

## SECOND QUARTER 2004 RE-INJECTION OPERATING REPORT

Re-injection at Fernald is exempted under 40 CFR 300.400(e)(1) from requiring a permit, as it is a CERCLA action. Ohio EPA Guidelines (OEPA 1997), suggest monthly operating reports be submitted that include:

- I. An analysis of the injectate
  - Composite daily total uranium results from the injectate source (AWWT Expansion Facility effluent) for days when re-injection occurred for the second quarter of 2004 are shown in Figure 1.
  - The monthly grab sample results for the second quarter 2004 are provided in Table 1.
- II. The volume and rate of re-injection
  - Table 2 summarizes second quarter 2004 operational data.
- III. A description of any well maintenance and rehabilitation procedures conducted.
  - No well maintenance or rehabilitation occurred in the second quarter of 2004.

DOE has submitted monthly reports since re-injection began in September 1998 through March 2002. Due to the routine nature of the reports, DOE and Ohio EPA agreed in March 2002 that the monthly information would be provided in quarterly reports beginning with the report for the second quarter 2002.

Routine monitoring of the aquifer in the re-injection area is conducted as part of the groundwater remedy performance-monitoring program specified in Fernald's Integrated Environmental Monitoring Plan (IEMP). Results of the IEMP are reported semi-annually and are available for viewing on the Fernald website, [www.fernaldd.gov](http://www.fernaldd.gov). During the second quarter of 2004 re-injection took place in seven re-injection wells. Re-Injection locations are shown in Figure 2.

### ANALYSIS OF THE INJECTATE

A reduced injectate analyte list became effective on January 1, 2004. The reduced analyte list was approved by the U.S. EPA on November 18, 2003 and by the Ohio EPA on October 29, 2003. Due to an inadvertent oversight, monthly grab samples were not collected in April or May. During June of 2004 no constituents exceeded their FRLs. The following total uranium concentrations were measured in the June grab and the June daily composite sample, respectively:

- June 29, 2004 - 2.08 micrograms per liter ( $\mu\text{g/L}$ ) and 1.5  $\mu\text{g/L}$

**TABLE 1**  
**ANALYSIS OF INJECTATE**

Constituents <sup>a</sup>	Results <sup>b</sup>			Groundwater FRL <sup>c</sup>	Constituent Type <sup>d</sup>	Basis for FRL <sup>e</sup>
	Apr. 2004	May 2004	June 29, 2004			
<b>General Chemistry</b>				<b>mg/L</b>		
Nitrate	NS	NS	0.92 J	11.0	MP	B
<b>Inorganics</b>				<b>mg/L</b>		
Antimony	NS	NS	U	0.006	N	A
Arsenic	NS	NS	U	0.05	N	A
Boron	NS	NS	0.0359 J	0.33	MP	R
Fluoride	NS	NS	0.258	4.0	MP	A
Lead	NS	NS	0.000082 J	0.015	N	A
Manganese	NS	NS	0.0915	0.9	N	B
Molybdenum	NS	NS	0.00128 J	0.10	N	A
Nickel	NS	NS	U	0.1	N	A
Zinc	NS	NS	0.00611 J	0.021	N	B
<b>Radionuclides</b>				<b>pCi/L</b>		
Technetium-99	NS	NS	U	94	MP	R*
				<b>µg/L</b>		
Uranium, total	NS	NS	2.08	30.0	MP	A
<b>Organics</b>				<b>µg/L</b>		
Carbon disulfide	NS	NS	U	5.5	N	A
Trichloroethene	NS	NS	U	5.0	N	A

Results Qualifiers: U = Nondetected result, B (inorganics) = Reported result is greater than the instrument detection level but less than the contract required detection limit, B (organics) = The compound is detected in an associated lab blank. J = Reported result is positively detected but is estimated; the result is still usable for making decisions, NS - Not Sampled.

<sup>a</sup> Constituents taken from Table 2-1 of the Re-Injection Demonstration Test Plan, and are those agreed upon by U.S. EPA (Letter dated November 18, 2003 Re: Monthly Injectate Analyte List) and by the Ohio EPA (Letter dated October 29, 2003, Re: Approval to Revise Monthly Injectate Grab Sample Analyte List)

<sup>b</sup> If a duplicate sample was analyzed, then the highest concentration between the regular sample and duplicate sample is reported.

<sup>c</sup> From Table 9-4 in the Operable Unit 5 Record of Decision Report. NS = Not Sampled

<sup>d</sup> Constituent types from Appendix A of IEMP, Rev. 1. 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.

<sup>e</sup> A - Applicable or relevant and appropriate requirement based (MCL, PMCL, etc.), B - Based on 95<sup>th</sup> percentile background concentrations, R - Risk-based, R\* - Risk-based radionuclide cleanup levels include constituent specific 95<sup>th</sup> percentile background concentration.

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**TABLE 2**  
**RE-INJECTION WELL OPERATIONAL SUMMARY SHEET**  
**SECOND QUARTER 2004**

Well Number	Reporting Period (hours) <sup>a</sup>	Hours Not Injecting <sup>b</sup>	Hours Injecting <sup>c</sup>	Operational Percent <sup>d</sup>	Million Gallons Injected <sup>e</sup>	Target /Average <sup>f</sup> Operating Injection Rate (gpm)
33253 (IW-8a) <sup>g</sup>	2184	327	1857	85.0	20.579	200 / 185
33254 (IW-9a) <sup>g</sup>	2184	327	1857	85.0	21.069	200 / 189
22109 (IW-10)	2184	399	1785	81.7	19.276	200 / 180
33255 (IW-10a) <sup>h</sup>	2184	327	1857	85.0	21.481	200 / 193
22240 (IW-11)	2184	399	1785	81.7	19.100	200 / 178
22111 (IW-12) <sup>i</sup>	2184	2184	0	0	0	200 / 0
31563 (IW-16)	2184	727	1457	66.7	16.313	200 / 187
33263 (IW-29)	2184	727	1457	66.7	10.269	100 / 117
Injection Pond <sup>j</sup>	2184	2184	0	0	0	100 / 0

<sup>a</sup> First operational shift reading on April 1, 2004 to first operational shift reading on July 1, 2004

<sup>b</sup> System downtime as noted on Figure 1

<sup>c</sup> Hours in reporting period - Hours not injecting

<sup>d</sup> (Hours injecting/Hours in reporting period) x 100

<sup>e</sup> Summation of daily totalizer differences

<sup>f</sup> Gallons Injected/(Hours Injecting x 60)

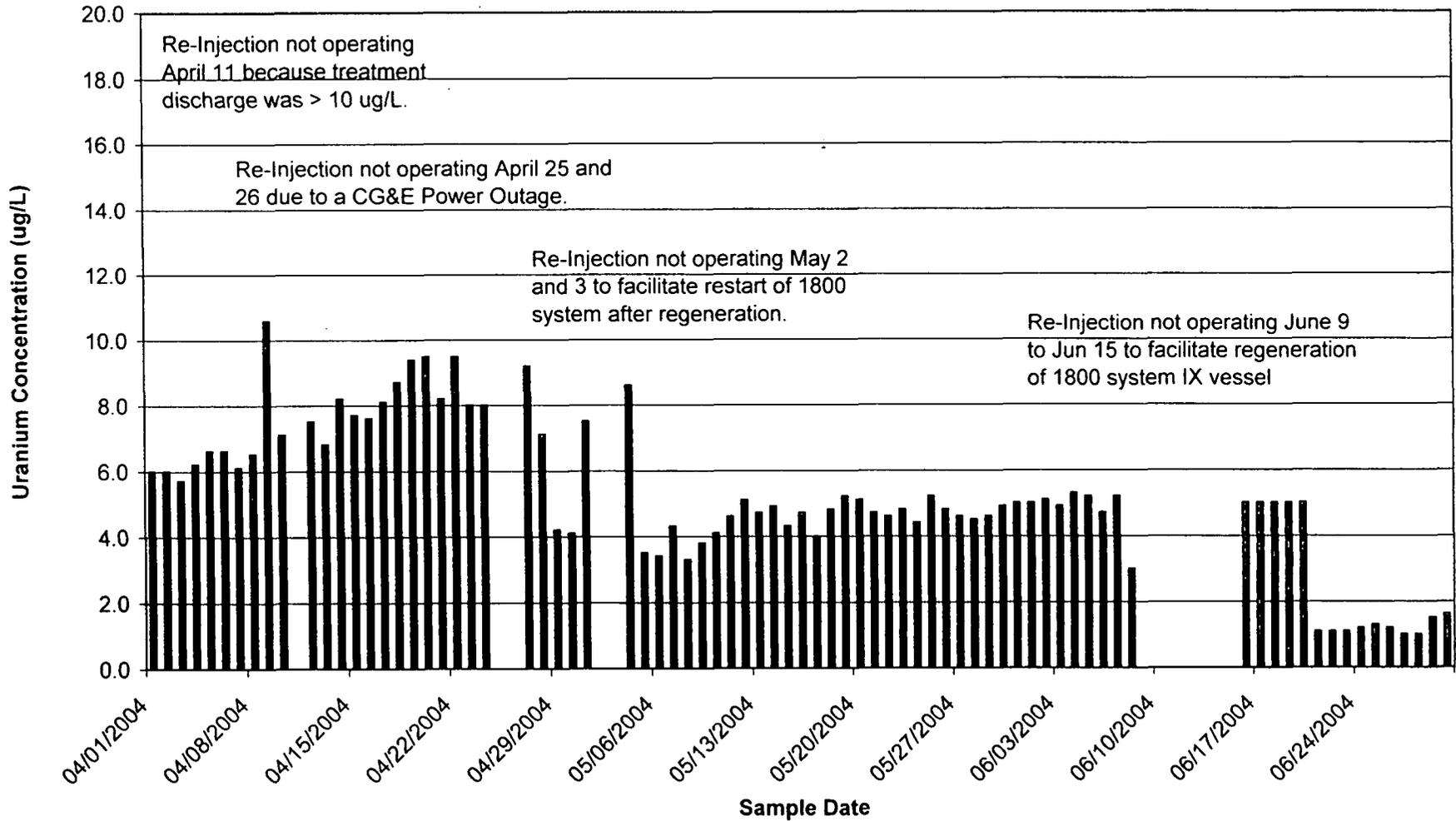
<sup>g</sup> In 2002, Re-Injection Wells 8 and 9 were replaced with new wells, 8a and 9a. These two replacement wells began operating in November 2002

<sup>h</sup> A new Re-Injection Well (IW-10a) began operating on May 22, 2003.

<sup>i</sup> Re-Injection in Well IW-12 was suspended on July 21, 2003. The area next to IW-12 is no longer in the 30-ug/L total uranium plume.

<sup>j</sup> While active re-injection of treated groundwater did not occur during the quarter, passive injection of storm water runoff continued.

**Figure 1**  
**Daily Composite Uranium Results from AWWT Expansion System**  
**Days when Re-Injection Occurred**



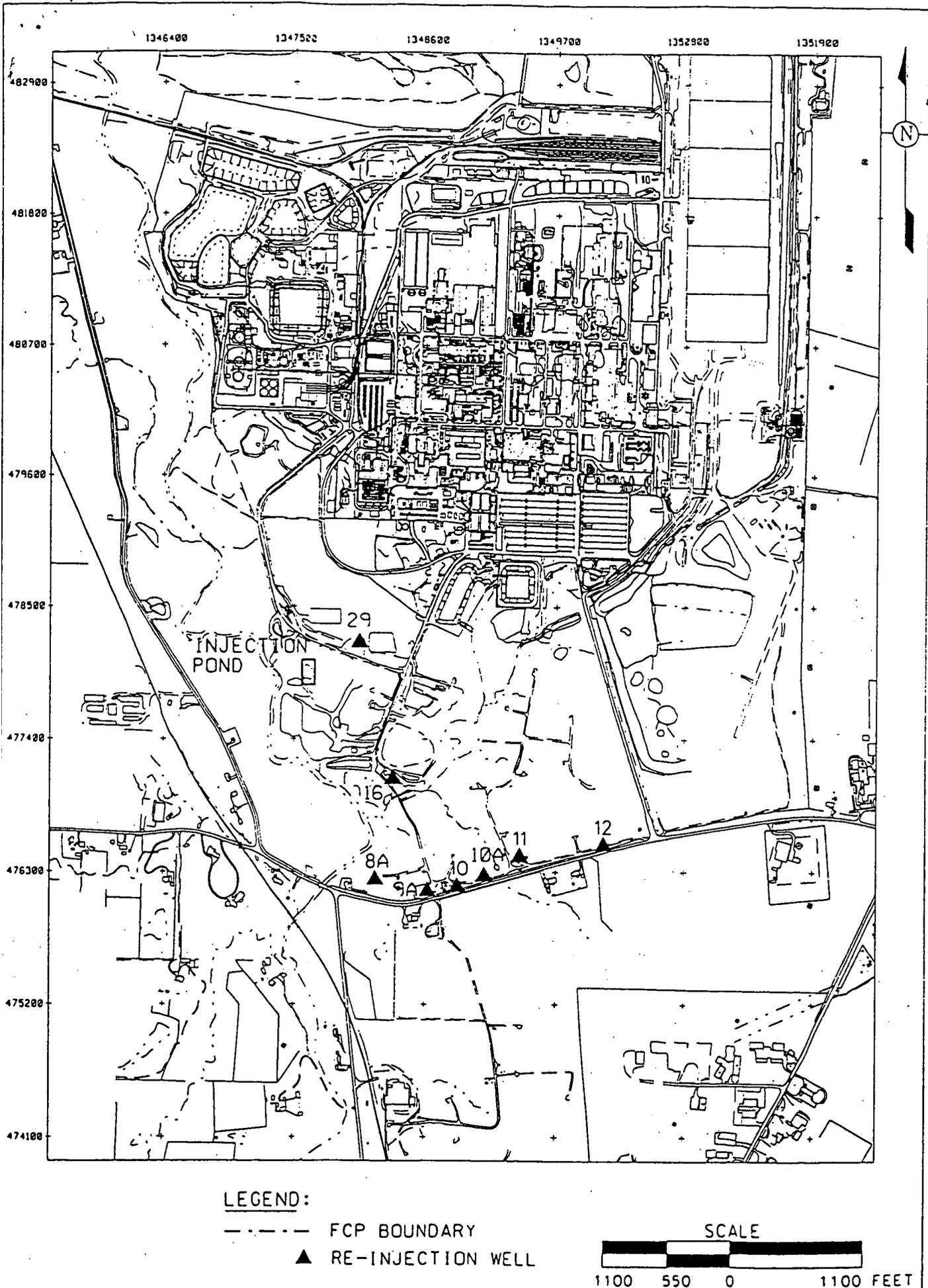


FIGURE 2. LOCATION OF RE-INJECTION WELLS AND INJECTION POND