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Department of Energy

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SEP 23 2003

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V, SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0523-03

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

Ms. Val Orr
Ohio Environmental Protection Agency
Division of Drinking and Ground Waters - UIC Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

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

REQUEST TO REVISE THE MONTHLY INJECTATE GRAB SAMPLE ANALYTE LIST

The United States Department of Energy would like to revise the Monthly Injectate Grab Sample Analyte List defined in the Re-Injection Demonstration Test Plan, which is comprised of 26 constituents. The revision would result in 12 fewer analytes being tested each month. Justification for the revision is provided below:

Specifically, we would like to discontinue analyzing the injectate for 16 constituents that have not been detected at concentrations above their Final Remediation Limit (FRL) in injectate source areas of the aquifer since inception of the Integrated Environmental Monitoring Plan (IEMP). We would also like to add four new constituents to the analyte list because they have been detected at concentrations above their FRL in injectate source areas of the aquifer since inception of the IEMP. It is appropriate to implement these changes at this time to better align injectate-sampling efforts to IEMP groundwater monitoring findings and IEMP sampling program changes that were implemented on January 1, 2003 to reflect those findings.

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SEP 23 2003

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-2-

DOE-0523-03

Injection of treated groundwater at the Fernald site began in September of 1998. Following the Ohio Environmental Protection Agency (OEPA) re-injection guidance "5X26 Aquifer Remediation Projects" a grab sample of the injectate is analyzed monthly. The constituents tested for were selected from a list of 50 Groundwater FRL Constituents identified in the Operable Unit 5 Record of Decision. The ones selected from the list for injectate sampling were those that had an (FRL) exceedance in injectate source areas of the aquifer (i.e., areas of the aquifer from which groundwater was being pumped). This designation was based on data collected as part of a Comprehensive Environmental Response, Compensation, and Liability Act Remedial Investigation/Feasibility Study Investigation and the IEMP sampling conducted prior to the start of re-injection.

Since 1997 intensive groundwater monitoring in the Great Miami Aquifer (GMA) has been ongoing at the Fernald site as part of an IEMP. Data collected since the inception of the IEMP shows that many of the constituents that were being monitored for in the GMA did not have an FRL exceedance. New area specific sampling lists were therefore developed for the IEMP to focus the sampling effort on those constituents that have had an FRL exceedance since the inception of the IEMP. These new sampling lists became effective in January of 2003.

IEMP data shows that 16 of the constituents being monitored for in the injectate have not had an FRL exceedance in the injectate source areas of the aquifer, (i.e., Aquifer Zones 1, 2, 3, and 4). Table 1 summarizes the IEMP data. These 16 constituents are:

- barium
- beryllium
- cadmium
- chromium-total
- cobalt
- mercury
- selenium
- silver
- vanadium
- neptunium-237
- radium-226,
- strontium-90
- thorium-232
- bis(2-ethylhexyl)phthalate
- 1,1-dichloroethene
- 1,2-dichloroethane

SEP 23 2003

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-3-

DOE-0523-03

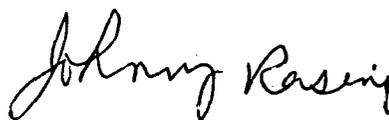
Although Table 1 shows one exceedance for vanadium, this exceedance was not in an injectate source area of the aquifer. It was measured in Well 2426, which is located near the On-Site Disposal Facility. It is these 16 constituents that we propose to drop from the injectate analyte list.

In addition to discontinuing analysis of the injectate for the above listed 16 constituents, boron, fluoride, molybdenum, and technetium-99 will be added to the analyte list. These four constituents have had FRL exceedances in injectate source areas of the aquifer since inception of the IEMP. The proposed new analyte list for injectate analysis is composed of the 14 highlighted constituents in Table 1 (enclosed).

The proposed new analyte list is protective of the aquifer in that it focuses on the constituents found in injectate source areas at concentrations above their FRL and is consistent with the new revised sampling lists that became effective for the IEMP on January 1, 2003. Continued groundwater sampling data collected under the IEMP will be used to detect water quality changes in the aquifer that could trigger the need to further revise the injectate sampling analyte list.

If you have any questions or need further information, please contact Johnny Reising at (513) 648-3139.

Sincerely,



Glenn Griffiths
Acting Director

FCP:Reising

Enclosure: As Stated

SEP 23 2003

DOE-0523-03

Mr. James A. Saric
Mr. Tom Schneider
Ms. Val Orr

-4-

cc w/enclosure:

D. Lojek, OH/FCP
J. Reising, OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosure)
G. Jablonowski, USEPA-V, SR-6J
F. Bell, ATSDR
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
R. Vandegrift, ODH
AR Coordinator, MS78

cc w/o enclosure:

R. Greenberg, EM-31/CLOV
N. Hallein, EM-31/CLOV
K. Johnson, OH/FCP
K. Broberg, Fluor Fernald, Inc./MS52-5
J. Chiou, Fluor Fernald, Inc./MS64
W. Hertel, Fluor Fernald, Inc./MS52-5
T. Hagen, Fluor Fernald, Inc./MS1
E. Henry, Fluor Fernald, Inc./MS52-5
M. Kopp, Fluor Fernald, Inc./MS52-5
T. Poff, Fluor Fernald, Inc./MS65-2
D. Powell, Fluor Fernald, Inc./MS64
C. Tabor, Fluor Fernald, Inc./MS90
ECDC, Fluor Fernald, Inc./MS52-7

TABLE 1
GROUNDWATER FRL EXCEEDANCES BASED ON SAMPLES AND LOCATIONS SINCE IEMP INCEPTION
(FROM AUGUST 1997 THROUGH 2001)

(1) Constituents	(2) Groundwater FRL ^a	(3) Basis for FRL ^b	(4) No. of Samples ^c	(5) No. of Samples > FRL ^{cd}	(6) Percent of Samples > FRL	(7) Zones with FRL Exceedances (No. of Wells with exceedances in each Aquifer Zone) ^{cd,e}	(8) Range above FRL ^{cd,e}
Uranium-Total	30 µg/L	A	2473	632	25.56%	1(9) 2(35) 3(2) 4(16)	30.13 J/844.991 -
Zinc	0.021 mg/L	B	854	70	8.20%	0(10) 1(5) 2(14) 3(5) 4(2)	0.0216 -/13.6 -
Manganese	0.90 mg/L	B	1025	62	6.05%	0(5) 1(6) 2(8) 3(5) 4(3)	0.916 -/105 J
Nickel	0.10 mg/L	A	853	19	2.23%	0(1) 2(7) 3(1)	0.101 -/1.54 -
Lead	0.015 mg/L	A	853	12	1.41%	0(2) 1(2) 2(4) 3(1)	0.0157 -/0.201 -
Technetium-99	94 pCi/L	R*	1089	15	1.38%	1(3)	101.08 -/1352.266 J
Nitrate	11 mg/L	B	1625	19	1.17%	1(5) 2(1) ^e	11.4 -/331 NV
Arsenic	0.050 mg/L	A	1046	12	1.15%	0(1) 1(1) 2(1) 4(4)	0.0547 -/0.125 -
Boron	0.33 mg/L	R	1516	14	0.92%	2(2)	0.331 -/1.16 -
Molybdenum	0.10 mg/L	A	674	5	0.74%	1(1)	0.207 -/0.69 -
Carbon disulfide	0.0055 mg/L	A	854	5	0.59%	0(1) ^b 1(3) 2(1) ^b	0.006 -/0.014 -
Trichloroethene	0.0050 mg/L	A	983	5	0.51%	1(2)	0.0207 -/0.120 -
Antimony	0.0060 mg/L	A	854	4	0.47%	0(1) 1(1) 2(2)	0.0073 J/0.0196 J
Fluoride	4 mg/L	A	1045	4	0.38%	0(2) 1(1) 3(1)	5.3 -/12.3 -
Vanadium	0.038 mg/L	R	810	1	0.12%	0(1)	0.0664 J ⁱ
1,1-Dichloroethane	0.28 mg/L	A	86	0	0%	NA	NA
1,1-Dichloroethene	0.0070 mg/L	A	323	0	0%	NA	NA
1,2-Dichloroethane	0.0050 mg/L	A	602	0	0%	NA	NA
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.00010 mg/L	D	19	0	0%	NA	NA
4-Methylphenol	0.029 mg/L	R	86	0	0%	NA	NA
4-Nitrophenol	0.32 mg/L	R	86	0	0%	NA	NA
alpha-Chlordane	0.0020 mg/L	A	490	0	0%	NA	NA
Aroclor-1254	0.00020 mg/L	D	86	0	0%	NA	NA
Barium	2.0 mg/L	A	176	0	0%	NA	NA
Benzene	0.0050 mg/L	A	764	0	0%	NA	NA
Beryllium	0.0040 mg/L	A	762	0	0%	NA	NA
bis(2-Chloroisopropyl) ether	0.0050 mg/L	D	238	0	0%	NA	NA
bis(2-Ethylhexyl)phthalate	0.0060 mg/L	A	86	0 ^j	0%	NA ^j	NA
Bromodichloromethane	0.10 mg/L	A	489	0	0%	NA	NA
Bromomethane	0.0021 mg/L	R	86	0	0%	NA	NA
Cadmium	0.014 mg/L	B	853	0	0%	NA	NA

5

TABLE 1
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(1) Constituents	(2) Groundwater FRL ^a	(3) Basis for FRL ^b	(4) No. of Samples ^c	(5) No. of Samples > FRL ^{c,d}	(6) Percent of Samples > FRL	(7) Zones with FRL Exceedances (No. of Wells with exceedances in each Aquifer Zone) ^{e,d,e}	(8) Range above FRL ^{c,d,e}
Carbazole	0.011 mg/L	R	238	0	0%	NA	NA
Chloroethane	0.0010 mg/L	D	86	0	0%	NA	NA
Chloroform	0.10 mg/L	A	86	0	0%	NA	NA
Chromium VI	0.022 mg/L	R	12	0	0%	NA	NA
Cobalt	0.17 mg/L	R	762	0	0%	NA	NA
Copper	1.3 mg/L	A	101	0	0%	NA	NA
Mercury	0.0020 mg/L	A	1640	0	0%	NA	NA
Methylene chloride	0.0050 mg/L	A	86	0	0%	NA	NA
Neptunium-237	1.0 pCi/L	R*	1396	0	0%	NA	NA
Octachlorodibenzo-p-dioxin	1.0E-7 mg/L	D	19	0	0%	NA	NA
Radium-226	20 pCi/L	A	174	0	0%	NA	NA
Radium-228	20 pCi/L	A	86	0	0%	NA	NA
Selenium	0.050 mg/L	A	853	0	0%	NA	NA
Silver	0.050 mg/L	A	746	0	0%	NA	NA
Strontium-90	8.0 pCi/L	A	1204	0	0%	NA	NA
Thorium-228	4.0 pCi/L	R*	850	0	0%	NA	NA
Thorium-230	15 pCi/L	R*	86	0	0%	NA	NA
Thorium-232	1.2 pCi/L	R*	775	0	0%	NA	NA
Vinyl chloride	0.0020 mg/L	A	489	0	0%	NA	NA

^aFrom Operable Unit 5 Record of Decision, Table 9-4

^bFrom Operable Unit 5 Feasibility Study, Table 2-16:

A - ARAR based

B - Based on 95th percentile background concentrations

D - Based on lowest achievable detection limit

R - Risk based Preliminary Remediation Goal (PRG)

R* - Risk based Preliminary Remediation Level includes the radionuclide risk-based PRG plus its 95th percentile background concentration.

^cBased on filtered and unfiltered samples from the August 1997 through 2001 IEMP groundwater data

^dSample results having a -, J, or NV qualifier were used:

- = result is confident as reported

J = result is quantitatively estimated

NV = result is not validated

^eNA = not applicable

^fNitrate/nitrite results are evaluated with respect to the nitrate FRL.

^gSince the IEMP inception, there has been only one nitrate/nitrite exceedance at Well 2017 in 1998, which has not occurred in later years (refer to Figure A-11).

^hSince the IEMP inception, there has been one isolated exceedance for carbon disulfide at two locations (refer to Figure A-5)

ⁱSince the IEMP inception, there has been only one vanadium exceedance at Well 2426 in 1998, which has not occurred in later years (refer to Figure A-15).

^jOf the 86 samples analyzed for bis(2-Ethylhexyl)phthalate, a common laboratory contaminant, five had results above the FRL. The above FRL results are all considered suspect due to laboratory analysis issues, laboratory blank and field blank contamination, or field duplicate results being non-detected. The five results exceeding are as follows: 0.0141 mg/L, Well 2398 and 0.010J mg/L, Well 3390 in Aquifer Zone 2; 0.016J mg/L, Well 2109 in Aquifer Zone 3; 0.008J mg/L, Well 2125 and 0.131 mg/L, Well 3095 in Aquifer Zone 4.