

7506

R-020-204.26

**REMOVAL ACTION NO. 9, WASTE WATER TREATMENT TECHNICAL
SPECIFIC WORK PLAN REVISIONS**

03/01/96

**DOE-0564-96
DOE-FN EPAS
75
WORK PLAN**



Department of Energy
Fernald Environmental Management Project
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 648-3155

MAR 01 1996
DOE-0564-96

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - SRF-5J
77 W. Jackson Blvd.
Chicago, IL 60604-3590

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

Dear Mr. Saric and Mr. Schneider:

REMOVAL ACTION NO. 9, WASTE WATER TREATMENT TECHNICAL SPECIFIC WORK PLAN REVISIONS

Enclosed is a revision to the above subject work plan which was submitted on December 7, 1995, and conditionally approved by the Ohio Environmental Protection Agency (OEPA) on January 12, 1996. For your convenience, the entire work plan has been reproduced and should replace the copy previously submitted. This revision should address all the concerns expressed in the OEPA letter dated January 12, 1996 (enclosed).

If you have any questions, please contact Robert Danner at (513) 648-3167.

Sincerely,

Johnny W. Reising
Fernald Remedial Action
Project Manager

FN:Danner

Enclosure: As Stated

cc w/enc:

R. Nace, EM-423, GTN
G. Jablonowski, USEPA-V, SRF-5J
T. Schneider, OEPA-Dayton (3 total)
P. Pardi, OEPA-Dayton
J. Richie, OEPA-Dayton
Manager, TPSS/DERR, OEPA-Columbus
F. Bell, ATSDR
D. S. Ward, GeoTrans
R. Vandegrift, ODH
S. McLellan, PRC
~~AR Coordinator, FERMCO~~

cc w/o enc:

R. Danner, DOE-FN
J. Sattler, DOE-FN
E. Skintik, DOE-FN
T. Hagen, FERMCO, 65-2
M. West, FERMCO, 35-1

ACTIVITY SUMMARY

Waste Water Treatment Project

This Technical Specific Work Plan is being developed to complete the "Work Plan for FEMP Liquid Mixed Wastes". The Liquid Mixed Waste Project was designed to manage two treatment technologies: 1) consolidation and transport of ignitable and combustible liquid waste mixtures to be treated at the TSCA Incinerator, and 2) treatment of liquid mixed wastes in the FEMP Waste Water Treatment System. The Work Plan for FEMP Liquid Mixed Wastes to be treated at the TSCA Incinerator was submitted to the OEPA and USEPA in April 1995 and was conditionally approved by OEPA in May 1995, and approved by USEPA in June 1995. Final approval of the Work Plan for FEMP Liquid Mixed Wastes was received from OEPA in October 1995. This attachment is an addendum to the Work Plan for FEMP Liquid Mixed Wastes which completes the submittal of management plans for liquid mixed wastes at the FEMP.

The FEMP is planning to implement treatment of liquid mixed low level waste in the FEMP Waste Water Treatment System. The regulations promulgated USEPA as a result of the Resource Conservation and Recovery Act, provide a Waste Water Treatment Unit Exclusion, for systems treating hazardous waste in a Clean Water Act System. The OEPA has adopted the Waste Water Treatment Unit Exclusion in their regulations. The FEMP has a NPDES permitted Clean Water Act System, the facilities, equipment and procedures in place to effectively treat certain liquid characteristic hazardous waste. The FEMP Waste Water Treatment System includes a land based unit. Currently, listed waste streams are not being considered for treatment under this plan.

This Technical Specific Work Plan describes the FEMP treatment capabilities and the steps necessary to manage and treat these wastes, using existing FEMP Standard Operating Procedures, maintaining compliance with current regulations. Applicable or Relevant and Appropriate Regulatory Requirements (ARARs) are addressed in this Technical Specific Work Plan.

**WASTE WATER TREATMENT PROJECT
OHIO EPA RCRA PART B PERMIT
SUBSTANTIVE COMPLIANCE DEMONSTRATION**

75 D6

ITEM	CROSS REFERENCE INDEX
Hazardous Waste Determinations (OAC 3745-52-11) & (40 CFR 262.11)	Section 2.0
Interim Status: Treatment Storage, and Disposal General Facility Standards (OAC 37445-65-13 through 16) (40 CFR 265.13 through 265.16)	Section 2.0, 4.1, 6.0, 6.1, 6.3
Interim Status: Treatment Storage, and Disposal Facility Preparedness and Prevention (OAC 3745-65-31 through 35 and OAC 3745-65-37) (40 CFR 265.31 through 265.35, 256.37)	Section 3.0, 6.0, 6.1, 6.2, & 6.3
Interim Status: Treatment Storage and Disposal Facility Contingency Plan and Emergency Procedures (OAC 3745-65-51 through 56) (40 CFR 265.51 through 265.56)	Section 6.2
Container Storage (OAC 3745-52-34, 3745-66-70 through 77) (40 CFR 262.34, 265.170 through 267.177)	Section 4.1, 6.1
Residue Of Hazardous Waste In Empty Containers (OAC 3745-51-07) (40 CFR 261.7)	Section 4.1
Land Disposal Restrictions (OAC 3745-59) (40 CFR 268)	Section 1.2 & 2.0
Waste Water Treatment Unit Exclusion (OAC 3745-65-01(c)(8)) (40 CFR 265.1(c)(10))	Section 1.0
Decontamination of Reusable Equipment (OEPA Closure Plan Review Guidance for RCRA Facilities)	Section 4.1

NOTE: Compliance with the applicable or relevant and appropriate requirements (ARARs) is discussed in Section 5.0 and in Table 5-1 of the attached Technical Specific Work Plan, which is being submitted as an addendum to the FEMP Liquid Mixed Waste Technical Specific Work Plan that was submitted to U.S. and Ohio EPAs in April, 1995.

1.0	INTRODUCTION	S-5
1.1	Objectives	S-6
1.2	Land Disposal Restrictions	S-6
2.0	WASTE DESCRIPTION	S-7
	Table 1.0	S-9
3.0	WWTS TREATMENT CAPABILITIES	S-11
	Figure 3.0 FEMP Water Treatment and Water Sources	S-12
3.1	Plant 8 VOC Treatment System	S-13
3.1.1	General Operation	S-13
	Figure 3.1 Plant 8 VOC System	S-14
	Figure 3.1.1 VOC Carbon Filter Sample List	S-15
3.2	Plant 8 Sump, Vacuum Filtration System	S-16
3.2.1	General Operation	S-16
	Figure 3.2 Plant 8 Sump	S-17
3.3	Advanced Waste Water Treatment System (AWWT)	S-18
3.3.1	General Operation	S-18
3.3.2	Future Operation	S-18
4.0	TREATMENT PROCESS DESCRIPTION	S-19
4.1.	Movement and Emptying of Containerized Liquid Mixed Wastes	S-19
4.2	Treatment Process	S-20
	Figure 4.0	S-22
	Figure 4.1	S-23
5.0	ENVIRONMENTAL COMPLIANCE AND SPILL RESPONSE	S-24
5.1	Applicable or Relevant and Appropriate Requirements	S-24
	TABLE 5-1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)	S-25
6.0	HEALTH AND SAFETY	S-30
6.1	Site Standard Operating Procedure	S-30
6.1.1	"Controlling Aqueous Waste Water Discharges into the Waste Water Treatment System" (EP-0005)	S-30
6.1.2	"Movement of Hazardous Waste" (SOP 20-C-017)	S-30
6.1.3	"Storage of Hazardous Waste" (SOP 20-C-630)	S-30
6.1.4	"Emptying Liquid Hazardous Waste Storage Containers" (SOP 20-C-613)	S-30
6.2	Emergency Response Team Fire Spill/Preplan	S-30
6.2.1	"Hazardous Waste Spill Clean-Up", (SOP 20-C-606)	S-30

6.3	Plant 8 Operations	S-30
6.3.1	"Plant 8 Process Control Testing Procedure" (SOP 08-C-618)	S-30
6.3.2	"Plant 8 Waste Water Receiving System" (SOP 08-C-611)	S-30
6.3.3	"Plant 8 Perched Groundwater Volatile Organic Compound (VOC) Treatment System" (SOP 08-C-200)	S-30
6.3.4	"Large EIMCO Filter Operation - Plant 8 Waste Water Processing System" (SOP 08-C-602)	S-30
6.4	Future Generated Waste	S-30
7.0	PROJECT MANAGEMENT AND REPORTING	S-31
7.1	Waste Programs Management (WPM) - Hazardous and Mixed Waste Management (HMWM)	S-31
7.2	Environmental Compliance (EC)	S-31
7.3	Aquifer Restoration Project (ARP)	S-32
	Table 7.0 Estimated Final Effluent Concentrations	S-33
	Figure 7.0	S-37
7.4	WPM - Hazardous and Mixed Waste Management	S-38
	Figure 7.0	S-38
7.5	WPM - Waste Operations	S-38
7.6	Remedial Support Operations (RSO)	S-38
7.7	Materials Control and Accountability (MC&A)	S-38
7.8	WPM - Hazardous and Mixed Waste Management	S-38
7.9	Environmental Compliance	S-38
	Figure 7.1 Waste Water Discharge Request Form	S-39
8.0	QUALITY ASSURANCE	S-40
	REFERENCE S-1	
	REFERENCE S-2	

1.0 INTRODUCTION

This attachment to the Liquid Mixed Wastes work plan describes the objectives and scope of work for the treatment of certain FEMP liquid mixed wastes utilizing the on-site Waste Water Treatment System (WWTS) and existing standard operating procedures. Treatment is being initiated under Removal Action (RA) No. 9 - "Removal of Waste Inventories".

RA No. 9 was identified in the Amended Consent Agreement (ACA) (September, 1991) to address the removal of low level radioactive (LLRW) waste inventories. The ACA requires DOE-FN to submit an annual compendium of existing procedures and documentation for the site's LLRW Management Program, in lieu of Removal Action Work Plans. Additionally, DOE-FN committed to submitting project work plans for certain projects in addendum No. 1 to the RA No. 9 Work Plan, including the Liquid Mixed Waste Project. The Liquid Mixed Waste Project was developed to manage FEMP liquid mixed wastes in two subprojects: 1) the consolidation and transport of ignitable and combustible liquid mixed waste mixtures to the TSCA Incinerator for treatment, and 2) treatment of liquid mixed wastes that are contaminated with low concentrations of hazardous constituents using the FEMP Waste Water Treatment System.

Waste water treatment is being implemented as part of the Liquid Mixed Waste Project as described in the FEMP Site Treatment Plan (STP). Further, the FEMP Site Treatment Plan identified the WWTS as a Preferred Option for treatment of certain FEMP liquid mixed waste streams. This attachment to the work plan is intended to provide the technical specific information required to amend RA No.9 and to meet the commitments of the Director's Finding and Orders issued October 1995 for treatment of liquid mixed waste using the FEMP WWTS.

The systems that will be used to treat mixed low level radioactive wastes (LLRWs) under the Waste Water Treatment Technical Specific Plan meet the regulatory definition of a waste water treatment unit established in OAC 3745-50-10(A)(129) (40 CFR 260.10) and are part of the existing FEMP NPDES permitted waste water treatment system (OEPA Permit No. 11000004*ED). As such, treatment of mixed LLRWs through these waste water treatment units meets the requirements of the regulatory exclusion promulgated in OAC 3745-65-01(C)(8) (40 CFR 265.1, 270.70), which allows certain characteristically hazardous wastes to be treated through NPDES permitted waste water treatment systems.

Waste streams will be added to the system in batches and either commingled with waste waters in the CWA system, or segregated for treatment. The decision for segregation will be made based on the constituents in the waste streams awaiting treatment. Once commingled with other waste streams or waste waters, dilution will occur. Dilution, as specified in OAC 3745-59-03(B) (40 CFR 268.3), will deactivate the waste removing the characteristic. The constituents which cause a waste to be characteristic for ignitability will be adsorbed during carbon filtration at Plant 8 VOC.

000007

In addition, treatment of project wastes through these waste water treatment units will render these wastes non-hazardous prior to discharge to the Bio-Surge Lagoon, thereby meeting RCRA based Land Disposal Restrictions (LDRs) promulgated in OAC 3745-59 (40 CFR 268).

1.1 OBJECTIVE

The objective of the Waste Water Treatment Project is to safely move containerized mixed waste from RCRA warehouse storage and treat the hazardous characteristics discharging the treated water consistent with the FEMP NPDES Permit No. 11000004*ED.

1.2 Land Disposal Restrictions

The FEMP is aware that the United States Environmental Protection Agency (USEPA) is working on changes to the LDR treatment standards for certain characteristic hazardous wastes. This work plan was developed to comply with current regulations as specified in 40 CFR 268 and Ohio Administrative Code (OAC) 3745-59. When the USEPA or the Ohio Environmental Protection Agency (Ohio EPA) promulgates further regulations affecting LDR standards, this work plan will be revised in accordance with those regulations.

000008

2.0 WASTE DESCRIPTION

Hazardous waste regulations found in OAC 3745-65-01(c)(8)(40 CFR 265.1, 270.70) allows certain hazardous wastes to be treated in a Clean Water Act permitted WWTS. The FEMP mixed waste streams identified for treatment in the WWTS are liquid mixed waste streams which are characteristically hazardous. The characteristic liquid mixed waste streams to be treated in the WWTS are evaluated to ensure that the addition to the WWTS does not interfere with normal operations and that they do not contain prohibited waste streams. The prohibited waste streams are: D003 Cyanide, TC Pesticides, D001 waste streams that are high Total Organic Compound (equal to or greater than 10 percent TOC). A decision chart for evaluating waste streams to be treated in the FEMP WWTS is provided as Figure 7.0

The mixed waste streams to be treated were generated as a result of process and response actions. These mixed waste streams are stored in RCRA warehouses primarily in 55 gallon containers. Additional liquid mixed waste streams of the same description will be generated as a result of future remediation activities. FEMP waste streams identified in the Site Treatment Plan for treatment in the WWTS are shown on Table 1.0 in this section.

The mixed waste streams to be treated in this project have been characterized using process knowledge and sampling and analysis results in accordance with site procedure EW-0001, "Initializing Waste Characterization Activities Using the Material Evaluation Form," the Waste Characterization Manual, and the FEMP Waste Analysis Plan. The waste characterization methodologies specified by EW-0001 are consistent with USEPA and Ohio EPA hazardous waste regulations. Although the drums of mixed waste have been characterized under EW-0001, it is possible that some waste containers may contain waste materials or anomalies that differ from the MEF characterization. Real Time Radiography (RTR) results will be employed to aid in screening containers to identify these materials.

The primary document for completing waste characterization is the three page MEF which is part of EW-0001. The first page of the MEF is the Generator's Section which summarizes information provided by the FEMP (internal) waste generator. This section is similar to the waste profile sheets used by commercial treatment, storage, and disposal facilities (TSDFs) allowing for documentation of information regarding: generator and waste stream identification; generation information; gross material characteristics; material composition; and health and safety precautions.

The second and third pages of the MEF are the Evaluation Section which summarizes the results of the waste characterization with respect to evaluation criteria, and pertinent information from the evaluation process including: material regulatory status; material management requirements; and health and safety precautions.

000009

The MEF evaluation process relies on a combination of process knowledge and sampling and analysis to complete the waste characterization. Process knowledge includes the sum of all information that can be collected on a material, including information from operating procedures, manufacturing specifications, material safety data sheets (MSDS), spill reporting logs, visual inspections, and personnel interviews. All process knowledge contributing to waste characterization is documented in the waste characterization files.

Sampling and analysis conducted in support of the MEF process is performed in accordance with USEPA SW-846, *Test Methods for Evaluating Solid Waste*. Protocols required by other regulatory programs are used when applicable. All data required to support waste characterization by sampling and analysis are included in the MEF waste characterization files. This includes the request for analysis, sampling plan, field sample log book, analytical data report, QA/QC report, chain-of-custody forms, and statistical treatment of analytical data once the sampling and analysis is completed.

000010

Table 1.0

FEMP WASTE STREAMS IDENTIFIED IN THE AMENDED PROPOSED
SITE TREATMENT PLAN FOR TREATMENT IN THE WWTS

MEF#	EPA CODES	CONSTITUENT	WASTE DESCRIPTION	LDR TREATMENT STANDARD (s)	VOLUME IN m ³
358	D002 D019	Carbon Tetrachloride	Caustic Solution (NaOH) from Plant 8 Raffinate Processing	DEACTIVATION	0.8
383	D011	Silver	X-Ray Fixer & Developer, Clear Liquid Moderate Acidic Solution	CONCENTRATION BASED	0.2
1178	D007	Chromium	Groundwater from Well #2649	CONCENTRATION BASED	1.2
1229	D008 D009	Lead Mercury	Contaminated Sump Water	CONCENTRATION BASED	6.6
1462	D002		Contaminated Water from Chemical Pit #2 Surface Cap	DEACTIVATION	1.0
1773	D011	Silver	Concentrate Fixer	CONCENTRATION BASED	0.2
1938	D007 D008 D010	Chromium Lead Selenium	Contaminated water from Paint Booth Sump	CONCENTRATION BASED	0.2
2210	D001	Hydrogen Peroxide	Hydrogen Peroxide Solution	DEACTIVATION	0.8
2257	D002		TCLP Extracts Lab Generated Waste	DEACTIVATION	0.2
2362	D002 D007 D008 D018 D035 D039 D040	Chromium Lead Benzene Methyl ethyl ketone Tetrachloroethylene Trichloroethylene	Radioactive Acidic Lab Waste from the Analyses of Samples	DEACTIVATION CONCENTRATION BASED	9.4
2363	D001 D002 D006 D008 D009 D018 D035 D038 D039 D040	Cadmium Lead Mercury Benzene Methyl ethyl ketone Pyridine Tetrachloroethylene Trichloroethylene	Radioactive Caustic Lab Waste from the Analyses of Samples	DEACTIVATION CONCENTRATION BASED	1.6
2554	D002		Acid Waste	DEACTIVATION	8.2
2606	D002 D004 D038	Arsenic Pyridine	Acid Digest-Arsenic	DEACTIVATION CONCENTRATION BASED	0.2

Table 1:0 (cont.)

MEF#	EPA CODES	CONSTITUENT	WASTE DESCRIPTION	LDR TREATMENT STANDARD (s)	VOLUME IN m ³
2607	D002 D008 D038	Lead Pyridine	Acid Digest-No Mercury	DEACTIVATION CONCENTRATION BASED	0.2
2687	D002 D008	Lead	Acid (EXT) waste with Lead	DEACTIVATION CONCENTRATION BASED	0.6
10014	D039	Tetrachloroethylene	U-Contaminated Water	TREATMENT STANDARD EFFECTIVE 9/19/96	2.8
10015	D039	Tetrachloroethylene	U-Contaminated Water	TREATMENT STANDARD EFFECTIVE 9/19/96	2.0

000012

3.0 WWTS TREATMENT CAPABILITIES

The FEMP WWTS is a NPDES CWA permitted system currently configured such that it is capable of treating certain characteristically hazardous liquid waste streams. The WWTS is able to provide treatment of mixed waste as it is capable of removing volatile organic compounds, heavy metals and uranium through precipitation, filtration, ion-exchange, activated carbon adsorption, deactivation of ignitables, corrosives, reactives, and neutralization by acid/base additions.

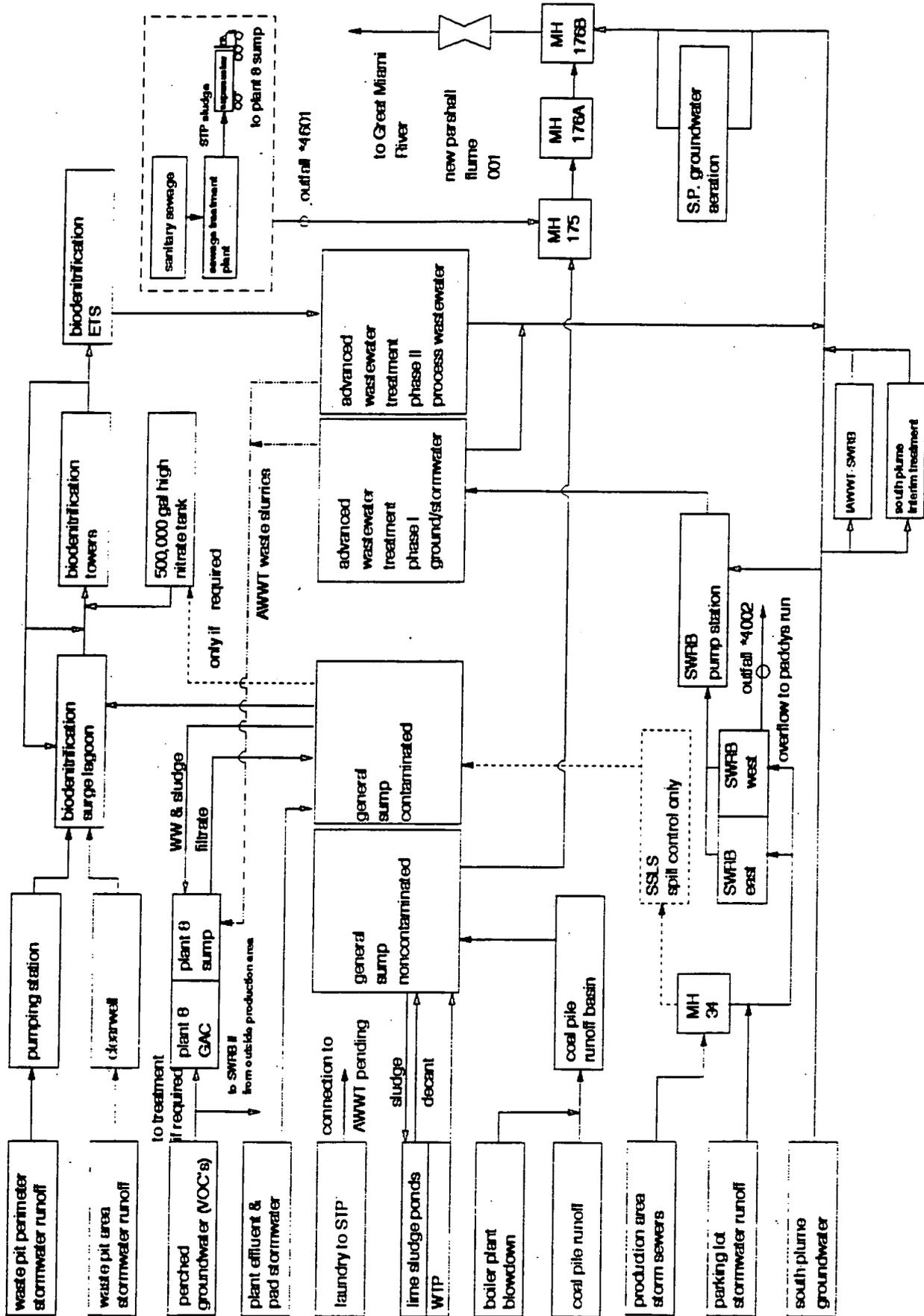
There are three components of the FEMP WWTS that will be utilized for treatment of liquid mixed waste. These three components are the Plant 8 Volatile Organic Compound (VOC) Removal System, the Plant 8 Sump Vacuum Filtration System, and the Advanced Waste Water Treatment System (AWWT). The three components are presented in the order in which waste streams with multiple contaminant types will be processed in the system for treatment. For example, a waste stream contaminated with VOCs, Heavy Metals, and Uranium will begin treatment at Plant 8 VOC and continue through all components to complete treatment. However, the waste stream will be rendered non-hazardous when it exits Plant 8, prior to entering the Bio-Surge Lagoon. The specific capabilities of each treatment component are described in Sections 3.1, 3.2 and 3.3.

An FEMP Waste Water Treatment Flow Diagram is provided as Figure 3.0.

000013

Figure 3.0

WASTEWATER FLOW DIAGRAM - AWWT OPERATIONAL



000014

F:\FL4\WW-AWWT.DRW

75 D6

3.1 Plant 8 VOC Treatment System

The Plant 8 VOC System is located inside Building 8A, an annex at the northwest corner of Plant 8. The system is installed in a concrete spill containment dike. A diagram of the Plant 8 VOC Treatment System is provided as Figure 3.1.

The Plant 8 VOC Treatment System removes volatile organic compounds utilizing a carbon adsorption method. This adsorption technology utilizes granular activated carbon in order to preferentially adsorb contaminants from waste streams. It is a proven technology for removing volatile organic contaminants from liquids. In adsorption, contaminants adhere on the surface of the carbon particles, thereby reducing the concentration of the organic contaminant in the liquid. As a waste stream flows through the granular activated carbon, contaminants adsorb onto the solid particles and a clean stream is produced.

3.1.1 General Operation

Liquids can be added to the Plant 8 VOC System via portable tanker, or containers may be emptied directly into a 6000 gallon holding tank. The holding tank has direct piping to the granulated activated carbon filters.

Waste streams will be added to the system in batches and either commingled with waste waters in the CWA system, or segregated for treatment. The decision for segregation will be made based on the constituents in the waste streams awaiting treatment. Once commingled with other waste streams or waste waters, dilution will occur. Dilution, as specified in OAC 3745-59-03(B) (40 CFR 268.3), will deactivate the waste removing the characteristic. The constituents, which cause a waste to be characteristic for ignitability, will be adsorbed during carbon filtration at Plant 8 VOC.

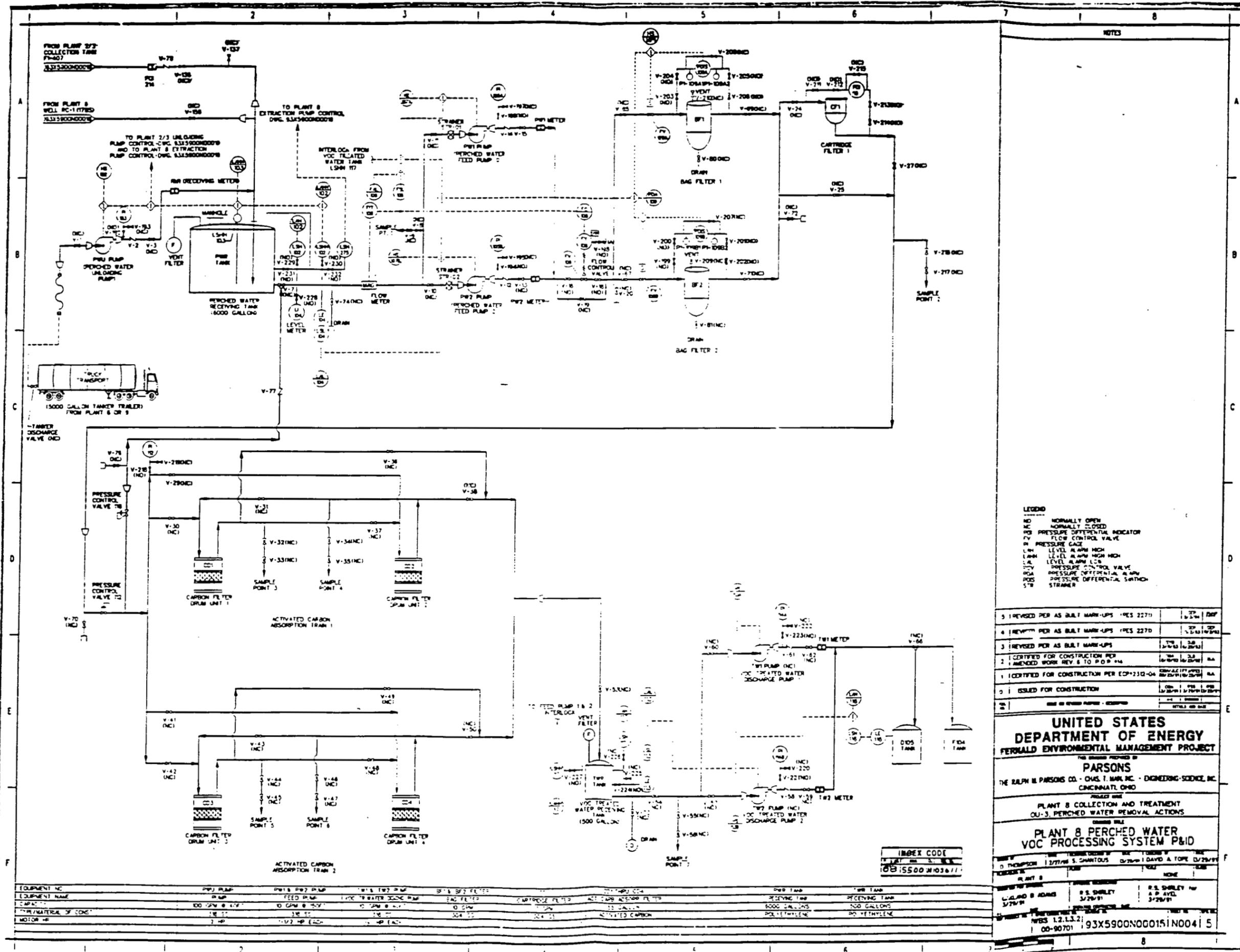
The water is pumped from the holding tank to a bag filter and cartridge filter to remove suspended solids. The water is pumped from the bag and cartridge filters to four activated carbon filter barrels which perform the removal of VOCs from water processed through the system. The system is operated with two filter drums parallel with two other carbon filters in series. Valved sample ports are provided on the discharge line of each filter drum.

The system is sampled weekly to verify removal of volatile organic compounds. The sample points are located between the lead and lag filter drums as shown on Figure 3.1. The list of VOCs currently sampled is provided as Figure 3.1.1. If a VOC, which is not currently sampled, is detected in a mixed waste stream that can be treated in the Plant 8 VOC Treatment System, the compound will then be added to the sampling plan prior to treating the waste in this system. The data quality objectives, including discharge verification practices for Plant 8, are provided as Reference S-2.

Treated water from the VOC Treatment System is pumped to the Plant 8 Sump for uranium and heavy metals removal.

000015

Figure 3.1



NOTES

- LEGEND
- NO NORMALLY OPEN
 - NC NORMALLY CLOSED
 - PI PRESSURE INDICATOR
 - PIV PRESSURE DIFFERENTIAL VALVE
 - PCV FLOW CONTROL VALVE
 - PG PRESSURE GAUGE
 - LAH LEVEL ALARM HIGH
 - LALH LEVEL ALARM HIGH HIGH
 - LALC LEVEL ALARM LOW
 - PCVY PRESSURE CONTROL VALVE
 - PDA PRESSURE DIFFERENTIAL ALARM
 - POS PRESSURE DIFFERENTIAL SWITCH
 - STR STRAINER

5	REVISED PER AS BUILT MARK-UPS (RES 2271)	12/21/94	DAF
4	REVISED PER AS BUILT MARK-UPS (RES 2270)	12/21/94	DAF
3	REVISED PER AS BUILT MARK-UPS	7/10/94	DAF
2	CERTIFIED FOR CONSTRUCTION PER AMENDED WORK REV 8 TO P&ID	10/10/93	DAF
1	CERTIFIED FOR CONSTRUCTION PER EOP-210-04	08/15/93	DAF
0	ISSUED FOR CONSTRUCTION	07/15/93	DAF

UNITED STATES
DEPARTMENT OF ENERGY
FERROAL ENVIRONMENTAL MANAGEMENT PROJECT

DESIGNED BY
PARSONS

THE RALPH M. PARSONS CO. - CIVIL, MECHANICAL, ELECTRICAL, CHEMICAL, ENVIRONMENTAL, AND INDUSTRIAL ENGINEERING, INC.
CINCINNATI, OHIO

PROJECT TITLE
PLANT 8 COLLECTION AND TREATMENT
OU-3 PERCHED WATER REMOVAL ACTIONS

ISSUED FOR
**PLANT 8 PERCHED WATER
VOC PROCESSING SYSTEM P&ID**

DESIGNED BY	DAVID A. TOPE	DATE	02/26/94
CHECKED BY	DAVID A. TOPE	DATE	02/26/94
APPROVED BY	DAVID A. TOPE	DATE	02/26/94
PROJECT NO.	93X5900N0015	REV.	004
DATE	02/26/94	BY	DAVID A. TOPE

EQUIPMENT NO.	DRY PUMP	PERCHED WATER FEED PUMP	PERCHED WATER DISCHARGE PUMP	DRY PUMP	DRY PUMP	DRY PUMP	DRY PUMP
EQUIPMENT NAME	DRY PUMP	FEED PUMP	DISCHARGE PUMP	BAG FILTER	CARTRIDGE FILTER	ACTIVATED CARBON FILTER	RECEIVING TANK
CAPACITY	100 GPM @ 47'	10 GPM @ 47'	10 GPM @ 47'	10 GPM	10 GPM	10 GPM	500 GALLONS
MATERIAL OF CONSTRUCTION	316 SS	316 SS	316 SS	304 SS	304 SS	304 SS	POLYETHYLENE
MOTOR HP	7 HP	1/2 HP EACH	1/2 HP EACH	1/2 HP EACH	1/2 HP EACH	1/2 HP EACH	NO MOTOR

Figure 3.1.1

VOC Carbon Filter Sample List

1,1,1,2-Tetrachloroethane	Acetone	N-Butylbenzene
1,1,1-Trichloroethane	Benzene	N-Propylbenzene
1,1,2,2-Tetrachloroethane	Bromobenzene	Naphthalene
1,1,2-Trichloroethane	Bromochloromethane	P-Isopropyltoluene
1,1-Dichloroethane	Bromodichloromethane	SEC-Butylbenzene
1,2,3-Trichloropropane	Bromoform	Styrene
1,2,4-Trimethyl	Bromomethane	SURR1 (Dibromofl)
1,2-Dibromo-3-chloropropane	Carbon Disulfide	SURR2 (Toluene-D)
	Carbon Tetrachloride	SURR3 (Bromofluo)
1,2-Dibromomethane	Chlorobenzene	Tert-Butylbenzene
1,2-Dichlorobenzene	Chlorobromomethane	Toluene
1,2-Dichloroethane	Chloroethane	trans-1, 2-Dichloroethylene
1,2-Dichloropropane	Chloromethane (Methyl chloride)	trans-1, 3-Dichloropropylene
1,3,5-Trimethyl	cis-1, 2-Dichloroethane	Trichloroethene
1,4-Dichlorobenzene	cis-1, 3-Dichloropropylene	Trichlorofluoromethane
2,2-Dichloropropionic acid	Dibromomethane	Vinyl Acetate
2-Butanone	Dichlorodifluoromethane	Vinyl Chloride
2-Chlorotoluene	Ethyl benzene	Xylenes-M, P
2-Hexanone	Hexachlorobutadiene	Xylenes-O
4-Chlorotoluene	Isopropyl benzene	1,1-Dichloropropane
4-Methyl 2-Pentanone	Methylene chloride	1,3-Dichlorobenzene

000017

3.2 Plant 8 Sump, Vacuum Filtration System

The Plant 8 Sump is located inside Building 8. A diagram of the Plant 8 Sump and the Vacuum Filtration System is provided as Figure 3.2.

The Plant 8 Sump will be used for pH adjustment, removal of heavy metals by precipitation, neutralization by the addition of acid/base solutions, and removal of uranium.

Precipitation is a separation process that removes soluble contaminants from water. Application of this technology is used for removal of dissolved toxic metals and radionuclides. Reducing contaminant solubility is accomplished by the addition of a chemical precipitant that reacts with the contaminant to form an insoluble compound. Filtration is the second step to heavy metals removal. The second step removes the precipitate using a solid/liquid separation process. Chemical Precipitation is used widely for the removal of heavy metals and fluoride in waste water treatment. Precipitation using lime is a low-cost, Best Available Technology.

3.2.1 General Operation

The FEMP uses lime for neutralization, heavy metals precipitation and removal of fluoride in the WWTS at the Plant 8 Sump. The lime is added to the waste water in 6,000 gallon tanks. The amount of lime to be added is determined through a jar test to obtain a pH of 7.0. Filtration of the effluent is completed in the rotary vacuum filter. Diatomaceous Earth is precoated on the filter. The filtrate is pumped to a filtrate receiving tank. The tanks used in the treatment process are acid brick-lined; one is rubber-lined, and one filtrate tank is stainless steel.

Treatment of the waste at Plant 8 Sump will generate two waste streams--the filtrate waste water and filter cake. The filter cake generated from treatment of characteristic hazardous mixed waste will be placed into 55 gallon drums. Samples will be extracted from the filter cake waste streams and the following analyses will be performed: TCLP Metals and Paint Filter Liquid Test (PFLT) in accordance with SW-846, % Moisture, Total U, U-235, and Alpha-Beta. A copy of the draft Sampling Plan is provided as Reference S-1. This Technical Specific Sampling and Analysis Plan will be invoked each time a batch of characteristic hazardous mixed waste is treated at the Plant 8 Sump. The data quality objectives, including discharge verification practices for Plant 8, are provided as Reference S-2.

000018

3.3 Advanced Waste Water Treatment System (AWWT)

Ion-exchange is a proven separations process whereby ionic species, primarily inorganics, are concentrated into a secondary waste stream. Ion-exchange resins act as insoluble acids or bases, having functional groups which take on a positive or negative charge in solution. This technology is applicable to all inorganic contaminants present as ions in a liquid phase. The ion-exchange system at AWWT removes only uranium ions. The resin used at the FEMP is ion-specific for uranium removal.

3.3.1 General Operation

The ion-exchange units and chemical precipitation systems of the AWWT are located at Building 51.

The AWWT treats uranium contaminated waste water to reduce the amount of uranium discharged to the Great Miami River. The initial treatment step is coagulation/gravity separation in clarifiers. The treatment is then a series of multitube filters followed by ion-exchange units. Waste waters go through a chemical precipitation and clarification process to remove suspended solids. The waste water then moves through an ion-exchange system where ions are exchanged with uranium complex ions, with the uranium ions collecting on resin. The treated water is discharged from AWWT to the Great Miami River.

3.3.2 Future Operation

Activated carbon filters used to adsorb volatile organic contaminants from waste streams and a Slurry Dewatering System are expected to be operational at the AWWT in the summer of 1996. When these technologies becomes available at the AWWT, Plant 8 will be decommissioned.

Once the planned Systems at the AWWT are operational, the FEMP will evaluate the technologies of these Systems as a treatment option for characteristic and listed mixed waste streams. The FEMP will provide additional information on the AWWT Systems if these Systems are evaluated to be a viable treatment option for liquid waste streams.

000020

4.0 TREATMENT PROCESS ACTIVITIES

4.1 Movement and Emptying of Containerized Liquid Mixed Waste

The WWTS Project involves moving containerized liquid mixed waste from RCRA permitted storage facilities to Plant 8 for treatment. The containers will be moved in accordance with site procedures developed for the movement of hazardous waste ensuring all precautions are taken to avoid damaging the container or causing a spill.

The containerized waste may will be moved twice during cold weather. Currently, none of the FEMP RCRA warehouses are heated. Therefore, during cold weather, a less than 90 day area will be established in a heated building near Plant 8 to ensure the liquid waste is not frozen when transfer operations begin. Prior to moving the waste, temporary secondary containment will be established at the building where the less than 90 day area is located. The secondary containment will be constructed using herculite and the perimeter raised to contain the waste if leakage would occur. Weekly inspections will be performed, and the waste will be stored in accordance with OAC 3745-52-34 (40 CFR 262.34) and the FEMP Part B Permit Application while stored in the less than 90 day area.

The second move will be to ~~the pad outside~~ Plant 8A, where the waste will be transferred from its storage container to the CWA tank. Prior to moving the waste, temporary secondary containment will be established. ~~The Weather permitting,~~ secondary containment will be established on a concrete pad outside, adjacent to Plant 8A near a large roll-up door. The roll-up door will be opened to allow placement of the secondary containment so that it will be continuous around the hazardous waste and the equipment used to transfer the waste from its storage container to the CWA tank.

During inclement weather, temporary secondary containment will be established inside Plant 8A adjacent to the CWA tank. All waste temporarily stored and the equipment used to transfer the waste, will be protected with secondary containment. The indoor secondary containment will be constructed using herculite and the perimeter raised to contain waste if spilled. The transfer tubing will be placed in PVC piping and sloped to drain toward the secondary containment in the event of a spill. The PVC piping will be of sufficient length to extend from the temporary secondary containment to the permanent secondary containment around the CWA tank.

The ~~Each~~ secondary containment ~~area~~ will be constructed using herculite and the perimeter raised to contain waste if spilled. The ~~Each temporary~~ secondary containment will be sized to hold the contents of all containers temporarily stored within its boundaries. In the event of a spill or leak during temporary storage, the waste can be recovered and added to the Plant 8 VOC System. The FEMP site spill procedure, as referenced in Section 6.0 of this plan, will be invoked to ensure any spilled hazardous waste is handled in compliance with regulations, site procedures and this plan. The waste will be placed inside the secondary containment before containers are opened for the transfer activities.

Containers will be moved to the Plant 8A secondary containment area only if they can be added to the treatment system by the end of business hours. In the event the waste cannot be added to the treatment system that day, the remaining containers will be returned to the less than 90 day area for overnight storage.

000021

A container of liquid mixed waste will only be opened at Plant 8 when it is ready to be added to the treatment system. The waste is transferred from its storage container to the treatment system tank using suction tubing and a double diaphragm pump. The storage container will be pumped until no more liquid can be removed. The container will then be examined to determine if all contents were removed leaving it "RCRA empty", or if there is remaining residue. Containers that are determined to be "RCRA empty" will be sent to the drum crusher and prepared for final disposition. Containers that are determined to have residue remaining will be closed and returned to the RCRA Warehouse pending further characterization and assignment to a different mixed waste treatment project. Reusable equipment, such as hoses and pumps, will be triple-rinsed after completion of waste transfer operations in accordance with the requirements of OEPA's Closure Plan Review Guidance for RCRA Facilities. Clean water will be supplied for triple-rinsing reusable equipment. Rinseate water from triple-rinsing reusable equipment will be pumped through the equipment and discharged directly into the CWA system 6000 gallon tank.

No decontamination rinse waters will be containerized from this activity. Personal protective clothing and contact waste generated as a result of this project will be containerized and characterized as described in Section 2.0 of this plan.

4.2 Treatment Process

The liquid mixed waste streams will be treated to remove the hazardous characteristic in the Plant 8 VOC and the Plant 8 Sump (see Figure 4). Both of these systems, as described in the preceding section, Treatment Capabilities, provide treatment of volatile organic compounds, utilizing activated carbon adsorption, heavy metals, and uranium through precipitation and filtration, deactivation of ignitables, corrosives and reactives, and neutralization by acid/base additions. The discharged water from the Plant 8 Sump will be non-hazardous.

All waste streams that are added to the WWTS as part of this project will be administratively reviewed prior to discharge to the waste water treatment system. This administrative review will be conducted to ensure that the volume and character of treated waste streams does not cause a violation of the FEMP NPDES permit or exceedance of RCRA based LDRs prior to discharging treating effluent to the Bio-Surge Lagoon. A detailed discussion of this administrative review process is included in Section 7.0.

Given the low concentrations of hazardous constituents present within the project wastes and the fact that these constituents can be effectively removed by treating these wastes through the existing waste water treatment system, treating the wastes to render it non-hazardous prior to discharging it to the Bio-Surge Lagoon is not anticipated to be a problem. Sampling and analyses for verification of the treatment and compliance with the FEMP NPDES Permit are incorporated in this plan.

000022

The non-hazardous waste water is discharged from the Plant 8 to the Bio-Surge Lagoon. The Bio-Surge Lagoon is a land based unit used in the Waste Water Treatment System for hydraulic equalization of waste water prior to transfer to the Bionitrification Towers. Currently, all waste water is processed through the Bionitrification Towers for the removal of nitrates. The waste water is then transferred to the Bionitrification Effluent Treatment System (BETS) for reduction of Biological Oxygen Demand (BOD).

The flow of waste waters to the Bionitrification Towers and the Effluent Treatment System is temporary. Future waste waters will be directed from the Bio-Surge Lagoon to the AWWT.

The water then moves to the AWWT for additional removal of uranium. Waste water discharges from the AWWT to manhole 176B. Manhole 176B discharges to outfall 11000004001, where the water discharges to the Great Miami River. The final effluent limitations and monitoring requirements for outfall 11000004001 are specified in the FEMP NPDES Permit and are provided as Figure 4.1 in this section.

000023

Figure 4.0

TREATMENT TRAIN FOR LIQUID MIXED WASTES IN THE FEMP WWTS

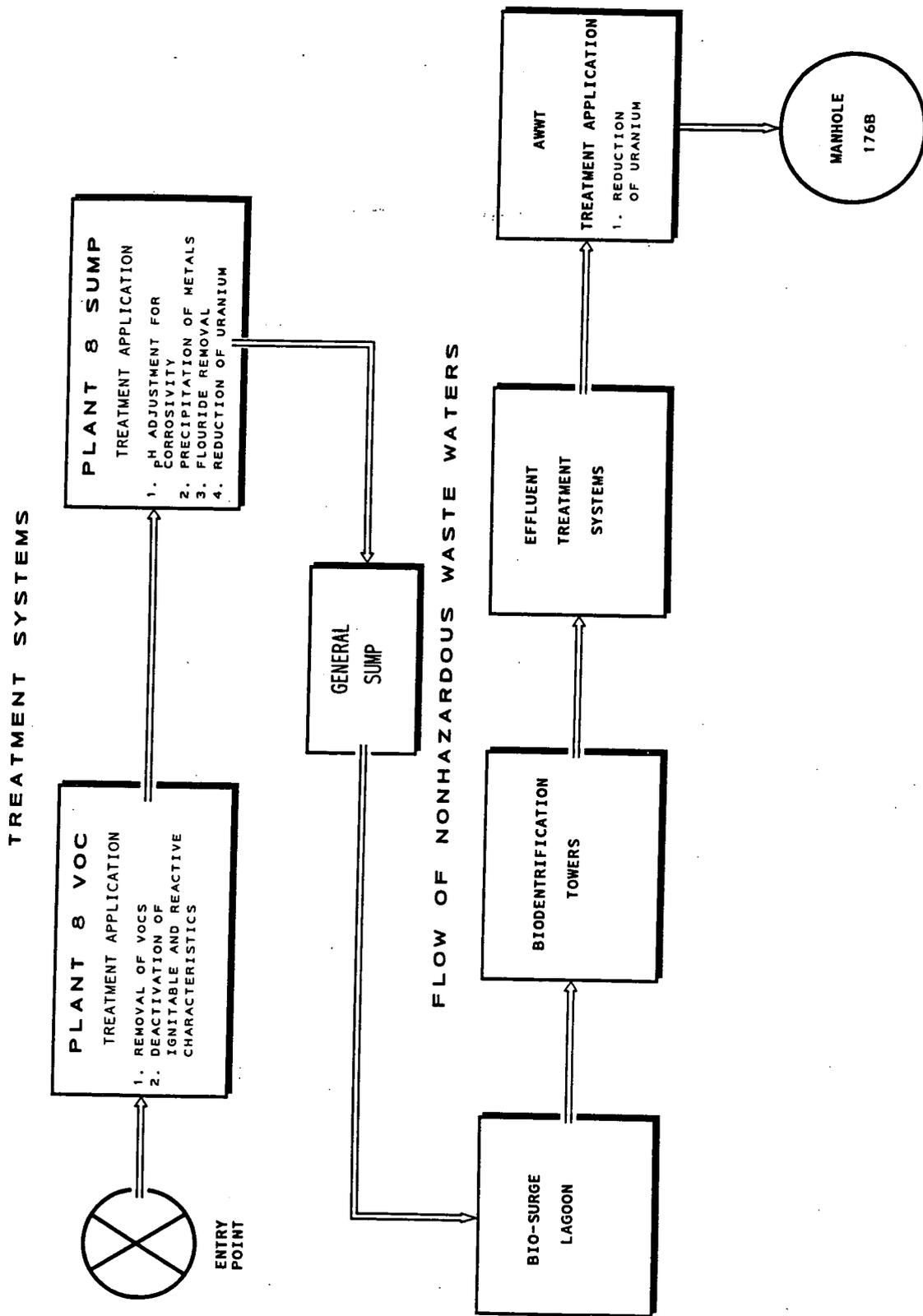


Figure 4.1

Page 2 of 28
Ohio EPA Permit No. 11000004*ED

PART I, A. - FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date of this permit and lasting until the expiration date, the permittee is authorized to discharge in accordance with the following limitations and monitoring requirements from outfall 11000004001. See Part II, OTHER REQUIREMENTS, for locations of effluent sampling.

EFFLUENT CHARACTERISTIC			DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
Reporting Code	Units	Parameter	Concentration Specified Units		Loading* kg/day		Mon. Freq.	Sample Type
			30 day	Daily	30 day	Daily		
00300	°C	Water Temperature	-	-	-	-	Daily	Grab
00300	mg/l	Dissolved Oxygen	-	5.0min.	-	-	1/Week	Grab
00500	mg/l	Total Suspended Solids	30	45	315	473	Daily	24-Hour Composite
00500	mg/l	Oil and Grease, Total	10	10	105	105	1/Week	Grab
00600	mg/l	Nitrogen, Ammonia (NH ₃)	-	-	-	-	1/Week	24-Hour Composite
00600	mg/l	Nitrogen, Nitrite + Nitrate	-	-	-	-	1/Week	24-Hour Composite
00901	mg/l	Fluoride, Total (F)	-	-	-	-	1/Week	24-Hour Composite
01109	µg/l	Copper, Total Recoverable	-	-	-	-	1/Week	24-Hour Composite
01200	µg/l	Chromium, Dissolved Hexavalent	-	-	-	-	1/Week	Grab
50000	MGD	Flow Rate	-	-	-	-	Daily	24-Hour Total
80002	mg/l	CBOD ₅	20	30	210	315	1/Week	24-Hour Composite
61425	TUs	Acute Toxicity, <u>Scenedesmus dubia</u>	-	-	-	-	See Part II, Item H	
61427	TUs	Acute Toxicity, <u>Pimephales promelas</u>	-	-	-	-	See Part II, Item H	

* Loadings are based on 2.775 MGD

2. The pH (Reporting Code 00402 (minimum) and 00401 (maximum)) shall not be less than 6.5 S.U. nor greater than 9.0 S.U. and shall be monitored continuously and the critical values reported. See Part II, Item C.
3. Samples taken in compliance with monitoring requirements specified above shall be taken at sampling stations described in Part II, OTHER REQUIREMENTS.

000025

5.0 ENVIRONMENTAL COMPLIANCE AND SPILL RESPONSE

The project involves treating liquid low level mixed wastes to remove the hazardous characteristic.

5.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Table 5-1 of this section identifies the Applicable or Relevant and Appropriate Requirements (ARARs) for the project. As part of RA No. 9, the project is exempt from the requirement to obtain administrative permit approval under Section 121(e) of CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as promulgated in 40 CFR 300.400(e).

Although on-site removal actions are exempt from the requirement to obtain administrative permit approval, Paragraph XIII.B of the ACA requires DOE to supply specific information regarding the permits that would have been required in absence of the CERCLA permitting exemption described above. To satisfy this ACA requirement, the following three pieces of information have also been included in Table 5-1.

- Identification of permits that would be required in absence of the CERCLA Section 121(e) exemption.
- Identification of the standards, requirements, criteria, or limitations (ARARs) that would have to be met to obtain the permits.
- An explanation of how the response action will meet the standards, requirements, criteria, or limitations identified above.

000026

TABLE 5-1

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARARs)	COMPLIANCE PLAN
<p>National Emission Standards for Hazardous Air Pollutants - (NESHAP) - 40 CFR Part 61, Subpart H - Emissions of Radionuclides Other Than Radon From DOE Facilities</p>	<p>40 CFR 61.92: Radiological emissions (except radon-222 and radon-220) to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in an effective dose equivalent of 10 mrem in any one year.</p> <p>40 CFR 61.07 and 61.96(b): An application for approval does not have to be filed for radionuclide sources if the effective dose equivalent caused by all emissions from the new construction or modification is less than 0.1 mrem per year.</p> <p>40 CFR 61.93(b): Continuous emission monitoring is required for stacks and vents that have the potential, under normal operating condition, but without emission control devices, to release radionuclides in sufficient quantities to cause any member of the general public to receive an effective dose equivalent of 0.1 mrem/year or greater.</p>	<p>The dose from Plant 8 activities is currently included in the annual FEMP NESHAP Part H Report. Any dose from this proposed project will be included in the dose reported in the annual Plant 8 calculations. Emissions from the project will not result in exceedance of the annual standard.</p> <p>Radionuclide emissions from the project are not expected to cause any member of the general public to receive an effective dose equivalent of 0.1 mrem/year or greater.</p>

000027

Table 5.1 (cont.)

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARARS)	COMPLIANCE PLAN
<p>National Pollutant Discharge Elimination System (NPDES) Permit - OEPA NPDES Permit No. 11000004*ED (OAC 3745-33-05)</p>	<p>Waste water discharges must not cause a violation of effluent limitations or loading rates at NPDES permitted outfalls. Discharges must be conducted in accordance with applicable terms and conditions of the permit. These include compliance with the notification requirements promulgated in 40 CFR 122.42, and OEPA water quality standards established under OAC 3745-1.</p>	<p>Discharges associated with the project will comply with the current NPDES Permit.</p>
<p>Occupational Radiation Protection (10 CFR 835)</p>	<p>All FEMP activities are to be performed under an approved occupational radiation protection program (RPP) (in addition to other requirements).</p>	<p>All activities associated with the project will be performed in accordance with the DOE approved FEMP Regulatory Protection Plan. Project activities will be reviewed by Radiological Control to ensure occupational radiation exposures are ALARA and ensure application of appropriate personal protective equipment.</p>
<p>Safe Drinking Water Act (42 U.S.C. 300G; PL 93-523)</p>	<p>National Primary Drinking Water Regulations (40 CFR 141). National Revised Primary Drinking Water Regulations (40 CFR 141.60 through 141.63)</p>	<p>Compliance will be demonstrated by site-wide environmental monitoring, including air, soil, and groundwater. Reports summarizing the site-wide monitoring results will be submitted to EPA. Surface water discharges will be conducted in accordance with the site NPDES permit and are not expected to impact groundwater quality.</p>

000028

Table 5.1 (cont.)

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARARS)	COMPLIANCE PLAN
Radiation Exposure to the Public	Radiation Dose Limit (40 CFR 192.02(b)) (To be considered)-- Radiation Dose Limit (Drinking Water Pathway) (10 CFR 834)	The project will be designed and operated to minimize the releases of radionuclides. Compliance will be demonstrated by site-wide environmental monitoring, including air, soil, and groundwater. Reports summarizing the site-wide monitoring results will be submitted to the EPA.
Resource Conservation and Recovery Act (U.S.C. 6901 et. seq.)	Hazardous Waste Determinations (OAC 3745-52-11) (40 CFR 262.11)	Project wastes have been characterized to determine their EPA waste codes and appropriate LDR treatment standards. Wastes generated from this project will be characterized in accordance with site procedures and the FEMP Waste Analysis Plan.
	Interim Status: Treatment, Storage, and Disposal General Facility Standards (OAC 3745-65-13 through 16) (40 CFR 265.13 through 265.16)	The project will operate in accordance with RCRA regulations. Existing site security measures will be utilized. Inspections of container storage areas are conducted in accordance with the FEMP's RCRA Part B Permit Application. Personnel will be trained in accordance with FEMP requirements.
	Interim Status: Treatment, Storage, and Disposal Facility Preparedness and Prevention (OAC 3745-65-31 through 35, 3745-65-37) (40 CFR 265.31 through 265.35, 265.37)	Preparedness and prevention equipment, as specified in regulations, will be on-site, available, and in operating condition throughout the duration of the project. The existing FEMP site-wide internal communications/alarm systems will be used. Portable fire extinguishers and spill control equipment will be placed in accessible locations to assist in emergency response.

000029

Table 5.1 (cont.)

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARARS)	COMPLIANCE PLAN
Resource Conservation and Recovery Act (U.S.C. 6901 et. seq.)	Interim Status: Treatment, Storage and Disposal Facility Contingency Plan and Emergency Procedures (OAC 3745-65-51 through 56) (40 CFR 265.51 through 265.56)	The existing RCRA FEMP Contingency Plan and Emergency Procedures will be followed for any hazardous waste emergency associated with the project.
	Container Storage (OAC 3745-52-34, 3745-66-70 through 77) (40 CFR 262.34, 265.170 through 265.177)	Containers of hazardous waste are stored and managed in RCRA-permitted storage areas and are inspected in accordance with regulatory requirements. Containers will be handled in a manner to prevent rupture, leakage, or spillage, and will remain closed during storage.
	Residue of Hazardous Waste in Empty Containers (OAC 3745-51-07) (40 CFR 261.7)	Containers used for the project will be considered empty in accordance with the requirements of this rule.
	Land Disposal Restrictions (OAC 3745-59) (40 CFR 268)	Wastes will be treated to meet LDR requirements applicable to treatment in a CWA System. A "One-Time Notice" to the RCRA Operating Record will be made for each waste stream treated in the WWTS.
	Waste Water Treatment Unit Exclusion (OAC 3745-65-01)(c)(8) (40 CFR 265.1 (c) (10))	The equipment used for treatment is part of the FEMP's NPDES-permitted WWTS and is subject to this exclusion.
	Decontamination of Reusable Equipment (OEPA Closure Plan Review Guidance for RCRA Facilities)	Decontamination of Reusable Equipment is discussed in Section 4.1 of this Work Plan. Reusable equipment contacting waste will be triple-rinsed in accordance with OEPA Closure Plan Review Guidance for RCRA Facilities.

000030

Table 5.1 (cont.)

PERMIT THAT WOULD BE REQUIRED	PERMIT REQUIREMENTS (ARARS)	COMPLIANCE PLAN
Occupational Worker Protection & Training (29 CFR 1904 & 1910)	All facility personnel will be trained. Employers will develop and implement a written safety and health program for employees involved in hazardous waste operations.	This removal action will be conducted in accordance with the provisions of the Technical Specific Health and Safety Plan.
National Environmental Policy Act (NEPA) (10 CFR 1021)	Ensure that all federal agencies (including DOE) consider environmental impacts in the planning and decision-making phases of their projects.	On June 13, 1994, DOE issued a revised policy regarding compliance with the National Environmental Policy Act (NEPA). This revised policy called for a streamlined approach for addressing NEPA requirements, particularly with respect to documentation for CERCLA response actions. As a result, substantive NEPA values for CERCLA response actions are to be addressed directly in technical specific plans. This project constitutes the equivalent of a categorical exclusion, pursuant to 10 CFR 1021, Subpart D, Appendix B6.1. As such, the project meets the conditions for categorical exclusions stipulated in 10 CFR 1021, Subpart D, Appendix B(1-4).
DOE Orders	To be considered.	All project design activities shall be implemented according to the DOE-FN procedures.

Representatives from DOE-FN and FERMCO will conduct inspections during the performance of this response action to ensure that the actions are conducted consistently with the discussions in the PSP.

000031

6.0 HEALTH AND SAFETY

Personnel involved in this subproject will have training according to their responsibilities, and an appropriate level of training in the site documents as listed in Section 7.0 of the general work plan. All activities performed for this subproject will be consistent with the FERMCO Safety Requirements Performance Manual (RM-0021), and the FERMCO Radiological Control Requirements Manual (RM-0020).

The WWTS Project will primarily use the following procedures:

6.1 Site Standard Operating Procedure

6.1.1 "Controlling Aqueous Waste Water Discharges into the Waste Water Treatment System", (EP-0005)

6.1.2 "Movement of Hazardous Waste", (SOP 20-C-017)

6.1.3 "Storage of Hazardous Waste", (SOP 20-C-630)

6.1.4 "Emptying Liquid Hazardous Waste Storage Containers" (SOP 20-C-613)

6.2 Emergency Response Team Fire Spill/Preplan

The FEMP Emergency Response Team Fire/Spill Preplan is included as Attachment H. At this time, the waste water treatment subproject is not planning to bulk or aggregate liquids prior to treatment. The liquid mixed wastes are primarily contained in 55 gallon drums and will be added to the WWTS from the existing containers to avoid excessive handling. The WWTS project personnel will be trained according to:

6.2.1 "Hazardous Waste Spill Clean-Up", (SOP 20-C-606)

6.3 Plant 8 Operations

Treatment will be completed in Plant 8 using the following procedures:

6.3.1 "Plant 8 Process Control Testing Procedure", (SOP 08-C-618)

6.3.2 "Plant 8 Waste Water Receiving System", (SOP 08-C-611)

6.3.3 "Plant 8 Perched Groundwater Volatile Organic Compound (VOC) Treatment System", (SOP 08-C-200)

6.3.4 "Large EIMCO Filter Operation - Plant 8 Waste Water Processing System", (SOP 8-C-602)

6.4 Future Generated Waste

In the future, some secondary waste may be bulked or aggregated. The evaluation to aggregate will be made as more information is available on secondary waste generation rates and the specific mixed waste project needs. These secondary wastes will be generated during response actions, closure activities, and other mixed waste treatment projects. In the event liquid mixed wastes destined for treatment in the WWTS are aggregated prior to treatment, the Health and Safety Plans, included as Attachment D, will be followed.

000032

7.0 PROJECT MANAGEMENT AND REPORTING

The following management steps will be implemented to ensure treatment of the liquid mixed waste in the FEMP WWTS does not interfere with the normal operations of the WWTS and treatment is appropriately documented.

7.1 Waste Programs Management (WPM) - Hazardous and Mixed Waste Management (HMWM)

The HMWM Project Manager will identify a candidate list of liquid mixed wastes from the characterized inventory for possible treatment in the FEMP WWTS and initiate a Waste Water Discharge Request. The HMWM Project Manager will use Figure 7.0 to ensure that the WWTS is capable of treating the hazardous characteristic in the candidate waste stream. HMWM personnel will document the request to treat the waste stream in the WWTS by completing Section I of the Waste Water Discharge Request Form (see Figure 7.1) and forward the request to Environmental Compliance for further evaluation.

7.2 Environmental Compliance (EC)

Environmental Compliance evaluates the discharge request and documents the evaluation in Section II of the Waste Water Discharge Request Form (see Figure 7.1). Environmental Compliance ensures discharges are in compliance with the NPDES permit and consistent with the NPDES Application on which the NPDES Permit is based. Environmental Compliance will determine if the candidate waste streams can be treated in the FEMP WWTS.

Dilution of project waste waters, as proposed under the project, are consistent with OAC 3745-59-20, which stipulates that dilution of characteristically hazardous wastes within a NPDES permitted waste water treatment system, is not considered impermissible for purposes of compliance with concentration based RCRA LDRs. While the FEMP plans to rely on dilution rather than sampling to demonstrate compliance with applicable LDR treatment standards, effective treatment of project wastes for organics and metals will be provided at the Plant 8 VOC and Sump Systems. Therefore, the actual concentrations of hazardous constituents present in the Plant 8 discharge will be reduced significantly from those that are readily attainable based solely on dilution within the Waste Water Treatment System.

Prior to discharging any waste water under the project, characterization data on a particular waste stream will be compiled and submitted to FERMCO's Environmental Compliance Division (EC) by staff from FERMCO's Waste Programs Management Division (WPM), along with the Waste Water Discharge Request Form shown in Figure 7.1 (see Page S-39), of the ~~Technology Specific Work Plan for the FEMP Waste Water Treatment Project~~. This information will be reviewed by staff from EC in accordance with procedure EP-0005, "Controlling Aqueous Waste Water Discharges into the Waste Water Treatment System", prior to EC's authorization to discharge any waste water under the project.

The primary objective of the EC review is to ensure that the discharge complies with the ARARs identified for the project in the approved Technology Specific Work Plan for the FEMP

000033

Waste Water Treatment Project and the existing FEMP NPDES permit (OEPA No. 11000004*ED). This review also serves as the means by which EC will provide special instructions for waste water plant personnel to follow when making discharges to the FEMP Waste Water Treatment System.

Each waste stream, identified by WPM for discharge under the project, will undergo evaluation in accordance with EP-0005 to ensure that LDR treatment standards can be achieved based solely on dilution available within the Plant 8 Sump System and to ensure compliance with the terms and conditions of the site's NPDES permit prior to discharging the waste from Plant 8. Multiple drummed waste streams may be split into several discrete batches to ensure that adequate dilution within the Plant 8 Sump System is available to demonstrate LDR compliance. Any wastestreams for which LDR compliance cannot be demonstrated on the basis of dilution, will be processed and held within Plant 8 until sampling and analysis results indicate LDR treatment standards were achieved through treatment or that they can be demonstrated by calculation on the basis of normal operational dilution within Plant 8.

The "worst case calculations", in the attached spread sheet, show that concentration based LDR treatment standards can be attained based solely on dilution within the FEMP Waste Water Treatment System prior to discharging project waste waters to the land-based Bio-Surge Lagoon. These calculations were prepared on the hypothetical basis that no treatment, other than dilution, would be provided within our existing waste water treatment facility. Final Plant 8 effluent concentrations (prior to discharge to the Bio-Surge Lagoon), would be determined using the maximum concentrations for each of the constituents for which a particular waste stream was deemed hazardous. Final effluent concentrations from the Plant 8 Sump System were based on the fact that 6000 gallons of water can be made available for dilution within the Plant 8 Sump System as part of its normal operation.

Upon completion of its review, EC staff will sign each Waste Water Discharge Request Form and note any special instructions concerning the discharge of the waste stream. The signed form will then be forwarded through WPM to the waste water treatment plant operator's response for conducting the discharge. Upon completion of the discharge, the operators will be responsible for signing the completed Waste Water Discharge Request form and returning the original copy to EC, where it will be maintained on file as part of the RCRA Operating Record.

Environmental Compliance will forward the Waste Water Discharge Request to the Aquifer Restoration Project (ARP) Operations Manager for review and signatures if the discharge is approved.

7.3 Aquifer Restoration Project (ARP)

The ARP Operations Manager will review the Waste Water Discharge Request Form and sign in Section II if the discharge is approved. The ARP Operations Manager will forward the Waste Water Discharge Request to the HMWM Project Manager for further action.

000034

TABLE 7.0
FEMP WASTE WATER TREATMENT PROJECT
ESTIMATED FINAL EFFLUENT CONCENTRATIONS--PLANT 8 SUMP
"WORST CASE CALCULATIONS"

- NOTE:**
1. Regulatory levels promulgated in 40 CFR 268.40.
 2. 6000 gallons of water can be made available at the Plant 8 Sump System for dilution as part of its normal operation.
 3. Waste streams requiring more than 6000 gallons of dilution water can be split into multiple batches to ensure that 6000 gallons of water is sufficient to dilute the waste stream below the regulatory level.
 4. Minimal quantity of dilution water required to bring discharge into compliance with LDR standards.

MEF #358	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 4000 gal. dil. ⁴
110 gallons	D002 D019	DEACT 0.057	--- 1.8	--- 749.430	--- 0.033	0 0.0495
NOTE: 4,000 GALLONS MIN. DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #1178	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 500 gal. dil. ⁴
300 gallons	D007	5.0	5.15	6432.608	0.283	3.399
NOTE: 500 GALLONS MIN. DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #1229	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 1500000 gal. dil. ⁴
1815 gallons	D008 D009 D039	5.0 0.2 0.056	11.1 0.226 38	76254.500 1552.569 261051.500	3.358 0.068 11.495	0.013431 0.000273 0.04598
NOTE: 1,500,000 GALLONS MIN. DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #1462	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	
275 gallons	D002	DEACT	---	---	---	
NOTE: pH ADJUSTMENT ONLY ³						

Table 7.0
 "WORST CASE CALCULATIONS"--February 8, 1996 (cont.)

MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	
220 gallons	D001	DEACT	---	---	---	
NOTE: DEACT ONLY ³						
MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	
55 gallons	D002	DEACT	---	---	---	
NOTE: pH ADJUSTMENT ONLY ³						
MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 4500000 gal. dil. ⁴
440 gallons	D001	DEACT	---	---	---	0
	D002	DEACT	---	---	---	0
	D006	1.0	7.9	13156.660	0.579	0.000772
	D008	5.0	35	58289.000	2.567	0.003422
	D009	0.2	241	401361.400	17.673	0.023564
	D018	0.14	250	416350.000	18.333	0.024444
	D035	0.28	500	832700.000	36.667	0.048889
	D038	0.014	139.65	232573.100	10.241	0.013655
	D039	0.056	500	832700.000	36.667	0.048889
	D040	0.054	500	832700.000	36.667	0.048889
NOTE: 4,500,000 GALLONS MIN. DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	
2255 gallons	D002	DEACT	---	---	---	
NOTE: pH ADJUSTMENT ONLY ³						

000036

Table 7.0
 "WORST CASE CALCULATIONS"--February 8, 1996 (cont.)

MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 250000 gal. dil. ⁴
55 gallons	D002 D004 D038	DEACT 5.0 0.014	--- 25.9 52.1	--- 5391.733 10845.920	--- 0.237 0.478	0 0.005698 0.011462
NOTE: 250,000 GALLONS MIN. DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 40000 gal. dil. ⁴
55 gallons	D002 D008 D018	DEACT 5.0 0.14	--- 12 97.2	--- 2498.100 20234.610	--- 0.110 0.891	0 0.0165 0.13365
NOTE: 40,000 GALLONS MIN. DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 1000 gal. dil. ⁴
165 gallons	D002 D008	DEACT 5.0	--- 20	--- 12490.500	--- 0.550	0 3.3
NOTE: 1,000 GALLONS MIN DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 15000 gal. dil. ⁴
770 gallons	D039	0.056	0.9	2623.005	0.116	0.0462
NOTE: 15,000 GALLONS MIN. DILUTION REQUIRED TO BRING BELOW REGULATORY LEVEL. ³						
MEF #	EPA CODE	REGULATORY LEVEL (mg/l) ¹	MAXIMUM CONC. LISTED IN MEF (mg/l)	MASS LOADING PLANT 8 SUMP (mg)	EFFLUENT CONC. (mg/l) 6000 Gal. Dilution ²	CONC. (mg/l) 20000 gal. dil. ⁴
550 gallons	D039	0.056	1.35	2810.363	0.124	0.037125

000037

EXAMPLE CALCULATIONS
MEF 358

Basis

Total Volume of Waste to be Treated: 110 gallons
Hazardous Constituent Concentration: DO19 - 1.8 mg/l
Dilution Factor within Plant 8 Sump System: 6000 gallons

Loading at Plant 8 Sump

110 gallons x 1.8 mg/l x 3.785 liter/gallon = 749.43 mg loaded to Plant 8 Sump System

Plant 8 Sump Effluent Conc. Based on 6000 Gallons of Dilution Within Plant 8 Sump

(749.43 mg/6000 gallons) x (1 gallon/3.785 liters) = 0.033 mg/l

Determination

Since 0.033 mg/l is below the regulatory level of 0.057mg/l established in 40 CFR 268.40, the discharge is allowable on the basis that 6000 gallons of waste water is made available for dilution within the Plant 8 Sump System.¹

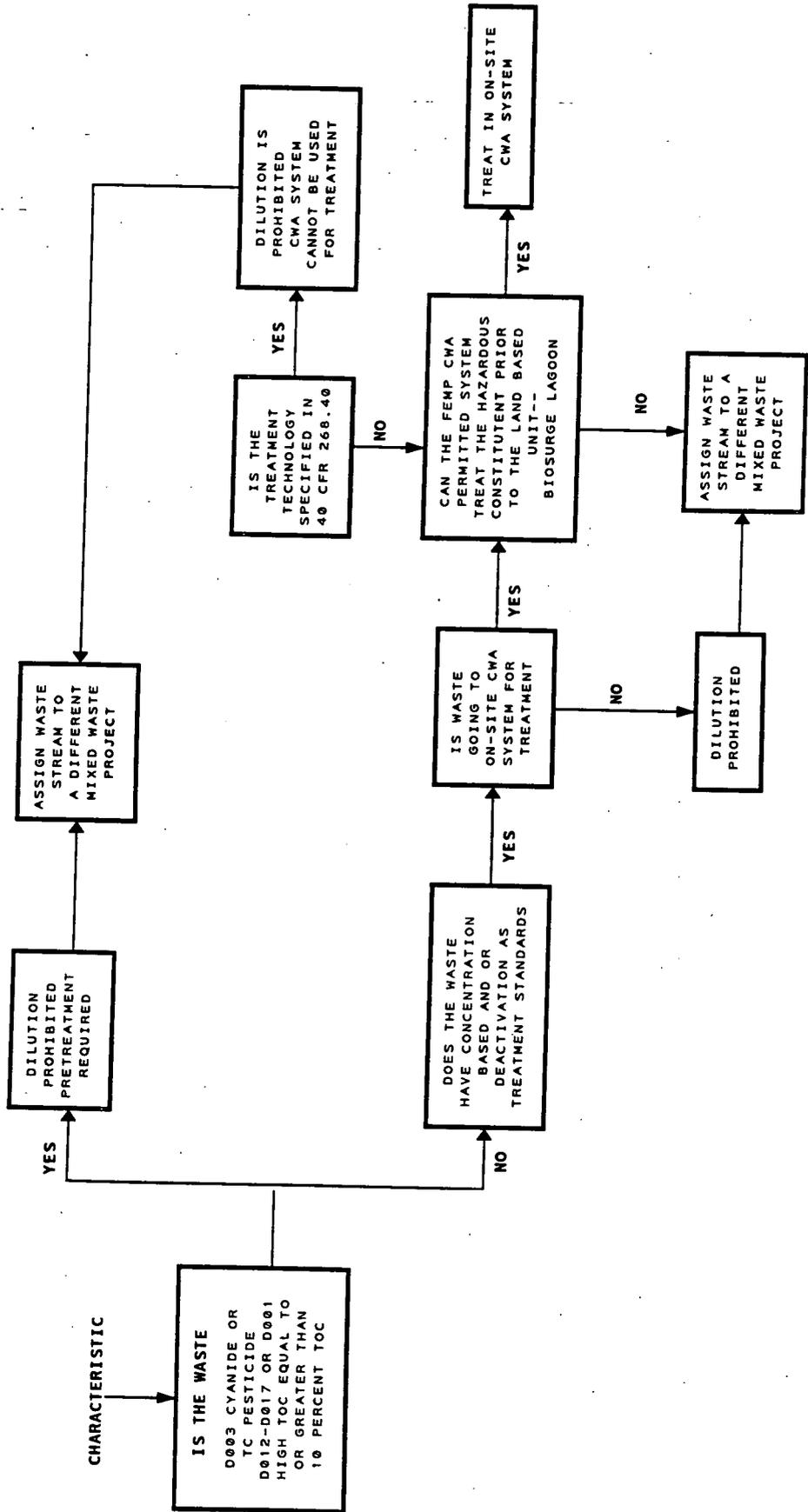
Notes:

- ¹ 6000 gallons of waste water can be made available for dilution within the Plant 8 Sump System as part of its normal operation.

000038

TREATMENT OF LIQUID MIXED LOW LEVEL WASTE STREAMS IN THE FEMP WWTS

Figure 7.0



THIS DECISION CHART WAS DEVELOPED FOR USE AT THE FEMP. THE FEMP WWTS IS CURRENTLY CONFIGURED SUCH THAT WASTE WATERS FLOW THROUGH A LAND-BASED UNIT, THE BIOSURGE LAGOON. THEREFORE, THE FEMP IS NOT PLANNING TREATMENT OF LISTED WASTE.

7.4 WPM - Hazardous and Mixed Waste Management

The HMWM Project Manager will evaluate waste streams that are determined unacceptable by Environmental Compliance for transfer to a more appropriate mixed waste treatment project.

Liquid Mixed Waste Streams which are approved for treatment in the FEMP WWTS will be referred to Waste Operations to implement treatment.

7.5 WPM - Waste Operations

Waste Operations will initiate and implement the internal steps necessary to safely transfer the waste to the appropriate entry point of the WWTS for treatment as designated on Section II of the Waste Water Discharge Request Form. FEMP personnel will open each container prior to discharging to the WWTS to identify if the waste contains a heavy oily layer, sludge or heavy sediment. If these conditions are observed, the contents of the container will not be added. The container will be returned to the RCRA Warehouse pending further evaluation.

7.6 Remedial Support Operations (RSO)

RSO will manage the addition of the liquid mixed waste to the WWTS. RSO will document the discharge using Section III of the Waste Water Discharge Request Form (see Figure 7.1) and send the completed form to the HMWM Project Manager.

7.7 Materials Control and Accountability (MC&A)

MC&A will record the consumption of the liquid mixed waste and generate the documentation to update the mixed waste inventory.

7.8 WPM - Hazardous and Mixed Waste Management

The HMWM Project Manager will make the "One Time Notice" (OAC 3745-59-07 (A)(5)) and (40 CFR 268.7 (a) (6) to the RCRA Operating Record and forward the completed Waste Water Discharge Request Form to the RCRA Operating Record for documentation.

7.9 Environmental Compliance

Environmental Compliance will maintain completed Waste Water Discharge Request Forms in the RCRA Operating Record.

WASTE WATER DISCHARGE REQUEST FORM

SECTION I: WASTE WATER INFORMATION

Waste Water Source Description: _____

Waste Stream Identification (MEF #, Lot #, Well #, etc.): _____

Most Recent Analytical Data Attached: YES NO

Total volume and/or flow rate of proposed discharge: _____

Requested Discharge Date: _____

Requestor: _____

Telephone Number: _____

Date: _____

SECTION II: ACCEPTABILITY EVALUATION

Discharge Allowed? YES NO

If yes, describe basis of decision and required point of entry into WWTS: _____

If no, describe basis for denial: _____

Evaluated by: _____

Date: _____

Approved by: _____

Date: _____

SECTION III: DISCHARGE VERIFICATION

In order for any waste water to be discharged, Section II must be checked "Y" and the point of entry into the WWTS must be defined. If there are any questions or concerns about the proposed discharge, contact EC at 648-5294 or 648-5287.

Date of Discharge: _____

Volume of Discharge: _____

Facility Owner: _____

The above signature of the facility owner certifies the discharge was accomplished as directed by EC in Section II.

8.0 QUALITY ASSURANCE

Quality Assurance for this project will be implemented to ensure the requirements for quality assurance are consistent with the FERMCO Quality Assurance Program Description (RM-0012). This project uses on-site existing equipment and treatment will be implemented using established procedures and practices. Quality Assurance will be provided, consistent with the requirements, for activities specified in the Standard Operating Procedures and used to implement treatment.

Drummed Waste Material
Project-Specific Sampling and Analysis Plan

Number: 95-1163
Date: 11-22-95
Page 1 of 4

A. Identifying Information

- 1) Project Name: Waste Water Treatment Characterization
- 2) Plan No.: 95-1163
- 3) Material Description/Matrix Code(s): filter cake/S
- 4) Number of Drums in Sub-Waste Stream: unknown
- 5) Material Type: unknown
- 6) Source Code: unknown
- 7) Material Evaluation Form #: not determined
- 8) Sampling Location for Drums: Plant 6
- 9) Process Knowledge: filter cake from Plant 8.

DRAFT

B. Sampling Information

- 1) General: Samples taken will be contained in glass or polyethylene jars with teflon lined lids.
- 2) Preservation Method: See Analytical Requirements in Section C.
- 3) Holding Times: See Preservative and Holding Time Guidelines in Section G. Holding times and sample volume/container requirements for media-specific analyses not listed in the SCQ are provided by the FEMP laboratory facility.
- 4) Sample Technique: Pipe/Auger
- 5) Number of Drums to be Sampled and Analyzed: unknown. see page 2.
- 6) Composite Samples: No
- 7) Visual Inspection Performed (# of visuals)?: No
- 8) Field Contact: Camila Wehrfritz. ext. 5676
- 9) Send Results to: Christa M. Walls. ext. 5673. MS 65-3
- 10) Charge No./Project Manager: 8ADD4/Tim Arnold. ext. 5774
- 11) Required QA/QC Samples:

<u>Field QC</u>	<u>Yes</u>	<u>No</u>	<u>Notes</u>
Trip Blank	<u>X</u>	<u>---</u>	volatile organic samples
Field Blank	<u>---</u>	<u>X</u>	1 per 20 samples or 1 per sampling event
Equipment Rinsate	<u>---</u>	<u>*</u>	1 per 20 samples or 1 per sampling event
Duplicate	<u>X</u>	<u>---</u>	1 per 20 samples or 1 per sampling event
Container Blank	<u>---</u>	<u>X</u>	analytical data supplied by supplier
Preserv. Blank	<u>---</u>	<u>X</u>	assay data supplied by supplier

Laboratory QC

Laboratory QC sample type and frequency requirements are provided in Appendix G of the SCQ.

Drummed Waste Material
Project-Specific Sampling and Analysis Plan

Number: 95-1163
Date: 11-22-95
Page 2 of 4
Charge #: 8ADD4

Sampling Information

Start with Sample Number 95-1163-1 for the first drum sample, then number consecutively until sampling is completed. The drum that is to be sampled in duplicate will be indicated with an asterisk (*). The duplicate samples will be given different sample numbers.

<u>Sample Number</u>	<u>Sample Matrix</u>	<u>Inv. Number</u>	<u>Lot Number</u>	<u>Drum Number</u>
95-1163-1		DRUMS TO BE SAMPLED HAVE NOT BEEN GENERATED. UPON GENERATION, THIS SAMPLE PLAN WILL BE UPDATED WITH THE SPECIFIC DRUMS THAT WILL BE SAMPLED.		
95-1163				
95-1163				
95-1163				

DRAFT

Note: If the material in the drum does not match the material code, do not sample. Perform a visual inspection of the contents of the drum. The visual inspection form will be given to Waste Characterization.

If there is not enough material to meet the volume requirements, do not sample the drum. Perform a visual inspection of the contents of the drum.

Refer to page 1, Section B-7, for requested visuals. These will be performed regardless of the contents of the drum.

000044

Project-Specific Sampling and Analysis Plan

TAL Number: 95-1163

Date: 11-22-95

Page 3 of 4

C. Analytical Requirements

Analysis Requested ASL B	Solid Matrix Samples Container and Preservative/Units		Liquid Waste Samples Container and Preservative/Units		Quality Control Samples Container and Preservative/Units	
Total VOA Table 5 (off-site)	-----	---	(3) x 40 mL GTS	Cool 4°C/ mg/L	(3) x 40 mL GTS	Cool 4°C & HCl to pH < 2/ mg/L
TCLP VOA Table 4 (off-site)	200 g GTL	Cool 4°C/ mg/L	---	---	---	---
Total SVOA Table 8 (off-site)	-----	---	(3) x 1 L AGTL	Cool 4°C/ mg/L	(3) x 1 L AGTL	Cool 4°C/ mg/L
TCLP SVOA Table 7 (off-site)	200 g AGTL	Cool 4°C/ mg/L	---	---	---	---
Total Metal Table 3 (off-site)	-----	---	(1) x 1 L GTI	Cool 4°C/ mg/L	(1) x 1 L jar, P	Cool 4°C & HNO ₃ to pH < 2/ mg/L
TCLP Metal Table 2 (off-site)	250 g G or P	Cool 4°C/ mg/L	-----	---	-----	---
Total U (on-site)	350 g G or P	None/ ppm	(1) x 120 mL G or P	None/ ppm	(1) x 250 mL G or P	HNO ₃ to pH < 2/ mg/L
pH (on-site)		---		None/ pH units		---
Quantitative PFLT (on-site)\$		None/ present/ absent		---		---
Percent Moisture (on-site)		None/ Wt%		---		---
U-235 (on-site)	250 g G or P	None/ Wt%	(1) x 250 mL G or P	None/ Wt%	(1) x 250 mL G or P	HNO ₃ to pH < 2/ mg/L
Alpha-Beta (on-site)		None/ pCi/g		None/ pCi/L		---
Description of material (Color, appearance, consistency, etc.)						

DRAFT

If there is not enough material to meet volume requirements do not sample drum. perform visual inspection on the drum.

\$ - PERFORM pH, CORROSIVITY, AND FLASHPOINT IF THE PFLT FAILS.

ATTACH A COPY OF THIS PAGE TO THE CHAIN-OF-CUSTODY.

Drummed Waste Material
Project-Specific Sampling and Analysis Plan

Number: 95-1163
Date: 11-22-95
Page 4 of 4

D. Sub-Waste Stream Description

The sub-waste stream consists of unknown drums in unknown lots. The material type of "unknown" and the source code of "unknown" indicate that this material is filter cake from Plant 8. The unknowns will be determined when the containers are generated.

E. Safety Concerns

See SOP 20C-806, Sections 7.0 to 7.16 for Health and Safety requirements. Due to their unknown nature, liquid waste samples will not be acidified.

F. Representative Sampling Procedure

The drums to be sampled are listed on page 2 of this form. If visual inspection indicates that the material has free liquid or is completely dry, then a P.F.L.T and Percent Moisture is not necessary. Record pertinent information in the Field Log Book for each drum sampled as specified in SOP 20C-806, Sections 7.2, 8.1.12 and 8.1.13.

G. Preservative and Holding Time Guidelines

See Tables 6.1 and 6.2 of the "Prototype Sampling and Analysis Plan for Containerized Waste at the FEMP" and/or Table 6-1 "Sample Container and Preservation Requirements," of the Sitewide CERCLA Quality Assurance Project Plan (SCQ). Sample container, preservative, and holding time requirements for analytical parameters not provided in these tables have been obtained from federal or state of generation policies/directives, or from the FEMP or FEMP-contracted laboratory facility; and incorporated into this PSAP as permitted in Section 3.3.2 of the SCQ.

H. Variances

Drums specified on page 2 of this PSAP, may be replaced due to the following: matrix can't be sampled, matrix does not match Material Type, or there is inadequate volume to meet the specified volume requirements. A formal variance is not required, logbook entries will record the specific variance.

This form must be dated and signed by an authorized individual.

If this Sub-Waste Stream is sampled and analyzed according to the information on this form, the results generated will be in agreement with the sampling and analysis requirements of PL-3048 (Rev. 2), NVO-325 (Rev. 1), Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements; and the Fernald Environmental Management Project (FEMP) Sitewide CERCLA Quality Assurance Project Plan (SCQ).

Authorized Signature/Date

Approved Date

DRAFT

000046

Fernald Environmental Management Project

Data Quality Objectives

Title: Plant 8 Filtration Operations

Number: TS-019

Revision: 1

Effective Date: 5/15/95 UNCONTROLLED COPY

Contact Name: Tim Arnold

Approval: *Richard L. Jike* Date: *5/15/95*
DQO Coordinator

<i>Rev #</i>	0	1			
<i>Date</i>	1/26/95	5/15/95			

Data Quality Objectives
Plant 8 Filtration Operations

1. State the problem or the situation to be resolved

In order to comply with NPDES permitting, the Plant 8 Treatment system receives slurry materials from various FEMP projects and processes. The Plant 8 Treatment System then processes the slurry materials through a Wastewater Treatment System to remove heavy metals. A second treatment system is also used at Plant 8 prior to introduction to the Plant 8 Treatment System to treat those materials with suspected Volatile Organic Compound (VOC) contamination. This determination is based on generator analysis or process knowledge. Attachment 1 includes a flow diagram of the Plant 8 Treatment System.

Sampling/field screening must take place to accomplish three important tasks:

- ensure that the materials can be received by Plant 8;
- demonstrate that the process is operating correctly; and
- ensure that final discharge limits are met.

2. Identify the decisions to be made that affect the situation

There are four distinct sampling points that are essential to assure the proper operation of the Plant 8 Treatment System. Each of these sampling points reflects a decision that indicates whether each of the discrete units of the Plant 8 Treatment System are operating correctly and that the overall process is functioning as required. The four sampling points are as follows:

Plant Receipt - All treatment materials arriving at Plant 8 must be analyzed for pH to ensure that the slurry materials are not extremely acidic or basic. The Plant 8 Treatment System cannot tolerate extremes in pH, so materials received for treatment must be well within the specified treatment system tolerance of ≥ 2 or < 12.5 .

VOC Cartridge Confirmation - Samples will be taken behind the first of the VOC cartridges to verify that they are working correctly.

pH Neutralization Verification - pH samples must be taken after the Neutralization phase to ensure that the pH of the neutralized batch does not exceed the filtration criteria set up in the Filter Standard Operating Procedure. Since the Wastewater Treatment System consists of both a Neutralization phase and a Filtration phase, it is imperative that samples be taken to confirm through field screening analysis that the Neutralization phase has been effective prior to Filtration.

Plant 8 Discharge Verification - In order to assure that discharge limits are met, additional pH analyses must occur to verify that the concentrations of analytes of concern exhibited in Section 5 are within allowable limits prior to discharge into the general sump.

3. Identify inputs that affect the decision

Plant Receipt - At receipt, any material received by Plant 8 for treatment will be analyzed for pH per SOP 08-C-613. One sample per receiving batch will be taken.

VOC Cartridge Confirmation - On a weekly basis, one sample will be taken behind the first of the VOC cartridges, which are used in series, and analyzed for VOC's. The sample will be taken during the first two hours of operation every week.

pH Neutralization Verification - One pH sample will be analyzed for each neutralization batch.

Plant 8 Discharge Verification - When 80% of the discharge volume has been processed, one sample will be taken and analyzed for pH (SOP 08-C-613 and SW-846 Method 9040A) and Total U (per SOP 08-C-613) at a minimum, or sampled per project requirements. Additional analytes may need to be added based upon specific need and/or constituents in project specific treatment batches. Additional analytes of interest and methods of analyses will be identified in Project Specific Plans.

4. Define the boundary of the situation

Spatial Boundaries: The spatial boundaries encompassing this DQO is the Plant 8 complex. The material received for treatment at Plant 8 may result from decontamination, decommissioning or processing activities onsite. These may consist of wastewater materials from other treatment processes, such as the treatment and neutralization of HF, UNH, Nitric Acid or Thorium Nitrate. The different slurry materials may be segregated into separate processing batches. As a result, the size of a receiving batch will vary. Additionally, how the quantity of material is received will also define the batch size (i.e. 20,000 gallons of material are to be received in two 10,000 gallon groupings - two pH measurements will be required for plant receipt).

Temporal Boundaries: The screening of each of the batches will occur when each of the four steps identified in Section 3 are completed.

5. Develop a logic statement that applies to the decision

Plant Receipt - The following logic statements will be used to receive materials into Plant 8:

<u>IF...</u>	<u>THEN...</u>
pH \leq 2.0	Notify Assistant Emergency Duty Officer (AEDO).
pH $>$ 2.0 but $<$ 5.0	Notify Plant 8 Facility Owner or Plant 8 Process Engineer for permission to receive material into Plant 8.
pH \geq 5.0 and $<$ 12.5	Receive material into Plant 8.
pH \geq 12.5	Notify AEDO.

VOC Cartridge Confirmation - Since there is a zero discharge limit set on the VOC Treatment System, if there are two successive increases in the VOC analysis, then the carbon drum train will be altered or a carbon drum change-out will occur.

pH Neutralization Verification - The pH of neutralized slurry for the waste water treatment system.

000049

prior to filtration, must meet the specified pH levels per the appropriate filtration procedures: SOP 08-C-602, SOP 08-C-608, or SOP 08-C-609. If the pH fails to fall within the allowable limits, then the applicable steps within these procedures will be followed to further neutralize or treat the material.

Plant 8 Discharge Verification - The final processed materials must, at a minimum, meet the following discharge limits prior to discharge from the plant:

1. pH > 7.0
2. Uranium \leq 48.0 g/L

If any of these discharge limits are not met, then the batch material will be recycled back into the process system.

b. Establish validation constraints on the uncertainty of the decision

A false positive error for pH \leq 2.0 or pH \geq 12.5 would result in the material not being received in Plant 8 and the AEDO being notified when they do not need to be notified. Further analytical results may be required to verify the initial measurement causing a significant increase in project cost. A false negative error for pH \leq 2.0 or pH \geq 12.5 would result in the material being received in Plant 8 when it should not be received. If this error is discovered later in the process, it would result in additional neutralizing agents being used and unnecessary degradation of equipment. Error such as this would only occur when both the screening instruments used by the generator and at Plant 8 are both calibrated incorrectly. This type of error can be prevented simply by following the approved procedures for calibration of the screening instruments.

A series of two false positive errors discovered in the VOC Cartridge Confirmation phase would result in the changing of flow into the carbon drums or the replacement of the carbon drums prior to full utilization. Two false negative errors would result in the processing of material through overloaded carbon drums. This would result in a release of VOC contaminated water to the General Sump and eventually, to the Advanced Waste Water Treatment (AWWT) Plant.

A false positive error for pH less than or equal to the specified amount per the pH Neutralization Verification procedure for the neutralized slurry would cause material to be filtered before the proper pH is reached, causing uranium to pass through the filters. A false negative error for pH greater than or equal to the specified amount per the filtration procedure for the neutralized slurry would result in additional neutralizing agents being used. If the required pH is not reached, the discharge limits required may not be achieved in the Discharge Verification step.

A false positive error for Plant 8 discharge limits would indicate that the filtrate must be recycled through Plant 8. This would mean additional processing time, increasing project cost. A false negative means that the filtrate would be discharged to the general sump erroneously. This also would result in a release of acidic/basic or uranium-contaminated water to the General Sump and eventually to the AWWT.

7. Optimize a design for obtaining quality data

The pH analysis performed on the received material are verifications of the supplied pH analysis results from the generator. One sample is tested to serve as a confirmation of the previous measurement and provides evidence that no additional harmful material has been added to the waste stream prior to treatment. This verification of pH is completed in Plant 8 at ASL level A. Calibration of the pH screening instruments will follow approved procedures.

The pH measurement taken for the pH Neutralization Verification ensures that the resulting filtrate will achieve the discharge limits on a "first pass" basis. This pH measurement is also completed in Plant 8 at ASL A.

The VOC process check samples are tested at ASL B to ensure accuracy.

The Plant 8 Discharge Verification sample is analyzed in the plant at ASL A for pH and Total Uranium concentration.

000051

DQO Summary Form

Revision: 1
Effective Date: 5/15/95

Page 1 of 3

1A. Task/Description:

CRU #: N/A

Process screening for Plant 8 operations.

1B. Project Phase: (Put an X in the appropriate selection.)

RI FS RD RA R_A OTHER Specify: Plant 8 process control sampling.

1.C. DQO No.: TS-019 Rev. 1 DQO Reference No.: _____

2. Media Characterization: (Put an X in the appropriate selection.)

Air Biological Groundwater Sediment Soil

Waste Wastewater Surface water Other (specify) Treatment slurry, decon water, etc.

3. Data Use with Analytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable Data Use.)

Site Characterization

A B C D E

Risk Assessment

A B C D E

Evaluation of Alternatives

A B C D E

Engineering Design

A B C D E

Monitoring during remediation activities

A B C D E

Other (Explain) Plant 8 process control

A B C D E

4A. Drivers: RA#1 - Removal of Groundwater Under Existing FEMP Buildings; RA#20 - Neutralization of UNH Inventories; HWMU 38 - HF Tank Car; NPDES permits.

4B. Objective: This sampling ensures that water and slurry materials received into the Plant 8 systems is suitable for treatment by Plant 8. It also ensures that the processes performed in Plant 8 are operating properly and that the discharge limits for Plant 8 are not being violated.

5. Site Information (Description): Plant 8 is located north of the Lab building in the process area, south of Plant 2/3. Both the VOC Treatment System and the Waste Water Treatment System are located at Plant 8. The VOC system discharges into the Waste water treatment system and the Waste water treatment system discharges to the AWWT.

DQO Summary Form

Revision: 1
Effective Date: 5/15/95

DQO Number: TS-019 Rev. 1

6.A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference:
(Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

1. pH	<input checked="" type="checkbox"/>	2. Uranium	<input checked="" type="checkbox"/>	3. BTX	<input type="checkbox"/>
Temperature	<input type="checkbox"/>	Full Radiologic	<input type="checkbox"/>	TPH	<input type="checkbox"/>
Specific Conductance	<input type="checkbox"/>	Metals	<input type="checkbox"/>	Oil/Grease	<input type="checkbox"/>
Dissoived Oxygen	<input type="checkbox"/>	Cyanide	<input type="checkbox"/>		
		Silica	<input type="checkbox"/>		
4. Cations	<input type="checkbox"/>	5. VOA	<input checked="" type="checkbox"/>	6. Other (specify)	
Anions	<input type="checkbox"/>	ABN	<input type="checkbox"/>	<u>Analytes on a Project Specific Basis</u>	
TOC	<input type="checkbox"/>	Pesticides	<input type="checkbox"/>		
TCLP	<input type="checkbox"/>	PCB	<input type="checkbox"/>		
CEC	<input type="checkbox"/>				
COD	<input type="checkbox"/>				

*Fluorides will be analyzed to support HF Neutralization

6.B. Equipment Selection and SCQ Reference:

Equipment Selection	Refer to SCQ Section
ASL A <u>pH, dipole check</u>	SCQ Section: <u>N/A</u>
ASL B <u>GCMS for VOC</u>	SCQ Section: <u>Appendix G</u>
ASL C _____	SCQ Section: _____
ASL D _____	SCQ Section: _____
ASL E _____	SCQ Section: _____

7.A. Sampling Methods: (Put an X in the appropriate selection.)

Biased Composite Environmental Grab Grid
 Intrusive Non-Intrusive Phased Source
 Other (specify): _____

DQO Summary Form

Revision: 1
Effective Date: 5/15/95

DQO Number: TS-019 Rev. 1

7.B. Sample Work Plan Reference: (List the samples required. Reference the work plan or sampling plan guiding the sampling activity, as appropriate.)

Background samples: N/A

7.C. Sample Collection Reference: (Please provide a specific reference to the SCQ Section and subsection guiding sampling collection procedures.)

Sample Collection Reference: SCQ Appendix K

8. Quality Control Samples: (Place an "X" in the appropriate selection box.)

8.A. Field Quality Control Samples:

- | | | | |
|---------------------------|--------------------------|--------------------------------|--------------------------|
| Trip Blanks | <input type="checkbox"/> | Container Blanks | <input type="checkbox"/> |
| Field Blanks | <input type="checkbox"/> | Duplicate Samples | <input type="checkbox"/> |
| Equipment Rinsate Samples | <input type="checkbox"/> | Split Samples | <input type="checkbox"/> |
| Preservative Blanks | <input type="checkbox"/> | Performance Evaluation Samples | <input type="checkbox"/> |

Other (specify) N/A

8.B. Laboratory Quality Control Samples:

- | | | | |
|--------------|--------------------------|----------------------------|--------------------------|
| Method Blank | <input type="checkbox"/> | Matrix Duplicate/Replicate | <input type="checkbox"/> |
| Matrix Spike | <input type="checkbox"/> | Surrogate Spikes | <input type="checkbox"/> |

Other (specify) As required

9. Other: Please provide any other germane information that may impact the data quality or gathering of this particular objective, task or data use.

The results of these samples will determine whether material will be received, processed, and/or released by either of the two Plant 8 treatment systems: the Waste water treatment or the Volatile Organic Compound treatment system.

All samples and screening techniques are guided by procedures. The VOC procedure 08-C-200 specifies the sampling procedure for the VOC system. The waste water system samples are guided by the specific filter procedures 08-C-602, 08-C-608, or 08-C-609. Project specific sampling will follow project specific requirements and methods.