



Department of Energy

**Ohio Field Office
Fernald Area Office**

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Cincinnati, Ohio 45253-8705
(513) 648-3155



MAY 21 1997

DOE-0937-97

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**James M. Raab
Hydrogeologist/ Supervisor
Technical Services Unit
Water Resources Section
Division of Water
Fountain Square
Columbus, Ohio 43224-1387**

Dear Mr. Raab:

TRANSMITTAL OF WELL/LYSIMETER PLUGGING AND ABANDONMENT INFORMATION FOR JULY THROUGH DECEMBER 1996

Reference: Letter, J. Raab (ODNR) to K. Nickel (DOE-FEMP), "Well Plugging and Abandonment," dated March 4, 1996.

This letter transmits information regarding monitoring well and lysimeter plugging and abandonment activities for the period of July through December 1996 for the Fernald Environmental Management Project (FEMP). This information has been prepared based on your correspondence (Reference) and subsequent follow-up phone conversations with FEMP staff. During the six month period, 30 monitoring wells and five lysimeters were plugged and abandoned using a number of abandonment methods which were selected based on well depth, construction, and future use of the area in which the wells were located. The methods are described in Enclosure I along with the list of wells/lysimeters plugged and abandoned. An Ohio Department of Natural Resources (ODNR) Water Well Sealing Report has been completed for the deepest well/lysimeter for each of the methods and is also included in Enclosure I. A summary list containing information about the plugged wells/lysimeters has been provided in Enclosure II.

Additional plugging and abandonment information will be sent on a semi-annual basis. If you have any questions or comments concerning this matter, please contact Kathleen Nickel at (513) 648-3166.

Sincerely,



Johnny W. Reising
Associate Director
Environmental Management

FEMP:Nickel

Enclosures: As Stated

cc w/encs:

N. Hallein, EM-42/CLOV
G. Jablonowski, USEPA-V, 5HRE-8J
J. Saric, USEPA-V, SRF-5J
R. Beaumier, TPSS/DERR, OEPA-Columbus
M. Rochotte, OEPA-Columbus
T. Onko, OEPA-Dayton
T. Schneider, OEPA-Dayton
F. Bell, ATSDR
D. S. Ward, GeoTrans
R. Vandegrift, ODOH
R. Geiger, PRC
J. Harmon, FDF/90
AR Coordinator/78

cc w/o encs:

C. Little, FDF/2
EDC, FDF/52-7

ATTACHMENT I

The plugging and abandonment methods used are described below:

NOTE: Asterisk (*) indicates the deepest well/lysimeter per method.

Method 1: Pull riser and screen from the ground. Inject an expansive cement grout slurry into the remaining hole, bringing grout flush to the surface.

Wells plugged using Method 1: 1152, 1160, 1171, 11504, *11505, 11685

Method 2: Fill screened interval and lower two feet of riser with sand. Place one to two feet of bentonite pellets on top of sand. Cut the riser a minimum of five feet below the base of the till. Inject an expansive cement grout slurry into the well as the riser is being pulled, bringing grout flush to the ground surface following complete removal of the cut portion of riser.

Wells plugged using Method 2: 2120, 2171, 2439, 3064, 3120, 4064, *4439

Method 3: Pull riser and screen from the ground. Overdrill boring to a depth of at least one foot below bottom of original boring using hollow stem augers. Inject an expansive cement grout slurry into the remaining boring up to 12 feet below the ground surface. Fill remainder of boring with a bentonite grout slurry (Volclay™) flush with ground surface.

NOTE: *Borings from wells 1064 and 2064 were filled completely with expansive cement grout flush to the ground surface.*

Wells plugged using Method 3: 1064, 11491, 11492, 11493, 11494, 11495, 11496, 11497, 11500, 11501, 11502, 11503, 11546, 11547, 11681, 11687, *2064

Method 4: Pull lysimeter PVC riser and porous cup from the ground. Overdrill boring to a depth of at least one foot below bottom of original boring using hollow stem augers. Inject a bentonite grout slurry into the remaining boring flush to the ground surface.

Lysimeters plugged using Method 4: 11482, *11557

Method 5: Pull lysimeter PVC riser and porous cup from the ground. Overdrill boring to a depth of at least one foot below bottom of original boring using hollow stem augers. Inject an expansive cement grout slurry into the remaining boring up to 12 feet below the ground surface. Fill remainder of boring with a bentonite grout slurry (Volclay™) flush to the ground surface.

Lysimeters plugged using Method 5: 11483, *11484, 11486

WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

LOCATION Fernald Environmental Management Project (FEMP)
County Hamilton Township Crosby Section 6
Property Owner United States Department of Energy
Address of Property 7400 Willey Road, Fernald, Ohio 45030
Location (NAD83 State Planar Coordinates) E1351197.25, N479209.168

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or (No) FEMP ID# 11505
(circle one)

MEASURED CONSTRUCTION DETAILS

Date of Measurements 1-3-95

Depth of Well 27.25 feet Static Water Level NA
Size of Casing 2-inch diameter Length of Casing 25 feet (riser)
Well Condition Good

SEALING PROCEDURE

Method of Placement Using tremie hose, inject expansive cement grout slurry

Placement:	From	To	Sealing Material	Volume
	<u>27.25 feet</u>	<u>0 feet</u>	<u>Expansive cement grout</u>	<u>0.59 cubic feet</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? (Yes) or No Amount Removed 25 feet & 2.25 feet screen and sump
(circle one)

Condition of Casing Good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 11-05-96

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation

CONTRACTOR

Name Alliance Environmental, Inc ODH Registration # 2119
Address 117 Industry Road
City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature *Lisa Redman*

SUBMIT COMPLETED FORM TO ODNR-DIVISION OF WATER

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WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

LOCATION Fernald Environmental Management Project (FEMP)

County Hamilton Township Crosby Section 6
Property Owner United States Department of Energy
Address of Property 7400 Willey Road, Fernald, Ohio 45030
Location (NAD83 State Planar Coordinates) E1350730.75, N48111.68

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 4439
(circle one)

MEASURED CONSTRUCTION DETAILS

Date of Measurements 3-1-93

Depth of Well 213.0 feet Static Water Level 70.3 feet
Size of Casing 4-inch diameter Length of Casing 201 feet (riser) 10 feet (screen)
2 feet (sump)

Well Condition Good

SEALING PROCEDURE

Method of Placement Fill screened interval and lower part of riser with sand. Place bentonite seal on top of sand. Inject expansive cement grout from bentonite to surface.

Placement:	From	To	Sealing Material	Volume
	<u>215.10 feet</u>	<u>203.5 feet</u>	<u>Sand</u>	<u>1.02 cubic feet</u>
	<u>203.5 feet</u>	<u>200.6 feet</u>	<u>Bentonite pellets</u>	<u>0.25 cubic feet</u>
	<u>200.6 feet</u>	<u>0 feet</u>	<u>Expansive cement grout</u>	<u>17.49 cubic feet</u>

Was Casing Removed? Yes or No Amount Removed 38 feet
(circle one)

Condition of Casing Good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 12-30-96

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation activities

CONTRACTOR

Name Alliance Environmental, Inc ODH Registration # 2119
Address 117 Industry Road
City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature *Lisa Rudolph*

SUBMIT COMPLETED FORM TO ODNR-DIVISION OF WATER

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WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

LOCATION Fernald Environmental Management Project (FEMP)
County Hamilton Township Crosby Section 6
Property Owner United States Department of Energy
Address of Property 7400 Willey Road, Fernald, Ohio 45030
Location (NAD83 State Planar Coordinates) E1350714.94, N480749.51

ORIGINAL WELL
ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 2064
(circle one)

MEASURED CONSTRUCTION DETAILS Date of Measurements 1-15-89
Depth of Well 82.5 feet Static Water Level 70.5 feet
Size of Casing 4-inch diameter Length of Casing 65 feet (riser)
Well Condition Good

SEALING PROCEDURE

Method of Placement Filled boring with sand to top of aquifer, tremied expansive cement grout into remainder of boring, flush with surface.

Placement:	From	To	Sealing Material	Volume
	<u>66 feet</u>	<u>31.8 feet</u>	<u>Sand</u>	<u>2.98 cubic feet</u>
	<u>31.8 feet</u>	<u>0</u>	<u>Expansive cement grout</u>	<u>2.77 cubic feet</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? Yes or No Amount Removed 65 feet and 17.5 feet screen and sump
(circle one)

Condition of Casing Good
Perforations: From NA To NA
From NA To NA

Date Sealing Performed 11-21-96
Reason(s) for Sealing Abandoned in advance of excavation and construction remediation

CONTRACTOR

Name Alliance Environmental, Inc ODH Registration # 2119
Address 117 Industry Road
City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature *Lisa Lodwick*

* Allowed natural aquifer materials to collapse from 82.5 feet to 66 feet.

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WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

LOCATION Fernald Environmental Management Project (FEMP)

County Hamilton Township Crosby Section 6
Property Owner United States Department of Energy
Address of Property 7400 Willey Road, Fernald, Ohio 45030
Location (NAD83 State Planar Coordinates) E1351261.7, N481822.748

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or **No** FEMP ID# 11557
(circle one)

MEASURED CONSTRUCTION DETAILS

Date of Measurements 2-24-95

Depth of Lysimeter 6.6 feet Static Water Level NA
Size of Casing 2-inch diameter Length of Casing 6.5 feet
Well Condition Good

SEALING PROCEDURE

Method of Placement Using tremie hose to place voclay (bentonite) grout into boring

Placement:	From	To	Sealing Material	Volume
	<u>7.6 feet</u>	<u>0 feet</u>	<u>Voclay(bentonite)grout</u>	<u>1.47 cubic feet</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? **Yes** or No Amount Removed 6.6 feet
(circle one)

Condition of Casing Good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 10-29-96

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation

CONTRACTOR

Name Alliance Environmental, Inc ODH Registration # 2119

Address 117 Industry Road

City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature *Allen Sudewick*

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SUBMIT COMPLETED FORM TO ODNR-DIVISION OF WATER

WATER WELL SEALING REPORT
(For Abandoned or Unused Wells)
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Water, Ground Water Resources Section
1939 Fountain Square Drive
Columbus, Ohio 43224-1360

LOCATION Fernald Environmental Management Project (FEMP)

County Hamilton Township Crosby Section 6
Property Owner United States Department of Energy
Address of Property 7400 Willey Road, Fernald, Ohio 45030
Location (NAD83 State Planar Coordinates) E1351281.67, N481826.248

ORIGINAL WELL

ODNR Well Log Number NA Copy attached? Yes or No FEMP ID# 11484
(circle one)

MEASURED CONSTRUCTION DETAILS Date of Measurements 1-5-95

Depth of Lysimeter 37.5 feet Static Water Level NA
Size of Casing 2-inch diameter Length of Casing 37.5 feet
Well Condition Good

SEALING PROCEDURE

Method of Placement Using tremie hose to place expansive cement grout and volclay (bentonite) grout

Placement:	From	To	Sealing Material	Volume
	<u>38.5 feet</u>	<u>12 feet (approx)</u>	<u>Expansive cement grout</u>	<u>5.20 cubic feet</u>
	<u>12 feet (approx)</u>	<u>0 feet</u>	<u>Volclay (bentonite) grout</u>	<u>2.36 cubic feet</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Was Casing Removed? Yes or No Amount Removed 37.5 feet
(circle one)

Condition of Casing Good

Perforations: From NA To NA
From NA To NA

Date Sealing Performed 10-30-96

Reason(s) for Sealing Abandoned in advance of excavation and construction remediation

CONTRACTOR

Name Alliance Environmental, Inc ODH Registration # 2119
Address 117 Industry Road
City/State/Zip Marietta, Ohio 45750

FEMP Geologist Signature *Sean Anderson*

SUBMIT COMPLETED FORM TO ODNR-DIVISION OF WATER

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ATTACHMENT II

WELL/LYSIMETER PLUGGING AND ABANDONMENT SUMMARY INFORMATION

Well/ Lysimeter	Coordinates NAD83 N	Coordinates NAD83 E	Diameter (In)	Depth (Ft)	Riser Material	Date Abandoned
METHOD 1						
11504	479215.148	1351204.74	2	18.0	Stainless	11-05-96
11505*	479209.168	1351197.25	2	27.25	Stainless	11-05-96
1152	480440.42	1350636.6	2	10.2	PVC	11-12-96
1160	480212.65	1350635.49	2	9.5	PVC	11-27-96
1171	479971.11	1350601.56	2	8.2	PVC	12-11-96
11685	480721.77	1350663	2	18.8	Stainless	12-31-96
METHOD 2						
2120	480216.32	1350654.03	4	75.4	Stainless	12-05-96
2171	479967.31	1350607.31	4	77.0	Stainless	12-16-96
2439	481123.95	1350730.35	4	82.0	Stainless	12-17-96
3064	480759.94	1350715.19	4	139.9	Stainless	12-31-96
3120	480196.63	1350626.18	4	132.0	Stainless	12-10-96
4064	480759.64	1350724.59	4	210.0	Stainless	12-31-96
4439*	481113.68	1350730.75	4	213.0	Stainless	12-30-96
METHOD 3						
1064	480748.2	1350724.01	4	30.0	Stainless	11-19-96
11491	483036.921	1351010.4	2	29.5	Stainless	11-07-96
11492	483025.29	1351006.05	2	24.5	Stainless	11-07-96
11493	482428.249	1350988.97	2	21.0	Stainless	10-21-96
11494	482428.339	1350978.82	2	16.5	Stainless	10-21-96
11495	482437.51	1350984.6	2	37.0	Stainless	10-22-96
11496	482106.213	1350980.16	2	17.0	Stainless	10-23-96
11497	482106.153	1350991.17	2	32.0	Stainless	10-31-96
11500	481820.148	1351269.26	2	25.5	Stainless	10-29-96

11501	481833.448	1351270.12	2	37.0	Stainless	10-28-96
11502	481297.568	1351267.86	2	22.0	Stainless	11-04-96
11503	481307.008	1351260.86	2	28.0	Stainless	11-04-96
11546	481845.509	1351270.94	2	13.0	Stainless	10-24-96
11547	480448.182	1350942.87	2	13.25	Stainless	11-21-96
11681	483087.46	1350409.81	2	12.25	Stainless	11-06-96
11687	482092.9	1351546.03	2	12.5	Stainless	10-24-96
2064*	480749.51	1350714.94	4	82.5	Stainless	11-21-96
METHOD 4						
11482	483023.87	1351013.1	2	5.0	PVC	11-06-96
11557*	481822.748	1351261.7	2	6.6	PVC	10-29-96
METHOD 5						
11483	483035.171	1351016.4	2	34.5	PVC	11-12-96
11484*	481826.248	1351281.67	2	37.5	PVC	10-30-96
11486	482114.253	1350989.98	2	36.5	PVC	10-31-96

*This well/lysimeter is the deepest per method.