7080 R-031-202.2

CONTAMINATION BENEATH AND ADJACENT TO THE PILOT PLANT, REMOVAL SITE EVALUATION

07/31/95

C:OP:95-0622
FERMCO DOE-FN
25
RSE

Fernald Environmental
FERMCO
Restoration Management Corporation P.O. Box 398704 Cincinnati, Ohio 45239-8704 (513) 738-6200

7080

FERNALD ____
LOG ____
JUL 31 8 30 AM '95
FILE: ____
LIBRARY: ____

July 31, 1995

Fernald Environmental Management Project
Letter No. C:OP:95-0622

Mr. Jack R. Craig, Director
Department of Energy
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705

Dear Mr. Craig:

CONTRACT DE-AC24-92OR21972, CONTAMINATION BENEATH AND ADJACENT TO THE PILOT PLANT, REMOVAL SITE EVALUATION (RSE)

Reference: Letter from D. Ofte to J.R. Craig, "Completion of the Pilot Plant (Abandoned Sump West of Pilot Plant) Removal Action No. 24, Removal Site Evaluation (RSE) - Alternate Approach Request," January 19, 1995

Letter from J.R. Craig to D. Ofte, "Completion of the Pilot Plant Sump Removal Action Number 24, Removal Site Evaluation -Alternate Approach Request," March 6, 1995

Attached is the Removal Site Evaluation (RSE) for the Pilot Plant. In the above referenced letters, the Department of Energy - Fernald (DOE-FN) proposed that remediation of soil under the Pilot Plant area and its subsurface drain line system could best be remediated under the Operable Unit 3 (OU3) Interim Record of Decision (IROD) and the OU5 Record of Decision (ROD). The attached RSE satisifies concerns with completion of the work under the IROD and ROD. This RSE satisfies the requirement in the above referenced letters and the requirement in the Pilot Plant Sump Final Report for an RSE in the Pilot Plant area.

Consistent with Section 40 CFR 300.410 of the National Contingency Plan (NCP), the DOE shall determine the appropriateness of a removal action. Under this section, "a removal site evaluation shall be terminated when . . . a party responsible for the release, or any other person, is providing appropriate response . . . [40 CFR 300.410(e)(6)]." The Pilot Plant area soils are to be remediated as part of the OU5 RI/FS phase of remedial response. Furthermore, remedial action to address this release will soon be undertaken in accordance with the OU3 IROD and the OU5 ROD.

Fernald Environmental
FERMCO
Restoration Management Corporation

40 CFR 300.415 identifies eight factors to be considered in determining the appropriateness of a removal action. These factors were considered and a removal action is not appropriate. Since the incremental increase in contamination beneath the Pilot Plant from this source is negligible until the implementation of the remedial response actions identified above, deferral of remediation to the OU3 IROD and the OU5 ROD is appropriate, and a removal action is not mandated.

If you have any questions please call Ken Kolthoff at 648-4051 or Lora Schweers at 648-4058.

Sincerely,

Michael K. Gates for

Don Ofte
President

DO:LLS:dlm

c: D. J. Carr, FERMCO
T. R. Clark, FERMCO
J. T. Curtis, FERMCO
E. M. Dupuis-Nouille, FERMCO
L. C. Goidell, FERMCO
T. D. Hagen, FERMCO
R. J. Hansen, DOE-FN
S. M. Houser, FERMCO
K. R. Kolthoff, FERMCO
L. E. Parsons, DOE
D. A. Pfister, DOE-FN
D. Ofte, FERMCO
J. L. Oxendine, FERMCO
J. W. Reising, DOE-FN
A. C. Shah, DOE-FN

CRU3 Project Files
File Record Storage Copy 102.1
Administrative Record

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

PILOT PLANT
REMOVAL SITE EVALUATION
JULY 1995

U.S. DEPARTMENT OF ENERGY

CONTENTS

Page

1. INTRODUCTION 1

2. ENVIRONMENTAL MEDIA (SOURCE TERM) 3

3. EVALUATION OF THE MAGNITUDE OF THE POTENTIAL THREAT 3

4. ASSESSMENT OF THE NEED FOR REMOVAL ACTION 22

5. APPROPRIATENESS OF RESPONSE 22

TABLES

2-1 Pilot Plant Soil and Water Data 5

FIGURES

1-1 Master Grid Site Map 2
2-1 Pilot Plant Monitoring Well Locations 4
4-1 OU5 Feasibility Study Excavation Depths in Pilot Plant Area 23

ACRONYMS

CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
DOE	Department of Energy
FEMP	Fernald Environmental Management Project
FERMCO	Fernald Environmental Restoration Management Company
IROD	Interim Record of Decision
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
pCi/g	pico Curies per gram
ppm	parts per million
RA	Remedial Action
RAWP	Removal Action Work Plan
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RSE	Removal Site Evaluation
SVOC	Semi-Volatile Organic Compound
OU	Operable Unit
VOC	Volatile Organic Compound

Pilot Plant
Removal Site Evaluation
July 1995

1. INTRODUCTION

This Removal Site Evaluation (RSE) has been completed by the Department of Energy (DOE) under authorities delegated by Executive Order 12580 under Section 104 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and is consistent with Section 300.410 of the National Oil and Hazardous Substance Pollution Control Contingency Plan (NCP).

This RSE addresses the existing soil conditions under the Pilot Plant foundation, its covered drain system, and the area immediately outside the Pilot Plant and has been completed to support the decision whether conditions warrant a separate removal action.

Pilot Plant operations began in October 1951 and the processes included aqueous/organic extractions of uranium and thorium, calcining, vacuum furnace casting, reduction of UF_6, reduction of UF_4 to uranium and metal, briquetting, heat treating, centrifugal casting, reject core reclamation, and various wet tank processes over the 36 years of operation. Pilot Plant processes produced purified thorium nitrate, oxalate, hydroxide, and metal.

The Pilot Plant sump was constructed as a temporary floor drain collection point that connected to the floor drain system from 1968 to 1970. The temporary sump was located adjacent to the Pilot Plant in the southwest corner of the Operable Unit 3 (OU3) Production Area (Figure 1-1). It was removed in October 1993 after it was discovered that the liquid level in the sump was fluctuating, indicating a potential release to the environment. The Pilot Plant Sump Removal No. 24 included removal of the sump and its contents, cutting and capping the drain line supplying the sump, removal of contaminated soils immediately surrounding the sump and drain line, and an attempt to inspect the drain line prior to backfilling the excavation. This removal action eliminated the sump as a source of contamination. The Pilot Plant Sump area excavations were backfilled during the week of October 11, 1993. All objectives of the removal action were met. As stated in the Removal Action No. 24 Final Report (1993), final remediation of the Pilot Plant sump area will be addressed in the OU3 Interim Record of Decision (IROD) and the OU5 ROD.

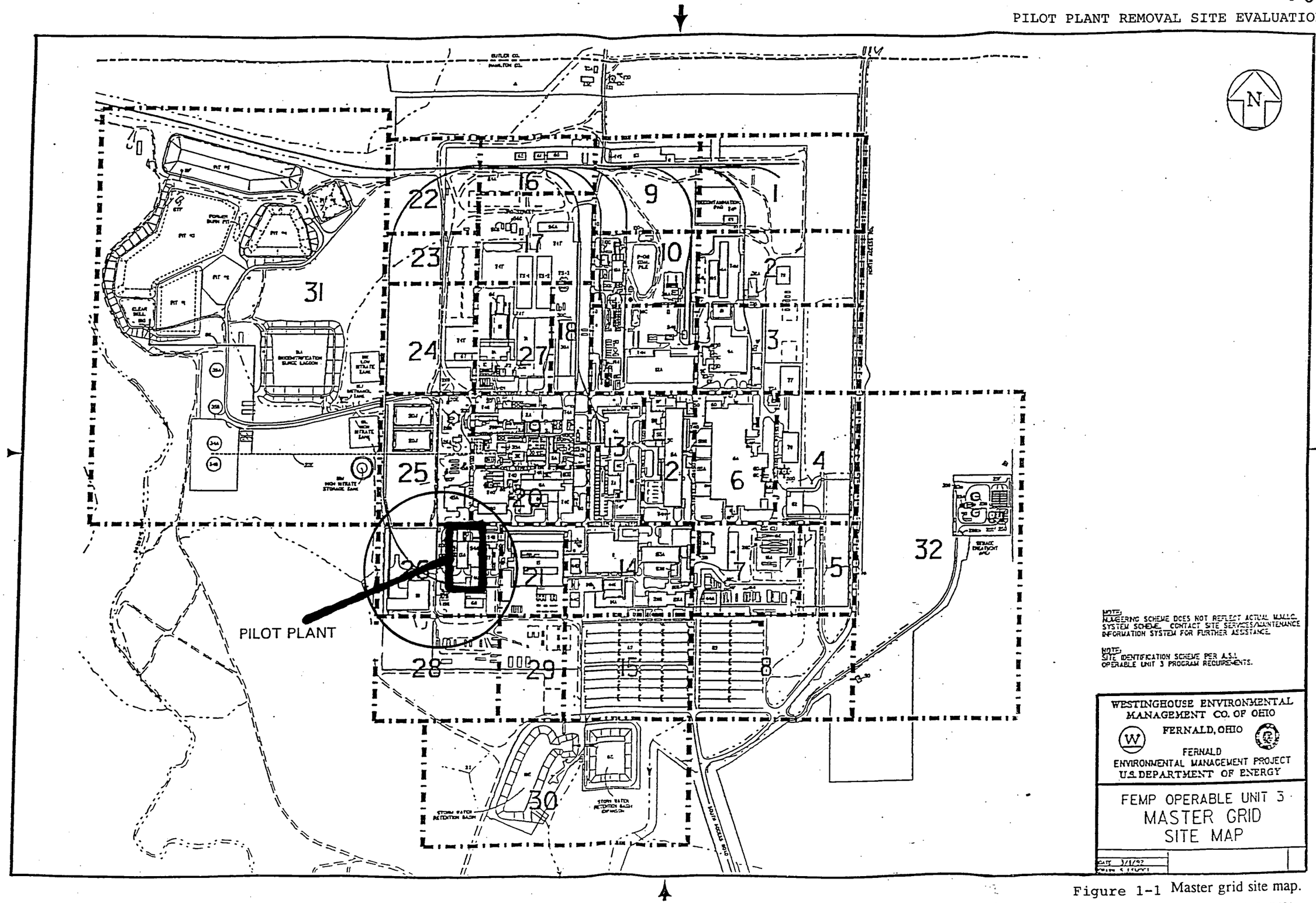


Figure 1-1 Master grid site map.

2. ENVIRONMENTAL MEDIA (SOURCE TERM)

Consistent with 40 Code of Federal Regulations (CFR) 300.410(a), this RSE includes a preliminary assessment, which is based upon readily available information as described in 40 CFR 300.410(c).

Perched groundwater and soil samples were taken in 1990 and 1991 to characterize undisturbed conditions adjacent to and under the Pilot Plant. Uranium was found in one perched water sample at 4.4 ppm in Well 1251 (Figure 2-1). Soil boring data were collected from borings 1247, 1248, and 1251 (beneath the Pilot Plant). No VOCs, SVOCs, metals, or pesticides of concern were identified. These three soil borings were analyzed at various depths from zero to 15 feet for uranium and other isotopes. Uranium was the most prevalent isotope of concern and ranged from 3.38 ppm to 756 ppm in soils. The highest uranium concentration in the soil was 756 ppm at two feet and 3.38 ppm at two and a half feet. In addition, technetium-99 was analyzed at only the one foot level and found to be 55.3 pCi/g (Table 2-1). Therefore, uranium poses the highest risk of migration to the Great Miami Aquifer beneath the Pilot Plant. A complete analytical report for water and soil samples in the Pilot Plant area is contained in the Pilot Plant Sump Final Report, December 1993.

3. EVALUATION OF THE MAGNITUDE OF THE POTENTIAL THREAT

Analytical results from environmental media surrounding the Pilot Plant confirm the presence of radiological and hazardous contaminants in the perched groundwater and soil beneath the plant. Therefore, the Pilot Plant and its floor drain system are sources of contamination with the potential for ongoing release to the environment.

New concrete was placed over the existing Pilot Plant floor in 1969 to prevent additional material from getting into the old drainline system. The Pilot Plant structure precludes precipitation and wind from disturbing the uranium contamination prior to the scheduled remediation under the OU3 IROD and the OU5 ROD.

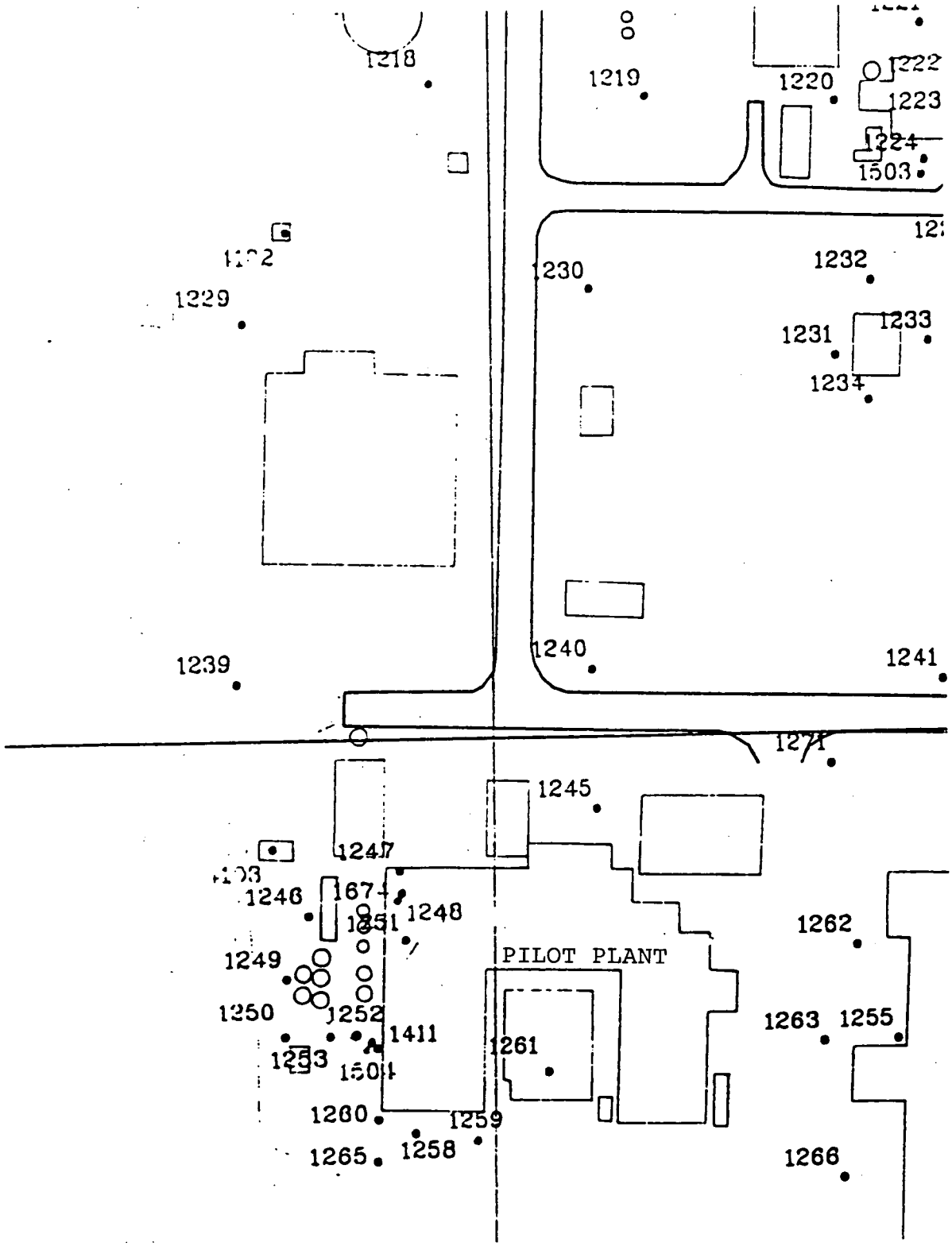


Figure 2-1 Pilot Plant Monitoring Well Locations

GROUNDWATER RESULTS: 1247

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Filter	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/20/91												
Nitrate		14.9000	mg/L		047001	NONE	UNFILTERED	IT	NORMAL	14.9000	3	-
Thorium, Total	<	6.7000	ug/L		047001	NONE	FILTERED	IT/R	NORMAL	6.7000	5	U

DATE PRINTED 07/06/95

Table 2-1 Pilot Plant Water and Soil Data

7080

000010

Table 2-1 Pilot Plant Water and Soil Data

7080

GROUNDWATER RESULTS: 1251

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Filter	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/20/91												
Nitrate		1.0100	mg/L		047002	NONE	UNFILTERED	IT	NORMAL	1.0100	3	-
Thorium, Total	<	0.7000	ug/L		047002	NONE	*U	IT/R	NORMAL	0.7000	5	U
Uranium, Total		4400.0000	ug/L		047002	NONE	*U	IT/R	NORMAL	4400.0000	5	-

DATE PRINTED 07/06/95

000011

Table 2-1 Pilot Plant Water and Soil Data

SOIL BORING RESULTS: 1247

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/02/90													
Cesium-137		1.5000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	1.5000	5	J
Cesium-137		0.5200	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	0.5200	5	J
Neptunium-237	<	0.6000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	0.6000	5	U
Neptunium-237	<	0.6000	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	0.6000	5	U
Plutonium-238	<	0.6000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	0.6000	5	U
Plutonium-238	<	0.6000	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	0.6000	5	U
Plutonium-239/240	<	0.6000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	0.6000	5	U
Plutonium-239/240	<	0.6000	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	0.6000	5	U
Radium-226		1.0100	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	1.0100	5	J
Radium-226		1.2600	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	1.2600	5	J
Radium-228		1.4800	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	1.4800	5	J
Radium-228		1.5000	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	1.5000	5	J
Ruthenium-106	<	1.0000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	1.0000	5	UJ
Ruthenium-106	<	1.0000	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	1.0000	5	UJ
Strontium-90	<	0.5000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	0.5000	5	U
Strontium-90		0.6500	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	0.6500	5	J
Technetium-99		10.5000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	10.5000	5	J
Technetium-99	<	1.3000	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	1.3000	5	UJ
Thorium, Total		5.1600	ug/g		018003	NONE	1.50	2.00	IT	NORMAL	5.1600	5	

000012

70080

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/02/90													
Thorium, Total		7.7000	ug/g		018004	NONE	2.00	2.50	IT	NORMAL	7.7000	5	-
Thorium-228		1.5300	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	1.5300	5	-
Thorium-228		1.5000	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	1.5000	5	-
Thorium-230		0.7500	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	0.7500	5	-
Thorium-230		1.2300	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	1.2300	5	-
Thorium-232	<	0.6000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	0.6000	5	U
Thorium-232		0.8600	pCi/g		018004	NONE	2.00	2.50	IT	NORMAL	0.8600	5	-
Uranium, Total		114.0000	ug/g		018003	NONE	1.50	2.00	IT	NORMAL	114.0000	5	J
Uranium, Total		368.0000	ug/g		018004	NONE	2.00	2.50	IT	NORMAL	368.0000	5	J
Uranium-234		45.8000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	45.8000	5	-
Uranium-235/236		2.2200	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	2.2200	5	-
Uranium-238		30.3000	pCi/g		018003	NONE	1.50	2.00	IT	NORMAL	30.3000	5	-
Thorium, Total		5.9282	pCi/g		018007	NONE	3.50	4.00	IT	NORMAL	5.9282	5	NV
Thorium-228		0.8600	pCi/g		018007	NONE	3.50	4.00	IT	NORMAL	0.8600	5	J
Thorium-230		1.1300	pCi/g		018007	NONE	3.50	4.00	IT	NORMAL	1.1300	5	-
Thorium-232		0.6500	pCi/g		018007	NONE	3.50	4.00	IT	NORMAL	0.6500	5	-
Uranium, Total		170.0000	ug/g		018007	NONE	3.50	4.00	IT	NORMAL	170.0000	5	J
Thorium, Total		8.3905	pCi/g		018013	NONE	6.50	7.00	IT	NORMAL	8.3905	5	NV
Thorium-228		0.6600	pCi/g		018013	NONE	6.50	7.00	IT	NORMAL	0.6600	5	J
Thorium-230		0.6100	pCi/g		018013	NONE	6.50	7.00	IT	NORMAL	0.6100	5	-

000013

7080

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/02/90													
Thorium-232		0.9200	pCi/g		018013	NONE	6.50	7.00	IT	NORMAL	0.9200	5	-
Uranium, Total		211.0000	ug/g		018013	NONE	6.50	7.00	IT	NORMAL	211.0000	5	J
Sample Date: 12/03/90													
Thorium-228	<	0.6000	pCi/g		018023	NONE	11.50	12.00	IT	NORMAL	0.6000	5	U
Thorium-230	<	0.6000	pCi/g		018023	NONE	11.50	12.00	IT	NORMAL	0.6000	5	U
Thorium-232	<	0.6000	pCi/g		018023	NONE	11.50	12.00	IT	NORMAL	0.6000	5	U
Uranium, Total		5.7200	ug/g		018023	NONE	11.50	12.00	IT	NORMAL	5.7200	5	J
Thorium-228	<	0.6000	pCi/g		052640	NONE	15.00	15.50	IT	NORMAL	0.6000	5	U
Thorium-230		0.8400	pCi/g		052640	NONE	15.00	15.50	IT	NORMAL	0.8400	5	-
Thorium-232	<	0.6000	pCi/g		052640	NONE	15.00	15.50	IT	NORMAL	0.6000	5	U
Uranium, Total		4.3500	ug/g		052640	NONE	15.00	15.50	IT	NORMAL	4.3500	5	J
Sample Date: 12/04/90													
2,4,5-TP (Silvex)	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	1.8000	3	UJ
2,4-D	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	12.0000	3	UJ
Arsenic	<	338.0000	ug/L		052652	NONE			IT	DRILL CUTTINGS	338.0000	3	U
Barium		1317.0000	ug/L		052652	NONE			IT	DRILL CUTTINGS	1317.0000	3	-
Cadmium		33.0000	ug/L		052652	NONE			IT	DRILL CUTTINGS	33.0000	3	J

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/04/90													
Chlordane	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	2.0000	3	UJ
Chromium		156.0000	ug/L		052652	NONE			IT	DRILL CUTTINGS	156.0000	3	-
Endrin	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	0.2000	3	UJ
Heptachlor	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	0.1000	3	UJ
Heptachlor epoxide	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	0.1000	3	UJ
Lead	<	200.0000	ug/L		052652	NONE			IT	DRILL CUTTINGS	200.0000	3	U
Mercury	<	0.2000	ug/L		052652	NONE			IT	DRILL CUTTINGS	0.2000	3	U
Methoxychlor	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	1.0000	3	UJ
Selenium	<	400.0000	ug/L		052652	NONE			IT	DRILL CUTTINGS	400.0000	3	U
Silver		174.0000	ug/L		052652	NONE			IT	DRILL CUTTINGS	174.0000	3	-
Toxaphene	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	2.0000	3	UJ
Uranium, Total		348.0000	ug/g		052653	NONE			IT	DRILL CUTTINGS	348.0000	5	J
Uranium, Total		360.0000	mg/kg		052654	NONE			WEMC	DRILL CUTTINGS	360.0000	5	NV
alpha-Chlordane	<		ug/L		052652	NONE			IT	DRILL	1.0000	3	UJ

000045

7080

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/04/90													
										CUTTINGS			
gamma-BHC (Lindane)	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	0.1000	3	UJ
gamma-Chlordane	<		ug/L		052652	NONE			IT	DRILL CUTTINGS	1.0000	3	UJ
Sample Date: 08/25/91													
1,1-Dichloroetnene	<	50.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	50.0000	3	U
1,2-Dichloroethane	<	50.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	50.0000	3	U
1,4-Dichlorobenzene	<	40.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	40.0000	3	U
2,4,5-TP (Silvex)	<	17.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	17.0000	3	U
2,4,5-Trichlorophenol	<	40.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	40.0000	3	U
2,4,6-Trichlorophenol	<	40.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	40.0000	3	U
2,4-D	<	120.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	120.0000	3	U
2,4-Dinitrotoluene	<	40.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	40.0000	3	U
2-Butanone	<	100.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	100.0000	3	U
2-Methylphenol	<	40.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	40.0000	3	U
4-Methylphenol	<	40.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	40.0000	3	U

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 08/25/91													
Arsenic	<	0.0470	mg/L		000841	NONE			IT	DRILL CUTTINGS	0.0470	3	U
Barium	<	0.9400	mg/L		000841	NONE			IT	DRILL CUTTINGS	0.9400	3	U
Benzene	<	50.0000	ug/L		000841	NONE			IT	DRILL CUTTINGS	50.0000	3	U
Cadmium	<	0.0040	mg/L		000841	NONE			IT	DRILL	0.0040	3	U

000017

7080

Table 2-1 Pilot Plant Water and Soil Data

SOIL BORING RESULTS: 1248

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/05/90													
Cesium-137		0.4410	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.4410	5	J
Cesium-137		0.3020	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	0.3020	5	J
Neptunium-237	<	0.6000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.6000	5	U
Neptunium-237	<	0.6000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	0.6000	5	U
Plutonium-238	<	0.6000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.6000	5	U
Plutonium-238	<	0.6000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	0.6000	5	U
Plutonium-239/240	<	0.6000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.6000	5	U
Plutonium-239/240	<	0.6000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	0.6000	5	U
Radium-226		0.9920	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.9920	5	J
Radium-226		1.1000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	1.1000	5	J
Radium-228		5.0800	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	5.0800	5	J
Radium-228		2.0800	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	2.0800	5	J
Ruthenium-106	<	1.0000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	1.0000	5	UJ
Ruthenium-106	<	1.0000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	1.0000	5	UJ
Strontium-90	<	0.5000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.5000	5	UJ
Strontium-90	<	0.5000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	0.5000	5	UJ
Technetium-99		55.3000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	55.3000	5	J
Technetium-99	<	1.5000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	1.5000	5	UJ
Thorium, Total		3.1900	ug/g		018025	NONE	1.00	1.50	IT	NORMAL	3.1900	5	-

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 12/05/90													
Thorium, Total		~ 8.9900	ug/g		018026	NONE	1.50	2.00	IT	NORMAL	8.9900	5	-
Thorium-228		5.3800	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	5.3800	5	-
Thorium-228		1.8400	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	1.8400	5	-
Thorium-230		0.6100	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.6100	5	-
Thorium-230		1.6600	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	1.6600	5	-
Thorium-232		0.3500	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	0.3500	5	-
Thorium-232		0.9960	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	0.9960	5	-
Uranium, Total		~ 304.0000	ug/g		018025	NONE	1.00	1.50	IT	NORMAL	304.0000	5	J
Uranium, Total		756.0000	ug/g		018026	NONE	1.50	2.00	IT	NORMAL	756.0000	5	J
Uranium-234		113.0000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	113.0000	5	J
Uranium-234		290.0000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	290.0000	5	J
Uranium-235/236		5.0400	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	5.0400	5	J
Uranium-235/236		10.5000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	10.5000	5	J
Uranium-238		102.0000	pCi/g		018025	NONE	1.00	1.50	IT	NORMAL	102.0000	5	J
Uranium-238		270.0000	pCi/g		018026	NONE	1.50	2.00	IT	NORMAL	270.0000	5	J
Thorium, Total		3.0600	ug/g		018033	NONE	5.00	5.50	IT	NORMAL	3.0600	5	-
Thorium-228		0.6500	pCi/g		018033	NONE	5.00	5.50	IT	NORMAL	0.6500	5	J
Thorium-230		1.0000	pCi/g		018033	NONE	5.00	5.50	IT	NORMAL	1.0000	5	-
Thorium-232	<	0.6000	pCi/g		018033	NONE	5.00	5.50	IT	NORMAL	0.6000	5	U
Uranium, Total		703.0000	ug/g		018033	NONE	5.00	5.50	IT	NORMAL	703.0000	5	J

SOIL BORING RESULTS: 1251

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 01/07/90													
Uranium, Total		32.0000	ug/g		052732	NONE			IT	DRILL CUTTINGS	32.0000	5	J
Sample Date: 01/04/91													
Cesium-137	<	0.2000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.2000	5	UJ
Cesium-137	<	0.2000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.2000	5	UJ
Neptunium-237	<	0.6000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.6000	5	UJ
Neptunium-237	<	0.6000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.6000	5	UJ
Plutonium-238	<	0.6000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.6000	5	R
Plutonium-238	<	0.6000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.6000	5	R
Plutonium-239/240	<	0.6000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.6000	5	R
Plutonium-239/240	<	0.6000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.6000	5	R
Radium-226		0.8300	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.8300	5	J
Radium-226		1.0700	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	1.0700	5	J
Radium-228		0.7100	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.7100	5	J
Radium-228		1.0100	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	1.0100	5	J
Ruthenium-106	<	1.0000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	1.0000	5	UJ
Ruthenium-106	<	1.0000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	1.0000	5	UJ
Strontium-90	<	0.5000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.5000	5	U
Strontium-90	<	0.5000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.5000	5	U

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 01/04/91													
Technetium-99		27.8000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	27.8000	5	J
Technetium-99		15.3000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	15.3000	5	J
Thorium, Total		5.4900	ug/g		018091	NONE	1.00	1.50	IT	NORMAL	5.4900	5	J
Thorium, Total		1.2300	ug/g		018092	NONE	1.50	2.00	IT	NORMAL	1.2300	5	J
Thorium-228		1.2800	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	1.2800	5	J
Thorium-228		1.2300	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	1.2300	5	J
Thorium-230		0.8400	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.8400	5	J
Thorium-230		0.8000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.8000	5	J
Thorium-232		0.6100	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.6100	5	J
Thorium-232		0.7500	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.7500	5	J
Uranium, Total		12.5000	ug/g		018091	NONE	1.00	1.50	IT	NORMAL	12.5000	5	J
Uranium, Total		3.6000	ug/g		018092	NONE	1.50	2.00	IT	NORMAL	3.6000	5	J
Uranium, Total		3.3800	ug/g		018093	NONE	2.00	2.50	IT	NORMAL	3.3800	5	J
Uranium-234		5.3000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	5.3000	5	J
Uranium-234		1.0500	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	1.0500	5	J
Uranium-235/236	<	0.6000	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	0.6000	5	UJ
Uranium-235/236	<	0.6000	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	0.6000	5	UJ
Uranium-238		3.5100	pCi/g		018091	NONE	1.00	1.50	IT	NORMAL	3.5100	5	J
Uranium-238		1.1600	pCi/g		018092	NONE	1.50	2.00	IT	NORMAL	1.1600	5	J
Uranium, Total		4.2200	ug/g		018099	NONE	5.00	5.50	IT	NORMAL	4.2200	5	J

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 01/05/91													
Uranium, Total		89.4000	ug/g		018109	NONE	10.00	10.50	IT	NORMAL	89.4000	5	J
Uranium, Total		28.9000	ug/g		052721	NONE	15.00	15.50	IT	NORMAL	28.9000	5	J
Sample Date: 01/07/91													
Uranium, Total		44.0000	mg/kg		052731	NONE			WEMC	DRILL CUTTINGS	44.0000	5	NV
Sample Date: 01/08/91													
1,1-Dichloroethene	<	5.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
1,2-Dichloroethane	<	5.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
1,4-Dichlorobenzene	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
1,4-Dichlorobenzene	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
2,4,5-TP (Silvex)	<	1.8000	ug/L		052733	NONE			IT	DRILL CUTTINGS	1.8000	3	U
2,4,5-Trichlorophenol	<	100.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	100.0000	3	UJ
2,4,5-Trichlorophenol	<	100.0000	ug/L		052733	R			IT	DRILL CUTTINGS	100.0000	3	NV
2,4,6-Trichlorophenol	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
2,4,6-Trichlorophenol	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV

Table 2-1 Pilot Plant Water and Soil Data

7080

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 01/08/91													
2,4-D	<	12.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	12.0000	3	U
2,4-Dinitrotoluene	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
2,4-Dinitrotoluene	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
2-Butanone	<	9.0000	ug/L	J	052733	NONE			IT	DRILL CUTTINGS	10.0000	3	U
2-Methylphenol	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
2-Methylphenol	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
3-Methylphenol	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
3-Methylphenol	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
4-Methylphenol	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
4-Methylphenol	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
Arsenic		0.2900	mg/L		052733	NONE			IT	DRILL CUTTINGS	0.2900	3	-
Barium		0.6840	mg/L		052733	NONE			IT	DRILL CUTTINGS	0.6840	3	-
Benzene	<	5.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
Cadmium		0.0160	mg/L		052733	NONE			IT	DRILL	0.0160	3	-

000023

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 01/08/91										CUTTINGS			
Carbon Tetrachloride	<	5.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
Chlorobenzene	<	5.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
Chloroform	<	5.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
Chromium		0.1040	mg/L		052733	NONE			IT	DRILL CUTTINGS	0.1040	3	-
Endrin	<	0.2000	ug/L		052733	DL			IT	DRILL CUTTINGS	0.2000	3	NV
Endrin	<	0.1000	ug/L		052733	NONE			IT	DRILL CUTTINGS	0.1000	3	U
Heptachlor	<	0.1000	ug/L		052733	DL			IT	DRILL CUTTINGS	0.1000	3	NV
Heptachlor	<	0.0500	ug/L		052733	NONE			IT	DRILL CUTTINGS	0.0500	3	U
Heptachlor epoxide	<	0.1000	ug/L		052733	DL			IT	DRILL CUTTINGS	0.1000	3	NV
Heptachlor epoxide	<	0.0500	ug/L		052733	NONE			IT	DRILL CUTTINGS	0.0500	3	U
Hexachlorobenzene	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
Hexachlorobenzene	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
Hexachlorobutadiene	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
Hexachlorobutadiene	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 01/08/91													
Hexachloroethane	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
Hexachloroethane	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
Lead	<	0.2000	mg/L		052733	NONE			IT	DRILL CUTTINGS	0.2000	3	U
Mercury	<	0.0002	mg/L		052733	NONE			IT	DRILL CUTTINGS	0.0002	3	U
Methoxychlor	<	1.0000	ug/L		052733	DL			IT	DRILL CUTTINGS	1.0000	3	NV
Methoxychlor	<	0.5000	ug/L		052733	NONE			IT	DRILL CUTTINGS	0.5000	3	U
Nitrobenzene	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
Nitrobenzene	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
Pentachlorophenol	<	100.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	100.0000	3	UJ
Pentachlorophenol	<	100.0000	ug/L		052733	R			IT	DRILL CUTTINGS	100.0000	3	NV
Pyridine	<	20.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	20.0000	3	UJ
Pyridine	<	20.0000	ug/L		052733	R			IT	DRILL CUTTINGS	20.0000	3	NV
Selenium	<	0.4000	mg/L		052733	NONE			IT	DRILL CUTTINGS	0.4000	3	U
Silver		0.1530	mg/L		052733	NONE			IT	DRILL	0.1530	3	-

Table 2-1 Pilot Plant Water and Soil Data

Parameter	Det. Sym.	Lab Results	Units	LQ	Sample ID	Suffix	Top Depth	Bottom Depth	Lab	QA Type	V.Results	ASL	VQ
Sample Date: 01/08/91													
										CUTTINGS			
Tetrachloroethene	<	3.0000	ug/L	J	052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
Toxaphene	<	2.0000	ug/L		052733	DL			IT	DRILL CUTTINGS	2.0000	3	NV
Toxaphene	<	1.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	1.0000	3	U
Trichloroethene	<	5.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	5.0000	3	U
Vinyl chloride	<	10.0000	ug/L		052733	NONE			IT	DRILL CUTTINGS	10.0000	3	U
alpha-Chlordane	<	1.0000	ug/L		052733	DL			IT	DRILL CUTTINGS	1.0000	3	NV
alpha-Chlordane	<	0.5000	ug/L		052733	NONE			IT	DRILL CUTTINGS	0.5000	3	U
gamma-BHC (Lindane)	<	0.1000	ug/L		052733	DL			IT	DRILL CUTTINGS	0.1000	3	NV
gamma-BHC (Lindane)	<	0.0500	ug/L		052733	NONE			IT	DRILL CUTTINGS	0.0500	3	U
gamma-Chlordane	<	1.0000	ug/L		052733	DL			IT	DRILL CUTTINGS	1.0000	3	NV
gamma-Chlordane	<	0.5000	ug/L		052733	NONE			IT	DRILL CUTTINGS	0.5000	3	U

4. ASSESSMENT OF THE NEED FOR REMOVAL ACTION

Consistent with Section 40 CFR 300.410 of the National Contingency Plan (NCP), the DOE shall determine the appropriateness of a removal action. Under this section, "a removal site evaluation shall be terminated when . . . a party responsible for the release, or any other person, is providing appropriate response . . . [40 CFR 300.410(e)(6)]." This release is already undergoing appropriate CERCLA remedial response action as part of the ongoing OU5 Remedial Investigation/Feasibility Study (RI/FS) phase of remedial response. Furthermore, remedial action to address this release will soon be undertaken in accordance with the OU3 IROD and the OU5 ROD, which will be submitted to the U.S. EPA and Ohio EPA on August 2, 1995.

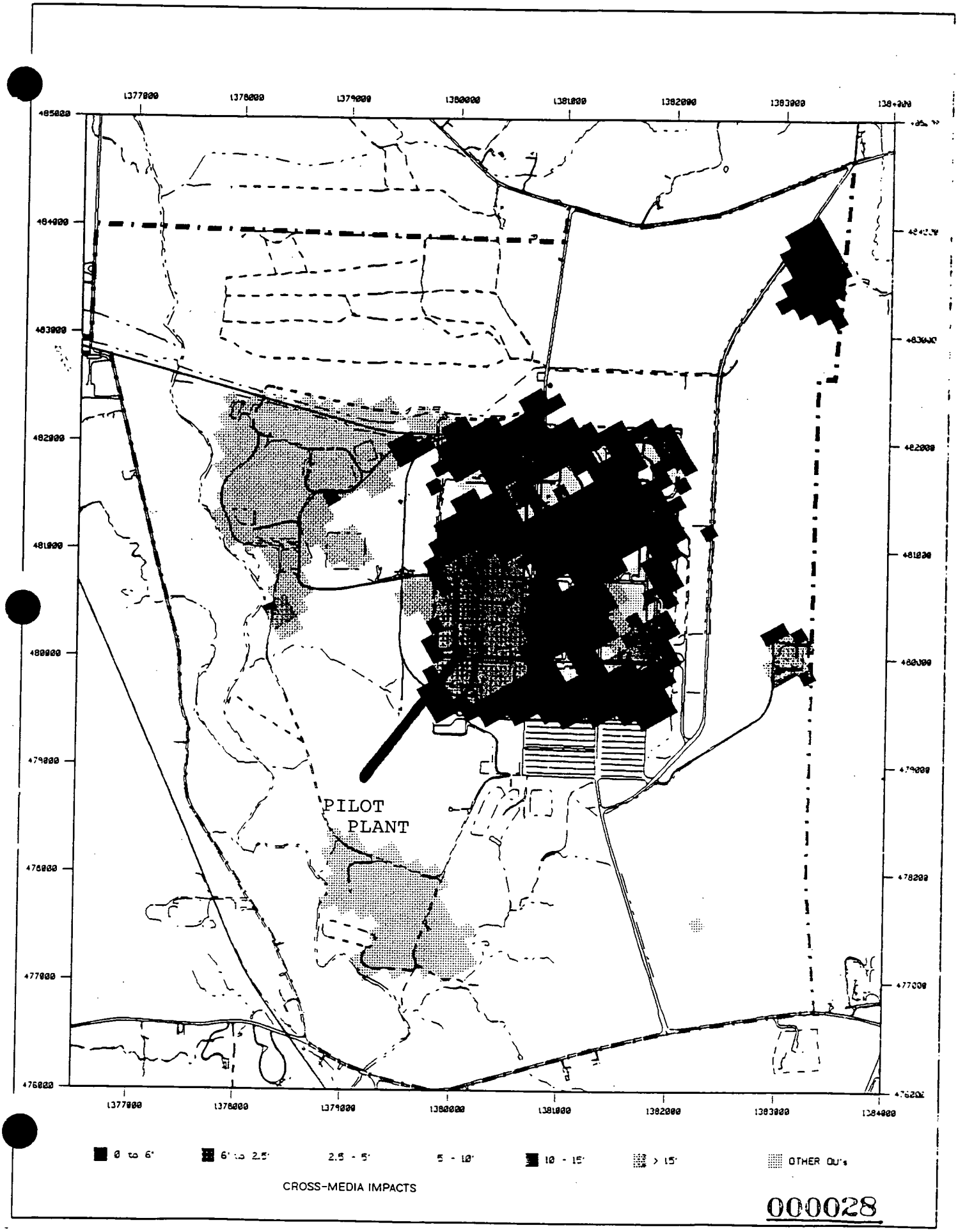
Additionally, 40 CFR 300.415 identifies eight factors to be considered in determining the appropriateness of a removal action. Since the incremental increase in contamination beneath the Pilot Plant from this source is negligible until the implementation of the remedial response actions identified above, deferral of remediation (under 40 CFR 300.430) to the OU3 IROD and the OU5 ROD is appropriate, and a removal action is not mandated. Remediation within this area of the FEMP will be directly addressed by the scope of the OU5 Remedial Action (RA).

5. APPROPRIATENESS OF RESPONSE

Based on the evaluation of the above factors, a removal action is not required. It is recommended that remediation within the Pilot Plant area be directly addressed by the scope of the OU5 Remedial Action.

Figure 4-1 OU5 Feasibility Study Excavation Depths in Pilot Plant Area

7080



000028