Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

WATER

TO: Charles Nylander, HSE-8, MS K490

DATE: March 12, 1987

FROM: George Cocks, ESS-4 *gcp*

MAIL STOP/TELEPHONE: J981/7-4318

SYMBOL: ESS-4-87-60

SUBJECT: DATA FOR REPORTS REQUIRED FOR FENTON HILL DISCHARGE PLAN

Here are the data which you requested. It is my understanding that you will write the report required by the EPA and to the State of New Mexico, Energy and Minerals Department. These reports are to cover discharges made under our NPDES permit and under our Discharge Plan for Geothermal Operations at Fenton Hill.

It is also my understanding that in the future you will write such reports at the proper time and will ask us for data to be included in the reports. These reports will be submitted at about this time every year.

In our Discharge Plan it states on page 34 that, "At present the plan is to build the pond (ie., the service pond) as soon as major workover operations are completed in 1985." Unfortunately workover operations are not yet complete because of various difficulties encountered. At present we are planning workover operations extending into FY 1988. However, there is a possibility that the cleaning and repair of the service pond could occur during the summer of 1987.

On a number of occasions water has been vented into the service pond from geothermal wells EE-2 and EE-3. The dates of the vents, the amounts of each vent, and the amount of water injected into the geothermal well prior to the vents are shown in Table I.

TABLE I

<u>Date of Vent</u>	<u>Vol. of vent in gallons</u>	<u>Vol. Injected in gallons</u>	<u>Remarks</u>
28-29 May, '85	503000	423000	Exp. 2059
29 June to 2 July, '85	586000	136800	Exp. 2061
18 July to 23 July, '85	437000	1525000	Exp. 2062
2 Feb. to 4 Feb., '86	368000	113100	Pkr. No. 10
22 Apr. to 25 Apr., '86	123000		Deflation.
24 Sep. to 11 Oct., '86	1950000	9762000	ICFT
4 Dec. to 23 Dec., '86	485000	182000	Exp. 2070
23 Feb. to 3 Mar., '87	245000		Deflation
Totals	4476500	12141900	

The water vented from the geothermal wells has remained in the service pond and the 5 million gallon reservoir since starting venting in May '85. In general the service pond has been full or partially full during that period. it is full at the time of this memorandum.

Once during the period since May '85 a discharge from the service pond in the amount of 2,163,000 gal. was made in accordance with our NPDES permit. This discharge took place during the months of Aug., Sept., Oct., Nov., and Dec., 1986.

There have been no accidental spills or leaks during the reporting period.

On 5 Sept., 1985 somewhat less than 1,000,000 gallons of water was transferred from the service pond to the 5 million gal. reservoir.

Table II shows the average concentrations of various ions plus averages of the pH, the conductivity, the pH, the total dissolved solids, and the total suspended solids in the water vented from the geothermal wells into the service pond. These averages cover analyses made from July 1985 through Dec., 1986.

Table III is similar to Table II except that it covers service pond analyses from Nov. 1985 through March 1987.

TABLE II

Averages of analyses made on fluids vented from the geothermal wells EE-2 and EE-3 into the service pond (EE-1 pond)

Ag ppm	Al ppm	As ppm	Au ppm	B ppm	Ba ppm	Br ppm	Ca ppm	Cd ppm	Cl ppm	Co ppm
<0.001	0.5	6.9	<0.001	92.5	0.69	22.4	108.3	<0.001	3719	0.002
CO3 ppm	cond.(L) umho/cm		Cr ppm	Cs ppm	Cu ppm	EH(L) mvppm	F ppm	Fe ppm	HCO3 ppm	Hg ppm
0	13151		0.012	5.7	0.001	242	7.4	9.0	681	<0.1
K ppm	Li ppm	Mg ppm	Mn ppm	Mo ppm	Na ppm	NH4 ppm	Ni ppm	No3 ppm	O2(dis) ppm	Pb ppm
285	46	6.0	0.76	<0.1	2152	3.3	0.025	0.2	1.20	0.013
pH(L)	P04 ppm	Rb ppm	S ppm	Sb ppm	Se ppm	Si ppm	SiO2 ppm	S04 ppm	Sr ppm	TSS ppm
6.88	<0.5	3.0	0.07	<0.1	<0.1	185	424	172	2.51	17.8
U ppm	Zn ppm	TDS ppm								
<0.1	0.05	7941								

TABLE III

Averages of analyses made on samples collected from the sevice pond (EE-1 pond).

Sample #			Date			Ag	Au	Al	As	B
EE-1 Pond Average			MM/DD/YY			ppm	ppm	ppm	ppm	ppm
			11-85 thru 3-87			<0.001	<0.001	0.1	5.3	83.7
Ba	Br	Ca	Cd	Cl	Co	Co3	Cond.(L)		Cr	Cs
pm	ppm	ppm	ppm	ppm	ppm	ppm	umho/cm		ppm	ppm
0.40	18.1	54.3	<0.001	3067	<0.001	21	11361		0.002	2.37
Cu	EH (1)	F	Fe	HC03	Hg	K	Li	Mg	Mn	Mo
ppm	mv	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
0.002	239	6.12	4.68	589	<0.2	210	42.2	4.4	0.38	<0.2
Na	NH4	Ni	NO3	O2(dis)		Pb	pH (L)	P04	Rb	S
ppm	ppm	ppm	ppm	ppm		ppm		ppm	ppm	ppm
2101	2.17	0.001	<0.5	4.6		0.020	7.80	<0.5	2.41	0.10
Sb	Se	Si	Sio2	So4	Sr	Tss	U	Zn	TDS	
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
<0.2	<0.2	81.1	156	151	1.89	212	<0.2	0.31	6628	

GC:cs

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