have had the opportunity to review and comment on the data, it will be released to applicable agencies within thirty (30) days of receipt of this letter.

Contact Michael Dale at 672-0449 or Ralph Ford-Schmid at 827-1536 if you have any questions concerning this matter.

Sincerely,



Steve Yanicak, DOE Oversight Bureau, LANL POC
New Mexico Environment Department

attachments

SY:mrđ

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Neil Weber, NMED, Chief, DOE Oversight Bureau

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Table 1. Flow observations and measurements obtained from several on-site surface-water reaches, Los Alamos National Laboratory, New Mexico

Location	Number on Map	Date	Mean Measured Flow (cfs)	Number of Measurements	Estimated Flow (cfs)
SURFACE WATER					
Pajarito Canyon					
PA 7.0	1	7/22/94	-	-	0.033
		10/27/95	-	-	0.078
PA 8.9	2	2/10/95	0.134	3	-
		2/25/95	0.267	3	-
		4/28/95	-	-	0.401
		5/19/95	-	-	0.357
		6/20/95	0.446	3	-
		8/9/95	0.212	4	-
		10/27/95	0.094	4	-
PA 9.05	3	11/16/95	0.086	5	-
		8/9/94	-	-	0.007
		2/24/95	-	-	0.022
		4/28/95	-	-	0.022
		5/19/95	-	-	0.022
		7/7/95	-	-	0.011
		11/9/95	0.011	7	-
Starmer's Gulch					
ST 0.05	4	8/9/94	-	-	0.045
		2/24/95	-	-	0.045
		4/28/95	-	-	0.067
		5/19/95	-	-	0.067
		7/7/95	-	-	0.045
		10/27/95	-	-	0.045
		11/9/95	0.050	7	-
Bulldog Tributary					
BU 0.1	5	8/9/94	-	-	0.022
		2/10/95	-	-	0.022
		2/24/95	-	-	0.022
		4/28/95	-	-	0.033
		5/19/95	-	-	0.033
		6/20/95	-	-	0.033
		7/7/95	-	-	0.022
		8/9/95	-	-	0.022
		10/20/95	-	-	0.022
		11/9/95	0.035	9	-
Canon de Valle					
VA 1.85	6	6/16/95	-	-	0.022
		8/31/95	-	-	0.007
		11/16/95	0.021	5	-
VA 2.1	7	11/16/95	0.018	6	-
VA 2.6	8	11/16/95	-	-	0.038

Table 1 (cont.). Flow observations and measurements obtained from several on-site surface-water reaches, Los Alamos National Laboratory, New Mexico

Location	Number on Map	Date	Mean Measured Flow (cfs)	Number of Measurements	Estimated Flow (cfs)
SURFACE WATER (cont.)					
Canon de Valle (cont.)					
VA 2.7	9	6/20/95	0.040	3	-
		3/17/95	0.154	3	-
		3/22/95	0.159	3	-
		3/30/95	0.166	3	-
		5/5/95	0.178	3	-
		6/16/95	0.103	3	-
		8/8/95	0.040	3	-
		8/31/95	0.088	3	-
		11/16/95	0.035	5	-

Note: See Figure 1 for location and data correlation.

Table 2. Flow observations and measurements obtained from several on-site springs, Los Alamos National Laboratory, New Mexico

Location	Number on Map	Date	Mean Measured Flow (gpm)	Number of Measurements	Estimated Flow (gpm)
SPRINGS/SEEPS					
Canon de Valle					
Burning Ground Spring	10	8/12/94	-	-	10-15
		3/17/95	-	-	10-15
		3/22/95	-	-	10-15
		5/12/95	-	-	10-15
		8/31/95	13.4	4	-
SWSC Spring	11	8/12/94	-	-	3-5
		3/17/95	-	-	3-5
		3/22/95	-	-	3-5
		5/12/95	-	-	3-5
		8/31/95	-	-	3-5
Peter Spring	12	8/12/94	-	-	3-5
		3/17/95	-	-	5-7
		3/22/95	-	-	5-7
		5/12/95	-	-	7-10
		8/31/95	-	-	3-5
Starmer's Gulch					
Charlie's Spring	13	7/22/94	-	-	2-4
		2/24/95	-	-	2-4
		4/28/95	-	-	2-4
		5/19/95	-	-	2-4
		6/14/95	-	-	2-4
		6/22/95	-	-	2-4
		7/7/95	-	-	2-4
		10/20/95	-	-	2-4
		11/9/95	-	-	2-4
Starmer's Spring	14	7/22/94	-	-	15-20
		2/24/95	-	-	15-20
		4/28/95	-	-	15-20
		6/14/95	-	-	15-20
		6/22/95	-	-	15-20
		7/7/95	-	-	15-20
		10/20/95	-	-	15-20
11/9/95	-	-	15-20		
Bryan Spring	15	5/19/95	-	-	3-5
		6/22/95	-	-	3-5
		7/7/95	-	-	3-5
		10/20/95	-	-	3-5
		11/9/95	-	-	3-5
Pajarito Canyon					
Homestead Spring	16	8/9/94	-	-	3-5
		2/24/95	-	-	3-5
		4/28/95	-	-	3-5
		5/19/95	-	-	3-5
		6/22/95	-	-	3-5
		7/7/95	-	-	3-5
		10/20/95	-	-	3-5
11/9/95	-	-	3-5		

Table 2 (cont.). Flow observations and measurements obtained from several on-site springs, Los Alamos National Laboratory, New Mexico

Location	Number on Map	Date	Mean Measured Flow (gpm)	Number of Measurements	Estimated Flow (gpm)
SPRINGS/SEEPS (cont.)					
Bulldog Tributary					
Kieling Spring	17	5/19/95	-	-	3-5
		7/7/95	-	-	3-5
		10/20/95	-	-	3-5
Bulldog Spring	18	8/9/94	-	-	10-15
		2/24/95	-	-	10-15
		4/28/95	-	-	15-20
		5/19/95	-	-	15-20
		7/7/95	-	-	10-15
		10/20/95	-	-	10-15
		11/9/95	-	-	10-15
Water Canyon					
WC 6.25 Seep	19	8/4/95	-	-	1-3
Drop Tower Canyon					
Martin Spring	20	5/12/95	-	-	2-3
		7/21/95	-	-	2-3
Fish Ladder Canyon					
FL Seep	21	5/12/95	-	-	2-4
		6/2/95	-	-	1-3
Threemile Canyon					
Threemile Spring	22	3/13/95	-	-	10-15
		6/23/95	-	-	5-10
		8/18/95	-	-	5-10
		11/9/95	7.3	8	-
TA-18 Spring	23	3/21/95	-	-	2-4
		3/13/95	-	-	2-4
		11/9/95	1.6	8	-

Note: See Figure 1 for location and data correlation.