TERA

EXXON MINERALS COMPANY, U.S.A.
POST OFFICE BOX 2180 · HOUSTON, TEXAS 77001

OPERATIONS DEPARTMENT

February 13, 1979

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NMSS
MAIL SECTION
DOCKET CLERK

Dr. Ray Cooperstein
Fuel Processing and Fabrication Branch
Division of Fuel Cycle & Material Safety
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Cooperstein:

Re: Solution Mine Cleanup Data
Original R&D Pilot
Highland, Converse County, Wyoming
License No. SUA-1064
Docket No. 40-8064

Per your request attached are recent data from the original R & D site indicating our progress in the aquifer cleanup process. The data provided include uranium, carbonate, bicarbonate, arsenic and selenium analyses for the individual wells during the last half of 1978. Also attached are copies of Figures III.3 through III.6 which show the uranium concentrations for the injection and production wells over the 1976-1978 time frame.

I believe this data includes all of the information you requested; however, if you have any questions in this regard, please call me.

Sincerely,

Marvin D. Freeman

MDF:dh
Attachments

7903140551

URANIUM CONCENTRATIONS AT INDIVIDUAL WELLS
ORIGINAL SOLUTION MINE R & D SITE
HIGHLAND PROPERTY, CONVERSE COUNTY, WYOMING

OBSERVED URANIUM CONCENTRATIONS-MILLIGRAMS PER LITER BY WELL

Date	Wells Producing From Leached Area							Observation (Monitor) Wells					
	#1	#2	#3	#4	#5	#6	INJ.	#7	#8	#9	#10	#11	#12
06/01/78	3	31	2	-	-	1	65	3	4	1	3	1	1
06/08/78	1	20	16	-	-	1	38	-	3	1	3	1	1
06/16/78	7	29	1	-	-	1	61	2	9	1	5	1	1
06/22/78	3	31	1	-	1	1	52	1	11	1	4	1	1
06/29/78	2	15	7	-	10	-	12	1	13	1	8	1	3
07/06/78	37	31	4	-	19	-	65	1	10	1	4	2	1
07/13/78	1	43	5	-	54	-	59	1	10	-	5	1	1
08/03/78	14	26	-	1	45	-	48	2	10	1	5	2	1
08/10/78	11	32	1	1	20	13	63	3	8	1	5	1	1
08/24/87	1	27	3	8	20	1	57	1	14	1	3	1	3
09/07/78	2	43	-	1	17	2	59	3	12	2	5	2	1
09/14/78	-	14	-	1	9	1	31	2	9	1	5	1	1
09/21/78	1	13	-	1	8	1	48	1	8	1	4	1	1
10/05/78	-	27	1	1	19	1	56	10	8	1	5	1	1
11/05/78	<1	27	<1	<1	-	1	54	2	5	<1	4	2	1
11/09/78	<1	22	<1	<1	-	<1	48	2	5	<1	4	2	1
11/16/78	<1	25	<1	<1	-	<1	43	1	5	<1	4	-	-
12/07/78	-	22	<1	<1	-	3	43	2	3	<1	-	2	2
12/24/78	-	15	<1	<1	-	-	-	<1	2	<1	-	2	1
01/18/79	-	25	<1	<1	-	5	-	1	1	<1	-	1	5

CARBONATE CONCENTRATIONS AT INDIVIDUAL WELLS
ORIGINAL SOLUTION MINE R&D SITE
HIGHLAND PROPERTY, CONVERSE COUNTY, WYOMING

OBSERVED CARBONATE CONCENTRATIONS-MILLIGRAMS PER LITER BY WELL

Date	Wells Producing From Leached Area								Observation (Monitor) Wells					
	#1	#2	#3	#4	#5	#6	#13	INJ.	#7	#8	#9	#10	#11	#12
06/01/78	8	122	8	-	-	17	183	251	60	8	8	8	8	8
06/08/78	8	110	44	-	-	8	131	218	-	8	17	8	8	8
06/16/78	8	66	8	-	-	8	87	218	44	8	8	8	8	8
06/22/78	8	66	8	-	8	23	131	241	23	8	8	8	8	8
06/29/78	8	133	8	-	8	-	-	83	73	98	303	8	8	8
07/06/78	83	66	10	-	44	23	-	290	87	23	8	23	23	10
07/13/78	8	87	8	-	22	-	-	218	23	8	-	8	8	8
08/03/78	8	110	-	8	174	-	-	174	87	8	8	10	8	8
08/10/78	10	87	8	8	8	8	131	218	66	10	8	8	8	8
08/24/78	8	87	8	8	8	22	-	174	66	8	8	8	8	8
09/07/78	8	218	-	8	8	66	154	267	98	23	8	23	10	8
09/24/78	-	108	-	8	8	8	131	110	87	8	8	8	8	8
08/21/78	8	66	-	8	8	10	66	174	44	8	8	8	8	8
10/05/78	-	66	8	8	8	8	66	216	43	8	8	8	8	8
11/02/78	<1	<1	90	<1	-	<1	120	210	30	<1	<1	<1	<1	<1
11/09/78	<1	90	<1	<1	-	<1	180	315	90	<1	<1	<1	<1	<1
11/16/78	<1	60	<1	<1	-	<1	120	240	60	<1	<1	<1	-	-
12/07/78	-	210	<1	<1	-	<1	166	420	60	<1	<1	-	<1	<1
12/24/78	-	32	<1	<1	-	-	210	-	32	<1	<1	-	<1	<1
01/18/79	-	143	<1	<1	-	<1	152	-	104	<1	<1	-	<1	<1

BICARBONATE CONCENTRATIONS AT INDIVIDUAL WELLS
ORIGINAL SOLUTION MINE R&D SITE
HIGHLAND PROPERTY, CONVERSE COUNTY, WYOMING

OBSERVED BICARBONATE CONCENTRATIONS-MILLIGRAMS PER LITER BY WELL

Date	Wells Producing From Leached Area								Observation (Monitor) Wells					
	#1	#2	#3	#4	#5	#6	#13	INJ.	#7	#8	#9	#10	#11	#12
06/01/78	146	393	116	-	-	104	511	773	201	131	82	110	97	104
06/08/78	121	346	311	-	-	104	380	587	-	121	104	86	86	86
06/16/78	173	293	86	-	-	104	380	605	173	121	86	103	121	86
06/22/78	121	328	86	-	86	104	414	550	155	121	104	121	137	104
06/29/78	144	149	102	-	205	-	-	108	66	121	251	121	108	129
07/06/78	226	356	129	-	178	121	-	582	178	129	118	137	95	118
07/13/78	121	346	121	-	40	-	-	569	225	137	-	104	86	86
08/03/78	207	241	-	6	432	-	-	484	173	137	86	137	104	86
08/10/78	173	328	103	6	207	155	362	621	225	137	104	121	104	104
08/24/78	86	277	189	189	189	171	-	535	223	120	120	120	120	120
09/07/78	103	483	-	34	173	173	293	569	173	137	103	121	104	121
09/14/78	-	310	-	152	152	173	344	501	225	173	121	152	104	104
09/21/78	70	310	-	8	137	137	466	605	225	121	103	137	104	121
10/05/78	-	373	122	8	174	156	363	589	225	138	104	122	104	122
11/02/78	214	549	122	31	-	244	549	976	397	183	183	214	183	183
11/09/78	152	396	214	61	-	214	427	503	274	214	214	229	214	183
11/16/78	152	610	122	30	-	214	671	976	396	214	183	244	-	-
12/07/78	-	610	183	35	-	305	671	671	366	244	214	-	214	214
12/24/78	-	171	43	10	-	-	885	-	117	64	53	-	75	64
01/18/79	-	534	148	40	-	244	603	-	237	186	145	-	138	155

ARSENIC CONCENTRATIONS AT INDIVIDUAL WELLS
ORIGINAL SOLUTION MINE R&D SITE
HIGHLAND PROPERTY, CONVERSE COUNTY, WYOMING

OBSERVED ARSENIC CONCENTRATIONS-MILLIGRAMS PER LITER BY WELL

Date	Wells Producing From Leached Area								Observation (Monitor) Wells					
	#1	#2	#3	#4	#5	#6	#13	INJ.	#7	#8	#9	#10	#11	#12
2/78	.05	.13	.01*	-	.01	-	.36	.53	-	.01	.01	.05	.01	-
3/78	.03	.20	.21	-	.02	-	.30	.54	-	.01	.01	.02	.01	.01
4/78	.05	.18	.01	-	.06	.01	.33	.58	.02	.01	.01	.01	.01	.01
5/78	.03	.21	.08	-	-	.01	.62	.29	.01	.01	.01	.01	.01	.01
6/78	.01	.16	.04	-	.02	-	-	.47	.01	.01	.01	.01	.01	.01
7/78	.10	.15	.01	.01	.05	-	.19	.27	.01	.01	.01	.01	.01	.01
8/78	.01	.19	-	.01	.03	.01	.23	.42	.01	.01	.01	.01	.01	.01
9/78	-	.17	-	.03	.06	.01	.25	.32	.04	.01	.01	.01	.01	.01
10/78	.01	.19	-	.01	-	.01	.26	.56	.02	.01	.01	.01	.01	.01

* Values when detected but reported as less than .01 are included as .01

SELENIUM CONCENTRATIONS AT INDIVIDUAL WELLS
ORIGINAL SOLUTION MINE R&D SITE
HIGHLAND PROPERTY, CONVERSE COUNTY, WYOMING

OBSERVED SELENIUM CONCENTRATIONS-MILLIGRAMS PER LITER BY WELL

Date	Wells Producing From Leached Area								Observation (Monitor) Wells					
	#1	#2	#3	#4	#5	#6	#13	INJ.	#7	#8	#9	#10	#11	#12
2/78	.040	.052	.002	-	.004	-	.090	.167	-	.003	.001	.002	.001	-
3/78	.062	.075	.064	-	.026	-	.083	.200	-	.016	.013	.017	.017	.052
4/78	.027	.050	.021	-	.025	.027	.054	.150	.035	.010	.017	.015	.027	.027
5/78	.055	.096	.055	-	-	.042	.15	.30	.069	.039	.050	.042	.056	.069
6/78	.15	.13	.13	-	.01	-	-	.27	.05	.07	.03	.01	.02	.03
7/78	.056	.050	.006	.005	.006	-	.13	.004	.009	.004	.004	.520	.004	.004
8/78	.004	.017	-	.001	.002	.016	.106	.201	.011	.002	.002	.003	.002	.005
9/78	-	.041	-	.017	.003	.009	.117	.248	.022	.004	.004	.003	.006	.014
10/78	.016	.050	-	.051	-	.050	.055	.170	.016	.010	.011	.010	.008	.041

FIGURE III.3

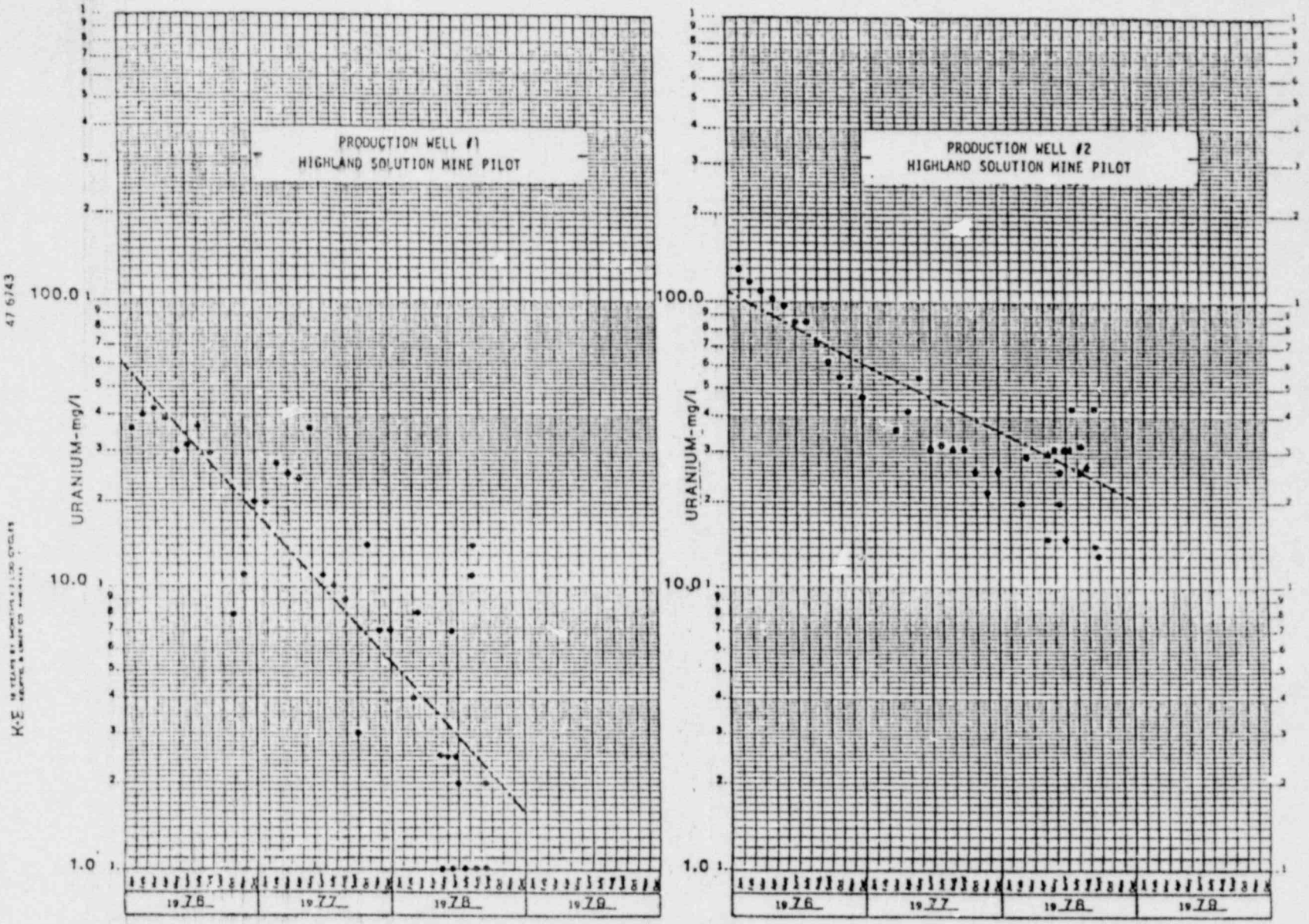

PRODUCTION WELL #1
HIGHLAND SOLUTION MINE PILOT
URANIUM-mg/l
100.0
10.0
1.0
1976
1977
1978
1979
PRODUCTION WELL #2
HIGHLAND SOLUTION MINE PILOT
URANIUM-mg/l
100.0
10.0
1.0
1976
1977
1978
1979

FIGURE III.4

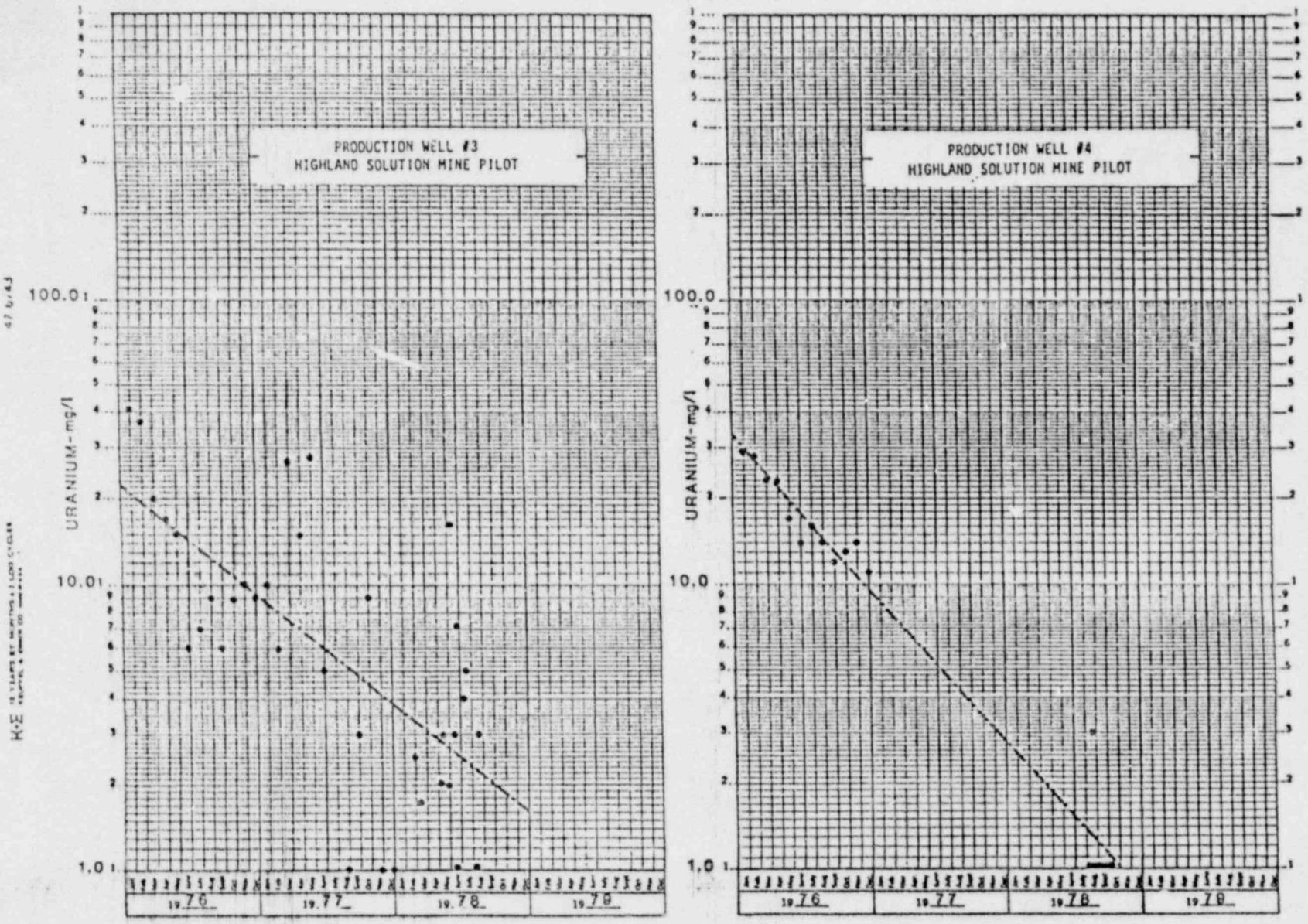

PRODUCTION WELL #3
HIGHLAND SOLUTION MINE PILOT
URANIUM-mg/l
100.0
10.0
1.0
19.76
19.77
19.78
19.79
PRODUCTION WELL #4
HIGHLAND SOLUTION MINE PILOT
URANIUM-mg/l
100.0
10.0
1.0
19.76
19.77
19.78
19.79

FIGURE III.6

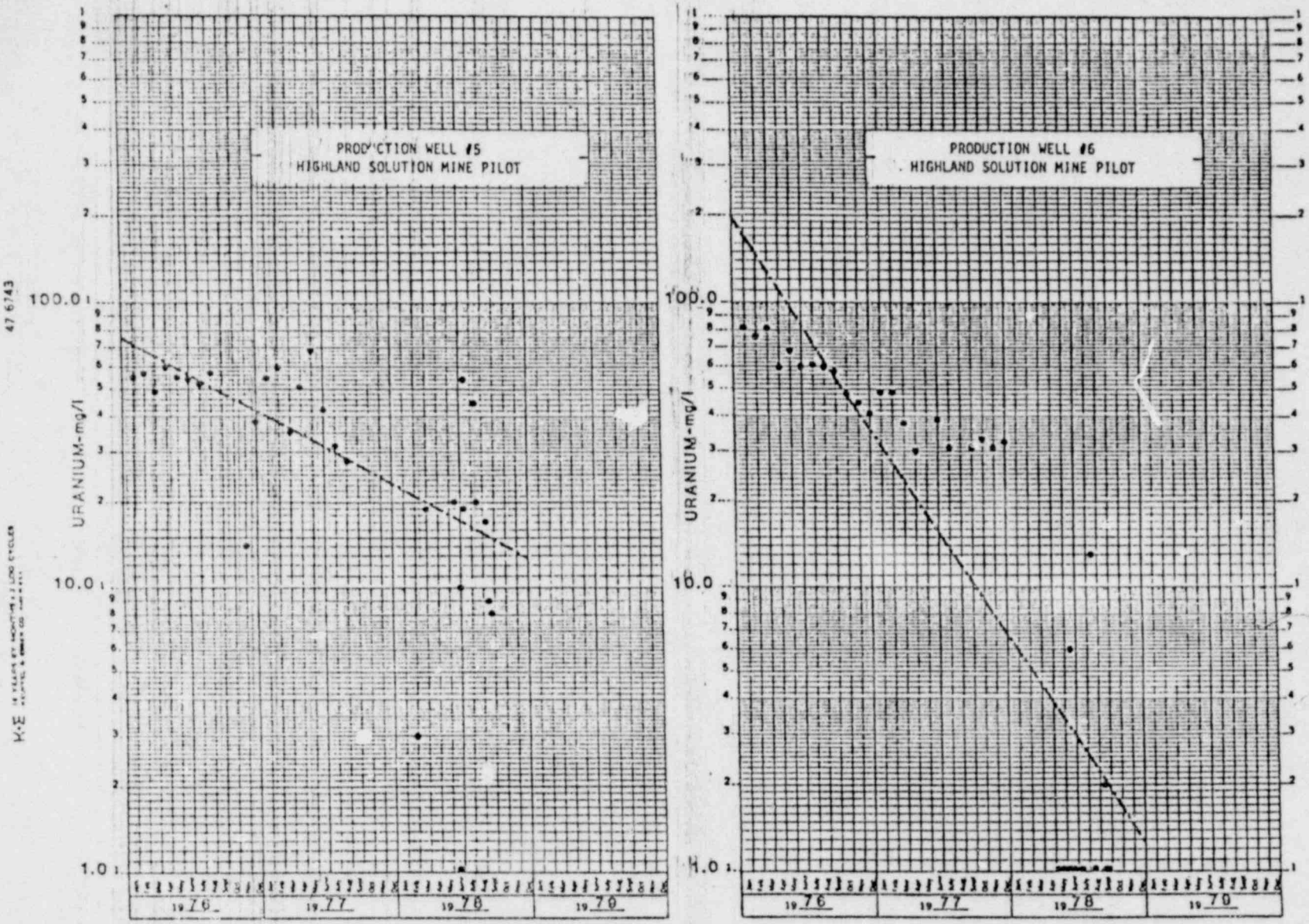
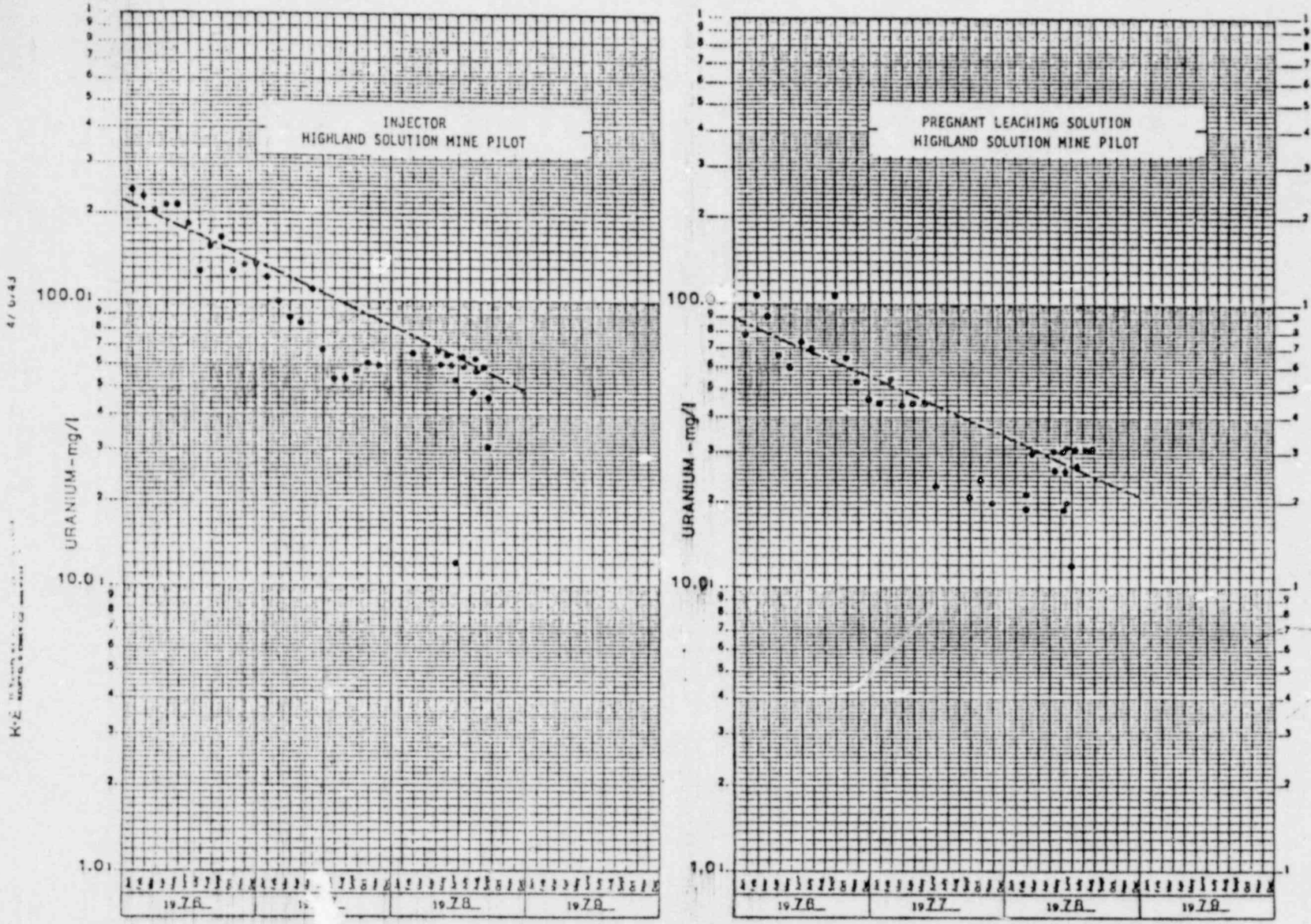

PRODUCTION WELL #5
HIGHLAND SOLUTION MINE PILOT
URANIUM-mg/l
100.0
10.0
1.0
1976
1977
1978
1979
PRODUCTION WELL #6
HIGHLAND SOLUTION MINE PILOT
URANIUM-mg/l
100.0
10.0
1.0
1976
1977
1978
1979

FIGURE III.6


INJECTOR
HIGHLAND SOLUTION MINE PILOT
URANIUM - mg/l
100.0
10.0
1.0
1978
1978
1979
PREGNANT LEACHING SOLUTION
HIGHLAND SOLUTION MINE PILOT
URANIUM - mg/l
100.0
10.0
1.0
1978
1977
1978
1979