



State of Ohio Environmental Protection Agency

Southwest District Office

401 East Fifth Street
Dayton, Ohio 45402-2911
(513) 285-6357
FAX (513) 285-6249

FERNALD

LOG A-0467 - 2711

DEC 28 7 59 AM '99

FILE: _____
LIBRARY: _____

George V. Voinovich
Governor

December 27, 1999

Mr. Johnny Reising
U.S. Department of Energy, Fernald Area Office
P.O. Box 538705
Cincinnati, OH 45253-8705

Re: JULY RE-INJECTION REPORT AND NOTIFICATION OF > 20PPB INJECTATE

Dear Mr. Reising:

Notice was provided to Ohio EPA by e-mail on September 17, 1999 that the total uranium concentration of injectate grab samples for the month of July 1999 exceeded 20 ug/L. This subject was discussed during the weekly phone call on September 21, 1999, in your letter (DOE-1140-99), and in the July 1999 Operating Report for Re-Injection Demonstration.

As you know, Ohio EPA Division of Drinking and Ground Waters Guidance allows underground injection wells to operate without an Ohio permit as long as the injectate does not exceed Safe Drinking Water Act Maximum Contaminant Levels or Health Advisory Limits. The Re-Injection Demonstration Test Plan (February 1998) states that the uranium concentration of injected water would be less than the FRL for uranium which is 20 micrograms per liter (ug/L). This is the second time that monthly grab samples of injectate exceeded the FRL for a FEMP contaminant of concern. The analytical results from the April 1999 injectate sample exceeded the FRL for total lead. The Ohio EPA concurred with the DOE explanation that the high lead concentrations in the grab sample was not representative of the average lead content of injectate for the month.

The Ohio Environmental Protection Agency concurs that the steps outlined in the above-referenced communications are appropriate measures to greatly reduce the possibility that treated ground water with concentrations above the FRLs will be injected. These measures, some of which are still being developed, include:

- New procedures to successfully regenerate the ion-exchange (IX) resin.
- Monitoring of resin loading to allow regeneration before resin efficiency becomes too low.
- Changes and improvements to valving which are designed to isolate regeneration water containing high uranium concentrations from treated water routed to

Q:\femp\ou5\reinj20+.wpd

Mr. Johnny Reising
December 27, 1999
Page 2

-- 2711

- reinjection.
- Improvements to Operational Work Instructions to reduce the possibility of unintended valve actuation. This is suspected of causing untreated water to bypass treatment.
 - The Monthly Reinjection Demonstration Operating Reports will include analytical results for daily composite samples of the AWWT Expansion effluent.

However, if these measures fail to consistently and reliably prevent the recurrence of injecting water containing COCs above the FRL into the Great Miami Aquifer, the Ohio EPA will be forced to conclude that the water treatment systems are not performing adequately to support the Re-Injection Demonstration. If that is the case, the future of the Re-Injection Demonstration is in jeopardy.

More problematic and of more immediate concern are the effects of injecting water with greater than 5 parts per billion (ppb) total uranium on the remediation time. A concentration of 5 ppb was assumed when the effects of re-injection were first modeled. At that time the modeled predictions of remediation time were not sophisticated enough to distinguish the difference in remediation time when injecting water with 5 ppb from the remediation time when injecting 10 or 15 ppb total uranium. Certainly from a mass-loading perspective, injecting water with a higher total uranium content will mean that a greater mass of uranium will remain in the aquifer. As the Data Fusion Model becomes more sophisticated, the effects of injecting higher concentrations of uranium should be modeled and evaluated. As uranium concentrations increase, eventually the reduced benefits of a shorter remediation time will not off-set the costs of treatment and re-injection. Ohio EPA expects that DOE will operate its water treatment for injection to maintain injectate concentrations below 5 ppb. If this is not possible, the Re-injection Demonstration should be re-evaluated and terminated if necessary.

If you have any questions, please contact Tom Ontko or me.

Sincerely,

Tom Ontko

for

Thomas A. Schneider
Fernald Project Manager
Office of Federal Facilities Oversight

cc: Jim Saric, U.S. EPA
Terry Hagen, FDF
Mark Shupe, HSI GeoTrans
Francie Hodge, Tetra Tech EM Inc.
Ruth Vandergrift, ODH

Q:\femp\lou5\reinj20+.wpd

2