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DEC 01 1999

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0200-00

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Ms. Val Orr
Division of Drinking and Ground Waters - UIC Unit
P.O. Box 1049
1800 Watermark Drive
Columbus, Ohio 43216-1049

Dear Mr. Saric, Mr. Schneider, Ms. Orr:

AUGUST 1999 OPERATING REPORT FOR THE RE-INJECTION DEMONSTRATION

This correspondence submits the Re-Injection Demonstration Operation Report for the month of August 1999.

As specified in the Re-Injection Demonstration Test Plan, monthly operating reports for the re-injection demonstration are to be prepared and submitted to the U.S. Environmental Protection Agency (U.S. EPA), Ohio Environmental Protection Agency (OEPA) Office of Federal Facilities Oversight, and the OEPA Division of Drinking and Ground Waters-UIC Unit.

If you have any questions regarding this submittal, please contact Robert Janke at (513) 648-3124.

Sincerely,

Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:R.J. Janke

Enclosure

cc w/enclosure:
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MONTHLY OPERATING REPORT
RE-INJECTION DEMONSTRATION
AUGUST 1999

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OVERVIEW

The FEMP Re-Injection Demonstration began on September 2, 1998. The controlling document for the Re-Injection Demonstration is the Re-Injection Demonstration Test Plan, Rev. 0. A requirement of Section 6 of the test plan is that monthly operating reports be submitted to the U.S. EPA, Ohio EPA Office of Federal Facilities Oversight and the Division of Ohio EPA Drinking and Ground Waters - UIC Unit. The monthly operating reports are to include the following information:

I. Analysis of the injectate
II. The volume and rate of re-injection
III. A description of any well maintenance and rehabilitation procedures which were conducted
IV. Results of groundwater monitoring at the re-injection test site.

This report serves to fulfill this commitment for the month of August 1999. It covers operation of the Re-Injection Demonstration from August 1, 1999 through September 1, 1999.

ANALYSIS OF THE INJECTATE

Groundwater which is being extracted from the great Miami Aquifer is being treated for uranium removal and re-injected back into the Great Miami Aquifer. The groundwater is being treated in the FEMP Advanced Waste Water Treatment (AWWT) Expansion Facility. The effluent from the AWWT Expansion Facility is being sampled monthly for the parameters listed in Table 2.1 of the Re-Injection Demonstration Test Plan, Rev. 0. Monthly injectate grab sampling is focusing on the final remediation level (FRL) constituents that have had an exceedance of their FRL in the area of the aquifer from which the groundwater is being pumped. The monthly injectate grab samples are being sent to an off-site laboratory for analysis.

Preliminary results from the monthly injectate grab sample collected in August are provided in Table 1. These results indicate that all the constituent concentrations are below their respective FRLs.

Figure 3 shows the composite daily uranium results from the AWWT Expansion Facility effluent. These results are derived from the 24-hour composite sampler, which samples the combined effluent from the active treatment trains comprising the facility. The results are used by plant management as

process control in that they provide for a daily evaluation of the quality of the water that is being re-injected back into the Aquifer. These results are being included in this report and will be included in future reports due to concerns raised by the monthly grab sample results.

VOLUME AND RATE OF RE-INJECTION

Treated groundwater is being re-injected into the Great Miami Aquifer in five re-injection wells at a rate of 200 gallons per minute, per well. Figure 1 illustrates the location of the five re-injection wells. Re-Injection Well 8 is an 8-inch diameter well. Re-Injection Well 9 is a 12-inch diameter well. The other re-injection wells are all 16 inches in diameter. The combined design re-injection rate for all five wells is 1000 gallons per minute. Operational data specific to each re-injection well are provided in Tables 2 through 6.

Figure 2 illustrates the water level rise in each of the five re-injection wells from August 1, 1999 through September 1, 1999, as measured by the operators at the AWWT Expansion Facility Distributed Control System (DCS). Water levels are recorded three times per day. Water levels inside the re-injection wells are monitored as an indicator of plugging within the wells. As a well screen becomes plugged, the water level in the well rises to compensate for the greater pressure needed to maintain a constant re-injection rate.

While it is not the intent of this report to discuss operational efficiency issues, the following information is provided to aid in the interpretation of Figure 2. Re-injection was down for a few hours on August 4th, August 10th, and August 23rd (sampling points 1012, 1028 and 1068 respectively) because the AWWT Expansion Facility went down and to clean out the sparge ring on the aeration tank.

WELL MAINTENANCE AND REHABILITATION

No well maintenance or rehabilitation work was required or performed on the five re-injection wells during the month of August.

GROUNDWATER MONITORING RESULTS

Water quality samples for the Re-Injection demonstration are collected quarterly and analyzed for major anions, cations, and total uranium. The first round of water quality data was collected in August 1998, prior to the start of re-injection. Results of the August sampling event were reported in the September monthly report. The second round of water quality samples was collected in

December 1998. Results of the December sampling event were reported in the January monthly report. The third round of water quality samples for the re-injection demonstration was collected in March 1999. Results of the March sampling event were reported in the April monthly report. The fourth round of sampling will be collected during the months of June through August. At the end of the one-year Re-Injection Demonstration, the water quality data collected quarterly during the demonstration will be used to illustrate water quality conditions over the course of the demonstration.

TABLE 1

ANALYSIS OF INJECTATE - PRELIMINARY RESULTS
Sample Collected August 30, 1999

Constituents[a]	Result[b]	Groundwater FRL[c]	Detection Limit	Constituent Type[e]	Basis for FRL[f]
General Chemistry		**mg/L**			
Nitrate	0.440 J	11.0		MP	B
Inorganics		**mg/L**			
Antimony	0.00015 B	0.006		N	A
Arsenic	0.0012 B	0.05		N	A
Barium	0.051	2.0		N	A
Beryllium	0.00001 B	0.004		N	A
Cadmium	U	0.014	0.00013	N	B
Total Chromium	0.00094 B	0.022[d]		MP	R
Cobalt	U	0.17	0.0000016	N	R
Lead	0.00026 B	0.015		N	A
Manganese	0.0023 B	0.9		N	B
Mercury	U	0.002	0.00004	MP	A
Nickel	0.0049 B	0.1		N	A
Selenium	U	0.05	0.0011	N	A
Silver	0.00023 B	0.05		N	R
Vanadium	0.00062 B	0.038		N	R
Zinc	0.0034 B	0.021		N	B
Radionuclides		**pCi/L**			
Neptunium-237	U	1.0	-0.001	MP	R*
Radium-226	U	20.0	0.072	N	A
Strontium-90	U	8.0	0.410	MP	A
Thorium-228	U	4.0	0.067	N	R*
Thorium-232	0.014	1.2		N	R*
		µg/L			
Total Uranium	9.25	20.0		MP	A
Organics		**µg/L**			
Bis(2-ethylhexyl)phthalate	U	6.0	5	N	A
Carbon disulfide	U	5.5	5	N	A
1, 1-Dichloroethene	U	7.0	5	N	A
1, 2-Dichloroethane	U	5.0	1	MP	A
Trichloroethene	U	5.0	3	N	A

[a]Constituents taken from Table 2-1 of Re-Injection Demonstration Test Plan. Constituents are those previously detected in aquifer zones 2 and 4 at concentrations above their FRL.

[b]If a duplicate sample was analyzed the highest concentration between the regular sample and duplicate sample is reported.
B = Lab qualifier(inorganic). Reported value was obtained from a reading that was less than the contract required detection limit but greater than or equal to the instrument detection limit.
J = Lab Qualifier, means data is estimated.
U = Nondetect

[c]From Table 9-4 in OU5 ROD.

[d]FRL is for hexavalent chromium.

[e]Constituent types from Appendix A of IEMP. MP indicates that the constituent has been identified as being able to migrate to the aquifer. N indicates that the constituent has been identified as not being able to migrate to the aquifer.

[f]A - Applicable or relevant and appropriate requirement based (MCL, PMCL, etc.).
B - Based on 95th percentile background concentrations.
R - Risk-based
R* - Risk-based radionuclide cleanup levels include constituent specific 95th percentile background concentration.

TABLE 2

RE-INJECTION WELL 22107 (IW-8)
OPERATIONAL SUMMARY SHEET
AUGUST 1999

Reference Elevation (feet AMSL) - 539.92 (top of casing)
Northing Coordinate ('83) - 476196.22
Easting Coordinate ('83) - 1347978.25

Hours in reporting period[a] = 743.55
Hours not injecting[b] = 20.50
Hours injecting[c] = 723.05
Operational percent[d] = 97.2

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e]	Average Operating Injection Rate (gpm)[f]
9/98	8.16	206
10/98	5.78	203
11/98	8.47	196
12/98	5.76	222
1/99	5.35	227
2/99	7.06	196
3/99	7.34	205
4/99	7.75	197
5/99	7.46	216
6/99	8.42	197
7/99	8.93	201
8/99	8.64	199

[a]First operational shift reading on 8/1/99 to first operational shift reading on 9/1/99
[b]Downtime. Injection stopped for a few hours on August 8th, 10th, and 23rd because the expansion system went down and to clean out the sparge ring in the aeration tank.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Summation of daily totalizer differences
[f]Million Gallons Injected/(Hours Injecting x 60)

TABLE 3

RE-INJECTION WELL 22108 (IW-9)
OPERATIONAL SUMMARY SHEET
AUGUST 1999

Reference Elevation (feet AMSL) - 578.025 (top of casing)
Northing Coordinate ('83) - 476255.74
Easting Coordinate ('83) - 1348384.49

Hours in reporting period[a] = 745.42
Hours not injecting[b] = 20.50
Hours injecting[c] = 724.92
Operational percent[d] = 97.2

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e]	Average Operating Injection Rate (gpm)[f]
9/98	8.17	206
10/98	8.30	201
11/98	8.53	197
12/98	5.66	214
1/99	4.33	181
2/99	6.07	156[g]
3/99	5.93	178[h]
4/99	6.66	184
5/99	7.83	200
6/99	8.41	197
7/99	8.79	198
8/99	8.63	198

[a]First operational shift reading on 8/1/99 to first operational shift reading on 9/1/99
[b]Downtime. Injection stopped for a few hours on August 8th, 10th, and 23rd because the expansion system went down and to clean out the sparge ring in the aeration tank.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Summation of daily totalizer differences
[f]Million Gallons Injected/(Hours Injecting x 60)
[g]Injection out of smaller downcomer in February. Target Injection rate of smaller downcomer is 150 gpm.
[h]Injection out of smaller downcomer up until March 8. Large downcomer was used from March 11 to April 1, 1999.

TABLE 4

RE-INJECTION WELL 22109 (IW-10)
OPERATIONAL SUMMARY SHEET
AUGUST 1999

Reference Elevation (feet AMSL) - 576.92 (top of casing)
Northing Coordinate ('83) - 476175.65
Easting Coordinate ('83) - 1348860.53

Hours in reporting period[a] = 745.43
Hours not injecting[b] = 20.50
Hours injecting[c] = 724.93
Operational percent[d] = 97.2

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e]	Average Operating Injection Rate (gpm)[f]
9/98	8.13	205
10/98	8.28	200
11/98	8.50	196
12/98	5.72	217
1/99	5.48	229
2/99	8.09	208
3/99	8.13	204
4/99	5.35	190
5/99	8.25	197
6/99	8.36	196
7/99	8.81	199
8/99	8.52	196

[a]First operational shift reading on 8/1/99 to first operational shift reading on 9/1/99
[b]Downtime. Injection stopped for a few hours on August 8th, 10th, and 23rd because the expansion system went down and to clean out the sparge ring in the aeration tank.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Summation of daily totalizer differences
[f]Million Gallons Injected/(Hours Injecting x 60)

TABLE 5

RE-INJECTION WELL 22240 (IW-11)
OPERATIONAL SUMMARY SHEET
AUGUST 1999

Reference Elevation (feet AMSL) - 577.14 (top of casing)
Northing Coordinate ('83) - 476422.82
Easting Coordinate ('83) - 1349386.92

Hours in reporting period[a] = 745.90
Hours not injecting[b] = 20.50
Hours injecting[c] = 725.40
Operational percent[d] = 97.3

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e]	Average Operating Injection Rate (gpm)[f]
0/98	8.39	211
10/98	8.29	199
11/98	8.50	197
12/98	5.68	216
1/99	5.53	230
2/99	8.06	208
3/99	8.04	204
4/99	7.56	192
5/99	8.34	199
6/99	8.42	197
7/99	8.85	199
8/99	8.65	199

[a]First operational shift reading on 8/1/99 to first operational shift reading on 9/1/99
[b]Downtime. Injection stopped for a few hours on August 8th, 10th, and 23rd because the expansion system went down and to clean out the sparge ring in the aeration tank.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Summation of daily totalizer differences
[f]Million Gallons Injected/(Hours Injecting x 60)

TABLE 6

RE-INJECTION WELL 22111 (IW-12)
OPERATIONAL SUMMARY SHEET
AUGUST 1999

Reference Elevation (feet AMSL) - 583.01 (top of casing)
Northing Coordinate ('83) - 476518.64
Easting Coordinate ('83) - 1350105.39

Hours in reporting period[a] = 745.80
Hours not injecting[b] = 20.50
Hours injecting[c] = 725.30
Operational percent[d] = 97.3

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected[e]	Average Operating Injection Rate (gpm)[f]
09/98	8.12	205
10/98	8.27	201
11/98	8.53	197
12/98	5.61	219
1/99	5.08	212
2/99	8.06	208
3/99	8.13	203
4/99	7.65	195
5/99	8.27	197
6/99	8.42	197
7/99	8.80	198
8/99	8.67	199

[a]First operational shift reading on 8/1/99 to first operational shift reading on 9/1/99
[b]Downtime. Injection stopped for a few hours on August 8th, 10th, and 23rd because the expansion system went down and to clean out the sparge ring in the aeration tank.
[c]Hours in reporting period - Hours not injecting
[d](Hours injecting/Hours in reporting period) x 100
[e]Summation of daily totalizer differences
[f]Million Gallons Injected/(Hours Injecting x 60)

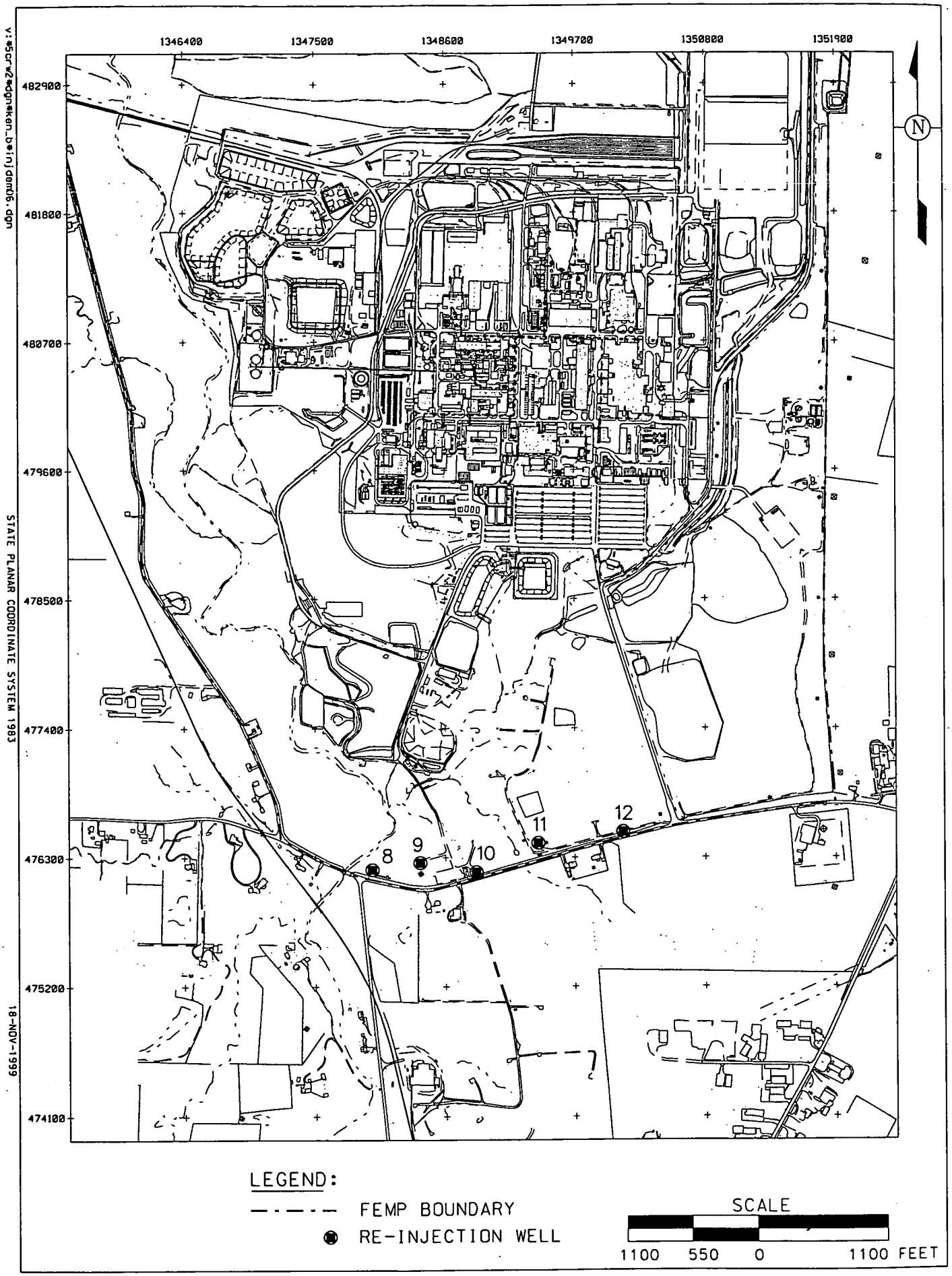

FIGURE 1. LOCATION OF RE-INJECTION WELLS

Figure 2
Re-Injection Wells, Water Level Rise
First Shift August 1, 1999 to September 1, 1999

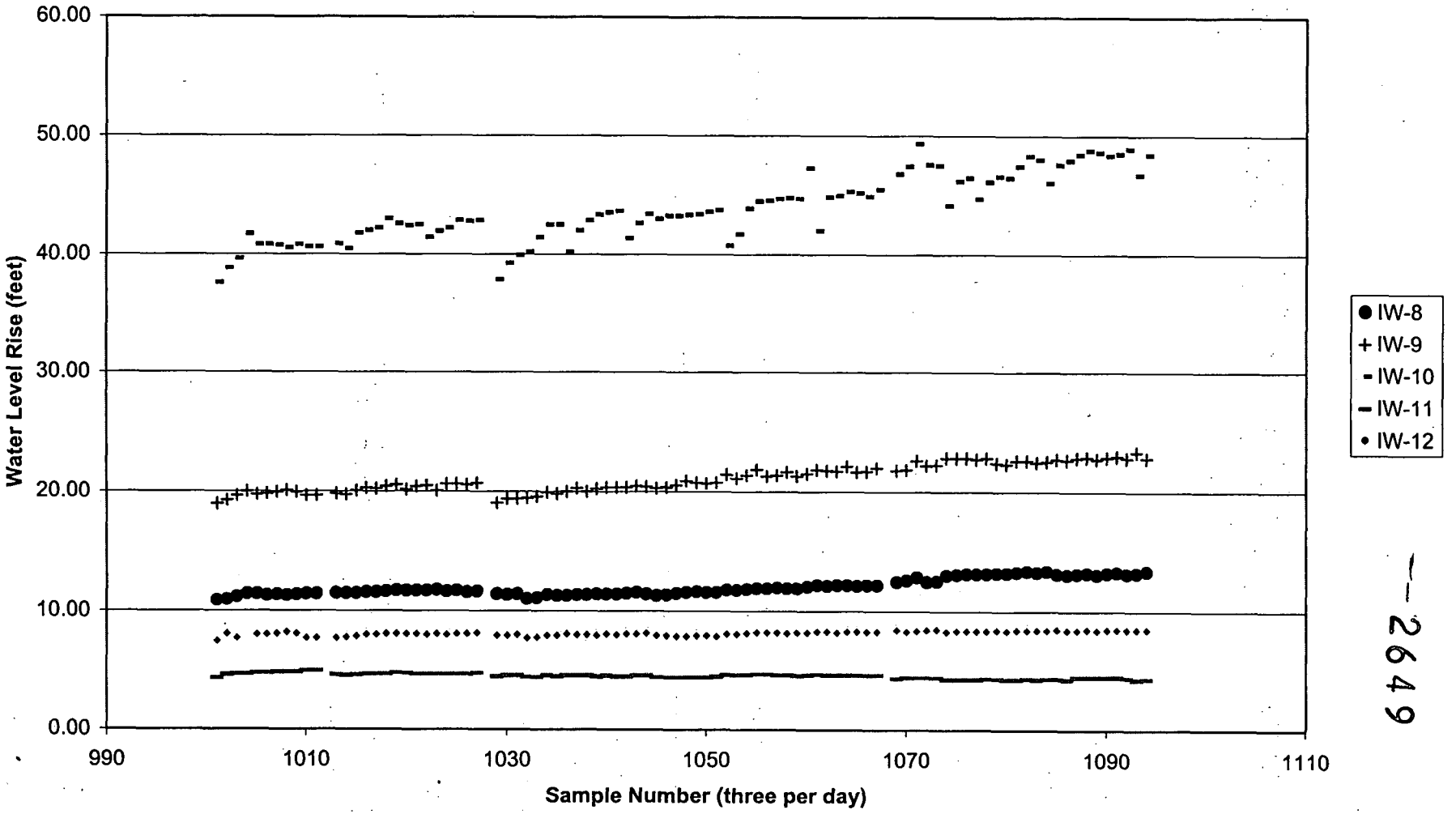

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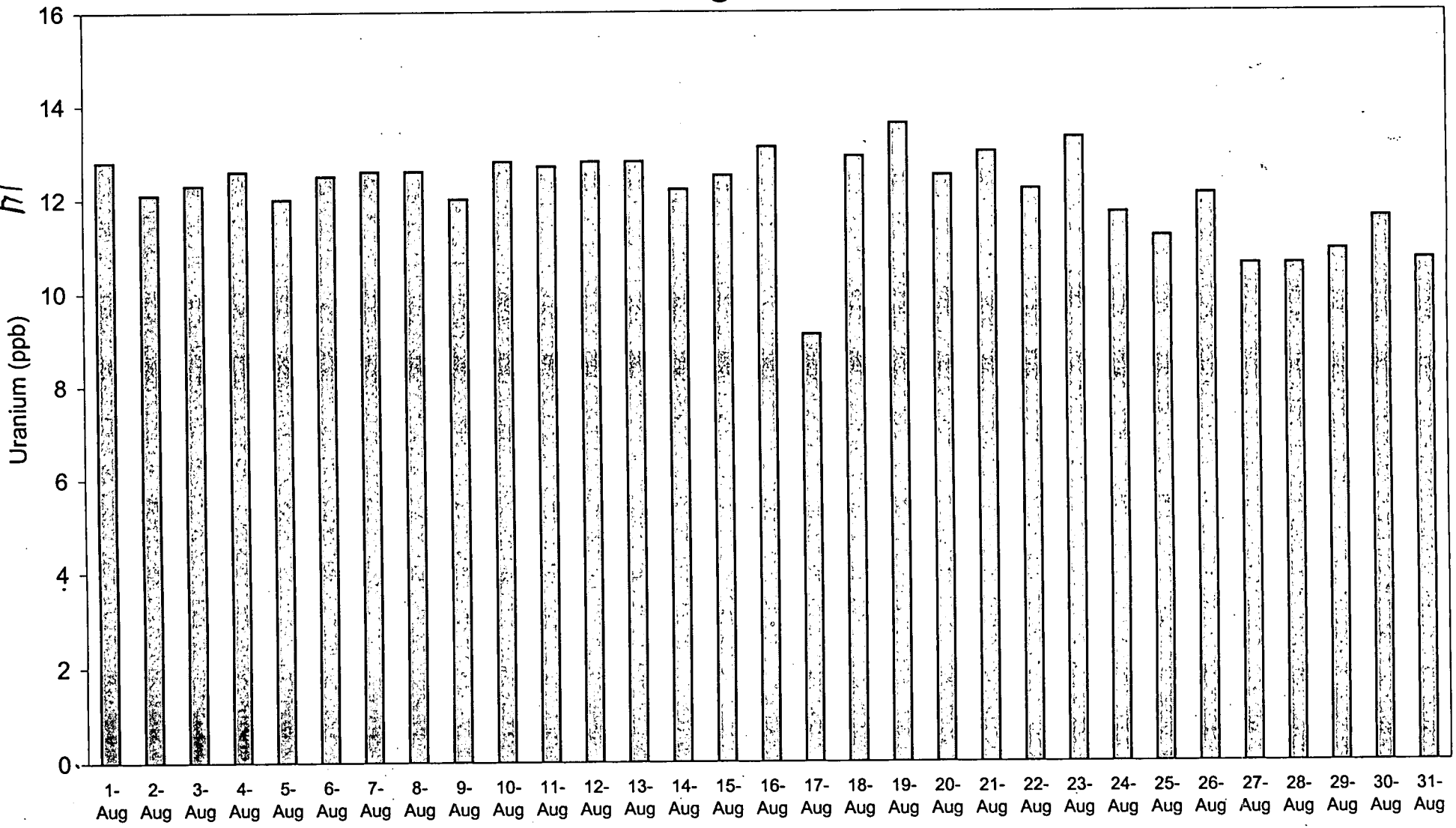
Figure 3

Uranium Concentration of AWWT Expansion Effluent*
August 1999



* Samples derived from combined plant effluent via 24 hour Composite Sampler.