



Department of Energy **1663**



Ohio Field Office  
Fernald Area Office  
P. O. Box 538705  
Cincinnati, Ohio 45253-8705  
(513) 648-3155

AUG 26 1998

Mr. Jim Welch  
Welch Sand and Gravel, Inc.  
10217 Columbia Street  
Harrison, Ohio 45030-9751

DOE-1124-98

Dear Mr. Welch:

#### GROUNDWATER MONITORING WELL RESULTS FOR 1994 AND 1995

As you are aware, the Department of Energy (DOE) has installed groundwater Monitoring Wells 2119, 2560, and 2561 on your property to collect water samples for analysis. We appreciate your participation in this important program. This letter presents the results of samples collected in 1994 and 1995 from Monitoring Wells 2119 and 2560. Monitoring Well 2561 has not been sampled since 1993 and Monitoring Wells 2119 and 2560 have not been sampled since 1995. Monitoring ceased at these wells once enough data had been collected to support the various sampling programs. Data collected prior to 1994, including the monitoring results from Monitoring Well 2561, were previously sent to you in March 1994. Although water quality samples are not collected from any of these wells, at this time, groundwater elevation measurements are still obtained from Monitoring Well 2119. These groundwater elevation results can be found in Integrated Environmental Monitoring Quarterly Status reports available at the Public Environmental Information Center.

#### Methodology

These monitoring wells have been sampled by Fernald Environmental Management Project (FEMP) personnel per the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA) requirements. Data from samples collected from the monitoring wells are used to determine the quality of the groundwater in the area surrounding the Fernald facility.

#### Results and Discussion

The 1994 through 1995 monitoring results from Monitoring Wells 2119 and 2560 are provided in this letter. A description of the units of measurement for the results is enclosed. When reviewing the monitoring results for each sampling period, please keep in mind that FEMP personnel sample monitoring wells for specific projects. As the FEMP continues its

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remediation efforts, the requirements for each project change; therefore, constituents analyzed by the laboratory may also change. Consequently, the constituents analyzed may vary from one sampling event to the next depending on what data are needed in order to fulfill reporting requirements.

The wells on your property were sampled for radium-226, radium-228, and total uranium. Each of these are naturally occurring constituents present in groundwater and soil. The FEMP has conducted independent analyses for these constituents to investigate the possible presence of these constituents in elevated concentrations in regional groundwater attributable to historical FEMP processing operations. Table 1 summarizes the monitoring results from these wells and compares them to FEMP Final Remediation Levels (FRL).

The FEMP has committed to remediate the groundwater, in the affected portion of the Great Miami Aquifer. The health protective concentrations to which the FEMP will cleanup to are referred to as FRL, and are defined in the Final Record of Decision for Remedial Actions at Operable Unit 5.

Table 1  
1994 and 1995 Summary Results from Monitoring Wells 2119 and 2560

Constituent	FRL	Ranges for These Wells
Radium-226	20 pCi/L	ND* to 1.9 pCi/L
Radium-228	20 pCi/L	ND* to 6.4 pCi/L
Total Uranium	20 µg/L	0.9 to 2.5 µg/L

\*ND = non-detectable concentrations; the lowest concentration that can be reliably detected is known as the detection limit. Non-detectable concentrations are between zero and the detection limit.

It is important to note that all of the results from the monitoring wells on your property were well below their respective FRL. Table 2 presents the detailed results of monitoring for radium-226, radium-228, and total uranium from these wells.

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Table 2  
Monitoring Well Data

Monitoring Well	Sample Date	Constituent	Sample Result	
2119	4/5/94	Total Uranium	1.6 µg/L	
	7/18/94	Radium-226	0.073 pCi/L	
		Radium-228	<0.27 pCi/L <sup>a</sup>	
		Total Uranium	1.7 µg/L	
	9/15/94	Radium-226	1.9 pCi/L	
		Radium-228	<2.1 pCi/L <sup>a</sup>	
		Total Uranium	2.5 µg/L	
	1/18/95	Radium-226	0.088 pCi/L	
		Radium-228	<1.8 pCi/L <sup>a</sup>	
		Total Uranium	1.6 µg/L	
	2560	2/24/94	Radium-226	<0.0 pCi/L <sup>a,b</sup>
			Radium-228	5.4 pCi/L
Total Uranium			1.2 µg/L	
5/10/94		Total Uranium	0.9 µg/L	
		8/4/94	Radium-226	0.57 pCi/L
			Radium-228	6.4 pCi/L
10/21/94		Total Uranium	2.1 µg/L	
		Radium-226	0.18 pCi/L	
		Radium-228	<3.2 pCi/L <sup>a</sup>	
2/22/95		Total Uranium	1.4 µg/L	
		Radium-226	0.34 pCi/L	
		Radium-228	<1.8 pCi/L <sup>a</sup>	
		Total Uranium	1.1 µg/L	

<sup>a</sup>The < sign indicates a non detectable concentration of the constituent and is identified as ND in Table 1. The lowest concentration that can be reliably detected is known as the detection limit. Non detectable concentrations are between zero and the detection limit.

<sup>b</sup>The actual concentration was less than zero because the laboratory background concentration was greater than the sample concentration.

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Additional information concerning the FEMP restoration plan and documents referred to above are available at the Public Environmental Information Center located in the Delta Building at 10995 Hamilton-Cleves Highway, Harrison, OH; Phone Number: (513) 648-7480.

The DOE is committed to making the environmental restoration of the Fernald site effective and successful. Your cooperation in this effort is greatly appreciated.

If you have any questions regarding the monitoring results, please contact Kathleen Nickel at (513) 648-3166.

Sincerely,



Johnny W. Reising  
Associate Director  
Environmental Management

FEMP:Nickel

Enclosure:

cc w/enclosure:

- G. Jablonowski, USEPA-V, SRF-5J
- R. Beaumier, TPSS/DERR, OEPA-Columbus
- F. Bell, ATSDR
- M. Schupe, HSI GeoTrans
- R. Vandegrift, ODH
- F. Barker, Tetra Tech
- D. Carr, FDF/52-2
- M. Cherry, FDF/90
- T. Hagen, FDF/65-2
- J. Harmon, FDF/90
- C. Tabor, FDF/90
- AR Coordinator, FDF/78

cc w/o enclosure:

- N. Hallein, EM-42/CLOV
- A. Tanner, OH/FEMP
- R. Heck, FDF/2
- S. Hinnefeld, FDF/2
- EDC, FDF/52-7

ENCLOSURE

FACT SHEET

This enclosure provides explanations for the terms used in this information packet. Please refer to the cover letter for additional information.

Monitoring Results

The monitoring well results report the name of the constituent analyzed, the concentration measured, and the unit of concentration.

Units

The monitoring well results are reported in standard concentration or radioactivity units. These are:

$\mu\text{g/L}$  (micrograms per liter) A unit of measure of the concentration of a constituent. This unit is approximately equivalent to parts per billion (ppb). As an illustration, one  $\mu\text{g/L}$  (ppb) is roughly one drop of gasoline in a railroad box car full of water.

$\text{pCi/L}$  (picocuries per liter) A unit of measure of the radioactivity of a constituent. Radioactivity is the process in which the nucleus of an unstable atom spontaneously decays or disintegrates. Radiation is the energy that is released when the disintegration or decay occurs. For comparison, 20  $\mu\text{g/L}$  equals 13.5  $\text{pCi/L}$  and one picoCurie is one disintegration every 27 seconds.