R-021-101.1

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EXPERIMENTAL TREATMENT FACILITY (ETF)

DOCUMENT DATE 12-05-91

Department of Energy
Fernald Environmental Management Project
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6357

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DEC 0 5 1991

DOE-444-92

Mr. Paul Pardi, Group Leader
Solid & Hazardous Waste Management Unit
Ohio Environmental Protection Agency
40 South Main Street
Dayton, Ohio 45402

Dear Mr. Pardi:

EXPERIMENTAL TREATMENT FACILITY (ETF)

During Fernald Environmental Management Project (FEMP) operations, Waste Pit 5 received liquid waste slurries from the onsite refinery and recovery plants. These liquid wastes included neutralized raffinates, settling solids, slag-leach slurries, sump slurries, lime sludges and process waters from the wastewater treatment process. In 1984, the Experimental Treatment Facility (ETF) was constructed for the purpose of volume reduction for final disposition of sludges generated and accumulating in Waste Pit 5.

The entire ETF was built above ground measuring 20 feet by 48 feet. At the perimeter are wood retaining walls six feet in height. The original design included a sand and gravel filter bed underlain by a plastic liner (see Figures 1 and 2). The ETF was also covered by a greenhouse type enclosure. It served to facilitate the thermal drying of the sludge. In addition, this cover provided protection from wind and precipitation.

The construction of the ETF makes it a tank as defined by OAC 3745-50-10, because it is a stationary device and constructed primarily of non-earthen materials (e.g. wood, steel, concrete, plastic) which provides structural support. The ETF was surrounded on each side by wood and had both a plastic bottom and covering.

In November of 1984, approximately 12,000 gallons of diluted Waste Pit 5 sludge was pumped to the ETF for treatment. An 80% reduction in volume was achieved through treatment at the ETF. Following treatment, the dried sludge residues remained in the ETF unit until a method was developed to remove the materials. The ETF project ceased in 1985 when As Low As Reasonably Achievable (ALARA) concerns were determined to be an issue with the study.

On February 23, 1988, high winds removed the plastic roof from the ETF which then contained the dry Pit 5 materials. A small amount of this material was

blown out of the structure onto the surrounding soils. Interim measures were taken to minimize materials being blown out of the ETF structure. These measures included water being sprayed over the remaining residues and the placement of a tarpaulin over the ETF filter bed.

On June 27, 1988, eleven subsurface filter samples were collected at five locations around the ETF unit. Enclosure 1 shows the sampling locations, the composition of the filter bed, and the results of the analyses. Analyses revealed that in the top 12 inches of the ETF, uranium concentrations ranged from 173 to 687 mg/kg. The sampling results indicated that uranium concentrations decrease rapidly with depth. Analytical data for Waste Pit 5 was taken at a later date than the transfer of sludge to the ETF. Data was developed during the Weston Study in 1987 and indicates high inorganic compound concentrations. The inorganic concentrations in the sludge residues may even be higher due to the dewatering process. Enclosure 2 provides the analytical data for the Waste Pit 5 sludge.

In 1991, the FEMP listed Waste Pit 5 on the Part A Permit Application on the June submittal to the State of Ohio. The subsequent Part B Permit Application, submitted October 1991, listed the ETF on the Part A Permit Application. It was determined that Waste Pit 5 may have received wastewaters containing the RCRA listed hazardous waste 1,1,1-trichloroethane (TCA). The applicability of the wastewater treatment exclusion and the interpretation of the headworks and additional information on solvent usage was presented to Ohio EPA on September 5, 1991. Since sludges from Waste Pit 5 were placed in the ETF the same regulatory logic applies. As of this date, the issue is still under consideration by Ohio EPA.

Inasmuch as the ETF served as a sludge drying unit and is a tank, as described above, then persons who are currently exempt from RCRA permit requirements under OAC 3745-50-5 (C)(5) and 40 CFR 270.1(c)(2)(v) will continue to be exempt from permitting if they use a sludge dryer. This issue was discussed in OSWER Directive 9503.51-1A(85) RD &D Permit for a Sludge Drying Process in a Wastewater System, dated December 24, 1985 (Enclosure 3). The FEMP wastewater treatment system is exempt from regulation except for units such as the Bio-Surge Lagoon which do not meet the definition of a tank. Since the ETF meets the definition of a tank it is exempt from regulation.

If Ohio EPA does not agree that the ETF is exempt from regulation and the structure remains in the same condition as described, there is a potential for more waste materials to be distributed from the existing ETF structure. Contamination to other areas of the site through wind erosion and run-off can occur especially during severe weather, high winds, and heavy precipitation. The FEMP, pursuant to OAC 3745-66-90 and 265.196, must remove from service immediately any tank system that is unfit for use and must prevent further migration of the leak or spill to soils.

A Removal Site Evaluation (RSE) for this action was prepared consistent with 40 CFR Part 300.410. It has been determined by the Department of Energy (DOE), the lead agency for the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) actions, that a time critical removal action is necessary. This removal action will involve the removal, containerization, and storage on site of the waste contents within the ETF structure (including the liner beneath the structure).

The initiation of the work is contingent upon the approval of the Work Plan submitted to U.S. EPA and Ohio EPA. It is expected that all on-site removal action activities will be completed within 120 calendar days from the approval date of the work plan. The schedule includes time allowances, if necessary, for adverse weather conditions. The activities are currently scheduled to commence on December 13, 1991 and be completed in March 1992.

The intent of this letter is to advise Ohio EPA that the ETF is exempt from regulation and to obtain concurrence with the interpretation. If the Ohio EPA does not agree that it is exempt from regulation, it is the intent of this letter to obtain concurrence with the schedule provided to remove an unfit tank system from service and prevent further migration of the material to surrounding soils.

If you have any questions, please contact Wally Quaider, of my staff, at FTS 774-6160 or (513) 738-6160. We are looking forward to concluding this discussion with a meeting or conference call with appropriate Ohio EPA personnel during the week of December 2, 1991.

Sincerely,

R. E. Tiller

R. E. Tiller
Manager

FO:Quaider

Enclosures: As Stated

cc w/encls.:

J. J. Fiore, EM-42, TREV
K. A. Hayes, EM-424, TREV
J. A. Saric, USEPA-V, 5HR-12
J. Benetti, USEPA-V, 5AR-26
M. Butler, USEPA-V, 5CS-TUB-3
K. Davidson, OEPA-Columbus
G. E. Mitchell, OEPA-Dayton
T. Schneider, OEPA-Dayton
E. Schuessler, PRC
L. August, GeoTrans
R. L. Glenn, Parsons
D. J. Carr, WEMCO
S. W. Coyle, WEMCO
J. P. Hopper, WEMCO
E. D. Savage, WEMCO
S. G. Schneider, WEMCO
J. D. Wood, ASI/IT
J. E. Razor, ASI/IT
AR Coordinator, WEMCO

FIGURE 3: EXPERIMENTAL TREATMENT FACILITY (ETF) END VIEW

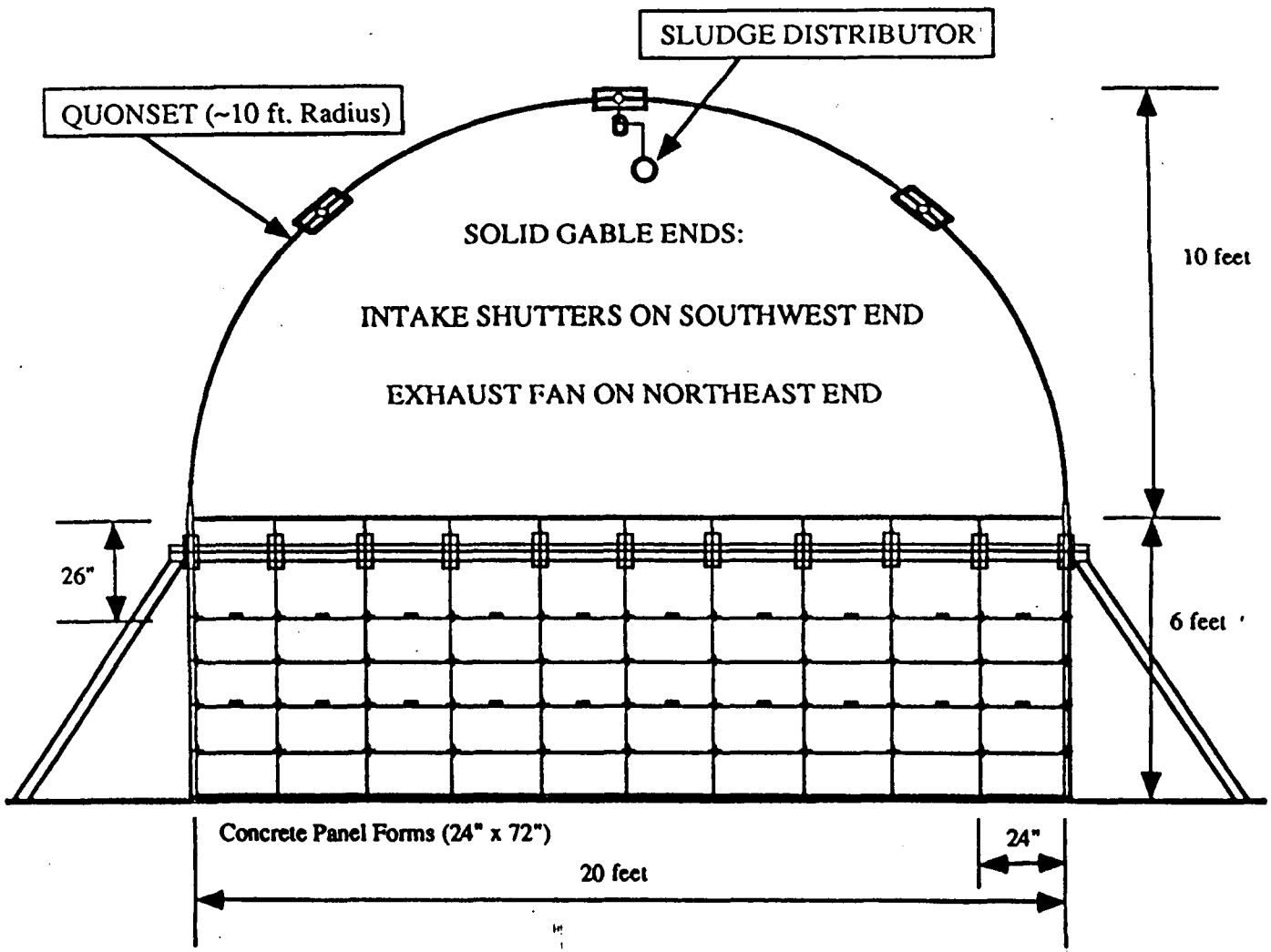

Figure 1

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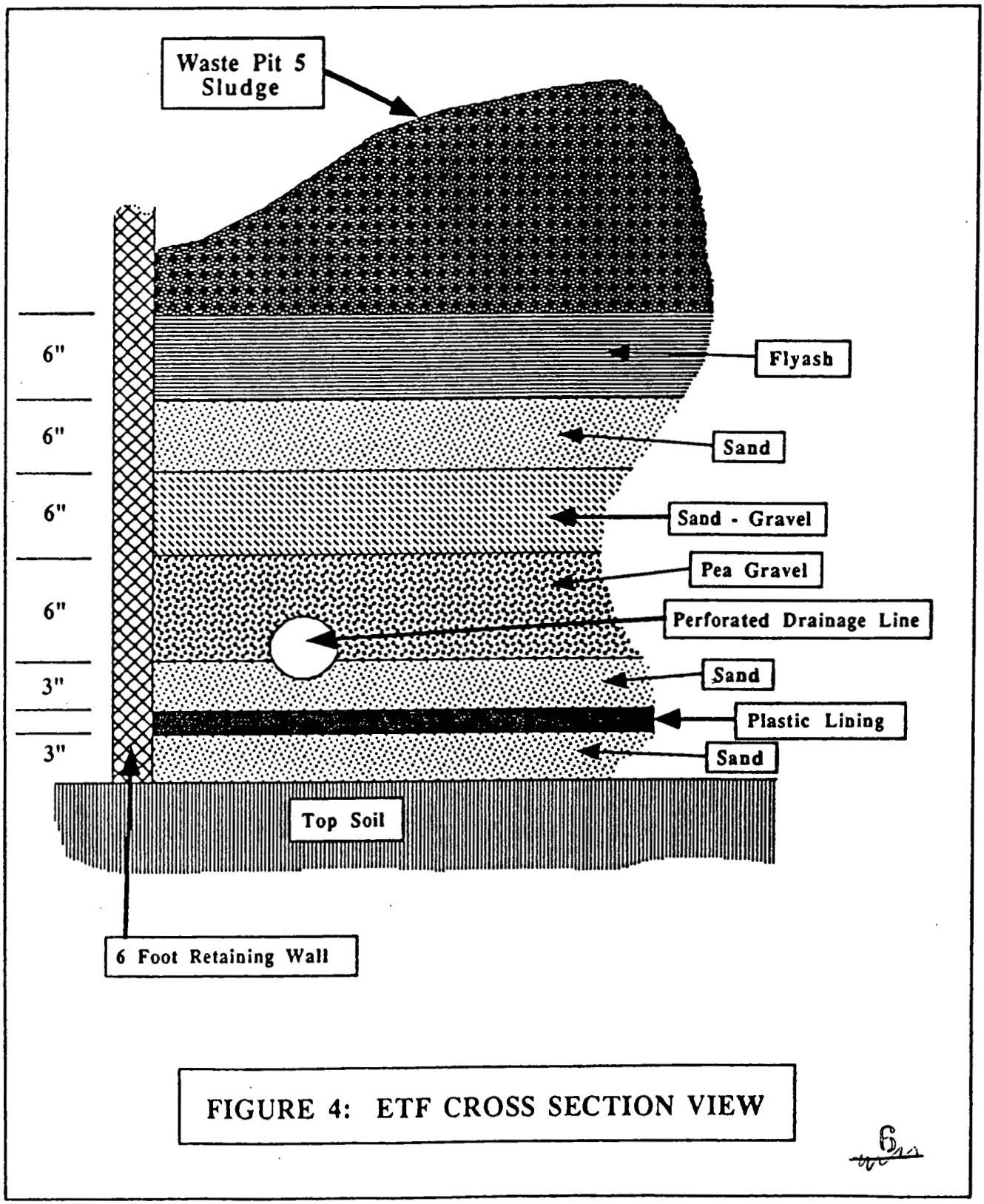
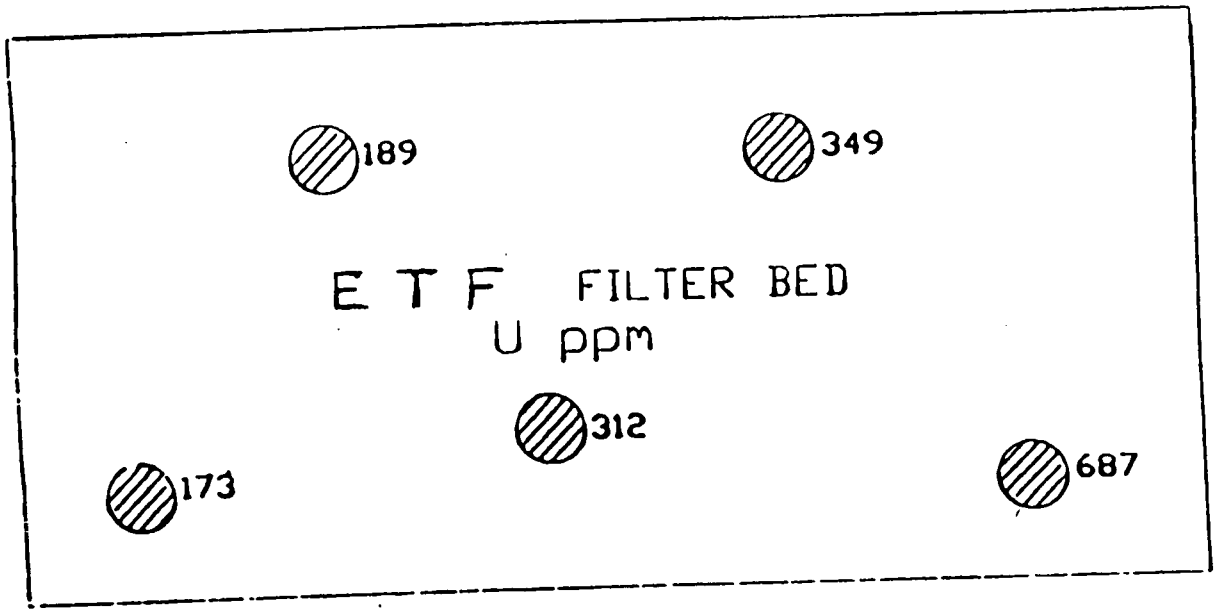
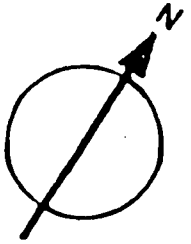


FIGURE 4: ETF CROSS SECTION VIEW

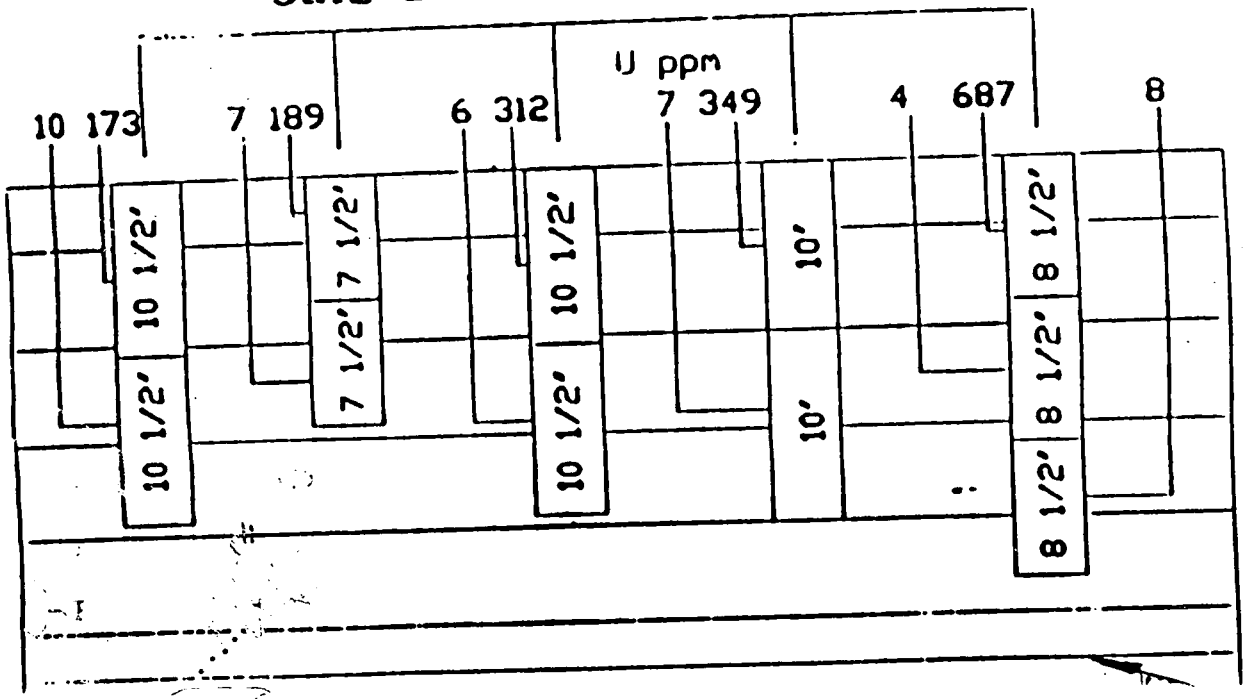




NOTE: DRAWING
NOT TO SCALE

FIG. 3 E T F sampling layout

SOIL BORING LOCATIONS



TYPES OF MATERIA
AND THICKNESS

4" PIT RESIDUE
6" FLYASH
6" SAND
6" GRIT
6" PEAGRAVEL
3" SAND
3" SAND

Enclosure 1

TABLE 1

OPERABLE UNIT 1 - WASTE PIT 5 CHARACTERISTICS

Description	Quantities and Units	References and/or Comments
Radioactive material concentrations		Reference 1
Radium-226	235 to 999 pCi/g	
Uranium-235	14 to 79 pCi/g	
Uranium-238	387 to 1,230 pCi/g	
Thorium-230	3,080 to 20,200 pCi/g	
Thorium-232	21 to 90 pCi/g	
Technetium-99	423 to 2,990 pCi/g	
Volatile inorganics		Reference 1
Arsenic	139 to 2,800 mg/kg	
Mercury	1.9 to 6.2 mg/kg	
Organics		Reference 1
PCBs (Aroclor 1254)	750 ppb	
HSL semivolatiles		The concentration level for HSL semivolatiles analyzed was below quantification level. See Appendix B of Reference 1 for concentrations.

TABLE 1
(Continued)

Description	Quantities and Units	References and/or Comments
HSL inorganics		Reference 1
Aluminum	6,373 to 15,400 mg/kg	
Calcium	116,000 to 206,144 mg/kg	
Iron	10,979 to 17,900 mg/kg	
Magnesium	807 to 63,200 mg/kg	
Arsenic	139 to 2,800 mg/kg	
Mercury	0.4 to 1.8 mg/kg	
Vanadium	792 to 5,380 mg/kg	
Hazardous materials/wastes		Reference 1 All samples tested were within the established limits for corrosivity, reactivity, ignitability, and EP Toxicity.
Listed hazardous materials		The concentration level for all listed hazardous materials analyzed was below quantification level. See Appendix B of Reference 1 for concentrations.

References:

1. Weston, Roy F., November 1987, "Characterization Investigation Study Volume 2: Chemical and Radiological Analyses of the Waste Storage Pits," prepared for Westinghouse Materials Company of Ohio, Cincinnati, OH.

2. Advanced Sciences, Inc., October 1986, "Remedial Investigation of the Feed Materials Production Center, Fernald, Ohio, Part I: Evaluation of Current Situation," prepared for Westinghouse Materials Company of Ohio, Cincinnati, OH.

3. Weston, Roy F., March 1988, "Geotechnical Evaluation of Feed Properties Material Properties of Waste Pit Materials at the Feed Materials Production Center, Fernald, Ohio," prepared for Westinghouse Materials Company of Ohio, Cincinnati, OH.

4. Appendix F of Reference 1 - Geological Description of Waste Pit Borings.

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United States Environmental Protection Agency

Office of Solid Waste and Emergency Response

EPA

DIRECTIVE NUMBER: 9503.51-1A(85)

TITLE: RD&D Permit for a Sludge Drying Process in a Wastewater System

APPROVAL DATE: December 24, 1985

EFFECTIVE DATE: December 24, 1985

ORIGINATING OFFICE: Office of Solid Waste

☒ **FINAL**

☐ **DRAFT**

STATUS:

REFERENCE (other documents):

OSWER OSWER OSWE VE DIRECTIVE DIRECTIVE

EPA

OSWER Directive Initiation Request

9503.51-1A-55

Name of Contact Person	Mail Code	Telephone Number
Nancy Pomerleau	WH-563	382-4500 ~~2532~~

Lead Office
- ☐ OSW
- ☐ OERR
- ☐ OUST
- ☐ OWPE
- ☐ AA-OSWER

Approved for Review 2529

Signature of Office Director: John Harris for Marcus Kelly

Date: 12/27/85

Title

RD&D Permit for a Sludge Drying Process in a Wastewater System

Summary of Directive

Sludge drying units at facilities with wastewater treatment units do not need a RCRA permit.

Type of Directive (Manual, Policy Directive, Announcement, etc.)

Policy memo

Status
- ☐ Draft
- ☐ Final
- ☐ New
- ☐ Revision

Does this Directive Supersede Previous Directive(s)? ☐ Yes ☒ No Does it Supplement Previous Directive(s)? ☐ Yes ☐ No

If Yes to Either Question, What Directive (number, title)

-0-

Review Plan
- ☐ AA-OSWER
- ☐ OERR
- ☐ OSW
- ☐ OUST
- ☐ OWPE
- ☐ Regions
- ☐ OERR
- ☐ OGC
- ☐ OPPE
- ☐ Other Specify

This Request Meets OSWER Directives System Format

Signature of Lead Office Directives Officer

Date 11

Signature of OSWER Directives Officer

Date

EPA Form 1315-17 (10-85)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

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DEC 24 1985

9503.51-1A(85)

MEMORANDUM

SUBJECT: RD&D Permit for a Sludge Drying Process in a Wastewater System

FROM: Marcia E. Williams, Director
Office of Solid Waste (WH-562)

TO: Allyn M. Davis, Director
Hazardous Waste Management Division (6H)
Region VI

In your letter of November 15, 1985, you requested written confirmation that the use of a sludge drying unit, manufactured by Water Management, Inc., at facilities with a wastewater treatment unit, would not jeopardize their exemption from RCRA permitting. The sludge dryer is intended to further reduce the volume of sludge requiring disposal.

If the sludge drying unit is a tank, as stated in your letter, then persons who are currently exempt from RCRA permit requirements under 40 CFR §270.1(c)(2)(v) because they have a wastewater treatment unit, will continue to be exempt from RCRA permitting if they use this sludge dryer. The Agency has clarified the definition of "tank", for the purposes of the wastewater treatment unit definition in §260.10, to cover unit operations which are not obviously tanks such as presses, filters, sumps, and many other types of processing equipment. (See attached memorandum dated July 31, 1981 from John Lehman to Richard Boynton, "Suspension of Regulations for Wastewater Treatment Units.")

I understand that the intent of the sludge dryer is to assist metal finishing industries, who have wastewater treatment units, to meet the waste minimization requirements of the new RCRA §3002(b). You should advise Water Management, Inc. that although their potential clients will continue to be exempt from RCRA permit requirements, their clients must comply with the RCRA manifest requirements of 40 CFR Part 262 for generators. Also, they must comply with 40 CFR Parts 261-263, as appropriate. The clients will need to sign the RCRA manifest for off-site shipments of the residue resulting from the use of the sludge dryer, including the waste-minimization certification statement on the revised Uniform Hazardous Waste Manifest Form (see 50 FR 28744-46, July 15, 1985).

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The client must also submit a biennial report to the Regional Administrator which includes a description of the efforts undertaken to reduce the volume and toxicity, as well as a description of the changes in volume and toxicity of the wastewater actually achieved during the year, by comparing it to previous years (§262.41, 50 FR 28746, July 15, 1985).

Since the sludge drying unit is intended for use by persons with wastewater treatment units, and the facilities with these units are exempt from RCRA permitting, it is unclear why Water Management, Inc. wants a research, development, and demonstration permit to test the unit. You should discuss this issue with Water Management, Inc. to determine if you should spend the resources on processing their permit application.

If your staff has any further questions on this matter, please have them contact Nancy Pomerleau at (FTS) 382-4500.

Attachment

cc: Bruce Weddle
Jack Lehman (WH-565)
Irene Horner (WH-565A)
Ken Gray (LE-132S)
Peter Guerrero
Art Glazer
Nancy Pomerleau
Tina Parker (WH-562)
William Rhea, Region 6
Hazardous Waste Division Directors, Regions I-X

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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JUL 31 1981

OFFICE OF
SOLID WASTE AND EMERGENCY RESPO

Richard C. Boynton, Chief
Permits Development Section
U.S. Environmental Protection Agency
John F. Kennedy Building
Boston, Massachusetts 02203

Re: Suspension of Regulations for Wastewater Treatment Units

Dear Mr. Boynton:

This letter responds to your recent request for an interpretation of the regulations of November 17, 1980 (45 FR 76074) which suspended certain requirements of the hazardous waste regulations for owners and operators of wastewater treatment units where such facilities are subject to regulation under Section 402 or 307(b) of the Clean Water Act.

Your letter is correct in stating that there is nothing in the definitions, preamble, or regulations which precludes an off-site hazardous waste management facility from qualifying for a suspension of the hazardous waste requirements in 40 CFR Parts 122, 264 and 265. The Agency considered limiting the suspension and proposed amendments to on-site facilities but was unable to justify that this type of facility was inherently less hazardous than an off-site facility so as to necessitate different standards. Accordingly, EPA does not intend to distinguish between on-site and off-site facilities in this regulation.

Even under the terms of the suspension, hazardous waste shipped to an off-site facility will, of course, be subject to the manifest requirements. In addition, the treatment facility must be subject to regulation under either Section 402 or 307(b) of the Clean Water Act.

To be completely exempted for now (and ultimately subjected to the permit by rule) all units in a facility must meet the definition of "tank" in §260.10. Lagoons, incinerators, and other types of facilities are not eligible. It is, however, true that the definition of "tank" is rather broad, covering unit operations which are not obviously tanks such as presses, filters, sumps, and many other types of processing equipment.

The Agency also intends that the phrase "subject to regulation under either Section 402 or 307(b) of the Clean Water Act" should be given a broad interpretation. This phrase includes all facilities that are subject to NPDES permits and encompasses facilities subject to either categorical pretreatment standards or general pretreatment standards. It is not necessary that the permits actually be issued or that pretreatment standards actually be in force. It is sufficient that the facility be subject to the requirements of the Clean Water Act.

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It should be noted that eligible facilities must in fact be treating "wastewaters" and not concentrated chemicals or non aqueous wastes. While we have not promulgated a formal definition, we are interpreting the term to refer to wastes which are substantially water with contaminants amounting to a few percent at most. It has been suggested that a formal definition would be helpful. We are considering adding such a definition to the final promulgation.

Public comments on the November 17, 1980 proposal also noted that some wastewater treatment units do not discharge a liquid stream and thus are not subject to the Clean Water Act. EPA is considering changing this "subject to" language to include such zero discharge facilities. We expect to finalize the proposed regulations for wastewater treatment units and elementary neutralization units within the next few months.

If you have any further questions, please do not hesitate to call me or Fred Lindsey, the Deputy Division Director at FTS 755-9185.

Sincerely yours,

John P. Lehman

John P. Lehman, Director
Hazardous & Industrial Waste Division

cc: Dennis Huebner
EPA, Region I

Ernest Regna
EPA Region II

Robert L. Allan
EPA Region III

James Scarbrough
EPA Region IV

Karl J. Klegerich
EPA Region V

R. Stan Jorgensen
EPA Region VI

Robert L. Morby
EPA Region VII

Lawrence P. Gazda
EPA Region VIII

Arnold R. Den
EPA Region IX

Kenneth D. Feigner
EPA Region X