0051795

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JUN 28 1999

99-EAP-363

SEP 1999
RECEIVED
EDMC

Mr. M. N. Jaraysi
Waste Management Project Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Dear Mr. Jaraysi:

REVISION OF HANFORD FACILITY DANGEROUS WASTE PERMIT APPLICATION DOCUMENTATION FOR THE WASTE RECEIVING AND PROCESSING FACILITY (WRAP) (DOE/RL-91-16) AND THE CENTRAL WASTE COMPLEX (CWC) (DOE/RL-91-17)

Enclosed are revisions to the Hanford Facility Dangerous Waste Permit Application documentation for WRAP and CWC. The revisions are being submitted in accordance with Washington Administrative Code (WAC) 173-303-810(14)(h) for inclusion in Modification E of the Hanford Facility Resource Conservation and Recovery Act Permit (HF RCRA Permit). WAC 173-303-810(14)(h) requires, "Where the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the department, he must promptly submit this information."

The Hanford Facility Dangerous Waste Permit Application documentation for WRAP and CWC was originally transmitted to the State of Washington Department of Ecology (Ecology) on June 1, 1998, for inclusion in the HF RCRA Permit during Modification D. Ecology issued the WRAP and CWC Hanford Facility Dangerous Waste Permit Application documentation for public comment on August 3, 1998. On November 9, 1998, comments on Ecology's draft permit conditions were provided by RL. Ecology subsequently withheld these treatment, storage, and/or disposal (TSD) units from inclusion in the HF RCRA Permit. Ecology plans to include these TSD units in Modification E of the HF RCRA Permit scheduled for public comment in August of 1999.

Revision 1 of WRAP (DOE/RL-91-16) and CWC (DOE/RL-91-17) documentation transmitted June 1, 1998, have been superceded by Revision 1A chapters and appendices in this transmittal. The enclosure contains entire individual chapters or appendices from WRAP (DOE/RL-91-16) and CWC (DOE/RL-91-17) labeled as Revision 1A, except for CWC Appendix 2A and Appendix 4A. Information submitted for CWC Appendix 2A and Appendix 4A only contains the elements that have changed (e.g., engineering change notices) and not the entire appendix. Please replace your Revision 1 chapters and appendices with Revision 1A except for CWC Appendix 2A and Appendix 4A. CWC Appendix 2A and 4A information should not be replaced, but updated. The version of WRAP (DOE/RL-91-16) and CWC (DOE/RL-91-17)

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resulting from these changes should be issued for public comment during Modification E of the HF RCRA Permit.

Should you have any questions regarding WRAP and CWC packages, please contact Clifford E. Clark, of my staff, on (509) 376-9333, or Liz Bowers, of the Waste Programs Division, on (509) 373-9276.

Sincerely,

James E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division
DOE Richland Operations Office

William D. Adair, Director
Environmental Protection
Responsible Party for
Fluor Daniel Hanford, Inc.

Enclosure:
Revision to the Hanford Facility
Dangerous Waste Permit Application
Documentation for WRAP and CWC

cc w/encl:
Ecology Library
Environmental Portal, A3-01
J. R. Wilkinson, CTUIR
L. E. Ruud, Ecology
W. D. Adair, FDH
S. A. Thompson, FDH
J. D. Williams, FDH
P. Sobotta, NPT
J. F. Williams, Jr., WMH
J. A. Winterhalder, WMH
R. Jim, YIN

Enclosure

Revision of Hanford Facility Dangerous Waste Permit Application Documentation
for the Waste Receiving and Processing Facility (DOE/RL-91-16)
and the Central Waste Complex (DOE/RL-91-17)

CONTENTS

1.0 PART A [A] 1-1

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1.0 PART A [A]

The Part A, Form 3, covers Waste Receiving and Processing Facility (WRAP). The original Part A, Form 3, (Revision 0) was submitted May 19, 1988 and included the Radioactive Mixed Waste Storage Facility [now known as Central Waste Complex (CWC)] and WRAP. The revised Part A, Form 3, (Revision 1) was submitted October 22, 1990. Revision 1 was prepared to ensure agreement between annual waste quantities as identified in the Part A, Form 3 (Revision 0), and the Hanford Site Annual Dangerous Waste Report submitted in March 1990 to the Washington State Department of Ecology. Two waste codes (D012 and D016) and 26 new dangerous waste codes, based on the U.S. Environmental Protection Agency *Final Rule Change*, "Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions" (55 FR 61), were added. Revision 2 submitted October 7, 1994 added waste codes (F039, P057, U248, U249, U328, U353, and U359) and removed waste codes (U230, WC01, P052, and U013). Revision 0, submitted January 25, 1995, provided a separate Part A, Form 3, for WRAP. The CWC Part A, Form 3, Revision 3 is included in the Hanford Facility Dangerous Waste Permit Application, Central Waste Complex, Revision 1 (DOE/RL-91-17). Revision 1, submitted September 30, 1996, identified a new co-operator. In addition the Part A, Form 3, was revised to (1) remove the detailed descriptions of WRAP Module 2A and Module 2B and replace them with a general statement that future additions of WRAP could be designed; (2) review the maximum weight limit of containers received at WRAP; (3) delete dangerous waste number WC02 (carcinogenic) because this dangerous waste number has been removed from WAC 173-303; (4) add dangerous number WSC2 (state-only, corrosive dangerous waste); (5) list the dangerous waste numbers in a streamline format; and (6) identify treatment, storage, and/or disposal (TSD) unit boundary.

Revision 2, submitted June 1, 1998, was revised with the following changes:

- Clarified the TSD unit boundary. The original TSD boundary was established to include WRAP 2 and 2A modules projects, however these projects have since been canceled. The TSD boundary has been moved to encompass just the WRAP 2336W Building

- Removed three dangerous waste numbers, added 61 dangerous waste numbers that have been added to the federal and state regulations to increase the estimated annual quantities of waste

- Updated site drawings

- Removed discussion in Section III.C. for process codes S01, "storage-container", and all discussion in Section IV.E. because discussion of this process code is not required in accordance with the Part A, Form 3, instructions.

Revision 3, submitted for inclusion into Modification E of the Hanford Facility Resource Conservation and Recovery Act Permit was revised to add 14 dangerous waste numbers, revise 200 Area Site Map, and revise the elevation drawing.

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FORM **3**

DANGEROUS WASTE PERMIT APPLICATION

1. EPA/STATE I.D. NUMBER: W A 7 8 9 0 0 0 8 9 6 7

OFFICIAL USE ONLY

PLICATION APROVED	DATE RECEIVED *(mo., day, & yr.)*	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. if this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION (*place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY (*See instructions for definition of "existing" facility. Complete item below.)*

MO.	DAY	YR.
03	22	43

* FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*
* The date construction of the Hanford Facility commenced.

☐ 2. NEW FACILITY (*Complete item below.)*

MO.	DAY	YR.

FOR NEW FACILITIES, PROVIDE THE DATE, *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *9place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☒ 2. FACILITY HAS A FINAL PERMIT

III. PROCESSES – CODES AND CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the codes(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C).*

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.

2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	*ACRES OR HECTARES*
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECATRES	Q

EXAMPLE FOR COMPLETING SECTION III *(shown in line numberS X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.*

LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	B. 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	B. 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY
X-1	*S 0 2*	*600*	*G*		*5*				
X-2	*T 0 3*	*20*	*E*		*6*				
1	T04	12,900	V		*7*				
2	S01	73,500	L		*8*				
3					*9*				
4					*10*				

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

T04

The Waste Receiving and Processing Facility (WRAP) commenced construction in 1994 and began waste management operations in March of 1997.

WRAP has the capability to treat waste through deactivation, solidification or absorption of liquids, neutralization of corrosives, amalgamation, microencapsulation, macroencapsulation, volume reduction of waste (e.g., supercompaction), reaction of reactive waste, and repackaging of waste.

The total process design capacity for treatment is 12,900 liters (3,408 gallons) per day.

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER – Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2			T 0 3 D 8 0	included with above

CONTINUE ON PAGE 3

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	D001	20,000	K	T04	S01			Treatment - Other/Storage - Container
2	D002	15,000						
3	D003	500						
4	D004	50						
5	D005	400						
6	D006	117						
7	D007	400						
8	D008	400						
9	D009	800						
10	D010	10						
11	D011	20						
	D012	300						
13	through							
14	D043							
15	WT01	16,000						
16	WT02	22,000						
17	WP01	12,000						
18	WP02	3,000						
19	WP03	2,000						
20	WSC2	15,000						
21	W001	5,000						
22	F001	4,000						
23	F002	4,500						
24	F003	6,500						
26								

(enter "A," "B," "C," etc., behind the "3" to identify photo copied pages)

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	F004	570	K	T04	S01			Treatment - Other/Storage - Container (continued)
2	F005	6,000						
3	through							
4	F012							
5	F019							
6	F020	300						
7	through							
8	F023							
9	F026							
10	F027	500						
11	F028	300						
12	F039	500						
13	U001	5,000						
14	through							
15	U012							
16	U014							
17	through							
18	U039							
19	U041							
20	through							
21	U053							
22	U055							
23	through							
24	U064							
25	U066							
26	U067							

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	U068	5,000	K	T04	S01			Treatment - Other/Storage - Container (continued)
2	through							
3	U099							
4	U101							
5	U102							
6	U103							
7	U105							
8	through							
9	U138							
10	U140							
	through							
	U174							
13	U176							
14	through							
15	U194							
16	U196							
17	U197							
18	U200							
19	through							
20	U223							
21	U225							
22	through							
23	U228							
24	U230							
	through							
26	U240							

(enter "A," "B," "C," etc., behind the "3" to identify photo copied pages)

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	U242	5,000	K	T04	S01			Treatment - Other/Storage - Container (continued)
2	through							
3	U244							
4	U246							
5	through							
6	U249							
7	U271							
8	U277							
9	through							
10	U280							
11	U328							
12	U353							
13	U359							
14	U364							
15	through							
16	U367							
17	U372							
18	U373							
19	U375							
20	through							
21	U379							
22	U381							
23	through							
24	U387							
25								
26								

CONTINUE ON REVERSE

(enter "A," "B," "C," etc., behind the "3" to identify photo copied pages)

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NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	U389	5,000	K	T04	S01			Treatment - Other/Storage - Container (continued)
2	through							
3	U396							
4	U400							
5	through							
6	U404							
7	U407							
8	U409							
9	through							
10	U411							
	P001							
	through							
13	P018							
14	P020							
15	through							
16	P024							
17	P026							
18	through							
19	P031							
20	P033							
21	P034							
22	P036							
23	through							
24	P051							
	P054							
26								

(enter "A," "B," "C," etc., behind the "3" to identify photo copied pages)

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	P056	5,000	K	T04	S01			Treatment - Other/Storage - Container (continued)
2	through							
3	P060							
4	P062							
5	through							
6	P078							
7	P081							
8	P082							
9	P084							
10	P085							
11	P087							
12	through							
13	P089							
14	P092							
15	through							
16	P099							
17	P101							
18	through							
19	P116							
20	P118							
21	through							
22	P123							
23	P127							
24	P128							
25	P185							
26								

CONTINUE ON REVERSE

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NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	P188	5,000	K	T04	S01			Treatment - Other/Storage - Container (continued)
2	through							
3	P192							
4	P194							
5	P196							
6	through							
7	P199							
8	P201							
9	through							
10	P205							Included With Above
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
26								

(enter "A," "B," "C," etc., behind the "3" to identify photo copied pages)

Continued from the front.

IV. DESCRIPTION OF DANGEROUS WASTE (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

V. FACILITY DRAWING Refer to attached drawing(s).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS Refer to attached photograph(s).

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawings and photos.

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information," place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
Keith A. Klein, Manager U.S. Department of Energy Richland Operations Office		6/28/99

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individ immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED

CONTINUE ON PAGE 5

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

6/28/99

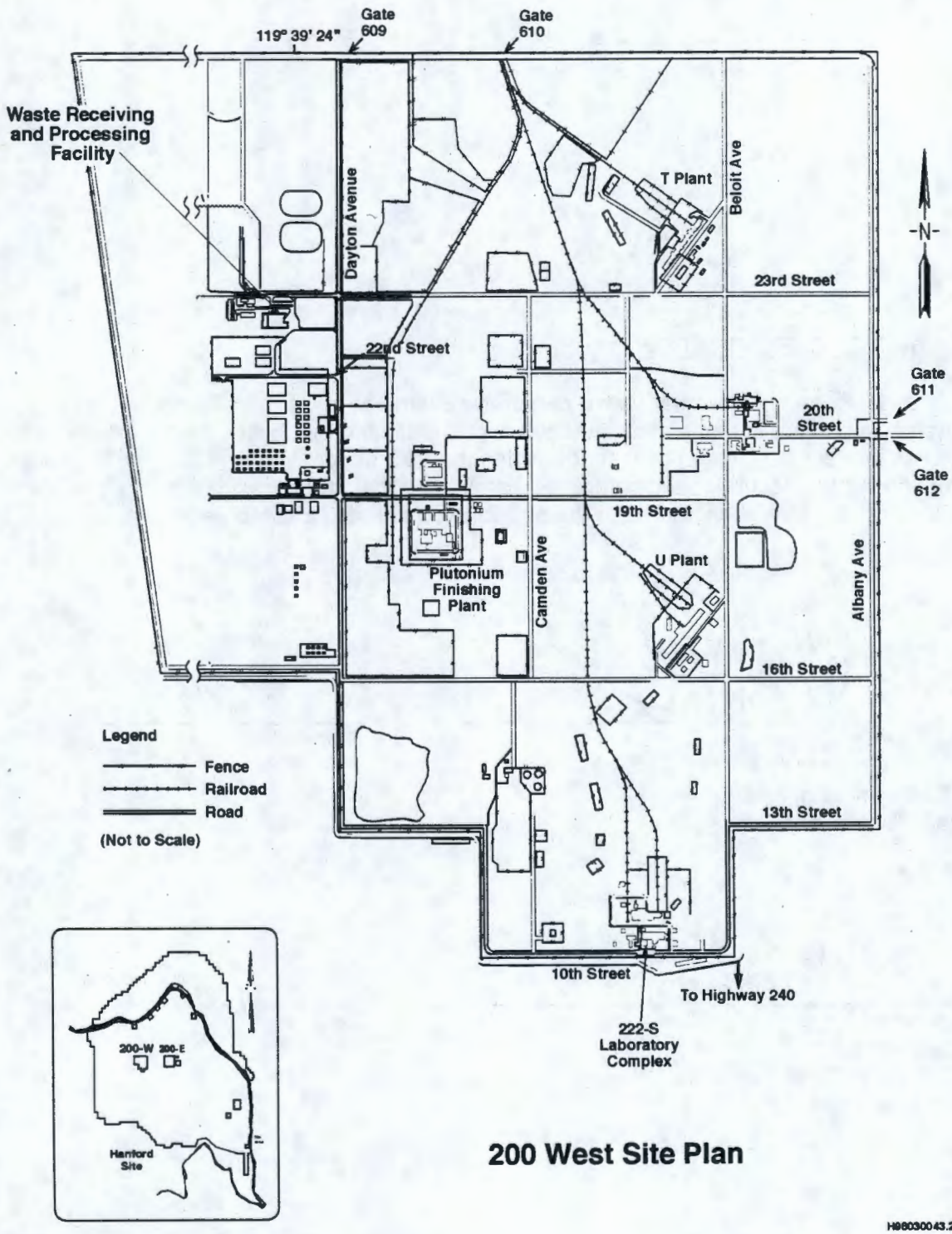
Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

Date

June 28, 1999

Co-operator
R. D. Hanson,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

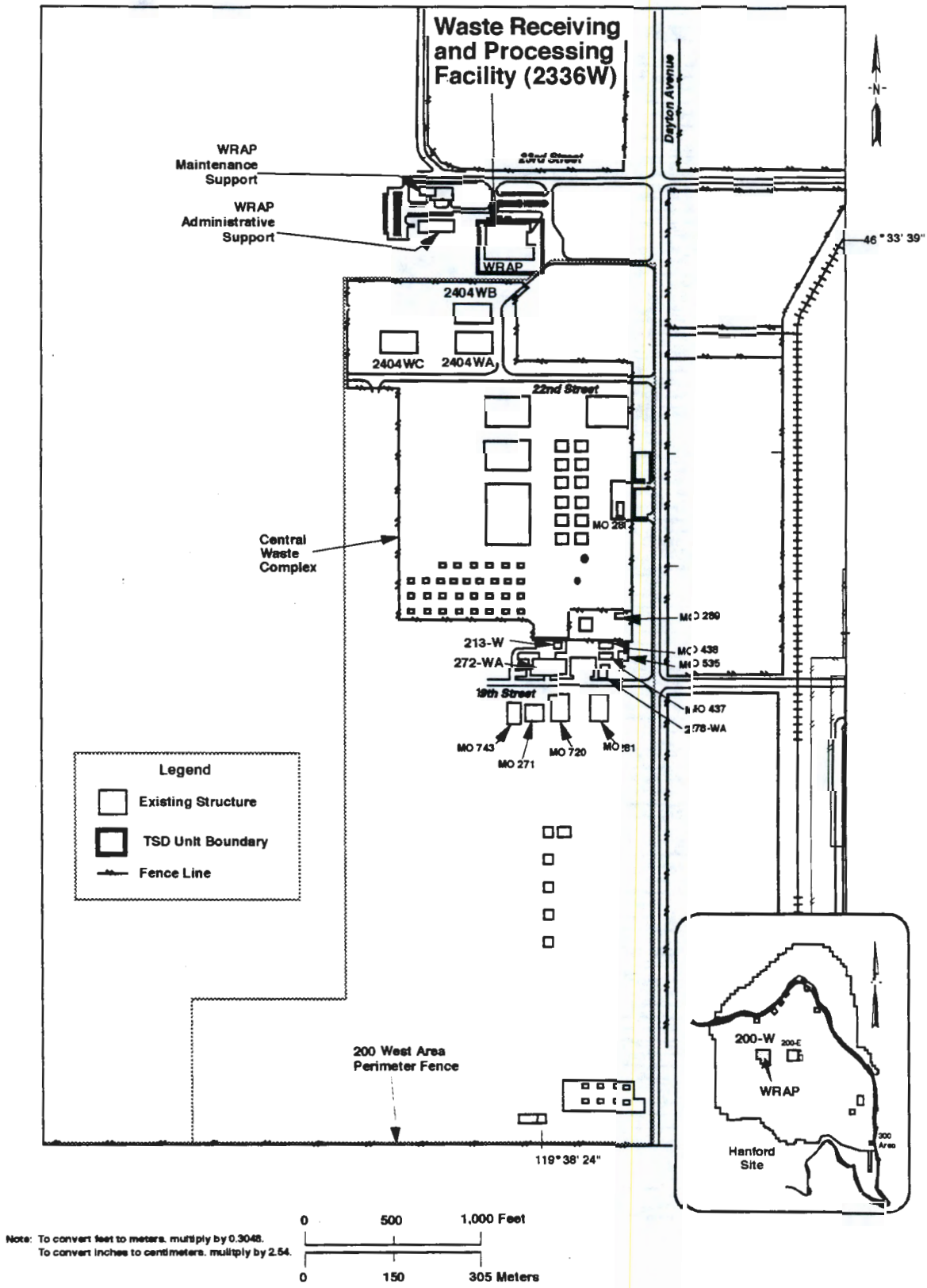
Date



200 West Site Plan

H96030043.2R3

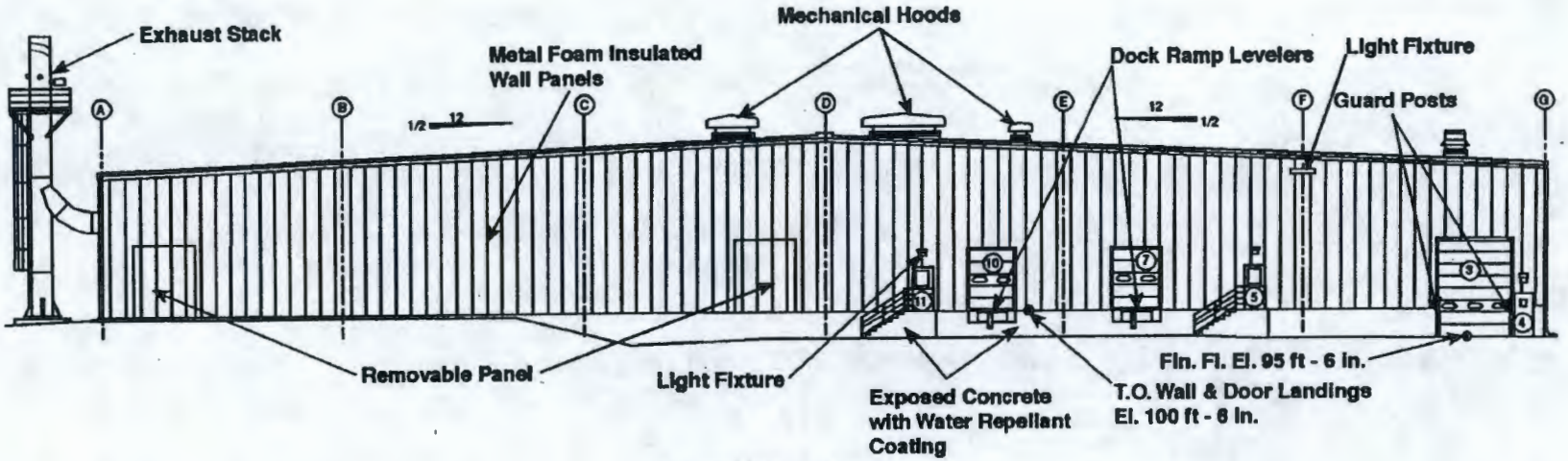
Waste Receiving and Processing Facility (WRAP)



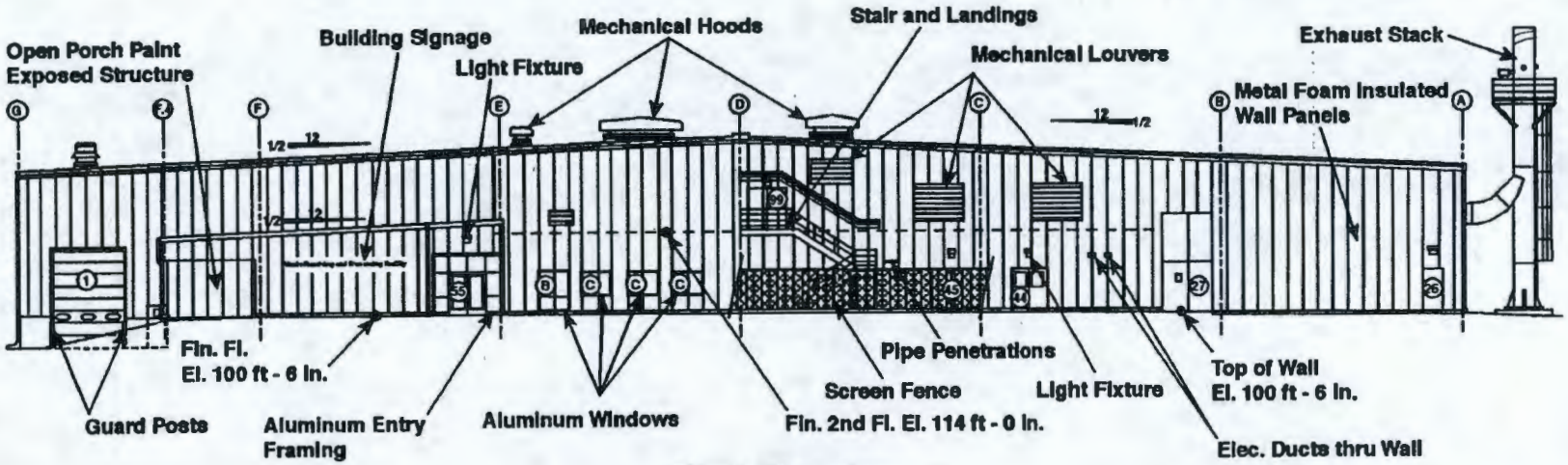
Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H98030043.3R2

Waste Receiving and Processing Facility
2336-W Building



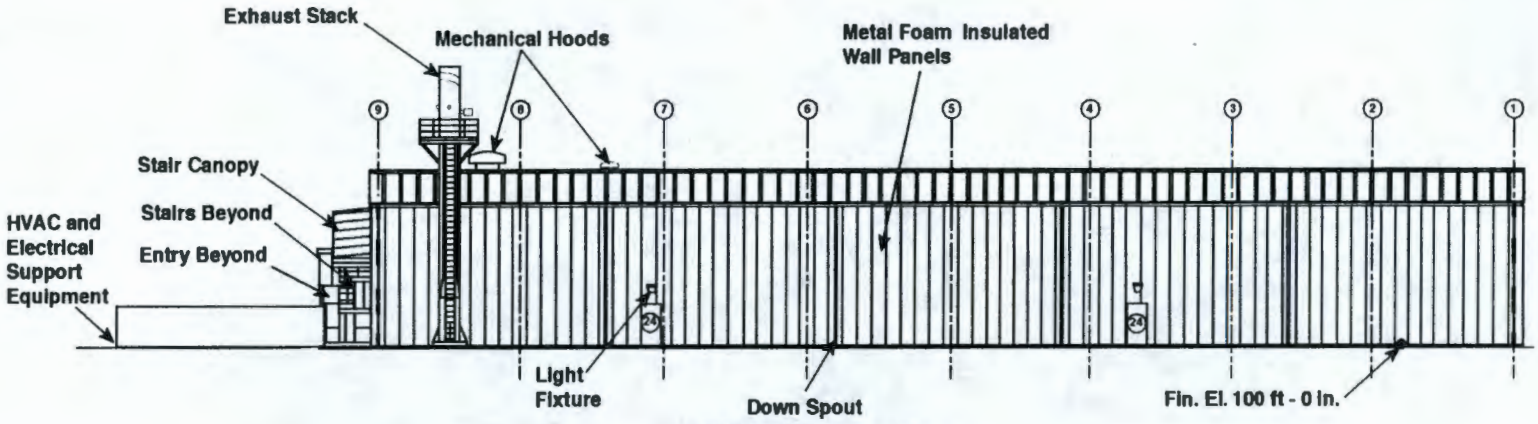
South Elevation



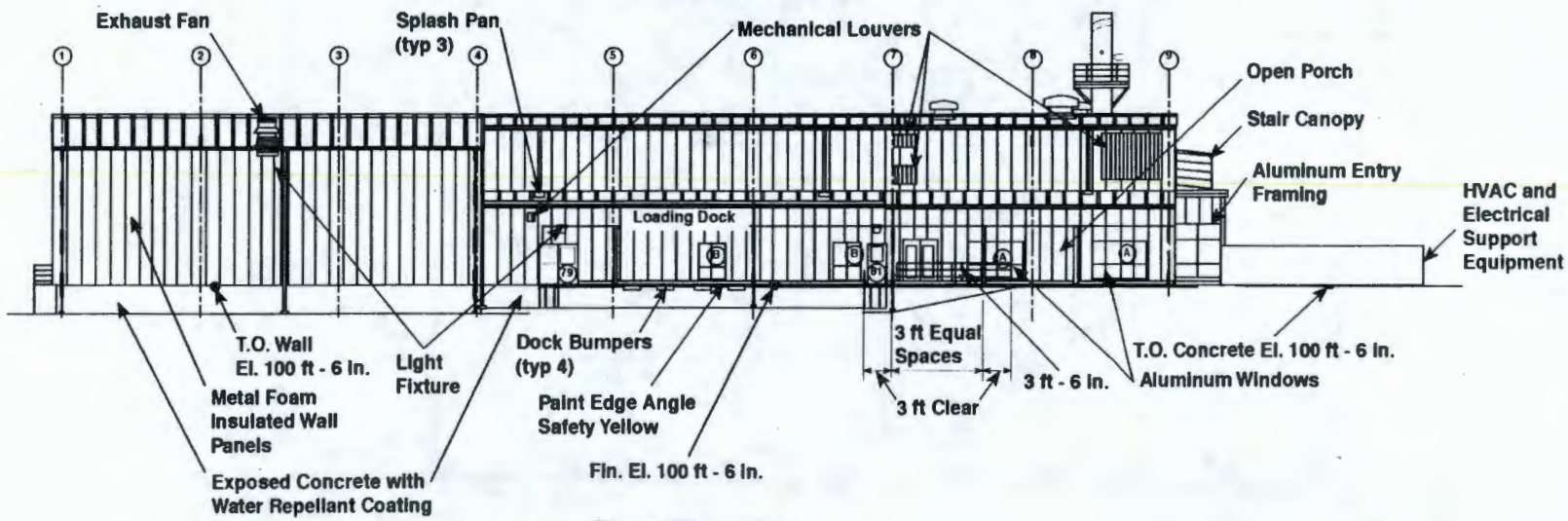
North Elevation

H98030043.4

Waste Receiving and Processing Facility
2336-W Building



West Elevation

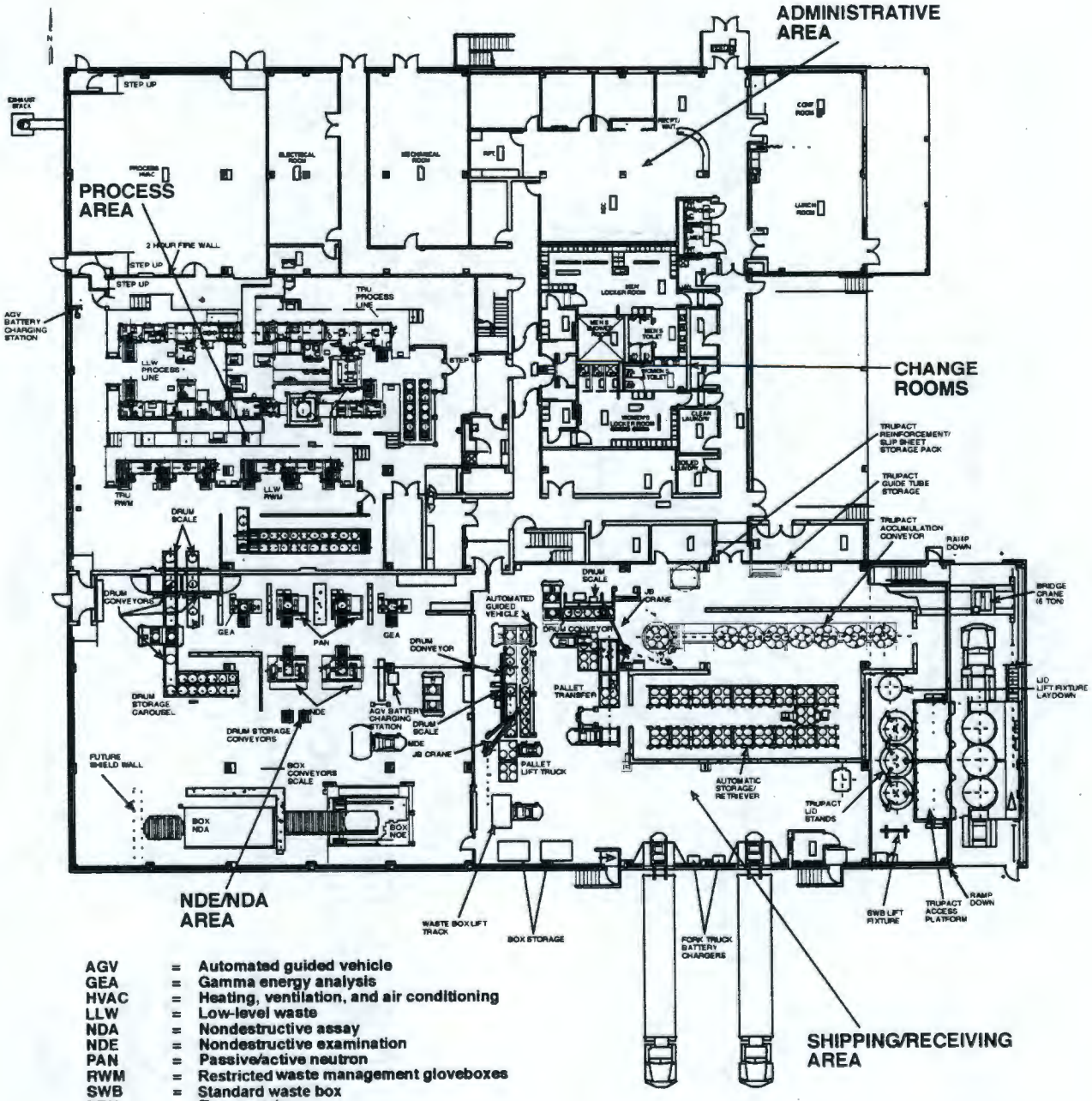


East Elevation

H98030043.5R2

HVAC = Heating, ventilation, and air conditioning.

Waste Receiving and Processing Facility
Building Layout



AGV	=	Automated guided vehicle
GEA	=	Gamma energy analysis
HVAC	=	Heating, ventilation, and air conditioning
LLW	=	Low-level waste
NDA	=	Nondestructive assay
NDE	=	Nondestructive examination
PAN	=	Passive/active neutron
RWM	=	Restricted waste management gloveboxes
SWB	=	Standard waste box
TRU	=	Transuranic
TRUPACT	=	Transuranic waste transporter

H98030043.1

WASTE RECEIVING AND PROCESSING FACILITY

46°33'29"
119°38'24"

96050191-68CN
(PHOTO TAKEN 1996)

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B AND E]

WRAP, located in the 200 West Area (Chapter 1.0), provides waste receipt, confirmation, repackaging, certification, and/or storage of dangerous, mixed, and radioactive waste from onsite generating units or from offsite generators, TSD units, or as a result of operations. Mixed and/or radioactive waste is treated in WRAP.

A more detailed discussion of the waste types and known characteristics of the waste that WRAP processes, and the associated process information, are provided in Chapters 3.0 and 4.0, respectively. Because dangerous waste does not include the source, special nuclear, and by-product material components of mixed waste, radionuclides are not within the scope of WAC 173-303 or of this permit application documentation. The information on radionuclides is provided only for general knowledge where appropriate.

2.1 DESCRIPTION OF WASTE RECEIVING AND PROCESSING FACILITY [B-1]

WRAP typically accepts contact-handled waste packaged in 208- or 322-liter steel drums and steel or wooden boxes no larger than 2.7 meters long by 1.5 meters high by 1.5 meters wide. Contact-handled waste is waste where the external surface dose rate does not exceed 200 millirems per hour. Remote-handled waste could be received on a case-by-case basis with special precautions. Remote-handled waste is waste where the external surface dose rate exceeds 200 millirems per hour. The maximum weight of containers received at WRAP is 455 kilograms for drums and 3,175 kilograms for boxes. However, heavier boxes could be received on a case-by-case basis.

WRAP has a waste shipping and receiving area, a nondestructuve examination (x-ray) and nondestructive assay area, and a processing area. The processing area contains process enclosures (referred to as gloveboxes) for opening, sorting, sampling, and treating the contents of the waste containers. WRAP also includes a process support area, a sample management area, and an administrative area (Figure 2-1).

Waste containers are received in the shipping and receiving area. After processing, the low-level portion of the waste is transferred to an onsite treatment, storage, and/or disposal unit or to an offsite TSD facility (hereinafter, use of 'TSD unit' does not preclude the possibility that an offsite TSD facility could be used). The transuranic waste will be shipped to a TSD unit approved by appropriate agencies to accept transuranic waste.

WRAP provides nondestructive examination and nondestructive assay of the contact-handled waste. Nondestructive examination is used to identify the physical contents of waste containers to support waste characterization and processing, confirmation, or certification. The assay results are used to determine radioactive content and distribution.

WRAP process area gloveboxes are designed for opening, sorting, and sampling to characterize or confirm the contents of containers of transuranic, low-level, and mixed waste. Treatment of waste includes deactivation, solidification or absorption of liquids, neutralization of corrosives, amalgamation, microencapsulation, macroencapsulation, volume reduction of waste (e.g., supercompaction), reaction of reactive waste, and repackaging of waste.

Process support areas are provided with space for heating, ventilation, and air conditioning equipment, mechanical equipment, and electrical equipment used to support operations.

A sample management area is provided to manage the various samples that are taken from within the process area gloveboxes.

The administrative area contains a computer control room. A computer is used to monitor the process control system, nondestructive examination equipment, nondestructive assay equipment, and other process equipment.

Exterior storage space is provided for the receipt of empty containers and other materials.

The following sections describe the functional areas of WRAP and include the following:

- Shipping and receiving area
- Nondestructive examination and nondestructive assay area
- Process area
- Sample management area
- Process support area
- Administrative area
- Exterior storage area.

Although a separate equipment decontamination area is not provided within WRAP, manual decontamination of equipment and waste containers is performed throughout the various areas when necessary.

2.1.1 Shipping and Receiving Area

The shipping and receiving area (Figure 2-2) provides approximately 350 square meters of interim storage for incoming and outgoing waste.

Storage within the shipping and receiving area is handled by an automated storage and retrieval system. Waste is segregated by container type and compatibility as follows.

- Mixed waste is segregated from waste that is only radioactively contaminated.

- Processed waste is segregated from unprocessed waste or waste awaiting analytical results.

- Transuranic waste is segregated from low-level waste.

- Ignitable and reactive waste is segregated and stored in compliance with WAC 173-303-630 and the Uniform Fire Code (NFPA 1997).

- Incompatible waste is packaged and segregated on containment pallets in accordance with the requirements of WAC 173-303-630.

Placement of containers is administratively controlled within the automated storage and retrieval system. In addition to segregation of incompatible waste, containment pallets are used to segregate other waste types and to contain any leaks.

Space is provided to accommodate the storage of at least 216 containers within the automated storage and retrieval system. A concrete wall provides shielding around the automated storage and retrieval system for radiological protection of personnel. Space also is provided in the shipping and receiving area for storage of up to eight waste boxes. In addition, waste containers can be stored throughout WRAP to accommodate waste management operations. Container storage locations are recorded on a computerized tracking system that selects individual containers for processing, which match current process requirements.

After processing at WRAP, most mixed waste and transuranic waste ready for treatment, storage, or disposal is transported to a permitted TSD unit.

Transuranic and transuranic mixed waste containers have their own loading and storage area in WRAP. In this area, containers are stretch-wrapped in plastic in a seven-drum configuration for loading into TRUPACT[1]-II shipping casks. Two seven-packs of containers or two standard waste boxes (SWB)[2] are loaded into each cask. However, loading configuration is subject to modification to accommodate receiving TSD unit requirements. Three casks can be on each trailer. Once the casks are loaded, the waste is shipped to an approved waste disposal site.

2.1.2 Nondestructive Examination and Nondestructive Assay Area

The nondestructive examination and nondestructive assay area (Figure 2-3) provides approximately 700 square meters for radiography and nondestructive assay equipment. The nondestructive examination equipment uses x-ray to examine the content of each waste container. The nondestructive assay equipment is used to determine the radionuclide content of each waste container.

Nondestructive examination systems are used to identify dense waste items that could influence nondestructive assay, to indicate the physical appearance of the waste, and to identify if liquids or other noncompliant[3] waste forms are present. Such identifications are noted on a computerized system to ensure that these noncompliant items are removed in the open/sort location in a glovebox in the process area.

All radiography equipment is designed to meet the Bureau of Radiological Health Standard for cabinet x-ray systems (21 CFR 1020.40). This equipment is located inside shielded enclosures.

---

[1] Transuranic package transporter.

[2] SWB is the name of a specific box designed expressly for transport in a TRUPACT-II shipping cask. Each SWB is approximately 139 centimeters wide by 162 centimeters long by 83 centimeters high with round ends with either a welded or gasketed bolted lid. Each SWB is constructed of 12-gauge painted carbon steel with carbon steel reinforcement and is equipped with one or more carbon composite filtered vents. Each SWB has an empty weight of 368 kilograms with a nominal capacity of 1.8 cubic meters and 2,727 kilograms gross.

[3] Noncompliant waste refers to materials that cannot be accepted for transportation or disposal without further processing and does not refer to noncompliance with WAC 173-303.

Nondestructive assay indicates the radionuclide content and distribution in the waste. Separate nondestructive examination and nondestructive assay lines are provided for containers and boxes. Space is provided within the nondestructive examination and nondestructive assay area for the storage of 12 waste containers. Concrete shield walls are located around the storage area to provide radiological protection for personnel.

After examination and assay, containers are routed to the shipping and receiving area. Containers that are found to include noncompliant items are processed through WRAP to remove or treat the noncompliant items. Containers with noncompliant items also could be stored at WRAP or at another TSD unit until treatment can be performed.

2.1.3 Process Area

The 650-square-meter process area (Figure 2-4) contains waste management gloveboxes. The area is designed to provide secondary containment when waste containers are opened in the gloveboxes. Automatic dry chemical fire extinguishment systems are provided inside the gloveboxes.

Waste containers are opened in the process gloveboxes. The waste is sorted, field screened, and sampled. Compliant waste and empty containers could be compacted and compliant waste is loaded out into new containers. Noncompliant waste items are transferred to one of two restricted waste management gloveboxes. These gloveboxes are used for screening, sampling, and treating waste. Aerosol cans are punctured, vented, and drained in the restricted waste management gloveboxes. The sampling and screening occur for both verification and waste characterization.

Because much of the waste is contained in small inner packages inside the containers, a nondestructive examination system is located within the gloveboxes to assist in the identification of noncompliant items. Also a small nondestructive assay system is located within the transuranic waste process glovebox.

The low-level and transuranic waste gloveboxes contain movable stainless steel sorting tables. The sorting tables are a primary location for all sorting, screening, and sampling activities within the WRAP process lines. The tables, on rails, travel under the respective drum tipper to accept waste from drums. The low-level waste sorting table can be tipped, when in the 'home' position, to replace waste into the drum after sorting. The transuranic sorting table moves into a position between two receiving drums so that waste can be sorted into the appropriate containers. Each table has a capacity of 0.91 metric ton. Closed circuit television cameras view the sorting tables to aid the operator in clearing the waste into the appropriate containers.

Limited treatment of noncompliant waste is performed in the restricted waste management glovebox. Noncompliant materials include the following:

- Aerosol cans
- Reactive metals
- Chelating compounds
- Chemically incompatible materials
- Corrosives
- Explosives
- Gas cylinders not permanently vented
- High-efficiency particulate air (HEPA) filters
- Lead

- Free liquids
- Mercury
- Particulate materials
- Pyrophoric materials.

Waste requiring treatment other than what WRAP can provide is repackaged, labeled, and transferred to a TSD unit for treatment or for storage pending identification or development of an appropriate treatment.

Waste sampling occurs in the restricted waste management gloveboxes, and to a lesser degree in the process gloveboxes, to determine the presence and characteristics of any dangerous waste constituents. Field screening techniques are used as much as practical to assist in the characterization of the waste. The specific waste analysis plan is provided in Chapter 3.0.

Samples of waste are transferred to the sample management area for packaging and transferred to an onsite laboratory or shipped offsite to a laboratory for analysis. Samples are collected and analyzed in accordance with Chapter 3.0, Appendix 3A.

Storage is provided for waste containers while awaiting laboratory analysis and empty containers. The storage area is surrounded by concrete shield walls and roof to protect operating personnel. The total space provided is for 24 containers. If there is insufficient space in this storage area, excess containers either are stored in the automated storage and retrieval system located in the shipping and receiving area or transferred to a TSD unit.

2.1.4 Sample Management Area

The sample management area receives samples from the process area and restricted waste management gloveboxes. The sample management area is used to package samples for transport to appropriate onsite or offsite analytical laboratories. All samples have a bar code label and are accompanied by chain-of-custody documentation as appropriate.

The sample management area contains storage space for samples, which includes refrigerated storage and laboratory supplies.

2.1.5 Process Support Area

The process support area provides approximately 900 square meters on the main level and the mezzanine for electrical equipment; mechanical equipment; heating, ventilation, and air conditioning systems; and a maintenance area.

The electrical equipment room is located adjacent to the process area. Incoming electrical power is brought to the room via overhead bus duct from transformers located outside WRAP.

The mechanical room contains the pumps associated with the heating, ventilation, and air conditioning equipment. Two chillers/tower units are located outside the building. This space also contains plant air compressors, a fire water entry, and a hot water heater.

The heating, ventilation, and air conditioning systems, exhaust fans, and HEPA filtration equipment are located adjacent to the process area. All air is exhausted through a stack located outside the building.

A maintenance room is provided for limited disassembly, part replacement, and maintenance activities associated with the process equipment. Other activities could occur in this room, as required.

2.1.6 Administrative Area

The administrative area provides approximately 800 square meters on the main level and the mezzanine for offices, lunch rooms, records retention, conference rooms, restrooms, change rooms for operations personnel including an anticontamination clothing change area, and a computer control room.

The computer control room is located on the upper level of the building and is centrally located to allow for direct observation of the shipping and receiving area, nondestructive examination and nondestructive assay area, and the process area. The control room contains five control stations to support operation of the nondestructive examination and nondestructive assay equipment, and to monitor the internal transport of waste containers and building and process systems. All computer equipment that supports process control or data management is located in the control room.

2.1.7 Exterior Loading Dock and Storage Area

The exterior loading dock and storage area provides approximately 200 square meters of space for storage of new containers and other supplies. A dry-pipe fire suppression system is provided within this area. This area is located on the east side of the building.

2.1.8 Other Environmental Permits

Environmental permits that are required to support operation of the WRAP are identified in the *Annual Hanford Site Environmental Permitting Status Report* (e.g., DOE/RL-96-63).

2.1.9 Construction Schedule [B-1b]

Any proposed new construction for WRAP will be managed as described in the *Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste* (HF RCRA Permit) (Ecology 1994).

2.2 TOPOGRAPHIC MAP [B-2]

Topographic map (Drawing H-13-000003) is located in Appendix 2A.

2.3 ROADWAY TRAFFIC TO WASTE RECEIVING AND PROCESSING FACILITY [B-4]

General traffic information for the Hanford Facility is presented in the General Information Portion (DOE/RL-91-28).

Various access routes to WRAP are provided on the topographic map located in Appendix 2A.

Waste is shipped to and from WRAP in vehicles that range in size from fork lifts to 18.3-meter tractor-trailer rigs, depending on the size of the load. Sufficient turnaround space is provided for a TRUPACT-II tractor-trailer rig outside of the shipping and receiving areas. The weight of fully loaded TRUPACT-II casks is 8,372 kilograms and three casks are transported on one specially designed flatbed tractor-trailer. This is the heaviest of the vehicles to operate over the paved roadways to WRAP. The heaviest axle loading of a fully loaded TRUPACT-II shipment is 9,072 kilograms for the rear axles, corresponding to a load of approximately 6,895 newtons per square meter.

In addition, parking space is provided for up to two tractor-trailers and two enclosed 1,301-kilogram waste transport vans. Separation of service vehicles and personnel vehicle access and parking is provided. Paved roads are constructed to provide adequate all weather access to WRAP.

Typical shipments to WRAP are 40 containers each day and two boxes each week (two to three trucks each day).

2.4 RELEASE FROM SOLID WASTE MANAGEMENT UNITS [E]

Information concerning releases from solid waste management units is discussed in the General Information Portion (DOE/RL-91-28).

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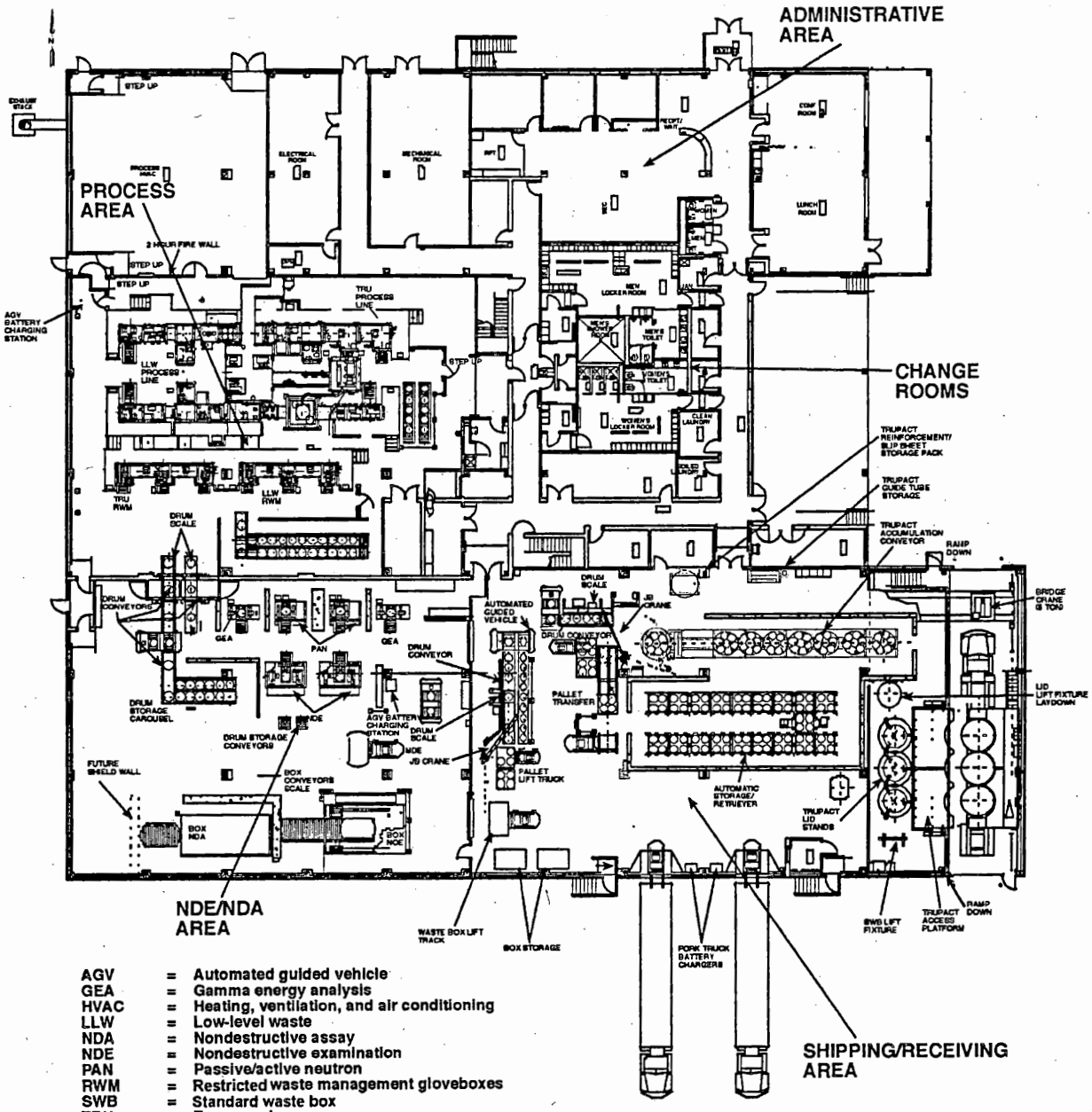
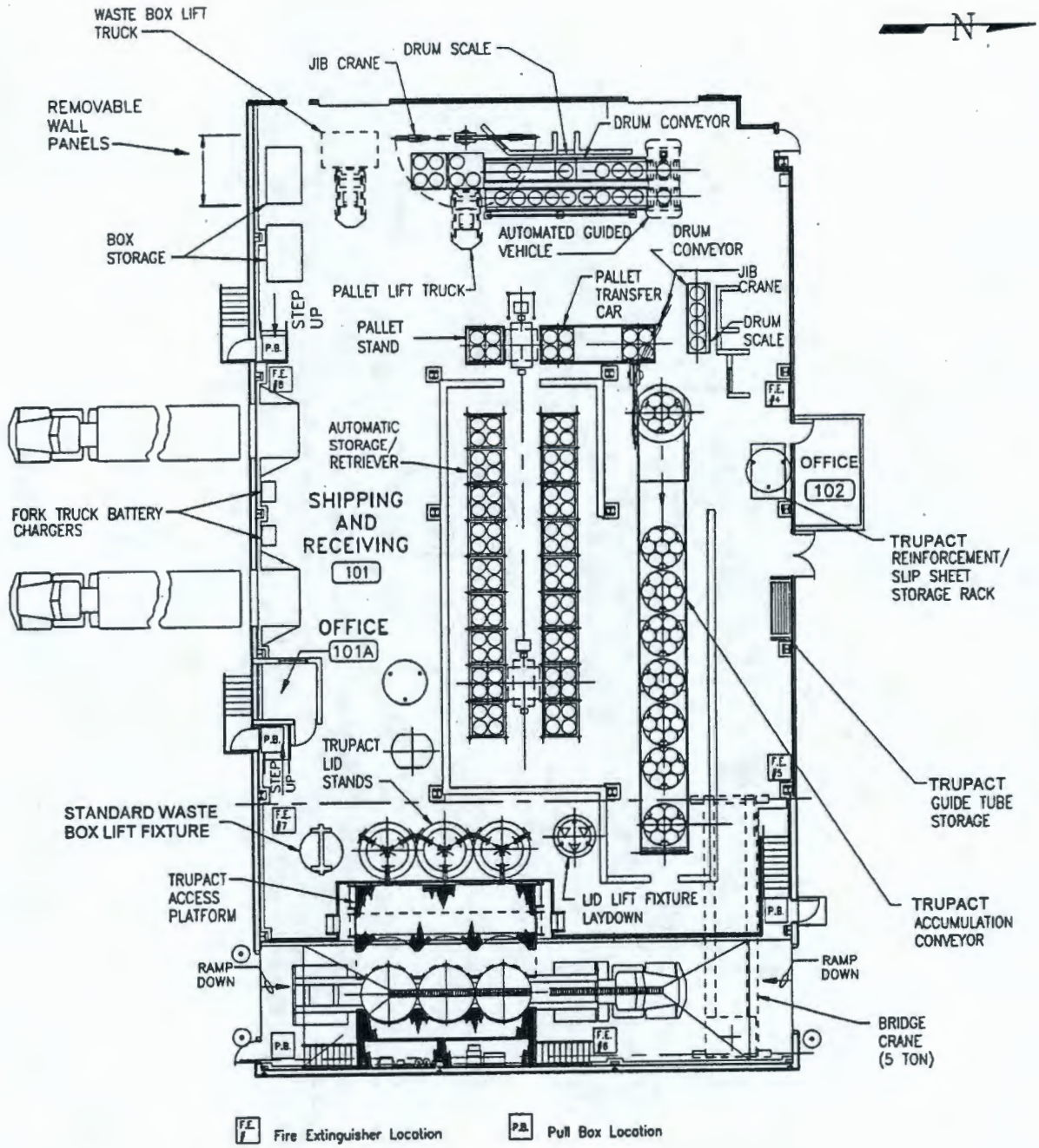
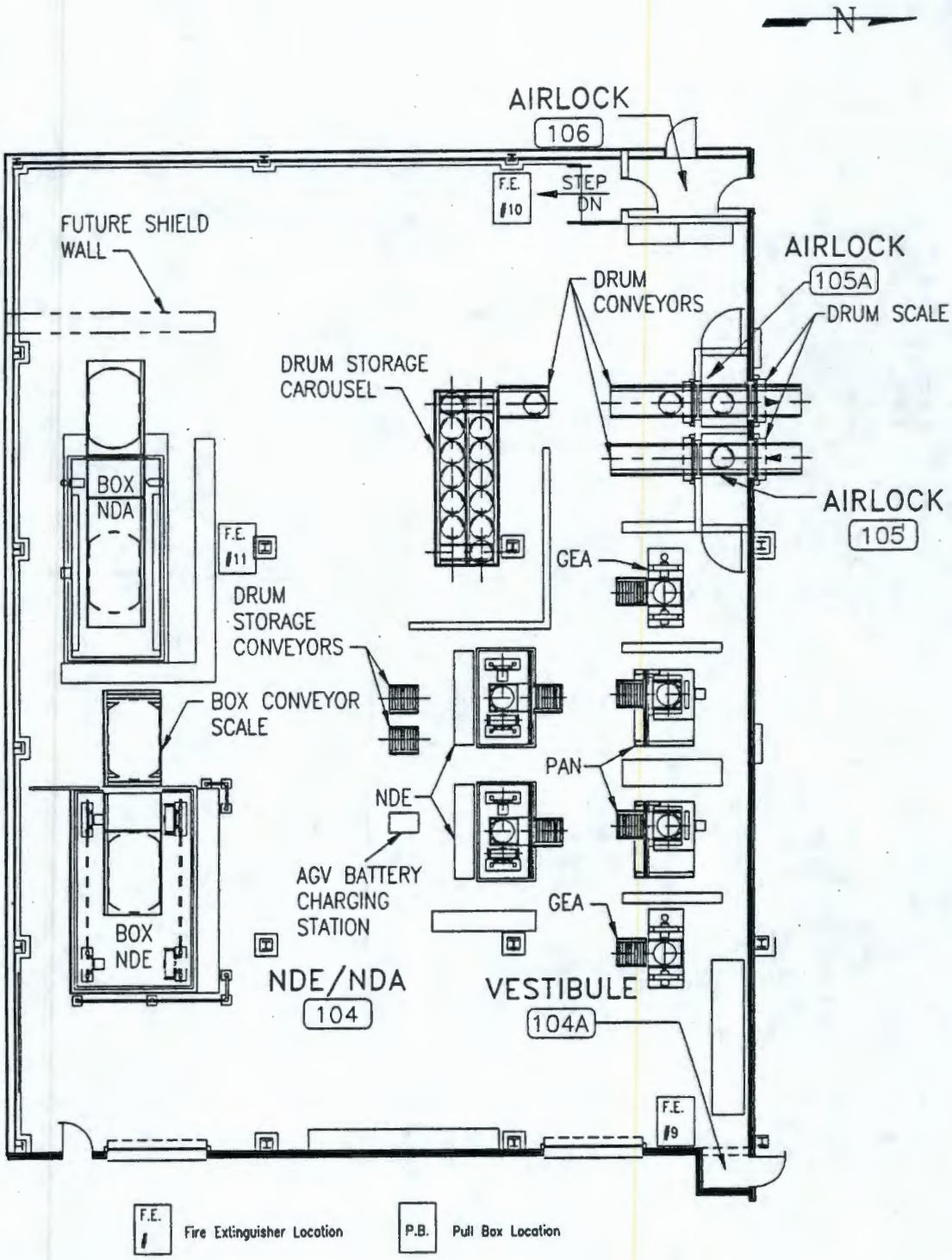


Figure 2-1. Layout for Waste Receiving and Processing Facility.



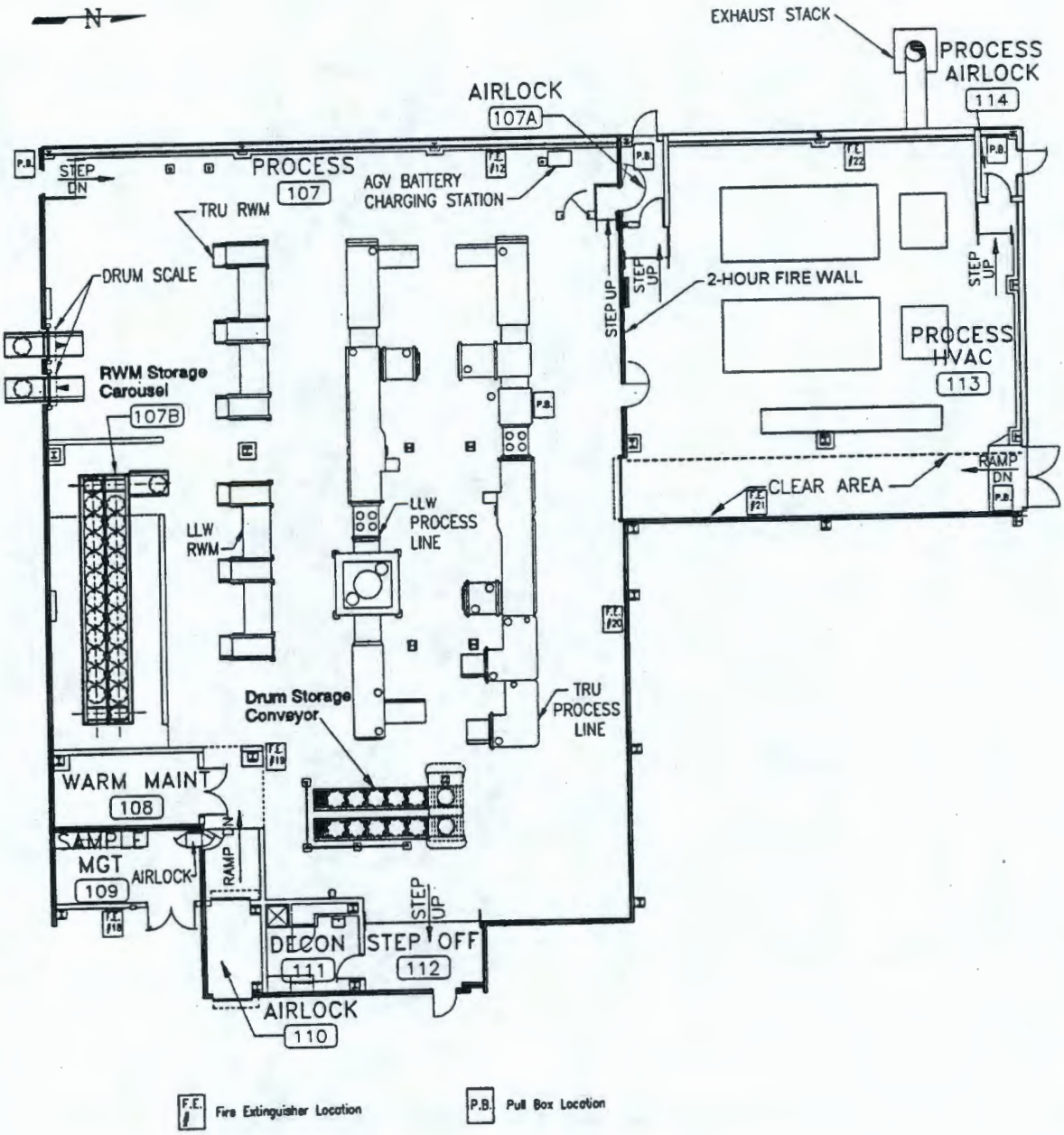
TRUPACT = transuranic waste transporter

Figure 2-2. Shipping and Receiving Area.



AGV = automated guided vehicle
GEA = gamma energy analysis
NDA = nondestructive assay
NDE = nondestructive examination
PAN = passive/active neutron

Figure 2-3. Nondestructive Examination and Nondestructive Assay Area.



AGV = automated guided vehicle
HVAC = heating, ventilation, and air conditioning
LLW = low-level waste
RWM = restricted waste management
TRU = transuranic

Figure 2-4. Process Area.

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FIGURE

Figure 4-1. Container Storage Arrangement. F4-1

TABLES

Table 4-1. Number of Waste Containers Expected in Each Area. T4-1
Table 4-2. Floor and Container Capacity Calculations. T4-2

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4.0 PROCESS INFORMATION [D]

This chapter provides the process information for WRAP.

4.1 CONTAINERS [D-1]

Waste is received at WRAP from onsite waste generating units, offsite waste generators, or TSD units, or a result of WRAP operations. Waste is contained inside either metal containers, overpacked containers, standard waste boxes or other metal or wooden boxes. Other types of containers could be accepted on a case-by-case basis.

4.1.1 Description of Containers [D-1a]

Waste is typically received packaged in 208- or 322-liter galvanized or coated steel containers (88.9 centimeters high by 61 centimeters in diameter and 99.1 centimeters high by 70.1 centimeters in diameter, respectively), standard waste boxes (carbon steel 93.2 centimeters high by 132 centimeters wide by 174 centimeters in length with an internal volume of approximately 1.84 cubic meters), steel or wooden boxes no larger than 2.7 meters long by 1.5 meters high by 1.5 meters wide (internal volume of approximately 5.4 cubic meters), or other approved containers. Containers typically meet the requirements for shipping as indicated in 49 CFR 173. Boxes typically meet the requirements indicated previously or the requirements of 49 CFR 173 for strong tight containers. The inner containment, as appropriate, could consist of either a heavy plastic liner or a rigid metal or plastic liner.

Containers coming into WRAP either are in good condition or are overpacked to maintain integrity during the storage period before processing. New containers are used for repackaging the waste. Waste is repackaged into either new 208-liter, 322-liter steel containers or other approved containers. Generally only solid waste is placed into the new waste containers. Some liquid waste could be placed in these containers to await future treatment. Non-sorbed liquid organic and aqueous waste is packaged in glass, plastic, or metal inner containers with sufficient absorbent material to absorb twice the volume of liquid present. The material used to sorb liquid waste is compatible with TSD requirements. The inner containers are enclosed in a rigid plastic liner within the steel drum or the steel drums have a special performance coating compatible with the waste. Any waste that could have the potential of reacting with the steel of the new containers is contained in plastic liner bags, or other containers to prevent contact with the steel.

4.1.2 Container Management Practices [D-1b]

Before shipment to WRAP, 208- and 322-liter containers must be closed by means of a gasketed steel lid. Other containers will be sealed by appropriate means (e.g., sealed with gaskets and either locking metal clips or bolts). Containers are transported within WRAP by fork lift, automated guided vehicle, or other approved lifting devices. Containers and the respective delivery vehicles are inspected visually and radiologically and the associated paperwork is reviewed. Any discrepancies noted either are resolved with the shipper, flagged for resolution by WRAP operations, returned to the onsite generating unit, or returned to the offsite generator.

Mixed waste containers received are opened only within gloveboxes. These gloveboxes provide the primary level of containment within WRAP when the containers are opened. The sealed stainless steel gloveboxes are designed to contain the waste during examination, sampling, and/or treatment.

Containers are stored in the shipping and receiving area and in the following locations within the process area: the drum storage carousel, the empty drum conveyor, the drum airlock, the lift tables, the process gloveboxes, and on the automated guided vehicle. Waste boxes are stored in the shipping and receiving area or the NDE/NDA area on pallets or have attached skids to keep the boxes off the floor and away from any leaking or spilled liquids. Waste containers are stored on the automated stacker retriever system, conveyors, or carousels to keep the drums above the floor level and away from any leaking or spilled liquids. The container storage capacity is shown in Table 4-1. Figure 4-1 shows the storage arrangements for the containers in the various storage areas.

Storage in the shipping and receiving area provides aisle spacing of at least 0.76 meter between rows. Rows are not more than two containers wide to facilitate inspections [WAC 173-303-630(5)(c)]. Sufficient access to containers is provided in case a container needs to be moved either for reprocessing or because of a problem identified during routine inspections.

Segregation of waste containers in the shipping and receiving area automated stacker retriever system is accomplished by segregating incompatible waste, ignitable and reactive waste, radioactive waste from nonradioactive waste, transuranic waste from low-level waste, mixed waste from radioactive waste, and processed waste from non-processed waste. The containers are placed in the automated stacker retriever system on containment pallets designed to collect liquids. The containment pallets have a raised grating or rack to keep the containers above the bottom of the pallet so as not to contact liquids. Storage conforms to National Fire Protection Association (NFPA) requirements (NFPA 1997) and WAC 173-303-630.

Containers shipped from WRAP are examined visually to ensure acceptable condition, proper identification, marking, labeling, and closure. Appropriate marking and labels are selected, completed, and applied to comply with U.S. Department of Transportation (49 CFR) labeling requirements and WAC 173-303. Each container not weighed previously will be weighed, and radiological surveys will be performed and documented.

4.1.3 Container Labeling [D-1c]

All waste containers received are marked and labeled in accordance with the requirements specified under 49 CFR 172. In addition to the 49 CFR 172 marking and labeling requirements, all waste containers must be marked, as appropriate, to adequately identify the major risk(s) associated with the contents of the containers, per WAC 173-303-630(3).

The labels and markings are affixed, as required, to the sides and tops of the containers. In addition, all containers received have either a bar code affixed to the container or the bar code is affixed in the shipping and receiving area.

Empty containers are crushed and loaded into overpacks. Overpacks are labeled as previously discussed.

4.1.4 Containment Requirements for Storing Containers [D-1d]

Secondary containment is provided for all waste containers. The secondary containment is described in the following sections.

4.1.4.1 Secondary Containment System Design [D-1d(1)]

Containers arriving at WRAP have at least two layers of containment, the outer container and the inner bags or rigid liners. The inner containment also could consist of a special medium or high performance coating on the inside of the metal container. This coating is compatible with the waste.

4.1.4.2 System Design [D-1d(1)(a)]

The building foundation is constructed of reinforced concrete with all process and waste storage areas located within the building. Copies of design and profile drawings of the secondary containment system are included in Appendix 4A. All floors have an impervious coating applied in accordance with construction specifications and material manufacturer's instructions to facilitate cleanup of any spills.

Sorting tables located within the process enclosures are designed to collect and retain liquids that might spill during the opening and sorting of the waste packages. The waste super compactor is designed to collect any liquids that are squeezed out of the waste during the compaction process. All liquid collected, either on the tables or in the base of the super compactor, is transferred to the low-level waste restricted waste management gloveboxes where the liquid is sampled for characterization purposes, treated as appropriate, or transferred to an onsite TSD unit or offsite TSD facility.

The hydraulic systems used to operate the compactors are located in the process area. The floor in this area is bermed (15.24 centimeters) and sealed to retain any fluid that leaks or spills if the system is breached for any reason. Any leaks or spills are cleaned up appropriately.

The base floor is located 15.24 centimeters above the ground level; therefore, run-on should not occur. In addition, all process areas or areas where containers are stored have 15.24 centimeter curbing around the respective areas without floor drains. Areas that have curbing include the shipping and receiving; nondestructive examination and nondestructive assay; process; and the process heating, ventilation, and air conditioning room. Waste boxes are stored on pallets or have attached skids to keep the boxes off the floor and away from any leaking or spilled liquids. Waste containers are stored on the automated stacker retriever, conveyors, carousels, or pallets to keep the containers above the floor level and away from any leaking or spilled liquids. In addition, containment pallets are used in the automated stacker retriever system located in the shipping and receiving area and could be used in other storage areas to further localize any leaks from the containers and to minimize cleanup. Because of these provisions, any spills are contained locally and readily cleaned up.

4.1.4.3 Structural Integrity of Base [D-1d(1)(b)]

The foundation and floor areas of WRAP are constructed of reinforced concrete. An engineering evaluation of the base is provided in Appendix 4B. All process areas, including the nondestructive examination and nondestructive assay area, shipping and receiving areas, and the process area are coated with a special coating to retard any infiltration of spilled liquids into the flooring. Any waste or liquid spills are contained within the bermed flooring and are cleaned up.

After pouring and setting, the foundation concrete was inspected to detect any gaps or cracks. Any gaps or cracks identified were filled and sealed. Sealants used are compatible with acids, bases, and organic materials provided that residency times are not extensive. The contingency plan, contained in Chapter 7.0, describes the actions to be taken in the event of a spill or leak.

The design of curbing, water stops, and the slope of the floors at points near the exits and outer walls of the building contain liquid within the building. Because the storage areas are all located within the WRAP structure, precipitation would not affect these areas.

4.1.4.4 Containment System Capacity [D-1d(1)(c)]

The size of the floor for WRAP was determined based on storage requirements, the size of the gloveboxes needed for waste processing, working space, and shipping and receiving space requirements. Each area contained by the 15.24-centimeter curbing is of sufficient volume to retain 10 percent of the volume of the total containers within the respective areas. The floor capacity, total volume of containers, and calculations for each storage area are shown in Table 4-2. There is no volume displaced by the containers because the containers are stored above the floor. The volume displaced by other structures is not sufficient to effect the 10 percent containment requirement. The containment pallets that are used in the automated stacker retriever system are designed to hold a maximum volume of 56.8 liters of liquid.

4.1.4.5 Control of Run-on [D-1d(1)(d)]

The only potential for run-on and run-off would be fire sprinkler activation or a break in the water main. No floods are predicted to impact WRAP (DOE/RL-91-28). All process areas have a 15.24-centimeter berm. The WRAP structure is located 15.24 centimeters above the ground level.

Collected or contained liquid is removed by pumps for large quantities and by absorbents for smaller quantities. All waste stored in WRAP is in containers, which limits the detrimental impact of any run-on and/or run-off situation.

Sprinkler discharge was considered when determining the height of the containment berms within the process and storage areas.

Actions to be taken in response to a spill or discharge are detailed in the building emergency plan (Chapter 7.0).

4.1.5 Removal of Liquids from Containment Systems [D-1d(2)]

If a spill or release within WRAP results in collection of liquid waste material, the following is performed.

- Leaking containers are overpacked and identified in the WRAP operating log.
- If present, the liquid is removed from the containment system. Normally, a hand-held pump or vacuum system equipment is used for removal of large quantities of liquid. Absorbents are used for removal of small amounts of liquid. The area is cleaned using a damp cloth(s). The cloths will be handled appropriately depending on the nature of the liquid or other material being cleaned.
- If the liquid is unknown, the liquid is analyzed for dangerous constituents.

- The containerized liquid is handled as follows:
  - The waste material is placed in the appropriate U.S. Department of Transportation-specified container.
  - If the liquid has been altered during stabilization and cleanup actions (e.g., absorbed, mixed, diluted), the container is managed in accordance with the provisions of the waste analysis plan (Chapter 3.0).
  - If the waste was not altered during stabilization and cleanup activities, the containerized waste is labeled appropriately and processed through WRAP or another approved TSD unit. WRAP inventory is revised to reflect any changes.
  - WRAP inventory is revised to reflect the changes in waste description, volume, and storage location.
- Any liquid effluents resulting from a discharge of the building fire suppression system would be pumped to appropriate containers. The liquid would be sampled and if determined to contain regulated concentrations of dangerous waste, the waste would be sent to an appropriate onsite or offsite TSD unit. Sanitary waste is discharged to a dedicated tile and leach field near WRAP (refer to Appendix 2A).
- When all the liquid is removed from the surface and the area is determined to be clean of any spilled material based upon the cleaning methodology, the area of the spill is considered free from all radiological or dangerous waste contamination.

Specific actions to be taken in response to a spill or discharge are detailed in the building emergency plan provided in Chapter 7.0.

The following is performed if a fire sprinkler activation or pipe break occurs that could result in collection of water in the containment system.

- Water in the containment system is inspected visually for signs of contamination.
- If contamination is suspected, an analysis of the pH and radioactive contamination will be performed.
- Containers in the area(s) affected by sprinkler activation or pipe break are inspected for signs of leakage.
- The water is removed from the containment system. A hand-held pump or vacuum system normally is used for removal of large quantities of liquid. Absorbents are used for removal of small amounts of liquid. The area also is cleaned using a damp cloth(s).
- Water that has accumulated in the containment system that cannot be confirmed to be free of contamination is handled in the same manner as removal of liquid waste material from the containment system as discussed previously.

- Water that has accumulated in the containment system that can be confirmed to be free of contamination will be released to the ground.

4.2 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTES IN CONTAINERS [D-1f]

Physical barriers such as containment pallets and administrative controls are employed to segregate waste throughout WRAP as appropriate. All damaged waste packages arrive in overpack containers. Known data on each waste package is forwarded to WRAP along with the waste package. The information is added to the data management system along with a bar code label for identifying and tracking the waste container through WRAP. Additional information gained through nondestructive examination and waste sampling is added to the data management system.

Waste requiring more extensive treatment than WRAP provides is packaged and transferred to a TSD unit until treatment is available.

4.2.1 Management of Certain Reactive Wastes in Containers [D-1f(1)]

Waste that contains reactive material can be accepted at WRAP for deactivation as an alternative to long-term storage or treatment at an onsite generating unit. In addition, some waste might not be well characterized. If reactive materials are in such waste, the materials would not be identified until after the waste is characterized at WRAP. If during waste characterization, reactive waste is identified, the waste is segregated, deactivated (if possible), and repackaged. If the waste cannot be safely deactivated, the waste will be repackaged. Subsequent treatment or storage of reactive waste will be accomplished at another TSD unit.

4.2.2 Management of Ignitable and Certain Other Reactive Wastes in Containers [D-1f(2)]

WRAP is designed and constructed to meet NFPA codes and is equipped with fire, heat, and smoke detectors along with a fire suppression system.

Management of ignitable and reactive waste in containers is conducted in the same manner as discussed in Section 4.3.1. It is possible for WRAP to receive ignitable waste for confirmation or processing. This waste either is sorbed at WRAP with sorbents or is packaged and stored as a liquid at a TSD unit pending development of appropriate treatment capability. Ignitable waste is stored in WRAP or at a TSD unit in an area designated for ignitable materials.

All waste containers used for repackaging transuranic waste within WRAP are vented with filters to preclude buildup of gasses within the waste container.

Explosive, shock sensitive, or pyrophoric waste is not anticipated to be received at WRAP. Nevertheless, should this type of waste be identified through the sorting or characterization process, it would be segregated immediately from all other materials and relocated in such a fashion to prevent detonation. The packaging of this type of waste would be conducted under the direction of the Hanford Fire Department or another approved agency.

4.2.3 Design of Areas to Manage Incompatible Wastes [D-1f(3)]

Incompatible waste is segregated inside all gloveboxes and placed in properly labeled containers to await further processing or treatment. Compatible waste, which does not require further treatment, is repackaged inside new containers. Containerized liquids are removed from waste packages and transferred to the appropriate restricted waste management glovebox.

Suspect incompatible materials are screened or sampled and analyzed as much as practical in the restricted waste management gloveboxes or another approved location to determine the characteristics and incompatibilities of the materials. Incompatible materials are segregated from each other and repackaged to ensure that no incompatible materials are together. If analysis is required to determine compatibility, analysis will be conducted in accordance with ASTM Method D5058-90, *Standard Test Methods for Compatibility Screening Analysis of Waste*.

Corrosive materials (and suspect corrosives) are tested using pH test paper or pH meter to determine if the materials are acidic or basic. Appropriate neutralization and stabilization is performed in the restricted waste management gloveboxes or another approved location.

4.3 AIR EMISSIONS CONTROL [D-8]

This section addresses the WRAP requirements of Air Emission Standards under 40 CFR 264, Subpart BB (WAC 173-303-691) and Subpart CC.

4.3.1 Applicability of Subpart BB Standards [D-8b]

The air emission standards of 40 CFR 264, Subpart BB, apply to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 parts per million by weight.

The only equipment at WRAP that is subject to the provisions of Subpart BB is the carbon canister associated with the aerosol can venting equipment. This equipment qualifies as a control device subject to the provisions of 40 CFR 264.1060. An exemption is provided in 40 CFR 264.1050(f) for equipment that contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight for a period of less than 300 hours per calendar year. Because this equipment is managed in a manner that meets the requirements of this exemption, this equipment is exempt from the requirements of 40 CFR 264.1052 through 264.1060. As required by 40 CFR 264.1064(g)(6), the aerosol can venting equipment is identified in a log that is maintained as part of the facility operating record. This equipment is marked as required by 40 CFR 264.1050(d).

4.3.2 Applicability of Subpart CC Standards [D-8c]

The air emission standards of 40 CFR 264, Subpart CC, apply to tank, surface impoundment, and container storage units that manage wastes with average volatile organic concentrations equal to or exceeding 500 parts per million by weight, based on the dangerous waste composition at the point of origination (61 FR 59972). However, containers that are used solely for management of mixed waste are exempt. Dangerous and mixed waste are managed at WRAP.

TSD owner/operators are not required to determine the concentration of volatile organic compounds in a dangerous waste if the waste is placed in waste management units that employ air emission controls that are in compliance with the Subpart CC standards. Therefore, the approach to Subpart CC compliance at WRAP is to demonstrate that WRAP meets the Subpart CC control standards (40 CFR 264.1084 - 264.1086) for containers of dangerous waste.

Container Level 1 and Level 2 standards are met at WRAP by managing all dangerous waste in U.S. Department of Transportation containers [40 CFR 264.1086(f)]. Level 1 containers are those that store more than 0.1 cubic meter and less than or equal to 0.46 cubic meter. Level 2 containers are used to store more than 0.46 cubic meter of waste that are in 'light material service'. Light material service is defined where a waste in the container has one or more organic constituents with a vapor pressure greater than 0.3 kilopascal at 20°C, and the total concentration of such constituents is greater than or equal to 20 percent by weight.

The monitoring requirements for Level 1 and Level 2 containers include a visual inspection when waste is initially placed in a container at WRAP, and at least once every 12 months when stored onsite for 1 year or more.

Container Level 3 standards apply when a container is used for the "treatment of a hazardous waste by a waste stabilization process" [40 CFR 264.1086(2)]. Because treatment of dangerous waste in containers is not provided at WRAP, these standards do not apply.

4.4 WASTE TREATMENT AT WRAP

WRAP has the capability to treat waste through deactivation, solidification or absorption of liquids, neutralization of corrosives, amalgamation, microencapsulation, macroencapsulation, volume reduction of waste (e.g., supercompaction), reaction of reactive waste, and repackaging of waste. Treatment of mixed and/or radioactive waste will occur in the restricted waste management gloveboxes, shipping and receiving area, and other areas within WRAP if needed.

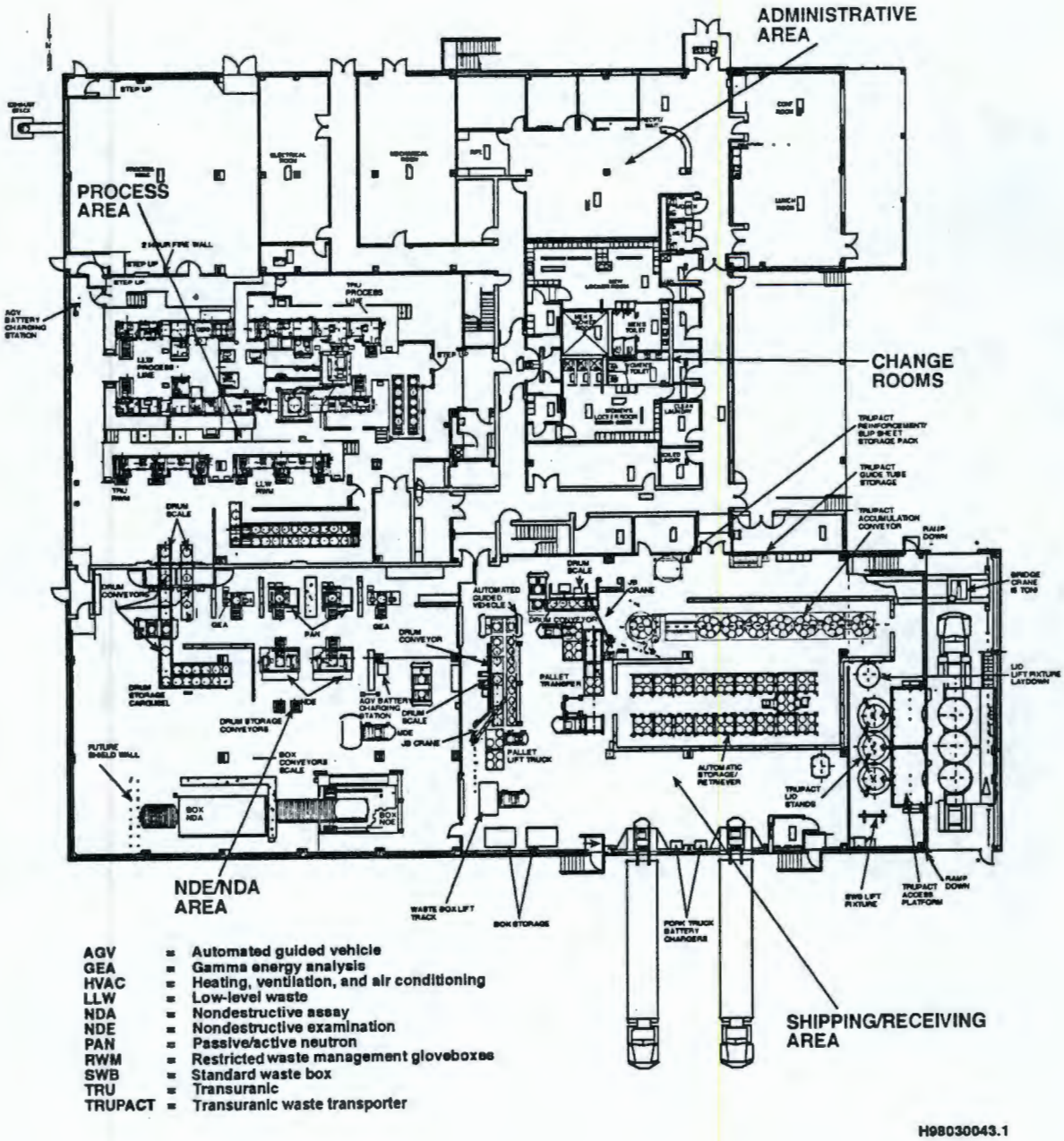

Figure 4-1. Container Storage Arrangement.

Table 4-1. Number of Waste Containers Expected in Each Area.

Location	Average	Maximum
Shipping and receiving area	241 drums 6 boxes	308 drums 10 boxes
Nondestructive examination area and nondestructive assay area	6 drums	12 drums
Process area	34 drums	42 drums

Table 4-2. Floor and Container Capacity Calculations.

Location	Floor area (square meters)	Liquid capacity (cubic meters) (floor area times .1524 meter berm height)	Maximum container capacity (cubic meters)
Shipping/receiving area	665.19	101.4	308x0.322 = 99.2
Nondestructive examination and nondestructive assay area	653.85	99.6	12x0.322 = 3.9
Process area	634.06	96.6	42x0.322 = 13.5

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TABLE

Table 6-1. Alarm Destinations. T6-1

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6.0 PROCEDURES TO PREVENT HAZARDS [F]

This chapter discusses security, inspection schedules, preparedness and prevention requirements, preventive procedures, structures, equipment, and prevention of reaction of ignitable, reactive and incompatible waste in WRAP.

The WRAP is designed and operated to minimize exposure of the general public and operating personnel. Shielding, contamination control, control of toxic or dangerous material, and safety and security procedures are used to keep exposure as low as reasonably achievable (ALARA).

6.1 SECURITY [F-1]

The following sections describe security measures, equipment, and warning signs used to control entry to WRAP. A discussion of Hanford Facility security is provided in the General Information Portion (DOE/RL-91-28).

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the 24-hour surveillance system, barrier, and warning signs used to provide security and to control access to WRAP.

6.1.1.1 24-Hour Surveillance System

The entire Hanford Facility is a controlled-access area [refer to General Information Portion (DOE/RL-91-28)].

6.1.1.2 Barrier and Means to Control Entry

WRAP is surrounded by the security fencing of the 200 West Area. The security fencing is 2.4-meter-high chain link and is topped with three strands of barbed wire. All entrances to WRAP are locked when the unit is unoccupied.

6.1.1.3 Warning Signs

Entrances to portions of WRAP that are used to manage dangerous waste are posted with signs in English, reading, "DANGER-UNAUTHORIZED PERSONNEL KEEP OUT". The signs, in English, are visible from all angles of approach, and are legible from a distance of at least 7.6 meters.

6.1.2 Waiver [F-1b]

Waivers of the security procedures and equipment requirements for WRAP are not requested. Therefore, the requirements of WAC 173-303-310(1)(a) and (b) are not applicable to WRAP.

6.2 INSPECTION PLAN [F-2]

This section describes the method and schedule for inspections of WRAP. These inspections help to ensure that situations do not exist that might cause or lead to the release of dangerous or mixed waste to the environment or that might pose a threat to human health. Abnormal conditions identified by inspections must be corrected on a schedule that helps prevent hazards to personnel, the public, and the environment.

6.2.1 General Inspection Requirements [F-2a, F-2b, and F-2d(3)]

The content and frequency of inspections are described in this section. The inspections are documented on inspection checklists and log sheets. The schedule and inspection records are kept in the inspection logbooks, maintained on a computerized information system, and retained at WRAP. Inspection records are retained for a minimum of 5 years, and contain the following information:

- Date and time of inspection
- Printed name and the hand written signature of the inspector
- Notation of the observations made
- An account of spills or discharges in accordance with WAC 173-303-145
- Date and nature of any repairs or remedial actions taken.

The inspection checklists consist of a listing of items that are to be assessed during each inspection. A yes/no response is made for each listed item. Any problems identified during the inspection are documented during the inspection and are reported promptly to management.

6.2.1.1 Types of Problems

WRAP inspections include, but are not limited to, the following:

- Condition of loading and unloading areas
- Condition of storage and accumulation areas
- Condition of safety, emergency, and communication equipment
- Condition of security equipment.

6.2.1.2 Frequency of Inspections

The inspection schedule for WRAP is daily when waste management activities occur for all areas subject to spills, daily and weekly for containers, and monthly for safety, emergency, and fire protection equipment (refer to Section 6.2.3). The frequencies of these inspections could be increased based on the condition of the unit and equipment.

As required by WAC 173-303-395(1)(d), an annual inspection of WRAP areas where ignitable or reactive waste is stored is performed by a professional knowledgeable of the Uniform Fire code (NFPA 1997). The following information is entered into WRAP operating record as a result of this inspection:

- The date and time of the inspection
- The name of the person who performed the inspection

- A notation of the observations made
- Any remedial actions that were taken as a result of this inspection

Though unlikely, WRAP secondary waste might have the characteristics of being reactive or ignitable. The Hanford Fire Department performs annual fire inspections of WRAP using a checklist developed specifically for facilities that handle dangerous and/or mixed waste.

6.2.2 Schedule for Remedial Action for Problems Revealed [F-2c]

If inspections identify significant corrosion, leaks, and/or spills in the secondary containment, the resultant liquid will be removed on a schedule that prevents hazards to human health and the environment. Further corrective actions are discussed in the building emergency plan (Chapter 7.0). If significant corrosion is observed, correction actions will be pursued. Depending on the severity of the corrosion, corrective action could range from correcting upon discovery or longer if procurement of needed materials and personnel are required.

Other conditions that are not a threat to human health and the environment will be dispositioned in a timeframe established by the operations supervisor.

6.2.3 Specific Process Inspection Requirements [F-2d and F-2d(1)]

The following describes the container inspections performed at WRAP.

- Daily visual inspection of container storage area when waste management activities occur for leaks, spills, accumulated liquids, and open or improperly sealed containers

- Weekly visual inspection of container labels to ensure labels are not obscured, removed, or otherwise unreadable

- Weekly visual inspection for deterioration of containers, containment systems, or cracks in protective coating or foundations caused by corrosion, mishandling, or other factors.

Weekly inspection of the following are performed:

- First aid kits
- Spill response kits
- Waste containers
- Curbing, floors, and sumps
- Chain and fence barricades.

Monthly inspection of the following are performed:

- Portable safety showers
- Portable eye wash stations
- Automatic fire suppression systems
- Fire extinguishers.

6.3 PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The following sections document the preparedness and prevention measures used at WRAP.

6.3.1 Equipment Requirements [F-3a]

The following sections describe the internal and external communications and emergency equipment located at WRAP.

6.3.1.1 Internal Communication

WRAP is equipped with an internal communication system to provide immediate emergency instruction to personnel. The internal communication system includes telephones, radios, a public address system, closed-circuit television monitoring, and alarm systems. The telephone and radio systems provide for intra-operations communication as well as external communication. Provisions are made to appropriately respond to various emergencies, including the following alarm-activated emergency situations: building evacuations, fire and/or explosion, loss of essential services, loss of ventilation, chemical releases, radioactive discharges, and high-airborne contamination.

Immediate emergency instruction to personnel is provided by a public address system by speaker horns and ceiling-mounted speakers located throughout WRAP. The public address system is coupled to the building telephone system to provide telephone accessed voice paging. The alarms are independent of the public address. The WRAP telephone system is linked to the Hanford Site voice data telecommunications system.

Data communication within WRAP and external communication are accomplished using two data communication systems. The local area network (which is compatible with the Hanford Site general usage network) carries general purpose data. The distributed control system is used to detect and annunciate alarms for process and control systems. Table 6-1 details where each type of alarm is sent.

The essential WRAP communication systems are fed from the emergency distribution system (uninterruptible power supply) and are operational for a minimum of 55 minutes following loss of power.

The fire alarm and fire detection system includes a fire alarm control panel, heat detectors, smoke detectors, incipient fire detectors, tamper sensors, and manual pull stations. The entire system is backed up with emergency battery power. The main fire alarm panel monitors input from various sources and indicates trouble or alarm status. The main fire alarm panel repeats these indications to master radio boxes for transmission to the Hanford Fire Department.

Heat detectors are located throughout the building including gloveboxes. The only exceptions are in the ventilation ducts where photo-electric smoke detectors are employed, and in the control/computer area where very early smoke detection apparatus (VESDA) incipient fire detectors are employed.

6.3.1.2 External Communications

WRAP is equipped with devices for summoning emergency assistance from the Hanford Fire Department, the hazardous materials response team, chemical response team, and/or local emergency response teams as necessary. External communication is by a telephone communication system. Telephones are available at numerous locations throughout WRAP. In addition, the following external

communication systems are available for notifying persons assigned to emergency response organizations:

- Fire alarm control panel (FACP) and fire sprinkler flow monitoring device--connected to a system monitored around the clock by the Hanford Fire Department

- Telephone number 911--the contact point for the Hanford Site; on notification, the Hanford Patrol Operations Center notifies and/or dispatches required emergency responders

- Telephone number 373-3800--single point of contact for the emergency duty officer; this number can be dialed from any Hanford Site telephone

- Crash alarm telephone system--consists of selected telephones that are disassociated from the regular system and are connected automatically to control stations

- Priority message system (management bulletin)--network of telefax machines used to disseminate information to personnel.

- The DOE-RL radio systems and frequencies--available for emergency communications.

6.3.1.3 Emergency Equipment

Emergency equipment is available for use throughout WRAP (i.e., portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment). A detailed list of equipment is included in the building emergency plan (Chapter 7.0, Appendix 7A).

WRAP is equipped with fire control equipment and includes structural features that ensure an improved risk level. All interior fire separation walls, floors, and ceilings have a minimum 2-hour fire rating. All fire doors, ventilation dampers, and control room window shutters have a minimum 1 ½-hour fire rating.

The design of WRAP minimizes the combustible loading by using components of fire resistant and noncombustible material wherever possible, particularly containment barriers and structural members. Containment barriers and structural members include walls, partitions, columns, beams, floors, and roofs. Suspended ceilings, pipe and duct insulation, adhesives, and other such materials are made of low or noncombustible substances. Concealed spaces, such as those above suspended ceilings, contain a minimum number of combustible materials. Cable enclosures, nonflame propagating electrical insulation, and fire stops in penetrations through walls, floors, and ceilings are used to minimize flame-spread potential.

Automatic wet-pipe sprinklers are provided throughout WRAP with the exception of the loading dock area, which is provided with automatic dry-pipe sprinklers. All sprinkler systems are designed in accordance with NFPA for ordinary hazard pipe schedule systems. A dry standpipe system is installed in the loading dock area.

An automatic dry chemical fire suppression system is provided for inside the process area enclosures. The dry chemical system is designed to quickly suppress a fire in the enclosures or can be activated by manual pull stations located outside enclosures. The dry chemical fire suppression system is activated by heat detectors located in the enclosures. The dry chemical system uses a multipurpose dry chemical suppressant and is designed in accordance with NFPA for total flooding fire-suppression systems.

Emergency eye washes and safety showers are distributed strategically throughout WRAP for emergency situations involving dangerous materials. An area is provided in WRAP for personnel decontamination in emergency situations. WRAP personnel are instructed to vacate the work area in the event of a release or loss of ventilation to minimize exposure.

6.3.1.4 Water for Fire Control

The primary water supply for fire protection is supplied from the 200 West Area water system. Water is pumped to WRAP through an underground pipeline that ties into existing water mains. All underground installations are in accordance with NFPA.

Additional water for fire control at WRAP is supplied by the Hanford Fire Department trucks for fires requiring high water volume and pressure. Each fire station normally has a truck equipped with a hydraulically operated aerial ladder, and one pumper (backup fire engine, without a boom, that is used if the aerial ladder is inoperable). Fire engines have a pumping capacity of at least approximately 5,600 liters of water per minute.

Other fire protection equipment use chemicals rather than water as extinguishing media.

6.3.2 Aisle Space Requirements [F-3b]

Aisle spacing at WRAP is sufficient to allow the movement of personnel and fire protection equipment in and around the containers. This storage arrangement also meets the requirement of the NFPA and the Life Safety Code for the protection of personnel and the equipment. A minimum 0.76-meter aisle space is maintained between rows of containers as required by WAC 173-303-630(5)(c).

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]

The following sections describe preventive procedures, structures, and equipment.

6.4.1 Unloading Operations

Methods are used to minimize the potential for puncturing or opening containers during waste unloading and are followed during packaging of the waste as well as during unloading. The methods employed are as follows.

- Containers are inspected for damage before being unloaded.
- Containers are handled by appropriate equipment such as a forklift or crane during unloading. Onsite generating units or offsite generators are required to provide rigging and instructions for unloading packages requiring special handling.

6.4.2 Run-Off

Procedures, structures, and equipment are used at WRAP to prevent run-off from dangerous waste and from hazardous chemicals.

WRAP design provides for structures and equipment to prevent run-off and flooding in accordance with the safety requirements of 40 CFR 264 and the WAC 173-303. WRAP is designed to contain spills, leaks, fire sprinkler system releases such that dangerous waste and/or hazardous chemicals are not released to other areas or the environment (e.g., berms, spill pallets, and catch pans).

6.4.3 Water Supplies

Water is supplied to WRAP from the Columbia River via the Hanford Site potable water system. All hose connections to the potable water line have a one-way check valve installed to prevent backflow. These check valves prevent contamination from entering the water supply lines from within WRAP.

The water supply system (potable and fire sprinkler supply) for WRAP is routed from two sources to provided a looped supply system per U.S. Department of Energy Order 6430.1A: one from the south near the 272-WA Building and the second from the east near T Plant Complex.

6.4.4 Equipment and Power Failure

The procedures, structures, and equipment used to mitigate the effects of equipment failure and power outage are described in the following sections.

6.4.4.1 Mitigation of the Effects of Equipment Failure

A combination of reliability, redundancy, maintenance, and repair features are used in the design of WRAP equipment and systems. Preventive maintenance and surveillance are performed to minimize random failure of equipment. The batch nature of WRAP systems minimizes process downtime and allows for preventive maintenance.

Redundant equipment and systems are provided for crucial systems required to run continuously during process operations. For essential production and safety equipment, spare parts are maintained. In addition, the design and layout of process systems enhance physical access for operation and maintenance.

Most of the operations within WRAP gloveboxes consist of hands on manual activities. Shutdown consists of simply stopping the activity in progress. There are several automatic container movement and handling functions controlled by computer. These functions are shutdown by pressing emergency stop buttons located throughout the WRAP process area.

6.4.4.2 Mitigation of the Effects of Power Failure

In the event of a power failure, uninterruptible power supply is provided. The uninterruptible power supply supplies power to critical computers and instrumentation for a minimum of 55 minutes following loss of power.

6.4.5 Personnel Protection Equipment

At WRAP, procedures, structures, and equipment are used to prevent undue exposure of personnel to dangerous waste and hazardous chemicals. Protective clothing and equipment are prescribed for

perso. . . nandling chemicals or dangerous waste. Whenever possible, exposures to hazards are controlled by accepted engineering and/or administrative controls. Protective gear is used where effective engineering or administrative controls are not feasible. In addition to providing employees with adequate protective clothing to prevent exposure to dangerous waste, the design of equipment at WRAP minimizes exposure to dangerous waste and hazardous chemicals. Equipment design follows guidelines such as the following.

- All loads are securely fastened for transport, inspection, and storage.
- Design of equipment and piping minimizes any arrangement that requires employees to place extremities of the body in potential pinch point areas.
- The design of equipment avoids personnel contact with, or exposure to, corrosive chemicals.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR INCOMPATIBLE WASTES [F-5]

The following section describes prevention of reaction of ignitable, reactive, and incompatible waste.

6.5.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste [F-5a]

Pyrophoric and reactive material, once discovered through nondestructive examination, is sent to the restricted waste management glovebox for processing. These materials only can be present if sealed in inner containers inside of drums (if not otherwise sealed from a normal oxygen atmosphere, the materials would have reacted before receipt at WRAP). These sealed inner containers are identified by radiography in the nondestructive examination area. No activities involving open flames, cutting, or welding takes place in this glovebox unless controlled administratively (confined space entry permit). Special processing area electrical equipment is 'hazardous location' rated to prevent sparks from igniting flammable vapor that could be present. Lighting is external to the glovebox. Smoking is not allowed anywhere within WRAP and 'NO SMOKING' signs are appropriately placed. WRAP is heated by heat pump with no ignition sources. Pyrophoric and reactive materials are stabilized before further processing. Chapter 3.0 provides further details on handling of pyrophoric and reactive materials.

6.5.2 Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste [F-2d(3) and F-5b]

The following general precautions are taken at WRAP for handling ignitable or reactive waste and mixing of incompatible waste.

- No smoking is allowed in WRAP.
- No open flames, sparking devices, cutting or welding, hot surfaces, or heat sparks are allowed while ignitable or reactive waste is present, unless a hot work permit has been approved.
- Compatibility testing is conducted before mixing any two wastes.
- Incompatible waste is segregated.

- At least yearly, the areas where ignitable or reactive waste are stored are inspected by a professional inspector familiar with the Uniform Fire Code (refer to Section 6.2.1.2).

Incompatible waste is segregated by drums and by containment pallets.

Known data on each waste package are forwarded to WRAP operators along with the waste package itself. The information is added to the waste tracking computer system along with a bar-code label for identifying and tracking the waste container through WRAP. As additional information is gained through nondestructive assay and nondestructive examination and waste sampling, the information is added to the waste tracking computer system.

Reactive waste is not anticipated to arrive at WRAP. If data on a waste package indicate that reactive waste is present within a container, the container can be accepted at WRAP but processing is controlled administratively. If reactive waste is received or identified, the waste is segregated, deactivated (if possible), and repackaged. If the waste cannot be safety deactivated, the waste is repackaged and returned to storage to await further treatment.

Deactivation of reactive waste is performed in the restricted waste management before sampling and testing to ensure that no reactions will occur during aggregation and to ensure complete deactivation. Alkali metals received at the restricted waste management are treated to render the metals nonreactive. Methods are employed to safely handle any reactive waste identified.

Information on ignitable waste, if known, is provided to WRAP operators to facilitate scheduling for processing, sampling, and solidification of this waste. Flammable and/or ignitable liquid waste is immobilized using flammable or combustible absorbent, as appropriate, to facilitate future treatment by incineration.

WRAP is designed and constructed to meet NFPA codes and is equipped with heat and smoke detectors along with a fire sprinkler system and an automatic ventilation shutdown system.

Transuranic waste is required to have vents on the waste containers from the time the containers are filled. Waste is required to be segregated and certified by the onsite generating unit or offsite generator before shipment such that no reaction could occur during storage or transportation.

All waste containers used for repackaging transuranic waste within WRAP are vented with filters to preclude buildup of gasses within the waste container.

Explosive, shock sensitive, and pyrophoric materials are not anticipated to be received in the waste destined for WRAP. Nevertheless, should this type of waste be received, the waste will be segregated immediately from all other materials and relocated in such a fashion to prevent detonation (Chapter 8.0). The packaging of these materials is conducted under the direction of the Hanford Fire Department or other approved agency. The package is stored appropriately until an approved plan for destruction has been developed. The contingency plan (Chapter 7.0) will be activated if any explosive, shock sensitive, or pyrophoric materials are discovered in WRAP.

Incompatible waste is segregated at the time of sorting inside of the main process glovebox or the restricted waste management glovebox. Compatible waste, which does not require further treatment at WRAP, is repackaged. Containerized liquids removed from waste packages are sampled for

characterization and tested for compatibility before any aggregation takes place in the restricted waste management gloveboxes.

Table 6-1. Alarm Destinations.

Alarm type	Local station	Central control room	Health protection station	Fire alarm panel
Process/control	X	X		
Safety-related	X	X	X	
Fire		X		X

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14.0 PART B CERTIFICATION [K]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy,
Richland Operations Office

Date 5/22/98

Co-operator
H. J. Hatch,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

Date May 14, 1998

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14.0 PART B CERTIFICATION [K]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

Date: 6/21/99

Co-operator
R. D. Hanson,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

Date: 6/21/99

Note: This certifies the following Revision 1A Chapters and Appendices: Chapter 1.0, Chapter 2.0, Chapter 4.0, Chapter 6.0, Appendix 3A, Appendix 7A, and Appendix 8A.

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APPENDIX 3A

WASTE ANALYSIS PLAN FOR WASTE RECEIVING AND PROCESSING FACILITY

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GLOSSARY

ALARA	as low as reasonably achievable
AWMP	alternative waste management plan
CAP	corrective action plan
CFR	Code of Federal Regulations
DOE-RL	U.S. Department of Energy, Richland Operations Office
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
GEA	gamma energy analysis
IPAN	imaging passive/active neutron
LDR	land disposal restriction
MSDS	material safety data sheet
NDA	nondestructive assay
NDE	nondestructive examination
PCB	polychlorinated biphenyl
PES	performance evaluation system
pH	negative logarithm of the hydrogen-ion concentration
PNNL	Pacific Northwest National Laboratory
PPE	personal protective equipment
QA/QC	quality assurance and quality control
RCRA	*Resource Conservation and Recovery Act of 1976*
SWITS	solid waste information tracking system
TRU	transuranic
TSD	treatment, storage, and/or disposal
WAC	Washington Administrative Code
WAP	waste analysis plan
WRAP	Waste Receiving and Processing Facility

METRIC CONVERSION CHART

The following conversion chart is provided to the reader as a tool to aid in conversion.

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

1.0 UNIT DESCRIPTION

The purpose of this waste analysis plan (WAP) is to document the waste acceptance process, sampling methodologies, analytical techniques, and overall processes that are undertaken for dangerous, mixed, and radioactive waste accepted for confirmation, nondestructive examination (NDE) and nondestructive assay (NDA), repackaging, certification, and/or storage at the Waste Receiving and Processing Facility (WRAP). Mixed and/or radioactive waste is treated at WRAP. WRAP is located in the 200 West Area of the Hanford Facility, Richland, Washington (Figures 1-1 and 1-2). Because dangerous waste does not include source, special nuclear, and by-product material components of mixed waste, radionuclides are not within the scope of this documentation. The information on radionuclides is provided only for general knowledge.

1.1 DESCRIPTION OF UNIT PROCESSES AND ACTIVITIES

WRAP (2336-W Building) is a nonland-based unit used for the treatment and storage of waste subject to the *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303. WRAP has a waste shipping and receiving area; NDE and NDA area; process area having enclosures for opening and sorting the contents of waste containers; restricted waste management enclosures for waste sampling and treatment; and process support, sample management, and administrative areas (Figure 1-3 through 1-6).

WRAP is designed for opening, sorting, and sampling to characterize retrieved[1] waste; and to verify the characterization of newly generated[2] containers of transuranic, low-level, and mixed waste. Limited treatment of mixed waste is provided in the process area enclosures, including deactivation (neutralization, cementing, absorption, and controlled reaction with water), stabilization (cementing, absorption, and encapsulation), and amalgamation; volume reduction of waste (i.e., supercompaction); and repackaging of waste.

Management of waste within WRAP is outlined in Figure 1-7. Waste entering WRAP initially is segregated into low-level and transuranic waste types. This segregation is based either on prior knowledge of the waste or on information obtained by performing NDA. Waste generator information on the physical nature of the waste also might be verified by NDE. Boxed waste is brought into WRAP for NDE and/or NDA and is not transferred to the process area. Waste in metal drums brought into WRAP could be examined by NDA or NDE or sent directly to the process area if sufficient information already exists for the waste. Waste intended for processing or additional verification within WRAP is transferred to the process area. Low-level waste is taken to the low-level process gloveboxes and transuranic waste is taken to the transuranic process gloveboxes. The waste is sorted in these gloveboxes into compliant and noncompliant[3] fractions. Compliant waste is waste that can be disposed without

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[1] Retrieved waste is defined as waste that has unknown, suspect, or limited characterization contents and has been retrieved from the Hanford Facility (e.g., Low-Level Burial Grounds or from other locations). All retrieved waste, after being characterized, is newly generated waste.

[2] Newly generated waste is defined as waste that has been certified as to content by a generator.

[3] Noncompliant waste refers to materials that cannot be accepted for transportation or disposal without further processing and does not refer to noncompliance with WAC 173-303.

further treatment. Field screening and sampling might be conducted within the gloveboxes to perform verification or to establish if a particular item is compliant. Noncompliant items are transferred to the low-level or transuranic restricted waste management gloveboxes. Additional field screening or sampling could occur in these gloveboxes to complete verification or assist in complete characterization of the waste. Noncompliant waste material also could be treated in the restricted waste management gloveboxes to meet land disposal restriction (LDR), 40 Code of Federal Regulations (CFR) 268 or other requirements. If sampling is necessary to verify treatment requirements, this will be conducted in the restricted waste management gloveboxes. Compliant waste, treated waste, and waste awaiting future treatment are transferred out of WRAP. Waste is examined using NDE before leaving WRAP if additional quality assurance (QA) verification is required. NDA is performed on waste exiting WRAP if the waste was sorted or combined such that a new radionuclide inventory must be determined for the waste container.

Additional description can be found in Chapter 2.0 of the *Hanford Facility Dangerous Waste Permit Application, Waste Receiving and Processing Facility* (DOE/RL-91-16).

1.1.1 How Waste is Accepted, Moved, Processed, and Managed

The following sections describe the process for waste acceptance and the different types of information and knowledge reviewed/required during the acceptance process. The process for management of waste is described in Chapter 4.0 of the WRAP dangerous waste permit application documentation (DOE/RL-91-16).

1.1.1.1 Narrative Process Descriptions

The onsite generating units, offsite generators, and treatment, storage, and/or disposal (TSD) units transferring waste to WRAP hereafter are referred to as the 'generator' unless otherwise denoted in this WAP.

Waste that does not meet LDR requirements, as specified in 40 CFR 268 and WAC 173-303-140, is stored in WRAP until the waste is processed for repackaging or further treatment. The WRAP operating record contains information necessary to meet LDR requirements (Sections 2.1.3.2 and 7.4). Containerized waste that is not fully characterized or is awaiting analytical results can be stored in WRAP (DOE/RL-91-16). The Hanford Facility is required to test certain mixed waste depending on the type of treatment standard to ensure that the waste or treatment residuals are in compliance with applicable LDR requirements (Section 2.1.3.2 and 4.5). Such testing is performed according to the frequency specified in this WAP.

1.1.1.2 Waste Acceptance Process

WRAP waste acceptance process consists of following activities:

- Waste Stream Approval. The generator provides information concerning each waste stream on a waste profile sheet. The waste stream information is reviewed against the WRAP waste acceptance criteria. If the waste stream information is sufficient and meets the applicable acceptance criteria, the waste stream is approved. In addition, the initial verification frequency for the waste is determined in accordance with the requirements found in the performance evaluation program (PES) (Section 1.1.1.3). For a more complete description of the waste stream approval process, refer to Section 2.1.1.

- Waste Shipment Approval. The generator provides specific data for each waste container on the container data sheet. The container data are reviewed against the waste profile sheet data and the WRAP acceptance criteria before being approved for shipment. In addition, the WRAP operating organization determines if any of the containers require verification based on the verification frequency as determined by PES. For a more complete description of the waste shipment approval process, refer to Section 2.1.2.

- Verification. Verification activities include container receipt inspection, physical screening, and/or chemical screening. A percentage of waste shipments and containers are selected for receipt verification during the waste shipment approval process. These containers can be inspected visually, verified by NDE, or sampled for field or laboratory analysis to confirm that the waste matches the waste profile and container data information supplied by the generator. Any discrepancies between the verification results and the waste profile sheet must be resolved before final acceptance at WRAP in accordance with the conformance issue resolution process found in Section 1.1.1.3.3.

1.1.1.2.1 Types of Acceptable Knowledge

When collecting documentation on a waste stream or container, the WRAP operating organization or representative organization, hereafter referred to the 'WRAP operating organization', must determine if the information provided by the generator is acceptable knowledge. Acceptable knowledge requirements are met using any one or a combination of the following types of data:

- Mass balance from a controlled process that has a specified input for a specified output
- Material safety data sheets (MSDSs) on unused chemical products
- Test data from a surrogate sample
- Analytical data on the waste or a waste from a similar process.

In addition, acceptable knowledge requirements can be met using a combination of analytical data or screening results and one or more of the following:

- Interview information
- Logbooks
- Procurement records
- Qualified analytical data
- Radiation work package
- Procedures and/or methods
- Process flow charts
- Inventory sheets
- Vendor information
- Mass balance from an uncontrolled process (e.g., spill cleanup)
- Mass balance from a process with variable inputs and outputs (e.g., washing/cleaning methods).

If the information is sufficient to quantify constituents and characteristics as required by the regulations and WRAP acceptance criteria, the information is considered acceptable knowledge. The WRAP acceptance criteria is defined as the requirements found in the WAP and the associated Part A, Form 3, (DOE/RL-91-16, Chapter 1.0).

1.1.1.3 Description of Performance Evaluation System

A PES is used to determine initial physical screening frequency of the generator. PES provides a periodic status of an individual generator's performance for waste received. Also, PES provides a mechanism for determining corrective actions and physical screening frequency adjustments when a problem has been discovered after waste has arrived at WRAP.

1.1.1.3.1 Initial Physical Screening Frequency Determination

The initial physical screening frequency is determined based on the following process.

- WRAP operating organization reviews the generator waste profile information to determine the relative potential for misdesignation or inappropriate segregation based on all relevant information, including any previous experience with the generator. Based on this review, WRAP operating organization identifies any concerns associated with the following criteria:

  - documented waste management program
  - waste stream characterization information
  - potential for inappropriate segregation.

- Based on the identification of concerns during the review, the WRAP operating organization establishes the initial physical screening frequency for the new generator's waste stream based on the following criteria:

  - Initial physical screening frequency of, at a minimum, 20 percent: No concerns identified (e.g., cleanup of contaminated soil where the soil has been well characterized and no other waste generation processes are occurring at that location)

  - Initial physical screening frequency of, at a minimum, 50 percent: Concern(s) identified in one criterion (e.g., a facility with many different processes that generate debris that have differing management paths)

  - Initial physical screening frequency of 100 percent: Concerns identified in two or more criteria (e.g., a facility with many different process and questionable segregation controls).

1.1.1.3.2 Monthly Performance Evaluation

A performance evaluation is used to trend a generator's performance and is used to raise the generator's overall physical screening frequency. The evaluation should be objective and should consider the conformance issues documented during the Preshipment Review and Verification functions. The WRAP operating organization will: (1) perform monthly evaluations based on deficiencies and conformance issues identified, (2) evaluate unsatisfactory performance for corrective actions, and (3) adjust physical screening rates accordingly.

1.1.1.3.3 Conformance Issue Resolution

Conformance issues during verification could result in a waste container that does not meet WRAP waste acceptance criteria. If a possible conformance issue is identified, the following actions are taken to resolve the issue.

- WRAP operating organization compile all information concerning the possible conformance issue(s).

- The generator is notified and requested to supply additional knowledge to assist in the resolution of the concern(s). If the generator supplies information that alleviates the concern(s) identified, no further action is required.

- On determination that a conformance issue has been identified, the WRAP operating organization personnel and the generator discuss the conformance issue and identify the appropriate course of action to resolve the container/shipment in question, i.e., pick another sample set, return the container/shipment, divert the container/shipment to another TSD unit that can accept the container/shipment and resolve the issue, or the generator resolves the issue at the TSD unit. If the conformance issue(s) results in the failure of a shipment, the physical screening frequency for all streams from the generator are adjusted to 100 percent until the issue(s) adequately can be addressed.

- On resolution of the initial conformance issue, WRAP operating organization requests the generator to provide a corrective action plan (CAP) that clearly states the reason for the failure and describes the actions to be completed to prevent re-occurrence. The generator could request a reduction in verification of unaffected streams. This request must be accompanied by a justification that identifies why this stream(s) would not exhibit the same conformance issue.

- WRAP operating organization reviews the CAP and stream justification for adequacy. If the CAP is inadequate, the generator remains at a physical screening rate of 100 percent. If the stream justification is adequate, WRAP operating organization could provide an alternative frequency as denoted in Section 1.1.1.3.2.

1.1.1.3.4 Process for Reducing the Physical Screening Frequency

Screening rate frequencies and changes to those frequencies could be applied to a specific waste stream, to a specific contractor, or to a specific offsite generator based on the circumstances surrounding the conformance issue. After the initial screening frequency for a given waste stream has been established or increased, the physical screening frequency can be reduced in accordance with the following.

The physical screening frequency will be reduced in three steps. Reduction for all steps is based on the ability to demonstrate that five containers from the waste stream in question pass verification. In addition, reduction to the minimum frequency requires that the WRAP operating organization documents an acceptable evaluation of the corrective action plan, and the corrective action plan is fully implemented. At no time will the physical screening frequency be reduced below 5 percent for waste generated onsite or below 10 percent for offsite generators.

- Step 1. Reduce frequency by 66 percent after five containers from the waste stream in question pass verification.

- Step 2. Reduce frequency established in Step 1 by 50 percent or to the minimum allowable, whichever results in a greater frequency after five containers from the waste stream in question pass verification.

- Step 3. Reduce frequency to the minimum allowable after five containers from the waste stream in question pass verification. The WRAP operating organization documents an acceptable evaluation of the corrective action plan, and the corrective action plan is fully implemented.

The screening rate reduction will be established during periodic performance evaluation system team meetings.

1.1.2 Process Flow Diagram

Refer to Figure 1-7 for WRAP waste analysis plan flowchart and Section 1.1 for description.

1.1.3 Operating Conditions

The following conditions and constraints apply to waste accepted at WRAP. Only waste contained in 208- and 322-liter metal drums can be received for management in the process area. The waste container weight must be known and proper handing procedures imposed to ensure safe operations. The waste container radiation dose must be known and procedures must ensure that personnel exposure is kept as low as is reasonably achievable (ALARA). The quantity of fissile material within the waste must be determined and must be low enough to prevent a criticality hazard. Liquid waste can be received if packaged in inner glass, metal, or plastic containers and surrounded by sufficient sorbent to sorb twice the amount of liquid present. Containers of waste that cause pressurization must be vented. Radionuclide and dangerous waste constituent inventories in waste containers must be kept low enough to ensure that personnel emergency exposure limits are not exceeded.

1.2 IDENTIFICATION AND CLASSIFICATION OF WASTE

Waste is accepted for treatment (mixed waste) and/or storage (mixed and dangerous) in WRAP except for the following waste types:

- Bulk liquid waste
- Explosive waste
- Shock sensitive waste
- Class IV oxidizer waste
- Infectious waste.

Refer to DOE/RL-91-16, Chapter 4.0 for precautions that are taken when ignitable, reactive, or incompatible waste is stored.

WRAP manages the following waste types:

- Labpack liquids
- Solids/debris
- Sludges/soils.

These waste types could be classified as transuranic, low-level, mixed, and/or dangerous. Unless otherwise prohibited by this WAP, the waste could exhibit the characteristics of ignitable, toxic, corrosive, and/or reactive. In addition to the waste received at WRAP for verification or processing, WRAP generates mixed and dangerous waste. This waste material consists of items such as personal protective equipment (PPE), rags, and spent equipment contaminated with dangerous cleaning agents, lubricants, paints, or other dangerous materials. Process knowledge, field screening, or sampling and analysis are used as appropriate to characterize these waste materials. Field screening and sampling are in accordance with this WAP and occur at the point of waste generation or at the location where the waste materials are stored.

1.2.1 Dangerous Waste Numbers, Quantities, and Design Capacity

The Part A, Form 3, permit application for WRAP identifies dangerous waste numbers, quantities, and design capacity (DOE/RL-91-16, Chapter 1.0).

1.2.2 Alternative Waste Management Plan

For waste that cannot be stored and disposed in accordance with the requirements set forth in this WAP, an alternative waste management plan (AWMP) could be submitted to the Washington State Department of Ecology (Ecology) for review. Because many activities associated with or necessary to support waste management projects readily would not be predictable, some flexibility in timeframes for submitting, reviewing, and completing waste management plans would be necessary. In general, the following schedules should be observed.

- Submit the AWMP to the Ecology Project Manager at least 120 days before the project is expected to begin. The cover letter would state that "no reply within 45 days constitutes approval".

- Ecology reviews and provides comments (if any) within 45 days after receiving the AWMP.

- On receipt, comments would be resolved through project manager meetings or other workshops as agreed to by the U.S. Department of Energy, Richland Operations Office (DOE-RL) and Ecology. When the AWMP is resubmitted following resolution of Ecology's comments, the same review timeframes would be applicable.

- If no comments are received from Ecology within 45 days after the AWMP is submitted, the plan would be denoted as approved.

These timeframes could be adjusted by mutual agreement to account for project-specific needs and priorities. The AWMP review would ensure the following.

- The project does not endanger human health and the environment.
- The course of action chosen is well justified.

On gaining written or automatic approval, the DOE-RL would proceed as described in the AWMP. Should the plan require revision because of unforseen circumstances, the DOE-RL would resubmit the plan before continuing. On conclusion of the project, the DOE-RL would supply Ecology with a report outlining the activities performed and the results of these activities. During the next permit modification cycle and no later than 1 year, a modification to the WAP would be submitted. Approval for a AWMP that violates a specific prohibition outlined in the WAP is not permitted without first receiving a modification to the permit.

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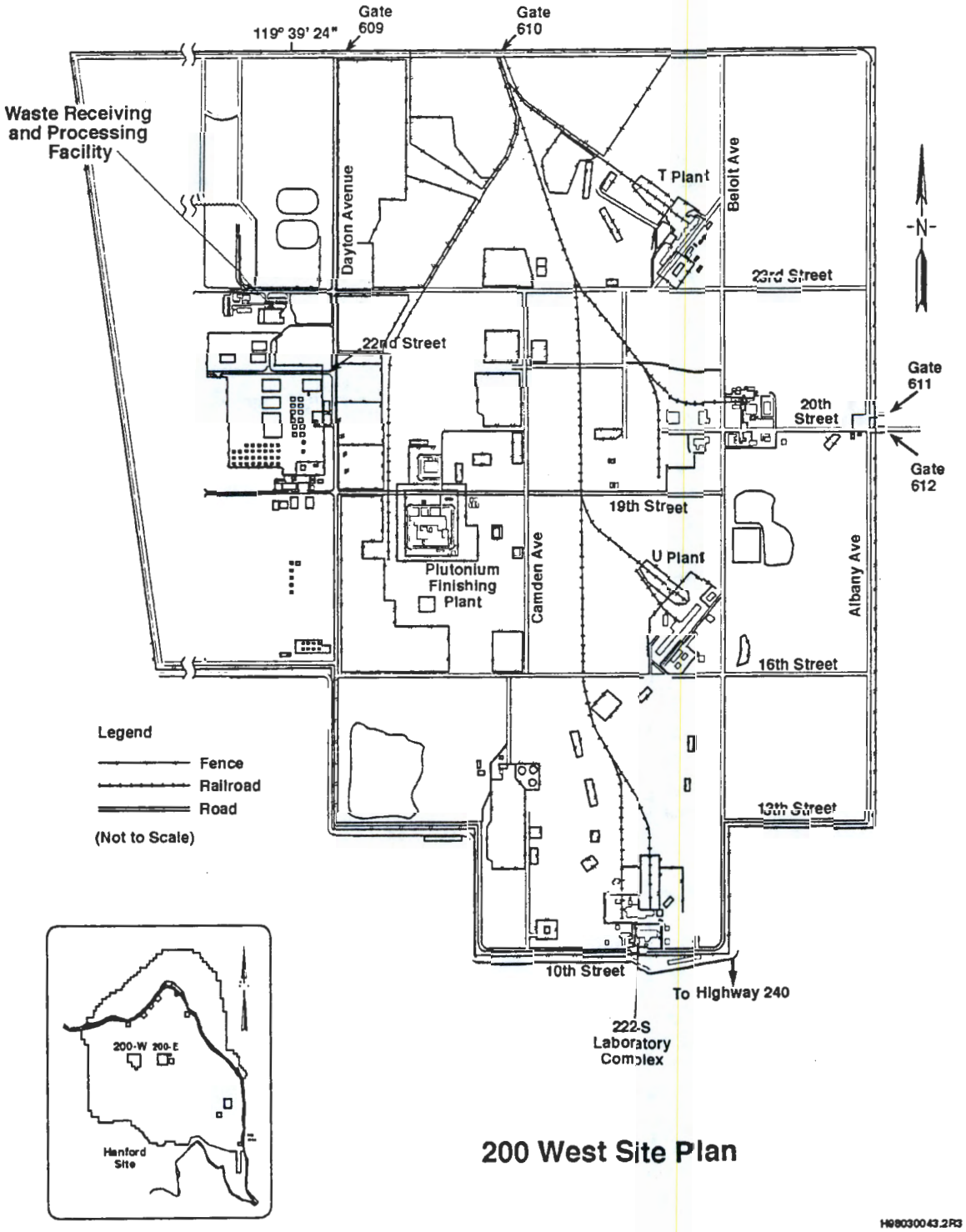


Figure 1-1. 200 West Area Site Plan.

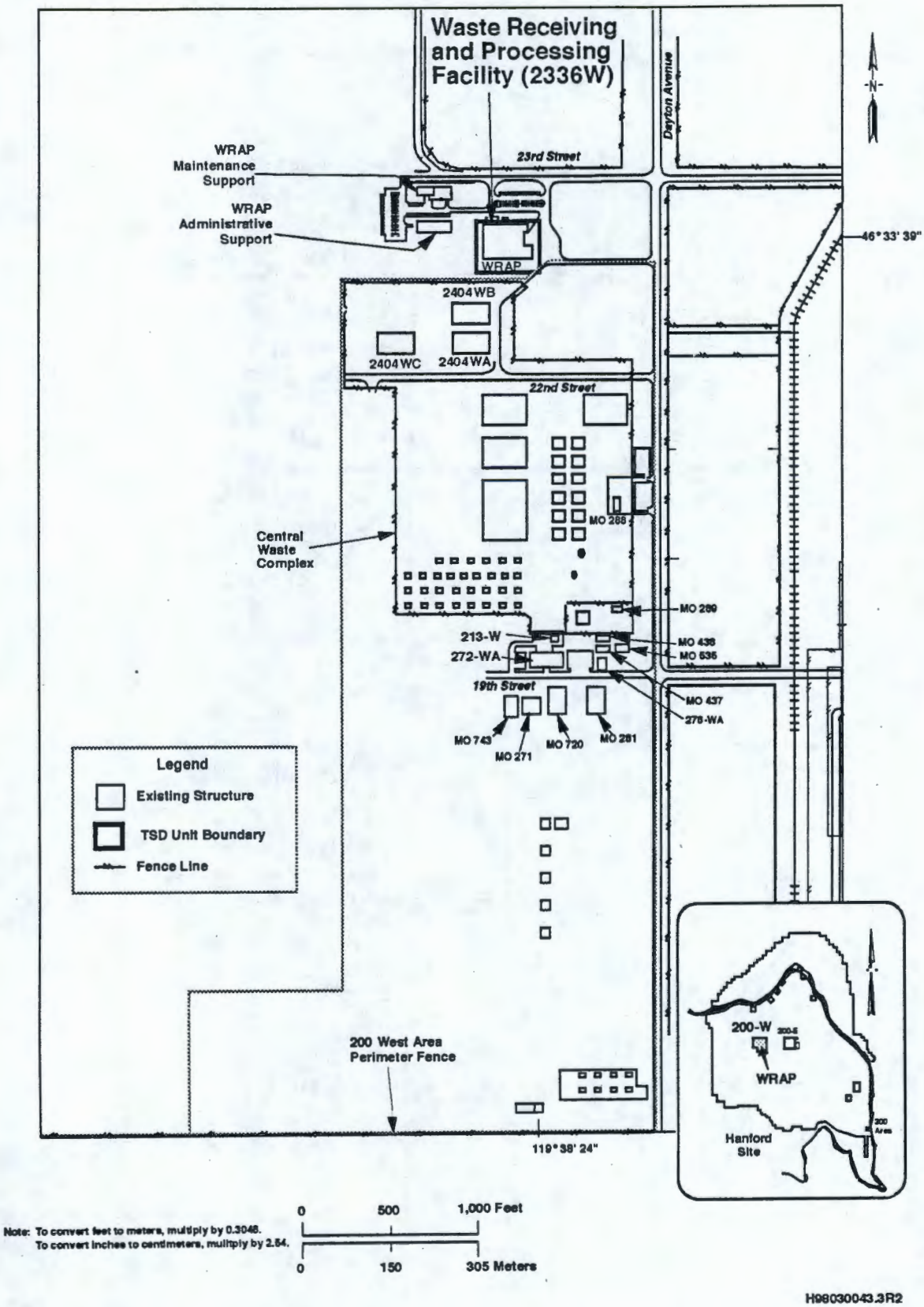


Figure 1-2. Waste Receiving and Processing Facility Location.

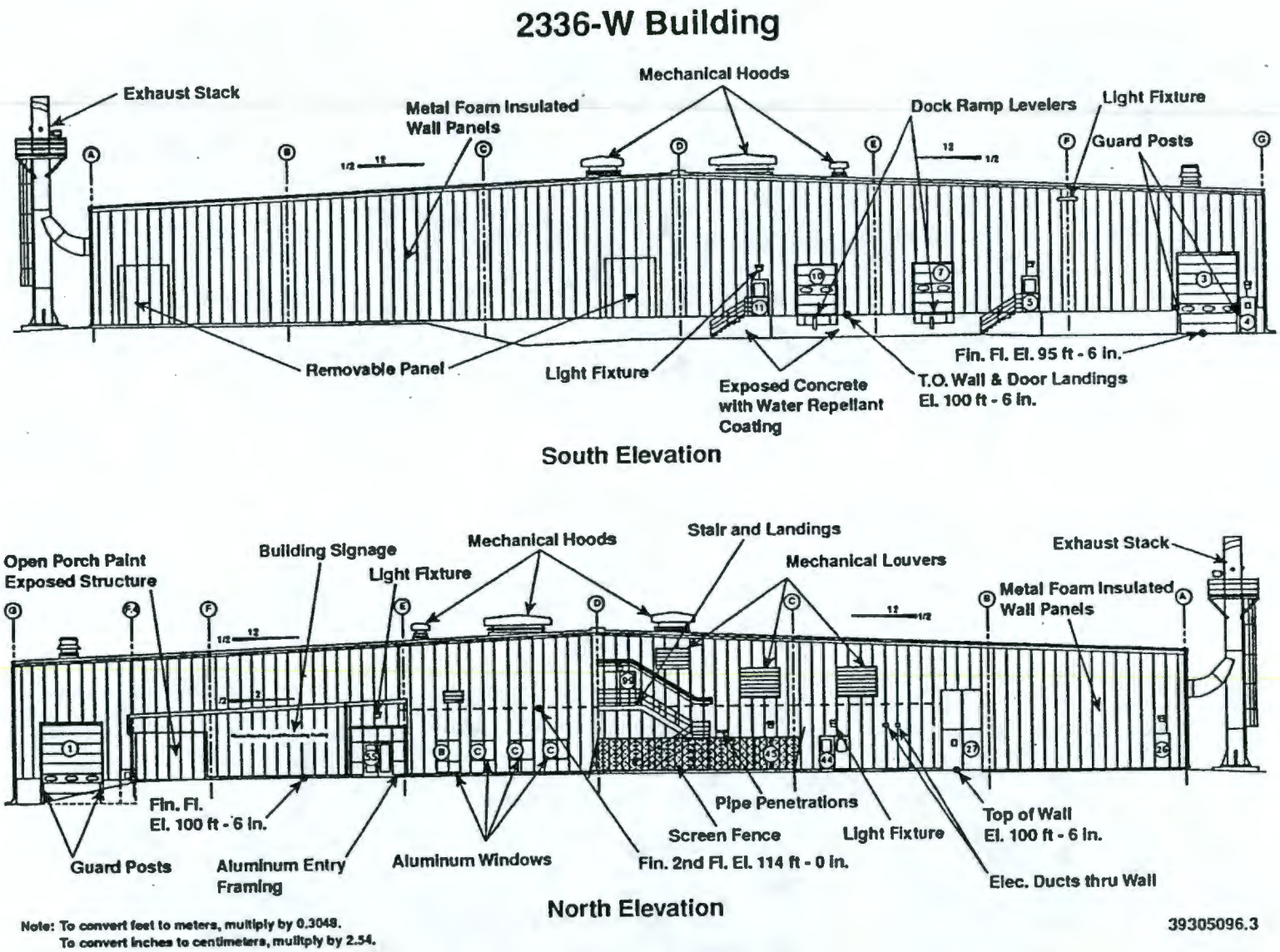
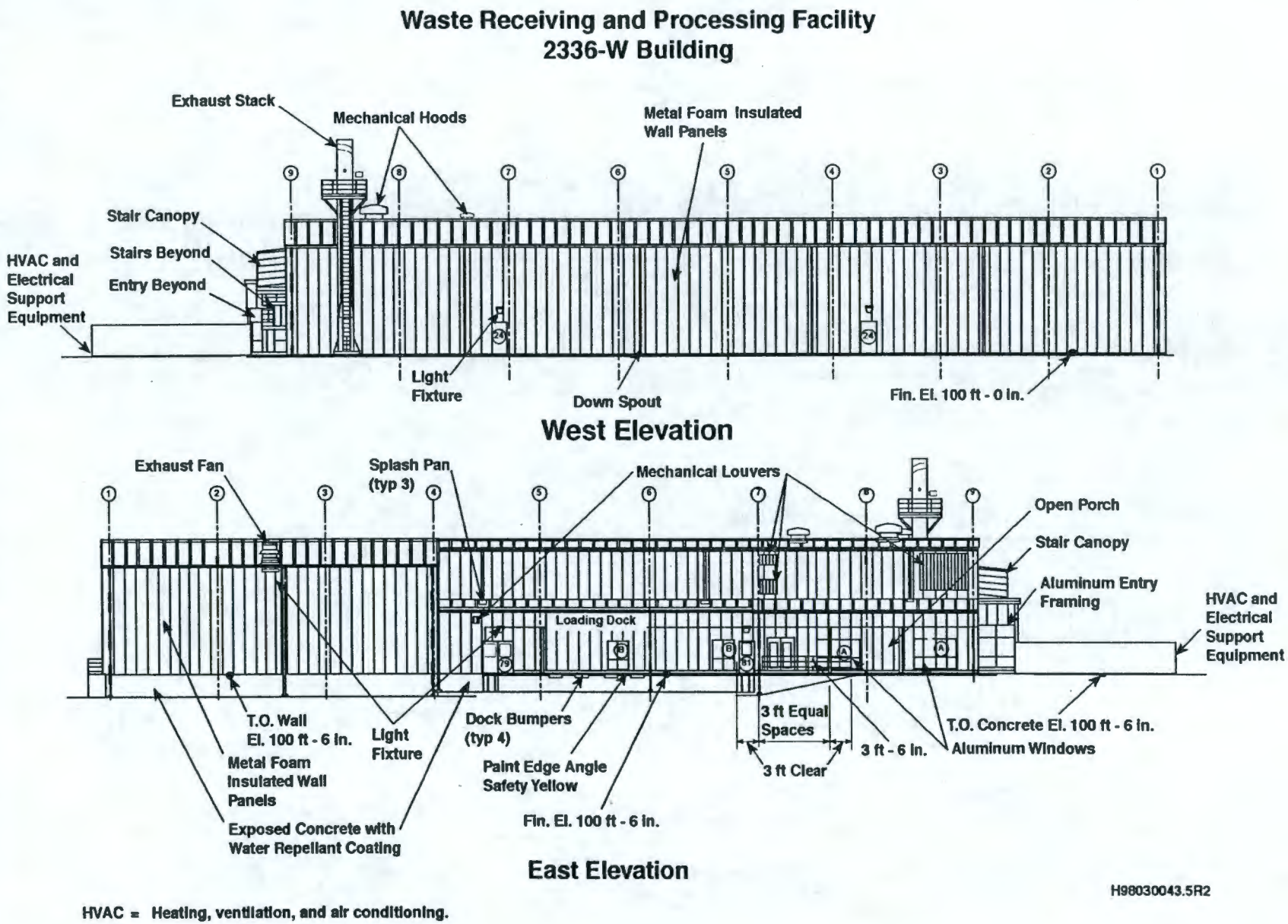


Figure 1-3. Waste Receiving and Processing Facility--2336-W Building (North and South Sections).



HVAC = Heating, ventilation, and air conditioning.

Figure 1-4. Waste Receiving and Processing Facility--2336-W Building (West and East Sections).

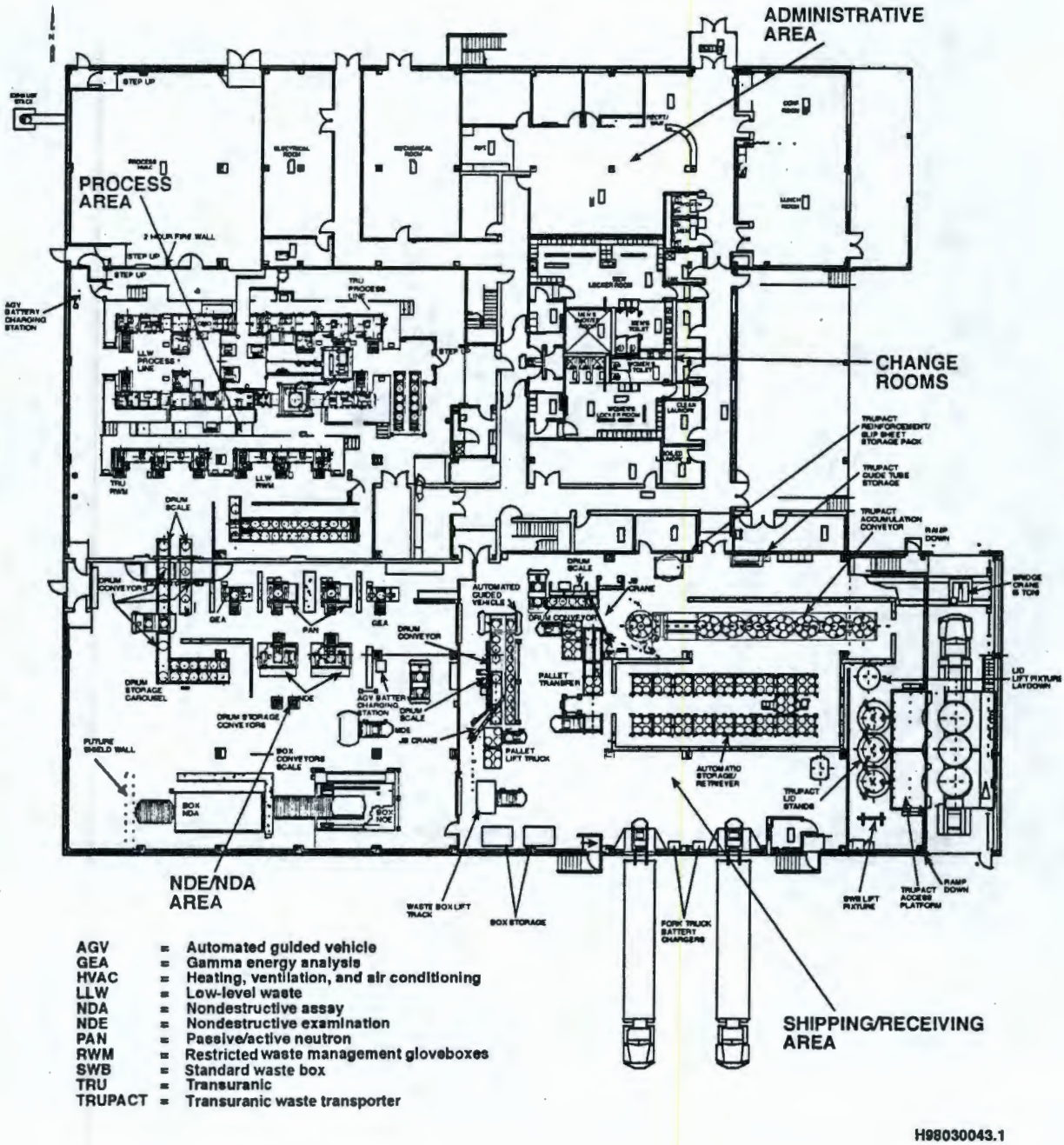
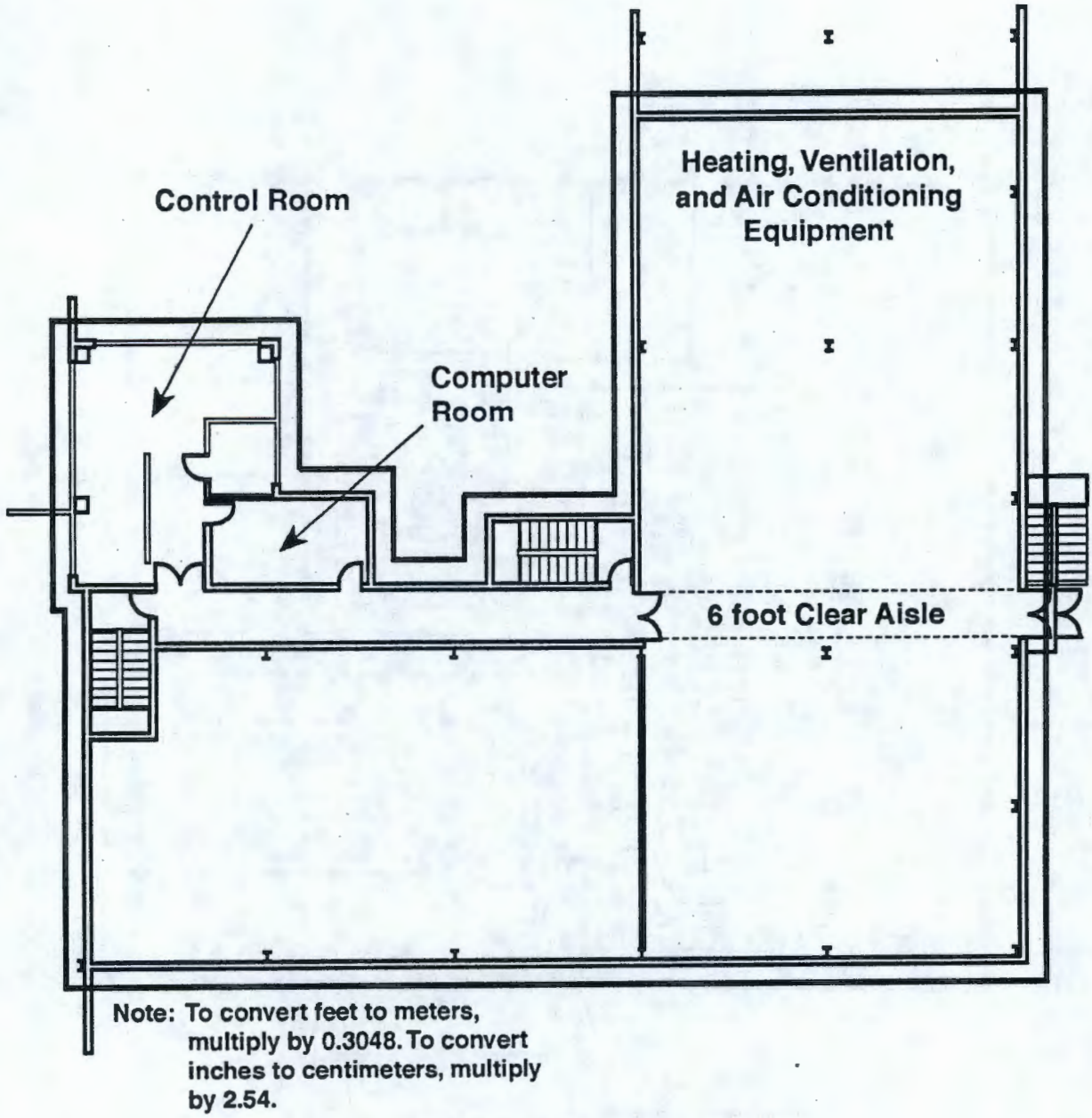


Figure 1-5. Waste Receiving and Processing Facility--2336-W Building Floor Plan.



Plan-Upper Level
(not to scale)

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Figure 1-6. Waste Receiving and Processing Facility--2336-W Building Upper Level Plan.

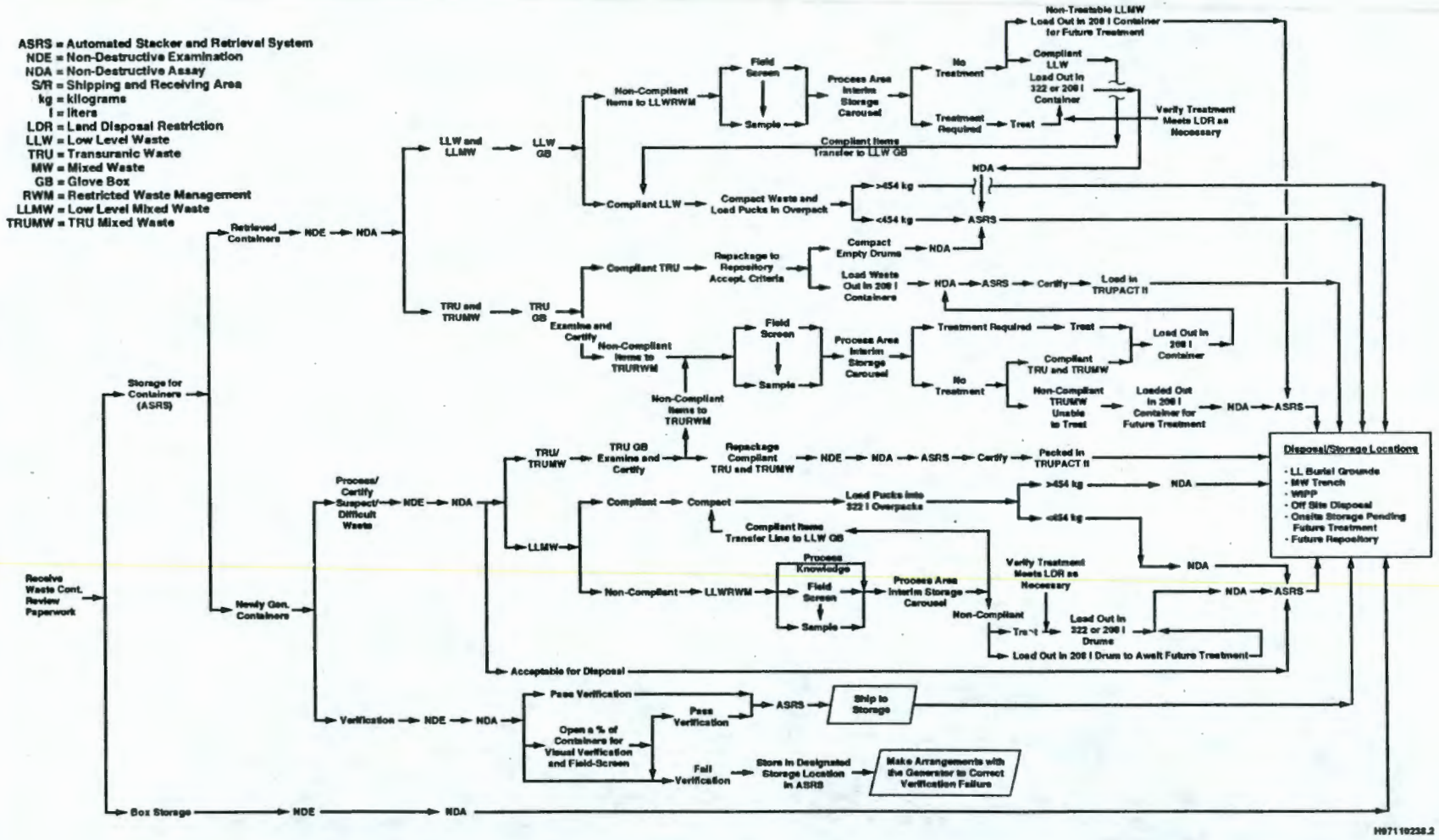

Figure 1-7. Waste Receiving and Processing Facility Waste Analysis Plan Flowchart.

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2.0 CONFIRMATION PROCESS

The confirmation process includes completing appropriate pre-shipment reviews and verification steps and/or parameters. The requirement to confirm appears twice in WAC 173-303-300 and applies to two different scenarios.

Scenario 1: The process that an owner or operator uses to ensure knowledge supplied by the generator or TSD unit is acceptable knowledge to ensure that the waste is managed properly [WAC 173-303-300(1)]. This is accomplished by a pre-shipment review.

Scenario 2: The process that a facility owner or operator receiving offsite facility shipments uses to determine, by analysis if necessary, that each waste received at the facility matches the identity of the waste specified on the accompanying manifest or shipping paper [WAC 173-303-300(3)]. This is accomplished during verification.

2.1 PRE-SHIPMENT REVIEW

Pre-shipment review takes place before waste can be scheduled for transfer or shipment to WRAP. The review focuses on whether the waste stream is defined accurately, meets the WRAP waste acceptance criteria, and the LDR status is determined correctly. Only waste determined to be acceptable for treatment and/or storage is scheduled. This determination is based on the information provided by the generator. The pre-shipment review consists of the waste stream approval and waste shipment approval process. The following sections discuss the pre-shipment review process. The information obtained from the generator during the pre-shipment review, at a minimum, includes all information necessary to safely treat and/or store the waste. The pre-shipment review ensures the waste has been characterized and the data provided qualify as 'acceptable knowledge' (Section 2.1.3).

2.1.1 Waste Stream Approval Process

The waste stream approval process consists of reviewing stream information supplied on a waste stream profile and attached analysis. At a minimum, the profile requests the following information:

- Generator information (e.g., name, address, point-of-contact, phone number)
- Waste stream name
- Waste generating process description
- Radiological knowledge (e.g., classification, reportable radionuclides, characterization method)
- Chemical characterization information (e.g., characterization method(s), chemicals present, concentration ranges)
- Designation information
- LDR information including identification of underlying hazardous constituents if applicable

- Waste type information (e.g., physical state, absorbents used, inert materials, stabilizing agents used)

- Packaging information (e.g., container type, maximum weight, size)

- Attachments could consist of container drawings, process flow information, analytical data, etc.

This information is reviewed against the WRAP waste acceptance criteria to ensure the waste is acceptable for receipt. If discrepancies are found during this review, additional information is requested that could include analytical data or a sample to be analyzed. If the waste cannot be received, the WRAP operating organization will pursue acceptance of the waste at an alternative TSD unit or request the generator to pursue acceptance at an offsite facility.

On determination that the waste is acceptable, the WRAP operating organization assigns the profile to a waste management path and establishes a waste verification frequency based on the requirements found in Sections 1.1.1.3 and 2.2.2.2.

2.1.2 Waste Shipment Approval Process

For each waste transfer or shipment that is a candidate for treatment and/or storage, the generator provides the following information:

- Container identification number
- Profile number
- Waste description
- Generator information (e.g., name, address, point-of-contact, telephone number)
- Container information (e.g., type, size, weight)
- Waste numbers
- Extremely hazardous waste or dangerous waste
- Dose rate information
- Reportable radionuclides and quantities
- Waste composition
- Packaging materials and quantities

The pertinent information is entered into Solid Waste Information Tracking System (SWITS). Figure 2-1 is the waste acceptance process.

Where potential nonconformances exist in the information provided, (i.e., waste characteristics do not match the waste profile information, or additional constituents are expected to be present that do not appear on the documentation), the generator is contacted by the WRAP operating organization or its representative for resolution. Refer to Section 6.0 for discussion on repeat and review frequency.

For each container, a technical review, physical screening determination, and chemical screening determination are performed as follows.

- **Technical review.** The individual container data are compared to the waste profile data to ensure the information is accurate. Every transfer or shipment is reviewed to ensure the waste meets the WRAP waste acceptance criteria.

Based on waste identification information provided, the waste designation is reviewed to ensure consistency with waste designations per WAC 173-303-070, as well as for technical accuracy to ensure the waste meets the waste acceptance criteria.

If the transfer or shipment information is found to be acceptable, the WRAP operating organization determines if any of the waste containers will be physically or chemically screened.

- **Physical screening determination.** Containers are chosen based on the methodology described in this section. The first criterion is based on whether pre-shipment review activities (document and characterization review) identify areas of potential concern. The second criterion is reviewing the current physical screening percentage (calculated using the following method) of containers received from said stream from said generator that have been received over the past 12 months or the date of the last physical screening adjustment, whichever occurs first. The rate will be applied as compared to those that have been physically screened. This criterion ensures that the minimum physical screening confirmation rates required by this WAP are met.

  The number of containers selected for physical screening in shipments is determined by multiplying the total number of containers received during the previous 12 months for that stream including the containers identified in the shipment by the applicable verification rate, rounded up to the next integer. This selected group of containers constitutes a sample set.

  Individual containers within a shipment are selected based on a review of the contents listed in the associated shipment documentation.

  Containers are selected at random unless variability within the stream is noted. In this case containers representing different variations are selected (e.g., wood debris vs metallic debris).

- **Chemical screening determination.** Individual containers within a shipment are selected based on a review of the contents listed in the associated shipment documentation. Containers are selected at random unless variability within the stream is noted. In this case, containers representing different variations are selected (e.g., used oil, spent solvent).

On determining whether the shipment will be verified, the shipment is scheduled.

2.1.3 Acceptable Knowledge Requirements

The WRAP operating organization ensures that all information used to make waste management decisions will be based on the requirements found in the following sections. For information determined to be 'acceptable knowledge', the WRAP operating organization must determine if the information is adequate for management of the waste.

2.1.3.1 General Acceptable Knowledge Requirements

Adequate acceptable knowledge requires (1) general waste knowledge requirements, (2) LDR waste knowledge requirements, and/or (3) waste knowledge exceptions.

(1) **General Waste Knowledge Requirements.** At a minimum, the generator supplies enough information for the waste to be treated and/or stored at WRAP. The minimum level of acceptable knowledge consists of designation data where the constituents causing a waste number to be

assigned are quantified, and data that address any WRAP operational parameters necessary for proper management of the waste.

Where the available information does not qualify as acceptable knowledge or is not sufficient to characterize a waste for management, the sampling and testing methods outlined in WAC 173-303-110 must be used to determine whether a waste designates as toxic characteristic, corrosive, and/or contains free liquids.

If a generator's process knowledge indicates that constituents, which if present in the waste might cause the waste to be regulated, are input to a process but not expected to be in the waste, sampling and analysis must be performed to ensure the constituents do not appear in the waste. This requirement can be met through chemical screening. This sampling and analysis is required only for initial characterization of the waste stream.

(2) **LDR Waste Knowledge**. Waste is stored in WRAP while awaiting analytical results for LDR requirements. The WRAP operating record contains all information required to document that the appropriate treatment standards have been met or will be met after the waste is treated.

For the purposes of this WAP, a representative sample is required to demonstrate compliance with a concentration-based treatment standard (refer to Section 4.5). Corroborative testing for the sample could be accomplished in the following manner.

- Generators could use onsite laboratories or other laboratories to certify that the waste meets LDR requirements. For waste that does not meet LDR requirements, the generator must supply information on the treatment methods necessary to meet LDR requirements and in accordance with WAC 173-303-380(1)(j)(k)(n)(o).

- The WRAP operating organization uses these analytical data to meet applicable requirements found in 40 CFR 268.7 and WAC 173-303-140(4).

(3) **Waste Knowledge Exceptions**.In some situations, full characterization of waste for cradle-to-grave management is not possible or feasible before receipt at WRAP for storage. For storage purposes, waste analysis requirements could be met through application of acceptable knowledge when such knowledge provides sufficient information to ensure that waste will be stored properly. Acceptable knowledge could be used to accommodate storage at WRAP for the following.

- Waste previously disposed before the effective date of the regulation that has been or will be retrieved for storage at WRAP, and for which adequate information has been obtained to ensure proper storage at WRAP.

- Waste placed in storage before the effective date of this permit for which adequate information has been obtained to ensure proper storage at WRAP.

- Newly-generated waste for which adequate information has been obtained to ensure proper storage at WRAP.

For situations in which acceptable knowledge has been used to accommodate storage, such information will be supplemented as necessary before treatment and/or disposal of the waste.

2.1.3.2 Methodology to Ensure Compliance with Land Disposal Restrictions Requirements

All generators are subject to LDR requirements and are required to submit all information notifications and certifications described in WAC 173-303-380(1)(j)(k)(n) or (o). Mixed waste not meeting the treatment standards, but meeting the WRAP waste acceptance criteria, can be stored at WRAP (refer to Chapter 1.0, Section 1.1.1.1). The following are general requirements for offsite notifications or onsite information and supporting documentation.

- The waste is subject to LDR and the generator has treated the waste. The generator supplies the appropriate LDR certification information (40 CFR 268).

- The waste is subject to LDR and the generator has determined that the waste meets the LDR for disposal. The generator develops the certification based on process knowledge, and/or analytical data, and supplies the appropriate LDR certification information necessary to demonstrate compliance with the LDR treatment standards of 40 CFR 268 and WAC 173-303-140. State-only LDRs do not require this type of certification.

- The waste is subject to LDR and requires further treatment to meet applicable treatment standard.

  - The generator supplies additional information concerning the waste and details any treatment necessary to meet applicable treatment standards.

  - If waste is treated to meet state-only or federal LDRs at WRAP, the WRAP operating organization prepares information necessary to meet WAC 173-303-380(1)(k) (refer to Section 7.4).

A representative sample of the waste must be submitted for analysis to ensure that concentration-based LDR treatment standards are met. This sample could be taken by the WRAP operating organization or the generator, and is required to comply with the treatment standards contained in 40 CFR 268.40 and 268.48 for underlying hazardous constituents.

2.2 VERIFICATION

Verification is an assessment performed by the WRAP operating organization to substantiate that the waste received at WRAP is the same as represented by the analysis supplied by the generator for the pre-shipment review. Verification is performed on waste received by WRAP. Verification includes container receipt inspection, physical screening, and chemical screening. Waste is not accepted by WRAP for treatment and/or storage until required elements of verification have been completed, including evaluation of any data obtained from verification activities.

All discrepancies identified during the verification process are resolved in accordance with Section 1.1.1.3.3.

2.2.1 Container Receipt Inspection

The container receipt inspection is a mandatory element of the confirmation process. Therefore, 100 percent of the transfers/shipments are inspected for damage and to ensure the waste containers are those indicated on the documentation. This activity is a mechanism for identifying any document discrepancies or damaged containers before acceptance. The container receipt inspection is performed

by the WRAP operating organization at WRAP or at another onsite location. When another onsite location is chosen, the container receipt inspection will be completed within 24 hours of waste receipt. The WRAP operating organization will ensure that the shipment: (1) is received in good condition, (2) is the waste indicated on the manifest or shipping papers, (3) has not been opened improperly after physical and/or chemical screening was performed, and (4) is complete.

2.2.2 Physical Screening Process

Physical screening is considered an additional verification element. This section describes the requirement pertaining to methods, frequency, and exceptions concerning the use of physical screening as a verification activity. Physical screening could be performed before the waste is shipped to WRAP. When screening is performed at a location not within the Solid Waste Project (e.g., Central Waste Complex, T Plant Complex, Low-Level Burial Grounds), tamper resistant seals are applied to each container examined.

2.2.2.1 Physical Screening Methods

Each of the following physical screening methods, listed in order of preference, complies with the requirement to verify a waste. If a method other than 1 or 2 is used, the reasoning behind the method chosen must be documented in the operating record. Choosing method 3 or 4 is not permitted if the basis for choosing 3 or 4 is because the NDE units are not functional.

1. Visual inspection (opening the container)
2. NDE
3. NDA
4. Dose rate profile.

Refer to Section 2.2.5 for quality control pertaining to physical screening.

2.2.2.2 Physical Screening Frequency

Physical screening frequency is 5 percent for onsite generating units, applied per waste stream per subcontractor per year. For offsite generators, the minimum physical screening frequency is 10 percent per waste stream per generator per year. The WRAP operating organization adjusts the physical screening frequency for generators based on objective performance criteria (refer to Section 1.1.1.3.1).

In the event that one of the containers in the original sample set fails, a second sample set of equal size, or a minimum of three additional containers, is selected from the shipment. First and second sample sets are selected using the rationale described in the pre-shipment review section (Section 2.1). A second failure in either the first or the second sample set constitutes failure of the shipment. If the second sample set passes the inspection the single failed container is considered an anomaly and the remainder of the shipment passes verification. All failed containers and shipments are dispositioned via the PES.

2.2.2.3 Physical Screening Exceptions

The following exceptions to the physical screening process outlined previously have been developed.

- Shielded, classified, and remote-handled mixed wastes are not required to be physically screened; however, the WRAP operating organization must perform a more rigorous documentation review

and obtain the raw data used to characterize the waste (<1 percent of current waste receipts). Ecology will be notified and have the opportunity to review information on these wastes before shipment. For classified waste, it is necessary to have an appropriate U.S. Department of Energy security clearance and a need to know the information as defined by the classifying organization or agency.

- Waste that physically cannot be screened at WRAP or associated screening facility must be physically screened at the generator location (e.g., large components, containers that can not be opened, are greater than 20 mrem per hour, contain greater than 10 nanocuries per gram of transuranic radionuclides, or will not fit into the NDE unit). Physical screening at the generator location consists of observing the packaging of the waste. If no location can be found to perform the physical screening, no screening is required.

- Waste that is packaged by the TSD unit authorized independent agent are considered to have met the physical screening requirements denoted in this WAP [e.g., WRAP operating organization packaged waste that is transferred to Waste Management Federal Services of Hanford, Inc. managed TSD units or Pacific Northwest National Laboratory (PNNL) packaged waste that is transferred to PNNL operated TSD units]. On closure of the container, tamper-resistant seals must be applied to ensure the integrity of the contents.

2.2.3 Chemical Screening Process

Chemical screening is considered an additional verification element. This section describes methods, frequency, and exceptions for chemical screening. Chemical screening could be performed before the waste is shipped to WRAP. When screening is performed at a location not within the Solid Waste Project, tamper-resistant seals are applied to each outer container examined.

Selection and interpretation of chemical screening methods is conducted by qualified personnel. Unless otherwise noted, tests are qualitative, not quantitative. The objective of screening is to obtain reasonable assurance that the waste is generally consistent with the description in the shipping documentation. The following tests are selected depending on the waste matrix and the applicability of the method. A minimum of three listed screening tests, including pH screening, are conducted on each sample. If less than five of the following methods are selected, the rationale is recorded by the qualified analyst.

The following tests are conducted on all samples collected for chemical screening:

- pH
- Peroxide
- Oxidizer
- Water reactivity.

Additionally, the following screening tests could be performed as needed:

- HOC (chlor-n-oil/water/soil)
- Headspace
- Sulfide
- Cyanide
- Paint filter.

.fer to Section 2.2.5 for quality control pertaining to chemical screening.

2.2.3.1 Chemical Screening Frequency

At a minimum, 10 percent of the mixed waste containers verified by physical screening (Section 2.2.2.2) must be screened chemically. Although grab samples are acceptable, the WRAP operating organization obtains a representative sample.

small containers of waste (labpacks), not otherwise identified in the exceptions, packaged in accordance with 40 CFR 264.316, 40 CFR 265.316, and WAC 173-303-161 are screened chemically in accordance with waste stream's chemical screening frequency as determined by PES (Section 1.1.1.3). Inner containers are segregated by physical appearance. At least one container from each group (or three containers if all are similar) are screened chemically.

2.2.3.2 Chemical Screening Exceptions

There are cases in which chemical screening is not required. The exceptions are as follows:

- Small containers of waste in overpacked containers (labpacks) packaged in accordance with WAC 173-303-161 and not prohibited under LDR specified in WAC 173-303-140
- Waste exempted from the physical screening requirements (Section 2.2.2.3) is exempted from chemical screening
- Commercial chemical products in the original product container(s) (e.g., off-specification, outdated, or unused products)
- Chemical containing equipment removed from service, (e.g., ballasts, batteries, etc.)
- Waste containing asbestos
- Waste, environmental media, and/or debris from the cleanup of spills or release of single substance or commercial product or otherwise known material (e.g., material for which an MSDS can be provided)
- Confirmed noninfectious waste (e.g., xylene, acetone, ethyl alcohol, isopropyl alcohol) generated from laboratory tissue preparation, slide staining, or fixing processes
- Hazardous debris as defined in WAC 173-303-040
- Other special-case could be exempted on a case-by-case basis with prior approval by Ecology.

2.2.4 Sampling for Confirmation Screening

Sampling methods will be performed in accordance with WAC 173-303-110(2), with the following exceptions. At all times, a best effort is employed to obtain a representative sample. When a representative sample cannot be obtained, selective sampling is performed at a location in the matrix that

visually appears to have the greatest potential for dangerous constituent contamination. The chemical screening methods described in Section 3.0 do not require any sample preservation methods because the screening tests are performed at the time and location of sampling, or as soon as possible thereafter. During the interim period, the samples are stored in a manner that maintains chain of custody and protects the sample composition.

2.2.5 Quality Assurance and Quality Control for Confirmation Process

The following QA and quality control (QC) elements are used by the WRAP operating organization to ensure confirmation activities provide sufficient data to provide an indication that waste received is as described in the shipping documentation.

2.2.5.1 Physical Screening Quality Control

Physical screening QC is used only to ensure that quality data are obtained when performing nondestructive examination. Visual inspection does not consist of the use of instrumentation or chemical tests. Therefore, QC for visual inspection depends on appropriate training for the individual(s) performing the test. If NDE is used to meet the physical screening requirements, 5 percent per year of the containers that have been nondestructively examined are opened to ensure the method is providing accurate data. Containers opened for other reasons, such as chemical screening or to investigate inconsistencies, could be used to meet this requirement. This requirernent is based on the total number of containers reviewed, not on a shipment or general waste stream basis. The WRAP operating organization is required, at a minimum, to meet this requirement over a running 3-month average with a minimum of one container being opened for every month NDE is operated. If the evaluation of NDE shows that a false negative has occurred, a review of the NDE operation is required to determine if the false negative was due to operator error, equipment malfunction, or equipment limitations. Based on the review, corrective actions are required to be implemented before further use of NDE as a physical screening tool.

2.2.5.2 Chemical Screening Quality Control

The following QC elements are used when performing chemical screening parameters.

- Using appropriate sample containers and equipment. New disposable sampling equipment is used whenever possible.

- Using field QA/QC samples.

  - 5 percent of the total number of field samples taken are fied blanks and field replicates. The percentage is calculated over a running 12-month period.

  - Field blanks--Field blanks refer to an artificial sample designed to monitor the introduction of artifacts into the sample preparation and analysis process Typically reagent water is used as a blank matrix. A universal blank matrix however does not exist for solid samples. Results of the field blank analyses checks the water and reagents used for field screening.

  - Field replicates--Field replicates are defined as independent samples collected in such a manner that the samples are equally representative. For confirmation purposes, the field replicate is tested in the field for the same parameters for which the original sample was tested. If the field

replicates do not agree, an additional two samples are tested. If the second duplicate pair of samples do not agree, all reagents for the test are checked and the test is not used until corrective action is taken. Replicates are run on an as-needed-basis to meet the requirement stated in this section.

- Equipment Checks

Test kit reagents are checked regularly as recommended by the manufacturer. Field instrumentation have current calibrations, and reagents that are past their expiration dates, if applicable, are not used.

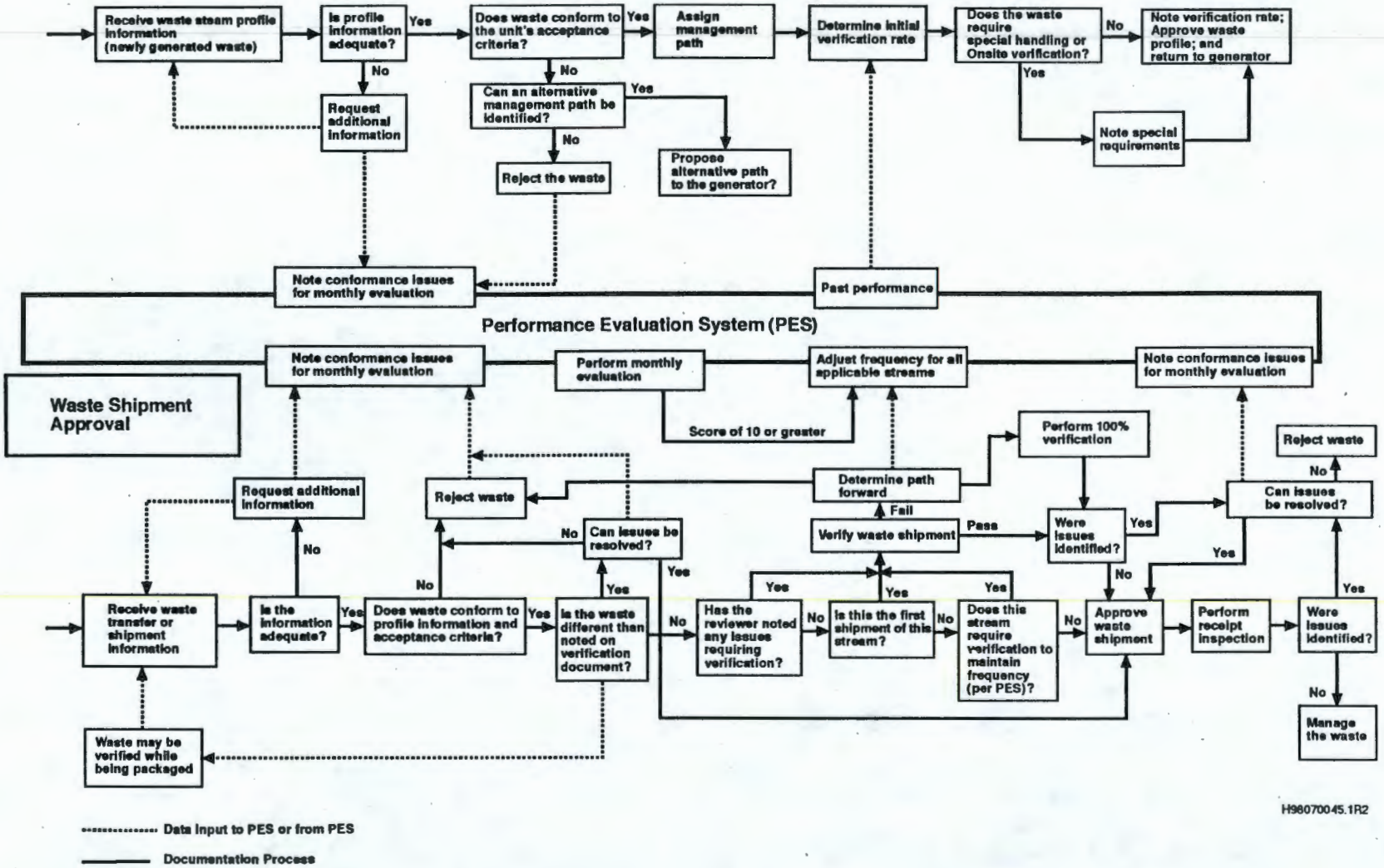

Figure 2-1. Waste Acceptance Process.

3.0 SELECTING WASTE ANALYSIS PARAMETERS

Analytical screening parameters that could be used for waste received at the WRAP for confirmation purposes, waste designation requirements, and LDR requirements are discussed in the following sections.

3.1 PHYSICAL SCREENING PARAMETERS

The following methods could be used to perform physical screening. These methods are listed in order of preference. If a method other than 1 or 2 is used, the reasoning behind the method selection will be documented.

(1) Visual inspection (preferred method for physical screening):

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying shipment documentation.

Method: The container is opened and the contents are removed as needed for visual examination. Homogenous loose solids could be probed to determine the presence of material not documented on the shipping documentation, or for improperly absorbed liquids. Visual observations are compared with the applicable profile information and the container specific information in the shipment documentation.

Failure criteria: A container fails the inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles or materials listed in Section 1.2; (c) discovery of material not consistent with the applicable waste stream profile; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, metal).

(2) NDE:

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying shipment documentation. This method also is subject to the QA checks listed in Section 2.2.5.1. Containers that are not easily amenable to visual inspection due to physical or radiological content, or facility availability, can be safely and economically examined.

Method: The container is scanned with a NDE system. Data are observed on a video monitor and captured on video tape. Personnel experienced with the interpretation of NDE imagery record their observations. These observations are compared to the contents listed on the shipping documentation.

Failure criteria: A container fails the inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles listed in Section1.2; (c) image data not consistent with the applicable waste stream profile; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, metal).

(3) NDA:

Rationale. This method is available for obtaining data that can be compared with accompanying shipping documentation for consistency on containers that cannot be opened for visual inspection, and cannot be examined by NDE (e.g., high container dose rate, shielding.) The reason for selection of this method is documented.

Method. Radioactive waste is assayed in one or both of two different assay systems. The assay systems include gamma energy analysis (GEA) and imaging passive/active neutron (IPAN). Gamma emitting radionuclides are detected in the GEA assay system. This instrument determines the type and quantity of radionuclides based on their gamma energy spectrum. The IPAN uses passive and active neutron detection to determine the presence of fissionable radionuclides. Passive detection results are equated with Pu-240 and active detection results are equated with Pu-239. The curie amount of low energy gamma emitting radionuclides, other fissile and non-fissile alpha emitting radionuclides, and beta emitting radionuclides are calculated from the GEA and IPAN data and the generator supplied radionuclide information. Radionuclide ratios are calculated by dividing the activity of each radionuclide reported by the activity of the most prominent radionuclide.

Failure criteria. A container fails the assay if the difference between the reported radionuclide ratios and the measured ratios and the reported and measured curie amounts exceed 50 percent. The failure criteria are adjusted based on the density of the waste and the amount of fissionable material present.

(4) Dose rate profile:

Rationale. This method is used to obtain data that can be compared for consistency with the shipment documentation for a container. This method is used only when the previous three methods cannot be performed for technological or ALARA reasons (e.g., container size, weight, shielding, dose rate). The reason for selection of this method is documented.

Method. A portable dose rate meter is used to determine the contact dose rate at six evenly distributed points on the exterior of the waste package. The six readings obtained are recorded and averaged. The average reading is compared with the container contact dose rate recorded on the shipment documentation.

Failure criteria. If the average dose rate observed during the dose rate profile examination differs from that recorded on the shipping documentation by more than 100 percent, the container fails.

3.2 CHEMICAL SCREENING PARAMETERS

The following methods could be used to perform chemical screening.

(1) Ignitability and/or headspace volatile organic compound screening

Rationale: To determine the potential ignitability and the presence or absence of volatile organic compounds in waste, and to ensure personnel adequately are protected. This method is used when containers are opened for inspection. This method can be applied to any matrix.

Method: A sample of the headspace gases in a container is analyzed by one or more of the following types of portable instrumentation: organic vapor monitor, colorimetric gas sampling tubes, or a lower explosive level meter.

Tolerance: High organic vapor readings in matrices not documented as having volatile organic content constitutes failure.

(2) Peroxide screening:

Rationale: To determine the presence of organic peroxides in solvent wastes, to alert personnel to potential hazards, to ensure safe segregation and storage of incompatible wastes, and to confirm consistency with the shipping documentation. The test is sensitive to low parts per million ranges.

Method: A peroxide test strip is dampened with a pipet sample of liquid waste. Solids are tested by first wetting the test strip with water and contacting a small sample of the waste. A blue color change indicates a positive reaction. The color change can be compared with a chart on the packaging to determine an approximate organic peroxide concentration.

Tolerance: Peroxide concentrations greater than 20 parts per million in liquid waste constituents that are known organic peroxide formers not documented as having been stabilized constitutes failure.

(3) Paint filter liquids test:

Rationale: To verify the presence or absence of free liquid in solid or semisolid material.

Method: To a standard paint filter, 100 cubic centimeters or 100 grams of waste are added and allowed to settle for 5 minutes. Any liquid passing through the filter signifies failure of the test.

Tolerance: Failure of the test in waste matrices not documented as having free liquids constitutes failure of the container. Small quantities of condensate trapped in inner plastic liner folds are acceptable.

(4) pH screen:

Rationale: To identify the pH and corrosive nature of an aqueous or solid waste, to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation.

Method: Full range pH paper is used for the initial screening. If the initial screen indicates a pH below 4 or above 10, a pH meter could be used, or a narrowrange pH paper. Solids are mixed with an equal weight of water and the liquid portion of the solution is tested. The extractant of the sample is placed on the pH paper and not dipped into the sample.

Tolerance: pH paper for this test has a sensitivity of +/-1.0pH units. If the pH of a matrix appears to exceed regulatory limits (<2.0 or >12.5) in wastenot documented as being regulated for this property, the container fails the test.

(5) Oxidizer screen:

Rationale: To determine if a waste exhibits oxidizing properties to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation. This test can be applied to waste liquids, solids, and semisolids.

Method: Acidified potassium iodide (KI) test paper is applied to solid or liquid waste. A darkening of the paper is a positive indication.

Tolerance: This method is very sensitive to oxidizing properties. A positive indication in a waste that can not be explained by documented constituents constitutes failure.

(6) Water reactivity screen:

Rationale: To determine if the waste has the potential to vigorously react with water, form gases, or other reaction products. This information is used to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation.

Method: Water is added to a sample of solid or liquid waste. The solution is observed for evidence or fuming, bubbling, spattering, or temperature change. These reactions are considered to be positive evidence that the waste is water reactive.

Tolerance: A positive indication in a waste that cannot be explained by documented constituents constitutes a failure.

(7) Cyanide screen:

Rationale: To indicate if waste could release hydrogen cyanide upon acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation.

Method: To a test tube or watch dish containing approximately 2 milligrams of sample, an equal amount of freshly prepared ferrous ammonium citrate is added. 3 Normal hydrochloric acid is used to reduce the pH of the solution to near 2.0. A deep blue color indicates the presence of cyanide.

Tolerance: A positive indication in a waste that can not be explained by documented constituents constitutes a failure.

(8) Sulfide screen:

Rationale: To indicate if the waste could release hydrogen sulfide upon acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible wastes, and to confirm consistency with the shipping documentation.

Method: Approximately 2 milligrams of sample is added to a watch dish or test tube and enough 3 Normal hydrochloric acid is added to bring the pH down to near 2.0. A sulfide test strip is placed in the solution. If the paper turns brown or silvery black, the presence of sulfides in the sample is indicated.

Tolerance: A positive indication in a waste that can not be explained by documented constituents constitutes a failure.

(9) HOC screen:

Rationale: To indicate whether PCBs or other chlorinated solvents are present in the waste. This information is used to ensure safe segregation and storage of incompatible waste, to confirm consistency with the shipping documentation, and to determine if the waste needs to be managed in accordance with the regulations prescribed in the *Toxic Substance Control Act of 1976*.

Methods: Field organic chlorine tests appropriate to the matrix, such as those offered by the Dexsil Corporation (e.g. Chlor-N-Oil, Chlor-N-Soil) are used. These screening tests are available with several detection limits. At a minimum, the 50 parts per million test is performed on oily matrices.

Tolerance: A positive indication of chlorinated organics in a waste not documented as having chlorinated organic content constitutes failure.

3.3 OTHER SAMPLE AND ANALYSIS PARAMETERS

Sampling and analysis parameters used to meet LDR requirements for waste stored and treated at WRAP are detailed in Appendix A. Refer to Appendix A for parameters, methods, and rationale.

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4.0 SELECTING SAMPLING PROCESSES FOR DESIGNATION

Specific sampling procedures and techniques depend on both the nature of the material and the type of packaging. This section describes the sampling methodology used to obtain representative samples.

4.1 SAMPLING STRATEGIES

Table 4-1 contains waste forms and sample equipment used to sample referenced waste. Sampling of these waste forms is performed in accordance with Table 4-1.

4.2 SAMPLING METHODS

The appropriate personnel are responsible for arranging all sampling and laboratory support for sample analysis. Samples are processed at one of several laboratories qualified to perform analysis of waste samples (refer to Section 5.0). Sampling methods are those described in WAC 173-303 110(2).

The basic sampling sequence is as follows:

- Obtain a unique sample number and complete the sample tag before sampling
- Obtain a precleaned sampler and sample bottles
- Attach sample label to sample bottles
- For sampling liquid waste, a sampler or pipet will be used to sample for two phase liquids. Homogeneous liquids in small containers will be poured into a sample bottle
- For sampling solid waste, use a scoop, trier, or hand auger to obtain a sample of the waste. For large containers of waste, composite several augers or scoops to ensure samples are representative
- Fill sample containers in the following sequence: volatile organics, semivolatile organics, metals, ignitability, pH (corrosivity)
- For solid waste, wipe the exterior surfaces of the sample bottle with a dry rag
- Place samples in an appropriate receptacle for transfer to the laboratory
- Complete the chain-of-custody forms
- Seal and mark the receptacle in accordance with WAC 173-303-071(3)(1)
- Transfer receptacle to the analytical laboratory as appropriate to meet sample holding times
- Properly clean and decontaminate nondisposable sampling equipment or package for return to central sampling equipment decontamination area according to onsite requirements.

4.3 SELECTING SAMPLING EQUIPMENT

Sampling equipment selection is detailed in Table 4-1. Sampling equipment needed to sample waste is maintained and decontaminated as necessary by the WRAP operating organization.

4.4 SAMPLE PRESERVATION

Sample preservation follows SW-846 protocol or other approved sample preservation method for waste in accordance with 62 FR 62079.

4.5 ESTABLISHING QUALITY AND QUALITY CONTROL FOR SAMPLING

The sampling team ensures all samples are labeled with a unique identifier.

Sample collectors prepare a permanent log of sampling activities. Log entries include as appropriate: date of collection, time of collection, location, batch number, sample number, tank number, copy of the chain-of-custody form, sampling methodology, container description, waste matrix (liquid), description of generating process (e.g., decontamination activities), number and volume of samples, field observations, field measurements (e.g., pH, percent lower explosive limit), laboratory destination and laboratory number, and signature. These logs entries are made by the appropriate personnel while the sampling is performed. The logs or copies of logs are maintained by the appropriate personnel after completion of sampling activities.

A chain-of-custody record accompanies samples at all times. The record contains a unique sample number for each sample, date and time of collection, sample type, sample location, methods of transfer, and signatures (or electronic equivalent, e.g., signature password) of the collector and all subsequent custodians.

During all sampling activities, strict compliance with applicable industrial hygiene and safety standards is mandatory. If samplers accidentally contact waste material and sampling personnel, decontamination of sampling personnel is performed immediately. Transportation of samples is performed in accordance with all applicable Hanford Site and U.S. Department of Transportation requirements.

The following QA/QC elements are used by the WRAP operating organization to ensure sampling activities for designation purposes result in acceptable laboratory data:

- Representative sampling methods as defined by WAC 173-303-110(2), 40 CFR 261 Appendix I, and/or SW-846 Chapter 9
- Appropriate sample containers and equipment
- Samples numbered
- Traceable labeling system
- Field QA/QC samples (applicable sampling and analysis plan)

- Equipment calibration (current as appropriate)
- Chain of custody.

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Table 4-1. Waste Receiving and Processing Facility Chemical Screening Sampling Equipment.

Waste form	Reference in SW-846	
	Waste type	Equipment*
Liquids	Free-flowing liquids and slurries	COLIWASA, SW-846, Chapter 9, glass thief or pipet
Solidified liquids	Sludges	Trier, SW-846, Chapter 9, scoops and shovels
Sludges	Sludges	Trier, SW-846, Chapter 9, scoops and shovels
Soils	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels
Absorbents	Large-grained solids	Large trier, SW-846, Chapter 9, scoops and shovels
Wet absorbents	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
Process solids and salts	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
	Dry powders or granules	Thief, SW-846, Chapter 9, scoops and shovels
	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels
	Large-grained solids	Large trier, SW-846, Chapter 9, scoops and shovels
Ion exchange resins	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
	Dry powders or granules	Thief, SW-846, Chapter 9, scoops and shovels
	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels

COLIWASA = composite liquid waste sampler.
* other ASTM approved equipment could be used to collect samples.

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5.0 SELECTING A LABORATORY, LABORATORY TESTING, AND ANALYTICAL METHODS

The following sections discuss selecting a laboratory for analyzing samples for QA/QC elements.

5.1 SELECTING A LABORATORY

The following laboratory QA/QC requirements apply to laboratory analyses of generator waste.

- The daily quality of analytical data generated in contracted analytical laboratories is controlled by the implementation of an analytical laboratory QA plan.

- Before commencement of the contract for analytical work, the laboratory submits their QA plan for approval. At a minimum, the plan documents the following:
  - Sample custody and management practices
  - Sample preparation and analytical methods
  - Instrument maintenance and calibration methods
  - Internal QA/QC measures, including the use of method blanks
  - Sample preservatives used
  - Analyses requested.

When required, replicate testing usually is accomplished by analyzing two samples, one by the generator and another by the WRAP operating organization.

5.2 SELECTING TESTING AND ANALYTICAL METHODS

WRAP identifies the type of testing and analytical method to be used at the laboratory (e.g., for metals analysis, the type of determination method will be stated, such as inductively coupled plasma metals by atomic absorption).

WRAP identifies the decision level necessary for each analytical parameter. If the decision level is found in a regulation, the generator references the regulation.

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6.0 SELECTING WASTE RE-EVALUATION FREQUENCIES

The re-evaluation (repeat and review) frequency to review profile information is yearly, or more often if the waste generation process changes.

WRAP re-evaluates a waste profile if:

- A generator notifies WRAP operating organization that the generating process has changed
- Inspection or analysis indicates that the waste received at WRAP does not match the profile and/or shipping documentation.

When a waste profile is re-evaluated, the WRAP operating organization could request the generator to do one of the following:

- Verify the current waste profile is accurate
- Supply a new waste profile
- Submit a sample for parameter analysis.

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7.0 SPECIAL PROCEDURAL REQUIREMENTS

This section discusses any special process requirements for receiving mixed waste at WRAP.

7.1 PROCEDURES FOR RECEIVING WASTE GENERATED ONSITE

In general, mixed waste received from onsite generator units is managed the same as waste received from offsite generators. Differences include, but not limited to, verification rates, shipping documentation, and LDR requirements.

7.2 PROCEDURES FOR RECEIVING WASTE GENERATED OFFSITE

Waste received from offsite is handled in the same manner as mixed waste received from onsite except as denoted in Section 7.1.

7.3 PROCEDURES FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE

WRAP accepts ignitable, reactive, or incompatible waste (refer to Section 1.2). The following precautions are taken before ignitable, reactive, or incompatible waste is accepted at WRAP.

- Pre-shipment review and/or chemical screening identifies whether the waste is ignitable, reactive, or incompatible.

- WRAP waste acceptance criteria identifies storage requirements for ignitable, reactive, and incompatible waste, ensuring the waste is stored in a safe manner.

The types of prohibited waste not accepted at WRAP are listed in Section 1.2.

7.4 PROVISIONS FOR COMPLYING WITH FEDERAL AND STATE LAND DISPOSAL RESTRICTION REQUIREMENTS

State-only and federal LDR requirements restrict the land disposal of certain types of waste subject to *Resource Conservation and Recovery Act* (RCRA) *of 1976* and the *Hazardous Waste Management Act*. Waste managed on the Hanford Facility falls within the purview of these LDRs per 40 CFR 268 and WAC 173-303-140. Waste constituents that are subject to LDRs are identified in 40 CFR 268.40 and referenced by WAC 173-303-140. Waste must meet certain treatment standards, as specified in 40 CFR 268.40 and WAC 173-303-140, if the waste is to be land disposed.

Generators (as defined in the regulation and not per Section 1.1.1.1) determine if LDRs apply to the waste based on knowledge or testing [40 CFR 268.7(a)]. Each waste is analyzed for those LDR constituents contained in the listed and characteristic waste numbers identified by the generator, if the generator's knowledge is not sufficient to make a determination. If the LDR waste does not meet the applicable treatment standards, the generator (Section 1.1.1.1) provides with each shipment of waste information stating so, in accordance with WAC 173-303-380(1)(j)(k)(n) or (o). If the waste meets the standards, the generator must send a certification that the waste meets the treatment standards.

7.4.1 Waste Treatment

Retrieved and newly generated waste is treated to meet LDR as specified in 40 CFR 268.40 and WAC 173-303-140 with the exception of transuranic mixed waste. Transuranic mixed waste is treated to the applicable standards required by Waste Isolation Pilot Plant or other generator requirements. WRAP potentially can pretreat certain waste before shipment to a permitted offsite facility that could perform full treatment of the specific waste to meet full LDR. Waste requiring treatment other than what WRAP can provide is repackaged, labeled, and transferred to a TSD unit for storage pending identification or development of an appropriate treatment.

LDR requirements apply to all mixed waste except a small class of state-only waste. When evaluating the treatability of certain characteristic waste, consideration must be given to any additional underlying hazardous constituents that might be found in the waste. The treatment standards, for the most part, are concentration-based. If the constituent concentrations for the waste fall below those specified in 40 CFR 268.40 and/or 268.48 for underlying hazardous constituents and in WAC 173-303-140, the waste can be land disposed without being treated. If the concentrations exceed these limits, the waste must be treated before disposal.

Specific treatments performed in WRAP include deactivation, encapsulation, stabilization, and amalgamation.

Deactivation is used to remove the hazardous characteristics of the waste due to its ignitability (D001), corrosivity (D002), solid corrosive acid (WSC2), and/or reactivity (D003). Treatment techniques include neutralization, cementing, absorption, controlled reaction with water, and macroencapsulation.

- Neutralization is the primary method of treatment for corrosive waste that has a pH ≤ 2 and/or ≥ 12.5. Examples of bases that could be used as neutralizing agents include sodium hydroxide, calcium hydroxide, or calcium carbonate. Examples of acids that could be used to neutralize bases are hydrochloric acid and sulfuric acid.

- Absorption is the primary method of treatment for ignitable waste, which include waste that is liquid and has a low total organic carbon content (<10 percent). Absorbent material that could be used includes polyacrylates, polypropylene, polymer type, superabsorbent polymer, cellulose, or other absorbent materials meeting various disposal requirements.

- Cementing or grouting is the primary method of treatment for ignitables consisting of metal fines or other corrosive materials. These types of waste are deactivated by mixing and binding it with an inert cementacious material.

- Controlled reaction with water is the primary method of treatment for reactive materials such as sodium metal. This process will deactivate the material and allow for further disposition.

- Macroencapsulation with polyethylene plastic containers is the primary treatment for debris. For elemental lead, macroencapsulation is performed in accordance with Table 1 of 40 CFR 268.42.

Stabilization methods used at WRAP include cementing or grouting, sealing, and absorption. Particulates and/or liquid waste containing hazardous constituents could be cemented or grouted in WRAP to meet either RCRA LDR, Waste Isolation Pilot Plant waste acceptance criteria, and/or the

disposal criteria of future TSD units. These types of waste are stabilized by mixing and binding the waste with an inert material. The inert material generally used is Portland cement. When dealing with some waste streams such as sludges that might contain an inconsistent or excess liquid content, absorbent could be added to the waste to provide a drier matrix to allow identification of the proper combination of ingredients to ensure a successful stabilization effort.

Amalgamation of liquid elemental mercury (D009) is achieved using inorganic reagents such as copper, zinc, nickel, gold, and sulfur. The resultant matrix is a nonliquid, solid, or semi-solid visually inspected to verify compliance.

Treatment of state-only extremely hazardous waste (WT01, WP01, and WP03) will be performed in accordance with RCW 70.105.050(2) and/or WAC 173-303-140(4)(a) as applicable.

Waste managed in WRAP is treated to meet either concentration-based treatment standards or technology-based standards. When dealing with underlying dangerous constituents or mixtures, both standards could apply, requiring a treatment train for ultimate compliance to LDR. In most cases, stabilization treatment will be at the end of the treatment train. In some instances, as with the cementing process, treatability studies could be performed to ensure that when the waste is treated, LDR requirements are met.

Grab samples are collected on each batch of concentration-based treated waste to ensure that the treatment process was successful. Methods used to ensure compliance include visual inspection, pH, and toxicity characteristic leaching procedure. For specified technologies, the WRAP operating record will contain information to demonstrate the treatment process was well designed and well operated.

7.4.2 Sampling and Analytical Methods

If waste is sampled and analyzed to demonstrate an LDR has been met, only U.S. Environmental Protection Agency or equivalent methods are used. Waste is analyzed using the methods outlined in 40 CFR 268.40 and WAC 173-303-140(4)(b) or any other reliable method allowed by regulations.

Samples of waste are transferred to the sample management area for packaging and transferred to an onsite laboratory or shipped offsite to a laboratory for analysis. Samples are collected and analyzed in accordance with SW-846 or any other method allowed by regulations. Storage is provided for waste containers while waiting for laboratory analysis results.

7.4.3 Land Disposal Restriction Certification of Treatment

When LDR treatment has been completed and sample results (if applicable per 40 CFR 268.40 and WAC 173-303-140) have verified the LDR treatment is successful, certification of the LDR treatment is required by WRAP. The certification statement is prepared by the WRAP operating organization in accordance with 40 CFR 268.7.

Where a LDR waste does not meet the applicable treatment standards set forth in 40 CFR 268.40 and WAC 173-303-140, or exceeds the application prohibition levels set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, this information is placed in the WRAP operating record, in accordance with WAC 173-303-380(1)(k) and (o).

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8.0 RECORDKEEPING

Recordkeeping requirements that are applicable to this WAP are described in Chapter 12.0, Table 12-1, *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28) and within this WAP.

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9.0 REFERENCES

DOE/RL-91-16, *Hanford Facility Dangerous Waste Permit Application, Waste Receiving and Processing Facility*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, revised periodically.

EPA SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

EPA-600/4-7-020, *Methods for Chemical Analysis of Water and Wastes*, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

62 FR 62079, *Mixed Waste Testing Guidance*, November 20, 1997.

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APPENDIX A

ANALYTICAL PARAMETERS, METHODS, AND RATIONALE FOR WASTE RECEIVED AT WASTE RECEIVING AND PROCESSING FACILITY

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Analytical Parameters, Methods, and Rationale for Waste Received at Waste Receiving and Processing Facility.

Parameter		Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
General chemistry					
Flashpoint		1010/1020	Liquid	To provide documentation for safe storage conditions	To determine regulatory status as D001 waste, to provide proper waste designation and applicability of LDR requirements
pH	Liquid	9040	Liquid, sludge	To indicate the degree of corrosivity for safe handling; to provide for proper waste designation; and to identify waste that might compromise container integrity	To determine regulatory status as D002 waste, to provide proper waste designation, applicability of LDR requirements and state-only requirements.
	Solid	9045c	Solid		
Hydroxide		9040	Liquid	To provide documentation for safe treatment and storage conditions; and to comply with WRAP waste acceptance criteria.	To provide proper waste designation and applicability of LDR requirements.
Water reactivity		Field method	Liquid, sludge	To determine whether the waste has a potential to violently react with water to form gases or generate heat; to provide documentation for safe treatment and/or storage conditions for waste designation; and to comply with WRAP waste acceptance criteria.	To provide proper waste designation; safe storage and management.
Free liquids		9095A	Liquid, sludge, solid	To determine applicability of LDRs and for characterization of appropriate treatment	To determine appropriate state-only LDR status of the waste.

Analytical Parameters, Methods, and Rationale for Waste Received at Waste Receiving and Processing Facility.

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Cyanide	9010B/9012A	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.
Sulfide	9030B	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.
Organic analyses				
PCBs	8081A/8082	Liquid, sludge, solid	To determine proper waste designation for management of waste in accordance with the *Toxic Substance Control Act of 1976 (TSCA)* and WAC 173-303.	To provide proper waste designation and to meet TSCA and LDR requirements.
Total organic carbon	9060	Liquid, sludge, solid	To determine applicability of LDR and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements, to meet LDR requirements, and comply with WRAP waste acceptance criteria.
Total organic halides	9020B/9021/9022	Liquid, sludge	To determine proper waste designation and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements.
Persistent constituents	9075/9076/9077/ 9211/9212/9214/ 9250/9251/9253			
Total suspended solids	160.2[b]	Liquid, sludge	To determine applicability of LDR and status as a wastewater	To provide applicability of LDR and status as a wastewater.

Analytical Parameters, Methods, and Rationale for Waste Received at Waste Receiving and Processing Facility.

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Volatile organic compounds	1311/8260B	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.
Semivolatile organic compounds	1311/8270A	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.
Chlorinated herbicides	8151A	Liquid	Not applicable	To provide proper waste designation and applicability to state-only requirements.
Inorganic analyses				
Arsenic	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Barium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Cadmium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.

Analytical Parameters, Methods, and Rationale for Waste Received at Waste Receiving and Processing Facility.

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Chromium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Lead	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Mercury	1311/7470	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Silver	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Selenium	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Nickel	6010	Liquid, sludge, solid	To determine applicability of LDRs, and for characterization of appropriate treatment.	To meet LDR requirements.

[a] EPA SW-846, unless otherwise noted.
[b] EPA-600/4-7-020, unless otherwise noted.
LDR = land disposal restriction.
PCB = polychlorinated biphenyls.

APPENDIX 7A

BUILDING EMERGENCY PLAN FOR WRAP

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This plan covers the following buildings and structures: 2336-W, 2620-W, 2740-W.

Approved:

Building Emergency Director	5/13/98 Date
Manager, Waste Receiving and Processing Facility	5/13/98 Date
Emergency Preparedness	5-13-98 Date
Hanford Fire Department	5/13/98 Date

This document will be reviewed annually and updated as required by the Building Emergency Director and modified pursuant to Washington Administrative Code (WAC) 173-303-830 and in accordance with the Hanford Facility RCRA Permit. This document will be approved by the manager of Emergency Preparedness (or delegate) and the Hanford Fire Department.

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1.0 GENERAL INFORMATION

The Waste Receiving and Processing Facility (WRAP) is located on the Hanford Site, a 560-square mile U.S. Department of Energy (DOE) operational site in southeastern Washington State. WRAP is located in the western port of the 200 West Area. The Hanford Site Emergency Preparedness Program is based upon the incident command system which allows a graded approach for response to emergency events. This plan contains a description of unit-specific emergency planning and response. It is used in conjunction with DOE/RL-94-02, *Hanford Emergency Response Plan*. Response to events is performed using unit specific and/or Site level emergency procedures. The WRAP subordinate documents implement DOE/RL-94-02.

1.1 **FACILITY NAME:** U.S. Department of Energy Hanford Site
Waste Receiving and Processing Facility

1.2 **FACILITY LOCATION:** Benton County, Washington; within the 200 West Area.

The following structures covered by this plan are:

2336-W	Waste Receiving and Processing Facility
2620-W	Maintenance Support Building
2740-W	Administrative Support Building

1.3 **OWNER:** U.S. Department of Energy
Richland Operations Office
825 Jadwin Avenue
Richland, Washington 99352

FACILITY MANAGER: Waste Management Federal Services of Hanford, Inc
P.O. Box 700
Richland, Washington 99352

1.4 DESCRIPTION OF THE FACILITY AND OPERATIONS

The WRAP accepts contact-handled waste packaged in 208- or 322-liter steel drums and steel or wooden boxes no larger than 2.7 meters long by 1.6 meters wide. Contact-handled waste is waste where the external surface dose rate does not exceed 200 millirems per hour. Remote-handled waste could be received on a case-by-case basis with special precautions. Remote-handled waste is waste where the external surface dose rate exceeds 200 millirems per hour. The maximum weight of containers received at WRAP is 454 kilograms for drums and 3,180 kilograms for boxes. However, heavier boxes could be received on a case-by-case basis.

The WRAP has a waste shipping and receiving area, a nondestructive examination (NDE) and nondestructive assay (NDA) area, and a processing area. The processing area contains process enclosures (referred to as gloveboxes) for opening, sorting, sampling, and treating the contents of the waste containers. The WRAP also includes a process support area, a sample management area, and an administrative area.

Waste containers are received in the shipping and receiving area. After processing, the low-level portion of the waste is transferred to an onsite treatment, storage, and/or disposal unit (TSD) or to an offsite TSD facility. The transuranic waste will be shipped to a TSD unit approved by appropriate agencies to accept transuranic waste.

The WRAP provides NDE/NDA of the contact-handled waste. The NDE is used to identify the physical contents of waste containers to support waste characterization and processing, confirmation, or certification. The assay results are used to determine radioactive content and distribution.

The WRAP process area gloveboxes are designed for opening, sorting, and sampling to characterize or confirm the contents of containers of transuranic, low-level, and mixed waste. Treatment of waste includes deactivation, solidification or absorption of liquids, neutralization of corrosives, amalgamation, microencapsulation, macroencapsulation, volume reduction of waste (e.g., supercompaction), reaction of reactive waste, and repackaging of waste.

Process support areas are provided with space for heating, ventilation, and air conditioning equipment, mechanical equipment, and electrical equipment used to support operations.

A sample management area is provided to manage the various samples that are taken from within the process area gloveboxes.

The administrative area contains a computer control room. A computer is used to monitor the process control system, NDE equipment, NDA equipment, and other process equipment.

Exterior storage space is provided for the receipt of empty containers and other materials.

Although a separate equipment decontamination area is not provided within WRAP, manual decontamination of equipment and waste containers is performed throughout the various areas when necessary.

1.5 BUILDING EVACUATION ROUTING (BUILDING LAYOUT)

Figures 1 and 2 provide identification of emergency evacuation routes from WRAP to the designated staging areas. When evacuating the WRAP processing area, personnel wearing Personal Protective Equipment (PPE) clothing shall segregate themselves from persons wearing normal clothing.

The Primary Staging Area for WRAP is located at the northwest corner of the parking lot; the Secondary Staging Area is located on the southeast side of WRAP.

2.0 PURPOSE

This building emergency plan describes both the hazards and the basic responses to upset and/or emergency conditions. "Emergency" as used in this document includes events meeting the Washington Administrative Code (WAC) 173-303 definition of emergency, as well as U.S. Department of Energy (DOE) Order 232.1 categories of Unusual Occurrence and Emergency. These events include spills or releases as a result of processing, fires and explosions, transportation activities, movement of materials, packaging, storage of hazardous materials and natural and security contingencies. When used in conjunction with the DOE/RL-94-02, *Hanford Emergency Response Plan*, this plan meets the requirements for contingency planning as required by WAC 173-303.

3.0 BUILDING EMERGENCY ORGANIZATION

The WRAP maintains a weekly on-call list for technical expert notification. Upon notification, the on-call person will notify the primary or alternate Building Emergency Director (BED) to respond to the scene in person as necessary. The on-call technical expert will maintain contact with the on-scene Incident Commander (IC) until arrival of WRAP personnel.

Building emergency organizations are discussed in the following sections.

3.1 BUILDING EMERGENCY DIRECTOR

Emergency response will be directed by the BED until the IC arrives. The incident command structure and staff with supporting on-call personnel fulfill the responsibilities of the Emergency Coordinator as discussed in WAC 173-303-360.

During events, WRAP personnel perform response duties under the direction of the BED. The Incident Command Post (ICP) is managed by either the senior Hanford Fire Department member present on the scene or senior Hanford Patrol member present on the scene (security events only). These individuals are designated as the IC and as such have the authority to request and obtain any resources necessary for protecting people and the environment. The BED becomes a member of the ICP and functions under the direction of the IC. In this role the BED continues to manage and direct WRAP operations.

A listing of the primary and alternate BEDs by title, work location and work telephone numbers is contained in a separate, internally controlled document. The BED is on the premises or is available through an 'on-call' list 24 hours a day. Emergency Preparedness maintains a listing of BED names and work and home telephone numbers at the Patrol Operations Center (POC) in accordance with *Hanford Facility RCRA Permit*, Dangerous Waste Portion, General Condition II.A.4.

3.2 OTHER MEMBERS

As a minimum, the BED appoints and ensures training is provided to individuals who perform as Personnel Accountability Aides and Staging Area Managers. The accountability aides are responsible for facilitating the implementation of protective actions (evacuation or take cover) and for facilitating the accountability of personnel after the protective actions have been implemented. Staging Area Managers are responsible for coordinating and/or conducting activities at the staging area.

In addition, the BED might identify additional support personnel (health physics, maintenance, engineering, hazardous material coordinators, etc.) to be part of the building emergency organization when the incident command system (ICS) is activated.

The building emergency organization listing for the WRAP is maintained in a separate location in a format determined appropriate by WRAP management. Copies are distributed to appropriate locations and to Emergency Preparedness.

4.0 IMPLEMENTATION OF THE PLAN

To meet the requirements of WAC, this plan will be considered to be implemented when the BED has determined that a release, fire, or explosion that could threaten human health or the environment (WAC 173-303 Emergency) has occurred at the WRAP. The incident classification process is described in DOE/RL-94-02, Section 4.2.

Under DOE guidance, this plan will be considered implemented whenever the BED determines that one of the incidents listed in Section 6.0 has or will occur and that the severity is or will be such that there is a potential to threaten human health or the environment (DOE Unusual Occurrence or Emergency). The BED implements this plan through DOE/RL-94-02, *Hanford Emergency Response Plan*, and WRAP and/or site-specific procedures (see Attachment A). DOE declared emergencies are assigned to three classifications, which are listed in order of increasing severity: alert emergency, site area emergency, and general emergency. The WRAP implements these DOE emergencies through identified criteria in DOE-0223, RLEP 1.1, Appendix 1-2.L; this plan; and other documents listed in Attachment A.

The BED must assess each incident to determine the response necessary to protect personnel, the WRAP, and the environment. If assistance from Hanford Patrol, Fire, or ambulance units is required, the Hanford Emergency Response Number 911 (373-3800 if using a cellular phone) must be used to contact the Patrol Operations Center and request the desired assistance. To request other resources or assistance from outside the WRAP, the Patrol Operations Center business number is used (373-3800). The Emergency Duty Officer (EDO) is requested when making the initial 911 call.

5.0 FACILITY HAZARDS

5.1 HAZARDOUS MATERIALS

Hazardous materials are stored at designated areas within WRAP for use in various activities such as sampling preservation, waste treatment, and equipment maintenance. The use, storage, and inventory of hazardous materials is controlled. Hazardous material inventories and material safety data sheets are maintained by Environmental Compliance in 2336-W, administrative bay area; 2620-W, tool crib; and 2740-W, room 133.

5.2 INDUSTRIAL HAZARDS

Standard operations involve the use of forklifts, overhead and jib cranes, drum movements, and material processing. Hazards associated with industrial accidents include the potential for injuries or death resulting from moving equipment, falls, failure of pressurized systems, or radiological and/or chemical exposure from spilled waste or chemicals.

5.3 DANGEROUS, RADIOACTIVE AND/OR MIXED WASTE

The WRAP is designated as a TSD unit and is capable of managing dangerous, mixed, and radioactive (LLW and TRU) wastes received from site waste generators, offsite waste generators, or generated from WRAP operations. WRAP generated waste includes maintenance waste, repackaged waste, chemical waste from sampling and treatment activities, and step-off pad waste. These wastes are managed in waste areas throughout WRAP (e.g., shipping, receiving, stacker retriever, NDE/NDA, process gloveboxes).

5.4 RADIOACTIVE MATERIALS

Radioactive materials/wastes are stored and processed in several areas of WRAP. The shipping and receiving area provides the main storage location. Limited storage capabilities are provided in the NDE/NDA area and the process area. Radioactive sources are also maintained in the WRAP to perform testing and calibration of equipment.

5.5 CRITICALITY

WRAP, excluding the process glovebox area, is classified as a limited control unit. This is defined as a unit that may contain more than one third of a minimum critical mass (MCM) of fissionable material; however, the form and distribution of the material preclude the occurrence of a criticality accident. The criticality specification for WRAP limits the amount of fissionable material to 200 grams per drum and 350 grams per box. The inventories for each container are reviewed at the time of waste receipt to ensure that the quantity of fissile material does not exceed the specified limit. A specific plan must be developed and approved for handling each drum or box exceeding these limits. The process glovebox area is classified as up to three isolated facilities. An isolated unit contains less than 1/3 of an MCM. Strict inventory control in this area precludes a criticality event.

6.0 POTENTIAL EMERGENCY CONDITIONS

Potential emergency conditions may fall into one of three basic categories: operations (process upsets, fires and explosions, loss of utilities, spills, and releases), natural phenomena (e.g., earthquakes), and security contingencies (bomb threat, hostage situation, etc.). The following are conditions that may lead to an emergency situation (WAC 173-303-350 and 360 or DOE 232.1) at WRAP and require the implementation of this plan.

6.1 FACILITY OPERATIONS EMERGENCIES

6.1.1 Loss of Utilities

The loss of utilities (e.g., electricity) could result in loss of air balance contamination control in the process areas, compressed air systems, and limited control of WRAP operations. An uninterruptible power system (UPS) supplies backup power to computer and alarm systems. However, the loss of utilities would not necessarily result in an emergency classified as a WAC or DOE defined emergency.

6.1.2 Major Process Disruption/Loss of Plant Control

Process disruption/loss of plant control would not result in an emergency classified as a WAC or DOE defined emergency.

6.1.3 Pressure Release

Pressure hazards, which could cause objects to be propelled through the air, could result from damage to the facility service air system (125 PSIG maximum).

Compressed gas cylinders (e.g., P-10 gas, propane, air cylinders, and fire extinguishers) are bulk stored in a building located at the southeast corner of the 2620-W material staging area. In addition, compressed gas cylinders are routinely used in the process area, maintenance shops, and various locations around WRAP. Examples of the gasses placed at WRAP include argon, nitrogen, acetylene, and P-10 gas. Gas cylinders may pose a potential projectile, inhalation, or fire hazard in the immediate area where these are stored and/or used.

6.1.4 Fire and/or Explosion

A fire or explosion in WRAP could result in the release of hazardous and/or radioactive constituents to the air or ground due to failure of storage container integrity and damage to process gloveboxes. Fire associated with flammable materials could cause damage to electronic devices, containment controls, and HEPA Filters. Fire could also result in the loss of life.

6.1.5 Hazardous Material Spill

Hazardous materials are stored in the WRAP. Spills or releases of hazardous materials could result in the following conditions:

- Spill of Hazardous Material. Hazards associated with a spill include potential exposure to dangerous constituents as well as potential environmental damage. Releases likely would be confined within the WRAP.

- Toxic Fumes Hazards. Hazardous materials stored at the WRAP is a potential airborne contamination hazard. Volatile materials such as concentrated caustics and solvents might generate toxic fumes.

- Fires or Explosions Involving Hazardous Material. A fire or chemical reaction in the WRAP could result in the release of dangerous constituents to the air or soil.

- Reactive Chemical/Corrosive Material Hazards. Misrepresented shipments and/or transfers of incompatible hazardous materials stored at the WRAP could potentially cause chemical reactions resulting in fire, explosion, and dangerous waste releases. Acidic and basic solutions are corrosive and could cause chemical burns.

- Thermal Reactions/Hazards. Thermal reactions could cause burns, chemical burns, and toxic fumes, and cause pressure hazards in sealed containers.

- Flammable Material/Liquids Hazards. Hazards associated with flammable materials and liquids include fire, explosion, and release of dangerous waste.

- Asbestos Release. The WRAP structure does not contain asbestos, but dangerous waste containing asbestos could be stored inside containers stored within the structure. Release of friable asbestos waste could result in an inhalation hazard.

- Explosive Materials/Munitions Hazards - N/A.

6.1.6 Dangerous and Mixed Waste Spill

A dangerous, mixed, and/or radioactive waste spill could result in potential personnel contamination through skin contact or via airborne contamination. Environmental impact could include contaminated water or soil.

- Spill of Dangerous and Mixed Waste. Hazards associated with a spill include potential exposure to dangerous, mixed, and/or radioactive constituents as well as potential environmental damage. Releases likely would be confined to a local area because container contents routinely are not in a liquid or powder form.

- Toxic Fumes Hazards. Dangerous, mixed, and radioactive waste stored at the WRAP is a potential airborne radioactive contamination hazard. Volatile materials such as concentrated caustics and solvents might generate toxic fumes. Plutonium, an alpha emitter, is known to generate hydrogen (H_2) gas when hydrogenous materials are present in the waste; however, catalytic recombiners, or vents, are used to maintain H_2 gas concentrations below 1 percent in waste containers and are replaced whenever the waste is repackaged. The recombiners used onsite are projected to maintain the oxygen (O_2) concentration below 0.5 percent, and the H_2 concentration below 1 percent.

  NOTE: Container damage resulting in material upset without the $H_2 + O_2$ recombiner could lead to a hydrogen explosion and subsequent release to onsite populations and the environment.

Waste acceptance criteria require that the offsite generators and onsite generating units document waste with gas-generating potential and that the requirement for gas recombiners be specified on the waste tracking forms.

- Fires or Explosions Involving Dangerous and Mixed Waste. A fire or chemical reaction in the WRAP could result in the release of dangerous and/or radioactive constituents to the air or soil.

- Reactive Chemical/Corrosive Hazards. Misrepresented shipments and/or transfers of incompatible dangerous or mixed waste managed at the WRAP could potentially cause chemical reactions resulting in fire, explosion, and dangerous, mixed, and/or radioactive waste releases. Acidic and basic solutions are corrosive and could cause chemical burns.

- Thermal Reactions/Hazards - Thermal reactions could cause burns, chemical burns, and toxic fumes, and cause pressure hazards in sealed containers.

- Flammable Material/Liquids Hazards. Fire involving flammable materials/liquids could cause damage to containers resulting in potential dangerous, mixed, and or radioactive waste releases. Liquid waste stored at the WRAP could include containers with lab packs (e.g., vials of liquids packed with absorbent solids) or containers containing solvent-soaked rags that are packed with absorbent material. Except for lab packs, containers with free liquid cannot have greater than 10 percent unabsorbed liquid. If a fire occurs involving these items, a 'worst case' (e.g., assume entire container is liquid) will be assumed until the containers can be opened and inspected.

- Asbestos Release. Asbestos materials are potential components of waste stored at the WRAP. Damage to these containers could result in an unplanned release of friable asbestos to the environment, creating an inhalation health hazard.

- Explosive Materials/Munitions Hazards - N/A.

6.1.7 Transportation and/or Packaging Incidents

Radioactive, hazardous, and mixed wastes are shipped from and received at WRAP in various Department of Transportation approved shipping containers. Shipping containers that are damaged during transportation or packaging could result in chemical and/or radiological releases to the environment and exposure to WRAP personnel. The WRAP could receive offsite shipments of mixed waste as defined by WAC 173-303.

6.1.8 Radiological Material Release

Hazards associated with stack releases include personnel and environmental exposure to radioactive contamination, and downwind contamination by surface deposition.

Hazards associated with liquid releases from process upsets or spills can expose personnel and the environment to hazardous materials, radioactive materials and mixed wastes.

Significant contamination spread/release due to failure of primary and secondary containment systems could result in inhalation hazards involving exposure to radioactive, toxic, corrosive, or flammable materials, depending upon the nature of the release. In addition, this event could result in the chemical and/or radiological contamination of soil, water, or air.

6.1.9 Criticality

A criticality safety evaluation of WRAP indicates that the occurrence of a criticality would not be a credible event. Criticality safety is accomplished by controlling the form, amount, and distribution of fissile material bearing wastes that are being evaluated and processed.

6.2 NATURAL PHENOMENA

Natural phenomena are discussed in the following sections.

6.2.1 Seismic Event

Depending on the magnitude of the event, severe structural damage could occur resulting in serious injuries or fatalities and the release of hazardous materials. Damaged electrical circuits and wiring could result in the initiation of multiple fires and personnel injuries.

6.2.2 Volcanic Eruption/Ashfall

Ashfall could cause shorts in electrical equipment and plug ventilation system filters.

6.2.3 High Winds/Tornados

High winds or tornados may cause structural damage to systems containing hazardous materials, resulting in a release to the environment.

6.2.4 Flood

The result of three worst-case flood scenarios identified as part of the facility final safety analysis report concluded that WRAP is situated above all possible flood levels.

6.2.5 Range Fire

The hazards associated with a range fire include those associated with a building fire plus potential site access restrictions and travel hazards such as poor visibility.

6.2.6 Aircraft Crash

In addition to the potential for serious injuries or fatalities, an aircraft crash could result in the direct release of hazardous materials or cause a fire that could lead to such a release.

6.3 SECURITY CONTINGENCIES

Security contingencies are discussed in the following sections.

6.3.1 Bomb Threat

A bomb threat may be received by anyone who answers the telephone or receives mail. The major effect on the WRAP will be the evacuation of personnel. If a bomb explodes, the effects are the same as those discussed in Section 6.1.4, Fire and/or Explosion.

6.3.2 Hostage Situation

A hostage situation can pose an emergency situation if there is the potential to adversely impact the WRAP. This can be as a result of losing WRAP control (operators removed from their stations) or when the situation results in the coercion of personnel to perform an act of sabotage.

6.3.3 Suspicious Object

The major effect on the WRAP is ceased operations and the evacuation of personnel.

7.0 INCIDENT RESPONSE

The initial response to any emergency will be to immediately protect the health and safety of persons in the affected area. Identification of released material is essential to determine appropriate protective actions. Containment, treatment, and disposal assessment will be the secondary responses.

The following sections describe the process for implementing basic protective actions and outline response actions for the events listed in subsection 6.0. DOE/RL-94-02, Section 1.3, provides concept of operations for emergency response on the Hanford Site.

7.1 PROTECTIVE ACTIONS RESPONSES

Protective action responses are discussed in the following sections.

7.1.1 Evacuation

If an evacuation is ordered or the evacuation siren sounds in the area of WRAP, personnel shall proceed to the appropriate staging area (see Figure 1).

The BED or staging area manager directs the evacuation; however, to ensure that evacuations are conducted promptly and safety, all personnel must be familiar with the correct evacuation procedure. During an evacuation, all personnel must report to the nearest staging area (upwind) for a head count.

If it becomes necessary to evacuate the primary staging areas, the staging area manager or the BED will instruct personnel to proceed to the alternate staging area or an alternate destination, depending on the nature of the emergency.

If an area evacuation is called for, all personnel shall be familiar with the evacuation procedure that follows. The order to evacuate normally will be passed via the Site Crash Alarm Telephone system.

Area evacuations are either rapid or controlled, as pointed out in the following steps. When possible, the following steps need to be conducted concurrently.

AREA EVACUATION PROCEDURE
Direct the activation of the WRAP evacuation siren (STEADY BUZZER).
Use whatever means are available (PA system, bullhorns, runners, etc.) to pass the evacuation information to personnel.
Halt any operations or work and place the building in a safe condition if safe to do so. Use emergency shutdown procedures for rapid evacuation.

Evacuate personnel to the staging area; group personnel as follows: potentially contaminated protective clothing, keys immediately available for vehicles, those needing rides.
Conduct personnel accountability. Report personnel accountability results to the RL-Emergency Operations Center (RL-EOC) (373-3876, 373-1786, 376-8612, 376-4712).
Inform IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) once the IC arrives at the ICP.
Barricade main roadways into WRAP, if necessary, to limit traffic to emergency vehicles only.
Relay pertinent evacuation information (routes, destination etc.) to drivers.
Dispatch vehicles as soon as the vehicles are loaded.
Report status to the RL-EOC, request additional transportation, if required, and report if any people remain who are performing late shutdown duties.

7.1.2 Take Cover

When the Take Cover Alarm is activated, personnel shall take cover in the nearest building or trailer. A message followed by the Take Cover siren will be transmitted over the area emergency sirens. The following actions must be taken or considered:

- Shut doors and windows and wait for further instructions
- Secure ventilation system
- Follow normal exit procedures from radiological areas
- Lock up classified documents and prepare for a possible evacuation
- Report your location to the Accountability Aid or the BED
- Accountability Aides will provide accountability status to the Staging Area Manager for facility personnel during an event.

7.2 RESPONSE TO FACILITY OPERATIONS EMERGENCIES

Depending on the severity of the event, the BED reviews site-wide procedures, the WRAP specific emergency response guide, specific sections of this plan, and/or plant operating procedures (POPs) and classifies the event and initiates area protective actions (activate sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

7.2.1 Loss of Utilities

Loss of electricity, compressed air, or process ventilation could result in an emergency condition due to the possibility of a contamination spread from the process gloveboxes. Loss of all or part of these utilities could make it necessary to evacuate the affected areas. The electrical power system includes battery operated emergency lighting throughout the WRAP, which will maintain lighting for a minimum of 90 minutes. The electrical power system also includes an uninterruptible power supply (UPS) which will provide battery power for a minimum of 55 minutes to the electrical, compressed air and process ventilation monitoring systems, which annunciate in the Control Room. The Control Room Operator notifies the Duty Operations Supervisor who, along with the BED, will decide if evacuation is necessary. Evacuation can be directed using the PAX system and the evacuation alarm, both of which are powered by the UPS.

7.2.2 Major Process Disruption/Loss of Plant Control

The results of a major process disruption in WRAP are inclusive of the specific hazards discussed in the other sections (i.e. spills, fire/explosion, etc.).

7.2.3 Pressure Release

A pressure release can occur due to damage or failure of a pressurized system. A release can cause damage to WRAP equipment or injury and death to personnel. In the event of a release of a pressurized system, exit the area immediately and notify management. No personnel shall perform manipulation of equipment to mitigate an event unless qualified to do so.

7.2.4 Fire and/or Explosion

In the event of a fire, the discoverer activates a fire alarm, calls 911 (373-3800 if using a cellular phone), and evacuates. Automatic initiation of a fire alarm (through the smoke detectors and sprinkler systems) also is possible.

- On actuation of the fire alarm, personnel shut down equipment and secure waste ONLY if time permits. The alarm automatically signals the Hanford Fire Department.

- Personnel leave the area/building by the nearest safe exit and proceed to the designated staging area for accountability.

- The BED proceeds directly to the primary or secondary ICP, as appropriate, and sets up the ICP. The BED will obtain all necessary information pertaining to the incident and will meet with, or send a representative to meet with, the Hanford Fire Department.

- Depending on the severity of the event, the BED reviews site-wide procedures, the WRAP specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (activate sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

- The BED informs the site emergency organization as to the extent of the emergency (including estimates of hazardous material quantities released to the environment).

- The BED informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP.

- If operations are stopped in response to a fire, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures.

- Hanford Fire Department firefighters extinguish the fire.

- The BED ensures that all emergency equipment is cleaned and fit for its intended use following completion of cleanup procedures.

7.2.5 Hazardous Material, Mixed and/or Radioactive Waste Spill

Spills can result from many sources including process leaks, container spills or leaks, damaged packages or shipments, or personnel error. Spills of mixed waste are complicated by the need to deal with the extra hazard posed by the presence of radioactive materials. The response to a spill and/or release is as follows:

- Notify WRAP personnel (including BED) of discovery of spill or release.

- Initiate notifications to the Hanford Fire Department (HazMat Team) by calling 911 (373-3800 if using a cellular phone), and provide all known information, or verify that the BED has called 911 or determined that emergency response assistance is not required.

- Ensure that any personnel that have been exposed to a spilled chemical and/or have suffered an injury receive proper first aid, immediate medical attention and that the PHMC health advocate is contacted by the EDO. In case of contact with a chemical, promptly remove contaminated clothing and shoes. **Immediately** contact supervision and the Patrol Operations Center at 911 (373-3800 if using cellular phone) to report injuries or exposure and obtain Hanford Fire Department medical response.

- Classify the spill as one that can be cleaned up by personnel in the immediate vicinity at the time of the incident, or as a spill that requires the notification of the BED and assistance from additional, trained personnel (i.e., HFD HazMat Team). The classification will be made as follows.

  - SWITS information, as well as other resources (ERPGs, Emergency Response Guidebook, MSDSs, etc.) will be used to determine spill constituents, including toxicity and other hazards.

  - If there is not a good understanding of spill hazards, or the risks are not understood clearly, the spill shall be handled by the HazMat Team.

  - Classification is not necessarily based on the quantity of the spill, but by the toxicity of the chemical present.

  - The HFD can be requested to evaluate the spill to determine if immediate response by the HFD HazMat Team is warranted.

If any of the previous conditions are not met or if there is any doubt, evacuate the area and remain outside, upwind of the spill. The discoverer will remain available for consultation with the BED, Hanford Fire Department, or other emergency response personnel and restricts access to the area until the arrival of the BED.

The BED performs or arranges for the following:

- Establishes a command post at a safe location, and coordinates further spill mitigation activities

- Obtains all available information pertaining to the incident and determines if the incident requires implementation of the contingency plan

- Reviews site-wide procedures, the WRAP specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (facility and area sirens, notifications, etc.) and activates the site emergency response organization. Attachment A provides a list of procedures and emergency response guides

- Informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP

- Arranges for care of any injured persons

- Maintains access control at the incident site by keeping unauthorized personnel and vehicles away from the area. Security personnel can be used to assist in site control if control of the boundary is difficult (e.g., repeated incursions). In determining controlled access areas, considers environmental factors such as wind velocity and direction

- Arranges for proper remediation of the incident after evaluation

- Remains available for fire, patrol, and other authorities on the scene, and provides all required information

- Enlists the assistance of alternate BED(s), if response activities are projected to be long term

- Ensures the use of proper protective equipment, remedial techniques, transfer procedures [including ignition source control (e.g., nonsparking tools, grounding containers, isolation of ignition sources, use of explosion-proof electrical equipment, etc.) for flammable or reactive spills], and decontamination procedures by all involved personnel, if remediation is performed by WRAP personnel

- Remains at the ICP to oversee activities and to provide information, if remediation is performed by the Hanford Fire Department Hazardous Materials Response Team or other response teams

- Ensures proper containerization, packaging, and labeling of recovered spill materials and overpacked containers

  NOTE: All containers of spill debris, recovered product, etc., are managed in the same manner as waste containers. Overpacks in use are marked with information pertaining to their contents and noted as to whether the container inside the overpack is leaking or is in good condition.

- If operations are stopped in response to the release, ensures that systems are maintained in a safe condition

- Ensures decontamination (or restocking) and restoration of emergency equipment used in the spill remediation before resuming operations

- Provides required reports after the incident, in accordance with the DOE/RL-94-02, *Hanford Emergency Response Plan*.

7.2.5.1 Damaged or Unacceptable Shipments

In accordance with WAC 173-303-370, when a damaged shipment or transfer of hazardous material or dangerous waste arrives at WRAP and the shipment/transfer is unacceptable for receipt, the damaged shipment/transfer shall not be moved.

If a damaged shipment or transfer results in a spill, the following actions are performed.

- Notify the BED, the Hanford Fire Department, and the appropriate personnel to advise of the situation. The BED responds and assists in the evaluation of, and response to, the incident. The BED informs the IC of conditions upon arrival.

- The BED informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP.

- Notify the offsite generator or onsite generating unit of the damaged shipment/transfer, and request any information necessary to assist in responding to the spill.

- Proceed with remedial action, including overpacking damaged containers, cleanup of spilled material, or other necessary actions to contain the spill. Refer to Section 7.2.5 for remedial actions.

7.2.5.2 Transportation Incidents

In accordance with WAC 173-303-145, the discoverer or BED will take the following actions for leaks or spills resulting from a hazardous materials transportation incident if the actions can be performed without jeopardizing personnel safety, as appropriate:

- Determines the nature of incident
  - Personnel injuries
  - Hazardous material spill with fire
  - Hazardous material spill without fire

- Assists injured personnel

- Initiates notifications to the appropriate personnel by any means available (telephone, radio, passing motorist, etc.) to request assistance from the Hanford Fire Department (Emergency Coordinator/Incident Commander for these type of events), Hanford Patrol, and medical personnel

- Remains in a safe location and attempts to isolate the area to prevent inadvertent personnel access

- The BED informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP.

7.2.6 Radiological Material Release

Radioactive and mixed wastes are stored and processed throughout WRAP. Spills or releases could result in significant levels of contamination. Consideration must be given to radiological risks during events involving ventilation loss, electrical loss, and all spills, including the use of clean liquids on contaminated systems or areas.

7.2.6.1 Radioactive Gaseous Effluent Discharge - Stack Alarm

All potentially contaminated gaseous effluent discharges are continuously sampled to determine radioactivity.

If a continuously monitored stream from the 2336-W exhaust stack exceeds release limits, alarms are activated and sounded locally at the stack monitoring cabinet, the control room, and remotely at an annunciator panel in Room 120 of the WRAP administrative area. The stack alarms are characterized by an audible bell and a flashing red beacon.

7.2.6.2 Significant Contamination Spread

Significant contamination spreads are typically indicated by a continuous air monitor (CAM) alarm, or identified during routine operations and/or radiological surveillance. There are two types of CAM alarms in WRAP: local CAMs, which are characterized by an audible contamination bell and a flashing red beacon, and remote CAMs, which have an audible bell and a flashing amber beacon.

Local CAMs draw air from the immediate air space in which they are stationed, and are located in the shipping receiving area, NDE/NDA area, HVAC Room, and throughout the Process Area. Remote CAM alarms indicate airborne contamination in an adjacent space.

Personnel must be acutely aware of the CAM alarms located in their work areas and know the appropriate emergency responses listed below.

- Stop work activities and immediately exit the area
- Notify the immediate manager and the BED
- Contact Radiological Control (RC) and stand by for survey and contamination status. If the room is found to be contaminated, RC will post the room as an airborne radioactivity area.

The following steps shall be conducted when responding to a remote CAM:

- Notify the immediate manager and the BED
- Contact RC and remain available to provide pertinent information.

7.2.7 Criticality

A WRAP criticality safety evaluation indicates that the occurrence of a criticality is not a credible event. Criticality safety is accomplished by controlling the form, amount, and distribution of fissile material bearing wastes that are being evaluated and processed.

7.3 PREVENTION OF RECURRENCE OR SPREAD OF FIRES, EXPLOSIONS, OR RELEASES

The BED, as part of the incident command system, takes the steps necessary to ensure that a secondary release, fire, or explosion does not occur. The following actions are taken as necessary:

- Isolates the area of the initial incident by shutting off power, shutting off or closing ventilation systems, etc., to minimize the spread of a release and/or the potential for a fire or explosion
- Inspects containment for leaks, cracks, or other damage
- Inspects for toxic vapor generation
- Removes released material and waste as soon as possible
- Contains and isolates residual waste material using dikes and absorbents
- Reactivates operations in affected areas only after cleanup of residual waste materials is achieved.

7.4 RESPONSE TO NATURAL PHENOMENA

Depending on the severity of the event, the BED reviews site-wide procedures, the WRAP specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (activates sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

Response to natural phenomena are discussed in the following sections.

7.4.1 Seismic Event

The emergency response organization's primary role in a seismic event is coordinating initial response to injuries, fires, and fire hazards and acting to contain or control radioactive, dangerous, or mixed waste releases.

Individuals must remain calm and stay away from windows, electrical lines, and hazardous material storage locations. Once the shaking has subsided, individuals must evacuate carefully and assist those needing help. The location of any trapped individuals is reported to the BED or to 911 (373-3800 if using a cellular phone).

The following steps shall be conducted by the BED when responding to a seismic event, as necessary:

- Conduct accountability
- Coordinate searches for personnel and potential hazardous conditions (fires, spills, etc.)
- Secure utilities and operations
- Arrange rescue efforts, and notify 911 (373-3800 if using a cellular phone) for assistance

- Assemble damage assessment teams
- Determine if hazardous materials were released
- Determine current local meteorological conditions
- Warn other units and implement protective actions if release of hazardous materials poses a danger
- Provide personnel and resource assistance to other units if required and possible.

7.4.2 Volcanic Eruption/Ashfall

When notified of an impending ashfall, the BED will implement measures to minimize the impact of the ashfall, such as:

- Installing filter media over building ventilation intakes
- Installing filter media or protective coverings on outdoor equipment that may be adversely affected by the ash (diesel generators, equipment rooms etc.)
- Shutting down some or all operations and processes
- Sealing secondary use exterior doors
- Releasing all non-essential personnel to go home.

If as a result of the ashfall other emergency conditions arise (e.g., fires due to electrical shorts or lightning), response is as described in the applicable section of this plan.

7.4.3 High Winds/Tornados

Upon notification of impending high winds, the BED takes steps necessary to secure all outdoor waste, hazardous material containers, and storage locations. All doors and windows are closed, and personnel are warned to use extreme caution when entering or exiting the building.

7.4.4 Flood

Not Applicable (refer to section 6.2.4, "Flood," of this plan).

7.4.5 Range Fire

Responses to range fires are handled by preventive measures (i.e., keeping hazardous material and waste accumulation areas free of combustible materials such as weeds and brush). If a range fire breaches the WRAP boundary, the response is as described in section 7.2.4, "Fire and/or Explosion."

7.4.6 Aircraft Crash

The response to an aircraft crash is the same as that for responding to a fire and/or explosion.

7.5 SECURITY CONTINGENCIES

Depending on the severity of the event, the BED reviews site-wide procedures, the WRAP specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (activates sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

Security contingencies are discussed in the following sections.

7.5.1 Bomb Threat

7.5.1.1 Telephone Threat

Individuals receiving telephoned threats try to gain as much information as possible from the caller (using the Bomb Threat Checklist if available). Upon conclusion of the call, notify the BED and Security via 911 (373-3800 if using a cellular phone).

The BED evacuates the building to the secondary staging area, away from all parked vehicles, and queries personnel at the staging area regarding any suspicious objects in or near the WRAP.

When Security personnel arrive, follow their instructions.

7.5.1.2 Written Threat

Receivers of written threats handle the letter as little as possible. Notify the BED and Security. Depending on the content of the letter, the WRAP may or may not be evacuated. The letter is turned over to Security personnel, and their instructions are then followed.

7.5.2 Hostage Situation/Armed Intruder

The discoverer of a hostage situation or armed intruder reports it to 911 (373-3800 if using a cellular phone) and to the BED, if possible. The BED, after conferring with Security personnel, may covertly evacuate areas of the WRAP not observable by the hostage taker(s)/intruder. No alarms will be sounded.

Security will determine the remaining response actions and will activate the hostage negotiating team, if necessary.

7.5.3 Suspicious Object

The discoverer of a suspicious object reports it to the BED and to 911 (373-3800 if using a cellular phone), if possible, and ensures that the object is not disturbed.

The BED will evacuate the affected WRAP and (based on the description provided by the discoverer) attempt to determine the identity or owner of the object by questioning WRAP personnel at the staging area.

If the identity/ownership of the object cannot be determined, then Security will assume command of the incident. The canine unit will be used to determine if the package contains explosives. If there is a positive indication of explosives or it cannot be assured that there are no explosives, then the Richland Police Department's Explosive Ordnance Disposal Team will be dispatched to the WRAP to properly dispose of the device.

8.0 TERMINATION OF EVENT, INCIDENT RECOVERY, AND RESTART OF OPERATIONS

DOE/RL-94-02, Section 8.0, describes these considerations. The extent by which these actions are employed is based upon the incident classification of each event. In addition, DOE/RL-94-02 also contains considerations for the management of incompatible wastes, which may apply.

8.1 TERMINATION OF EVENT

For events where the RL-EOC is activated, only the RL Emergency Manager has the authority to declare event termination. This decision is based on input from the BED, IC, and other emergency response organization members. For events where the RL-EOC is not activated, the incident command structure and staff will declare event termination.

8.2 INCIDENT RECOVERY AND RESTART OF OPERATIONS

A recovery plan is developed when necessary. A recovery plan is needed following an event where further risk could be introduced to personnel, the WRAP, or the environment through recovery action and/or to maximize the preservation of evidence. Depending on the magnitude of the event and the effort required to recover from it, recovery planning may involve personnel from RL and other contractors. If a recovery plan is required, it is reviewed by appropriate personnel and approved by a Recovery Manager before restart. Restart of operations is performed in accordance with the approved plan.

If this plan was implemented for a WAC emergency (see Section 4.0), the Washington State Department of Ecology (Ecology) must be notified before operations can resume. DOE/RL-94-02, Section 6.1, discusses different reports to outside agencies. This notification is in addition to other required reports and must include information documenting the following conditions:

- There are no incompatibility issues with the waste and released materials from the incident.

- All the equipment has been clean and returned to service or replaced. The notification may be made via telephone conference. Additional information that Ecology requests regarding these restart conditions will be included in the required 15-day report identified in WAC 173-303-360(2)(k).

For emergencies not involving activation of the RL-EOC, the BED ensures that conditions are restored to normal before operations are resumed. If the RL-EOC was activated and the emergency phase is complete, a special recovery organization is appointed at the discretion of RL to restore conditions to normal. The makeup of this organization depends on the extent of the damage and its effects.

8.3 INCOMPATIBLE WASTE

After an event, the BED or the onsite recovery organization ensures that no waste that might be incompatible with the released material is treated, stored, and/or disposed of until cleanup is completed. Cleanup actions are taken by WRAP personnel or other assigned personnel. DOE/RL-94-02, Section 8.3, describes actions to be taken. These actions might include, but are not limited to, any of the following:

- Neutralization of corrosive spills
- Chemical treatment of reactive materials to reduce hazards
- Overpacking or transfer of contents from leaking containers
- Use of sorbents to contain and/or absorb leaking liquids for containerization and storage and/or disposal
- Decontamination of solid surfaces impacted by released material, e.g., intact containers, equipment, floors, containment systems, etc.
- Disposal of contaminated porous materials that cannot be decontaminated and any contaminated soil
- Containerizing and sampling of recovered materials for classification and determination for proper management
- Followup sampling of decontaminated surfaces to determine adequacy of cleanup techniques as appropriate.

Waste from cleanup activities is designated and managed as newly generated waste. A field check for compatibility before storage is performed, as necessary. Incompatible wastes are not placed in the same container. Containers of waste are placed in storage areas appropriate for their compatibility class.

If incompatibility of waste was a factor in the incident, the BED or the onsite recovery organization ensures that the cause is corrected. Examples include modification of an incompatibility chart or increased scrutiny of waste from a generating unit when incorrectly designated waste caused or contributed to an incident.

8.4 POST EMERGENCY EQUIPMENT MAINTENANCE AND DECONTAMINATION

All equipment used during an incident is decontaminated (if practicable) or disposed as spill debris. Decontaminated equipment is checked for proper operation before storage for subsequent use. Consumables and disposed materials are restocked. Fire extinguishers are recharged or replaced.

The BED ensures that all equipment is cleaned and fit for its intended use before operations are resumed. Depleted stocks of neutralizing and absorbing materials are replenished, self-contained breathing apparatus are cleaned and refilled, protective clothing is cleaned or disposed of and restocked, etc.

Factors to consider when establishing an equipment and personnel decontamination station are as follows:

- Water supplies
- Containment/catch basins and/or systems
- Personnel necessary to accomplish proper decontamination
- Protective clothing
- Decontamination supplies (buckets, brushes, soap, chemicals as needed)
- Risk to personnel
- Weather conditions [i.e., severe heat, cold (current and forecasted)]
- Toxicity of material
- Porosity of equipment to be decontaminated
- Disposal requirements of decontamination rinse
- Use of controlled zones to maintain contamination control.

9.0 EMERGENCY EQUIPMENT

Hanford Site emergency resources and equipment are described and listed in DOE/RL-94-02, Appendix C.

9.1 FIXED EMERGENCY EQUIPMENT AT WRAP

Fixed Emergency Equipment		
Type	Location	Capability
Local Fire/Smoke Detectors	2336-W	Provides notification of a fire
Fire Alarm Pull Boxes	2336-W	Activates the building fire alarm systems
Wet/Dry Pipe Fixed Sprinkler Systems	2336-W	Assists in fire suppression
Dry Chemical Fire Suppression Systems	2336-W Process Gloveboxes	Assists in fire suppression in the process gloveboxes
Emergency Lighting	2336-W	Low-level lighting during power outages
Decontamination Shower	2336-W Room 111	Flushing radiological/ chemical material from eyes, clothes, and body
First Aid Kits	2336-W	Provide materials for immediate first aid response
Eye Wash Stations and bottles	2336-W	Flushing chemical/ radiological material from eyes

9.2 PORTABLE EMERGENCY EQUIPMENT

Portable Emergency Equipment		
Type	Location	Capability
Fire Extinguishers	2336-W	Assist in fire control
Emergency Monitoring Kit (Silver Suitcase)	Incident Command Post in the conference room at WRAP and the conference room of Building 2740-W	Emergencies use: radiation detection equipment, PPE clothing, respiratory protection equipment

9.3 COMMUNICATIONS EQUIPMENT/WARNING SYSTEMS

Communications Equipment		
Type	Location	Capability
Public Address (PA) System	Throughout the 2336-W facility areas	Notification of WRAP personnel
Crash Alarm Telephone System	2336-W, Room 125	Site notifications and communications
Telephone System	2336-W	Communication with onsite and offsite personnel and organizations
Radios	2336-W	Job Specific communications within WRAP

Evacuation Siren (Steady Buzzer) - Manually activated alarm that alerts WRAP personnel of an evacuation condition.

Take Cover Siren (Wavering Buzzer) - Manually activated alarm that alerts WRAP Complex personnel of a take cover condition.

CAM Unit - Continuous Air Monitor Unit. Has a steady ringing bell and flashing red beacon when used for monitoring local air spaces. CAM units used for monitoring non-local, or remote, air spaces have steady ringing bells and flashing amber beacons.

Fire Alarm (Hi Pitched Beep and Flashing Strobe) - There is an emergency fire signal system in the 2336-W Building. Activation of this alarm by either smoke/heat detectors or manual pull stations alerts personnel in the affected facility to perform an evacuation.

Plant Control System Alarms (PCS) - Monitored system parameters associated with the 2336-W facility operations (ventilation, electrical, air, exhaust emissions, radiation levels, etc.) will provide alarm conditions in the 2336-W Control Room, Local Alarm Panels, and selected alarm indications on the remote alarm panel located in room 120.

9.4 PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment		
Type	Location	Capability
Personal Protective Clothing (PPE)	2336-W Change room Areas and Clean STP Storage Area (Room 132)	Protect personnel from skin exposure to particulate contaminants
Acid Suit, Aprons, Face shields, Gloves	2336-W Material Preparations Area (Room 152)	Protect personnel when working with acids and caustics

9.5 SPILL CONTROL AND CONTAINMENT SUPPLIES

Spill Kits and Spill Control Equipment		
Type	Location	Capability
Portable Spill Response Carts (Absorbents, pillows, spill pigs, Non-sparking cleanup tools, protective clothing, etc.)	2336-W Shipping/Receiving Area	Provide immediate access to required materials necessary to stabilize hazardous material spills in the facility
Spill Response Locker (Absorbents, pillows, spill pigs, containers, Non-sparking cleanup tools, protective clothing, etc.)	2336-W Material Preparation Area (Room 152) and process area	Provide immediate access to required materials necessary to stabilize hazardous material spills in the Material Preparation Area

9.6 INCIDENT COMMAND POST

The primary ICP for WRAP is the conference room of Building 2336-W. The secondary ICP location is the conference room of Building 2740-W. At such a time that either the primary or secondary ICP locations cannot be established/maintained due to unsafe conditions, then the BED will identify an alternate location or request the utilization of the mobile command vehicle.

10.0 COORDINATION AGREEMENTS

The RL has established a number of coordination agreements, or memoranda of understanding (MOU) with various agencies to ensure proper response resource availability for incidents involving the Hanford Site. A description of the agreements is contained in DOE/RL-94-02, Table 3-1.

11.0 REQUIRED REPORTS

Post-incident written reports are required for certain incidents on the Hanford Site. The reports are described in DOE/RL-94-02, Section 6.1.

12.0 PLAN LOCATION

Copies of this plan are maintained at the following locations:

- Operations Management Offices
- WRAP Managers Office
- ICP equipment bag
- RL-EOC
- Hanford Local Area Network (HLAN).

13.0 BUILDING EMERGENCY ORGANIZATION

The complete building emergency organization listing of positions, names, work locations and telephone numbers for the WRAP is maintained in a separate, internally controlled, WRAP document. Copies are distributed, at a minimum, to appropriate WRAP locations and to Hanford Site Emergency Preparedness. In addition, names, work and home telephone numbers of the BEDs and alternates are available from the Patrol Operations Center (373-3800), in accordance with the *Hanford Facility RCRA Permit*, Dangerous Waste Portion, General Condition II.A.4.

14.0 REFERENCES

DOE/RL-94-02, *Hanford Emergency Response Plan*, as amended.

DOE Order 232.1, "Occurrence Reporting and Processing of Operations Information," U.S. Department of Energy, Washington D.C.

NIOSH, 1996, *Pocket Guide to Chemical Hazards*, National Institute of Occupational Safety and Health, U.S. Department of Health and Human Resources, Public Health Service, Centers for Disease Control, Washington, D.C., updated periodically.

WAC 173-303, "Washington State Dangerous Waste Regulations," *Washington Administrative Code*, Washington State Department of Ecology, Olympia, Washington, as amended.

Hanford Facility RCRA Permit, Dangerous Waste Portion, Washington State Department of Ecology, Olympia, Washington, as amended.

FIGURE 1. EVACUATION ROUTES - 2336-W

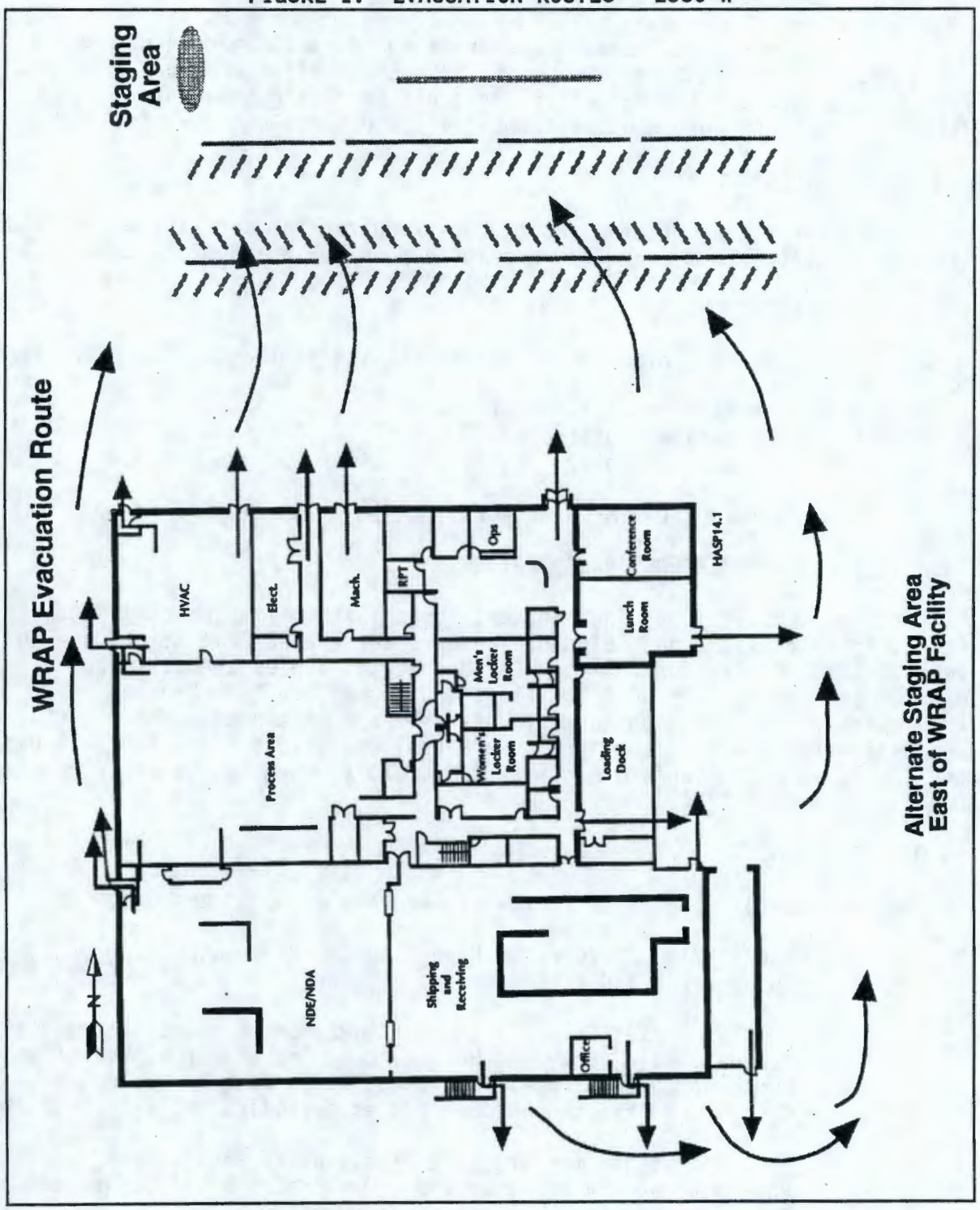
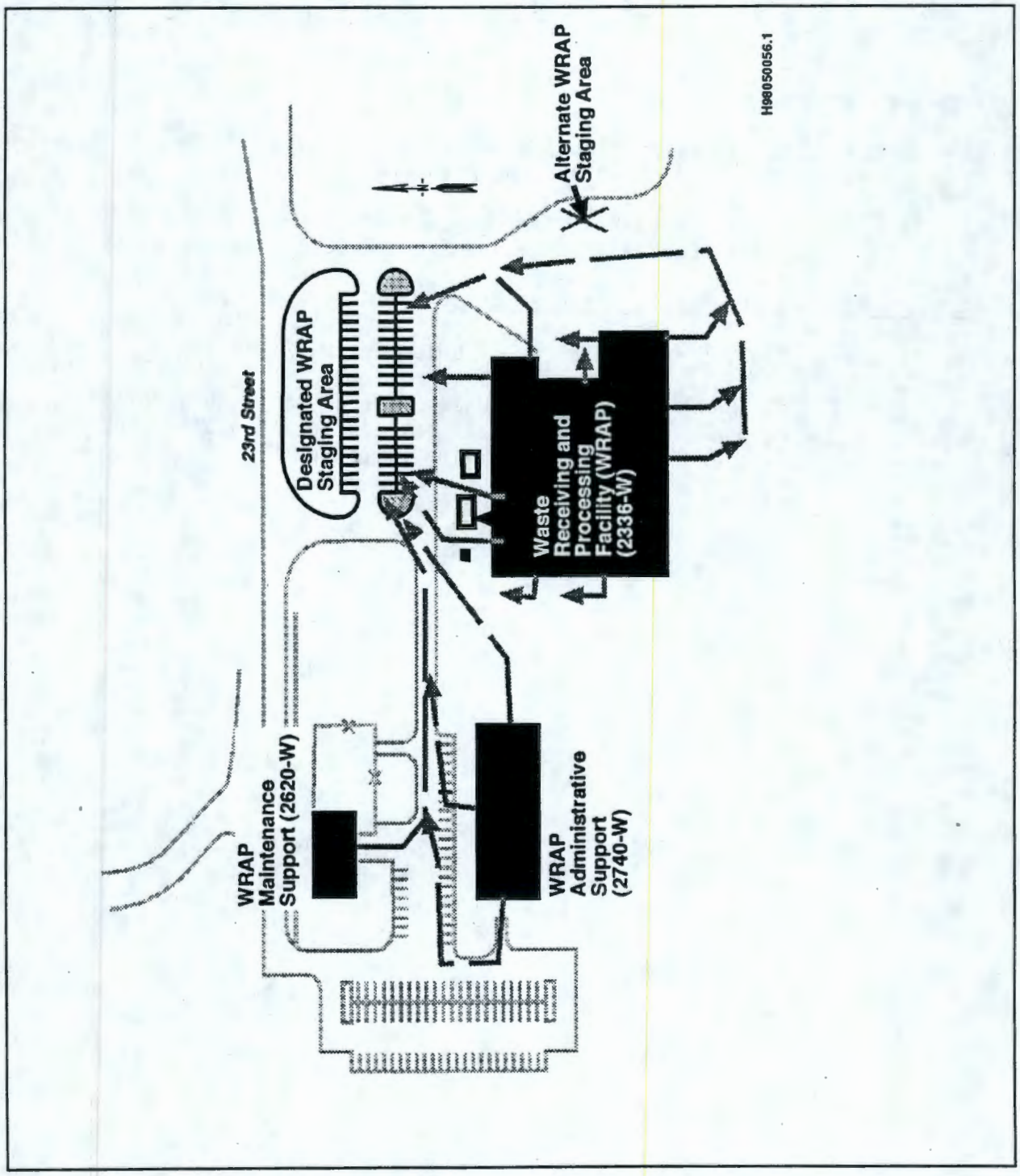


FIGURE 2. OVERVIEW OF THE WRAP COMPLEX



ATTACHMENT A

Listing of Procedures and Guides

Site-Wide Procedures

DOE-0223, *Emergency Plan Implementing Procedures*, RLEP-3.4, "Emergency Termination, Reentry, and Recovery"

DOE-0223, *Emergency Plan Implementing Procedures*, RLEP-1.1, "Hanford Incident Command System and Event Recognition and Classification"

Facility Specific Emergency Response Guide

HNF-IP-1262, *Building Emergency Guide for WRAP*

NOTE: The *WRAP Emergency Response Guide* provides more detailed response direction for all emergencies identified in Chapter 7.0 of this Building Emergency Plan.

APPENDIX 8A

TRAINING

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R. W. Reddinger, Manager
Training

Date 5/21/99

L. W. Roberts, Manager
Waste Receiving and Processing Facility

Date 6/4/99

H. C. Boynton, Environmental Compliance Officer
Waste Receiving and Processing Facility

Date 5/4/99

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1.0 PURPOSE

This document outlines the Dangerous Waste Training Program (DWTP) for the Waste Receiving and Processing Facility (WRAP) organization. WRAP is a treatment, storage, and/or disposal (TSD) unit on the Hanford Facility. The DWTP implements the requirements of Washington Administrative Code (WAC) 173-303-330 and Title 40 Code of Federal Regulations (CFR) 264.16 for the development of a written dangerous waste training plan.

2.0 SCOPE

This DWTP applies to personnel who perform work at, or in support of WRAP. The DWTP requirements are based on an assessment of duties and responsibilities of personnel responsible for dangerous waste management (e.g., handling, treatment, storage, and/or disposal of dangerous and/or mixed waste. In addition, this training program ensures that personnel are familiar with emergency equipment and/or systems and emergency procedures to safely operate and maintain WRAP.

Processing within WRAP consists of a series of operations. Most of these operations occur manually within the gloveboxes. Some of the operations are automatic once initiated by the operator. Shutdown procedures for the automatic operations are included in each of the individual training courses.

3.0 DEFINITIONS

None.

4.0 RESPONSIBILITIES

Personnel responsibilities are described in the following sections.

4.1 Facility Manager

The Facility Manager has the overall responsibility to meet all training requirements of WAC 173-303-330 and Condition II.C of the Hanford Facility RCRA Permit (Ecology 1994). To meet the requirements in WAC 173-303-330(1)(a), the training director position is described in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28, Chapter 8.0). Because the Facility Manager has overall responsibility in the assignment of training for personnel, the Facility Manager is involved in directing training at WRAP.

4.2 Training Manager

The training manager has overall responsibility for establishing, conducting, and administering the training program for WRAP to ensure personnel are trained to meet their assigned jobs.

4.3 Facility Management

All managers, under the direction of the Facility Manager, are responsible for the following:

- Determining required training for all personnel assigned to the WRAP, as required by job assignment.

- Ensuring that personnel assigned to WRAP receive required initial training, continuing training, and retraining as needed to be qualified to perform their assigned duties in dangerous waste management.

- Maintaining up-to-date personnel training records for assigned personnel.

4.4 Training Personnel

Training personnel are responsible for the following:

- Reviewing training requirements whenever regulations change or annually, at a minimum, for adherence to regulations and to ensure the requirements reflect the current systems, procedures, and policies applicable to each position.

- Developing and conducting training on new and existing systems or equipment.

4.5 Waste Receiving and Processing Personnel

WRAP and WRAP support personnel are responsible for the following:

- Working with their managers to define applicable training
- Completing necessary training to gain/maintain qualifications.

5.0 TRAINING PROGRAM

The WRAP DWTP is implemented based on training requirements related to job responsibilities.

5.1 Training Requirements

Training requirements for individual personnel are tracked in the Training Matrix (TMX).

The responsible manager reviews training requirements when personnel change positions or assume new job responsibilities, when changes are identified to this training plan (other than editorial changes), or annually, as a minimum. Updates to the training requirements are made as necessary.

Personnel must meet the training requirements within 6 months of the date of hire, within 6 months of assignment to the WRAP, or within 6 months of assignment to a new position within the WRAP. Personnel in-training will not make decisions that could affect facility safety. Personnel independently can perform specific jobs or tasks for which they are qualified. Personnel performing work who do not meet all training requirements must be supervised by a qualified person.

As new requirements are identified and indicated in this training plan, WRAP personnel will comply with the new requirements within 6 months of the effective date of the requirement.

5.2 Job Titles and Descriptions

Personnel are assigned a job title and a job description. The job description includes requisite skills, work experience, education, and other qualifications, and a brief list of duties and/or responsibilities. This information is maintained by the human resources department.

5.3 Dangerous Waste Worker Position

WRAP personnel are categorized into six worker positions: (1) All Employee, (2) General Worker, (3) Advanced General Worker, (4) General Manager, (5) General Shipper, and (6) Waste Designator.

Personnel are categorized into these positions based on duties and responsibilities as determined by a job analysis or management assessment. In the event personnel duties and responsibilities fall into more than one position, personnel will complete the training requirements for each position.

The duties and responsibilities described for the positions in this section, coupled with the information described in Section 5.4, provide the necessary information to determine the training for appropriate personnel. The categories are based on duties and responsibilities of personnel associated with dangerous waste management at WRAP and are provided in the following sections.

5.3.1 All Employee

Personnel included in this position are those who do not fall into one of the other five positions and have no duties or responsibilities directly associated with dangerous waste management. Typical job titles of personnel in this position include secretaries, clerks, and oversight personnel.

Most visitors, categorized as All Employee, generally tour, provide oversight, or are brought onsite for interviews. Other non-Hanford Facility personnel who gain access to the WRAP to complete work in controlled areas but do not become involved in the management of dangerous waste are categorized as All Employee.

5.3.2 General Worker

Personnel with limited dangerous waste management duties, such as activities associated with the generation of dangerous waste or facility maintenance or modification, are categorized as General Workers. Typical job titles of personnel in this position include maintenance personnel, health physics technicians, and transporters.

Personnel categorized as General Workers could be assigned duties and responsibilities for the following:

- Placing waste into pre-approved containers and filling out logsheets where applicable
- Completing radiological surveys of dangerous waste
- Moving containers or loading packaged containers onto trucks
- Responding to a spill or release of known contents where duties and responsibilities are limited to containing the spill/release, returning the container to an upright position, and/or placing the known spilled material or waste into a pre-approved container.
- Applying container markings or labels based on direction from an Advanced General Worker, General Manager, or General Shipper.

5.3.3 Advanced General Worker

Personnel whose duties exceed those of a General Worker for dangerous waste management are categorized as Advanced General Workers. A typical job title of personnel in this position is Nuclear Process Operator.

Responsibilities of an Advanced General Worker for management of dangerous waste in containers can include the following:

- Determining container markings and labels
- Preparing container logsheets
- Completing waste inventories
- Sampling of waste
- Packaging and transporting waste samples
- Responding to spills and releases of waste in accordance with approved procedures
- Performing inspections and surveillances
- Receiving transfers and/or shipments of waste.

5.3.4 General Manager

Personnel identified as General Managers coordinate, direct, and oversee the work of General or Advanced General Workers in the management of dangerous waste or in the operation and control of WRAP. Other duties could include responsibilities during emergency events requiring implementation of the building emergency plan. Personnel at the WRAP who could be categorized as General Managers include: the operations manager (OM), team leads (TLs), environmental compliance officer (ECO), cognizant engineers (Cog Engrs), persons in charge (PIC), hazardous material specialist (HMS), and building emergency director (BED). The TMX identifies personnel currently filling these positions.

5.3.4.1 Operations Manager

OM responsibilities include the following:

- Supervising, coordinating, and directing the activities of the TLs
- Maintaining control over WRAP operations in accordance with established operating procedures and policies, DOE Orders, and federal and state regulations
- Directing, controlling, and coordinating the storage and transfer of dangerous waste
- Complying with WRAP permits
- Providing guidance to TLs during abnormal or emergency conditions.

5.3.4.2 Team Leads

TLs responsibilities include the following:

- Supervising and coordinating WRAP operation and maintenance activities

- Maintaining control of WRAP operations in accordance with established policies and operating procedures, DOE Orders, and federal and state regulations
- Conducting pre-job safety meetings with personnel
- Maintaining operational records
- Reviewing and revising WRAP operations procedures
- Recognizing and responding to abnormal and/or emergency conditions
- Supervising the storage, handling, and transfer of dangerous waste
- Complying with WRAP permits.

5.3.4.3 Environmental Compliance Officer

ECO responsibilities include the following:

- Ensuring WRAP management is aware of environmental compliance requirements and issues
- Providing support to ensure compliance with applicable environmental rules and regulations
- Serving as WRAP liaison on environmental issues and permits
- Advising WRAP management of emerging environmental requirements and policies, and recommending implementation strategies to ensure compliance
- Ensuring compliance with WRAP permits.

5.3.4.4 Cognizant Engineers

Cog Engrs responsibilities include the following:

- Ensuring emergency and monitoring equipment, process equipment, procedures, designs, etc., comply with DOE Orders, federal and state regulations, national standards, and applicable engineering procedures and management standards
- Issuing and maintaining operation documentation, operating procedures, flowsheets, specifications, process test plans and procedures, operational safety requirements, etc.
- Performing evaluations of WRAP process to ensure compliance with process control requirements and permits
- Preparing and approving engineering design documents and drawings in compliance with applicable policies, procedures, and instructions per national standards and codes
- Providing technical assistance for hazardous material and dangerous waste spill response.

5.3.4.5 Person In Charge

PIC responsibilities include providing in-field direction of tasks in progress.

5.3.4.6 Hazardous Material Specialist

HMS responsibilities include the following:

- Supervising and coordinating hazardous waste storage and transfer
- Providing approved storage containers and applicable markings
- Interfacing with other organizations to ensure proper and timely disposal of hazardous waste
- Preparing and maintaining applicable hazardous waste documentation in accordance with DOE Orders and federal and state regulations
- Ensuring nonregulated alternatives are used whenever possible
- Reviewing hazardous waste documentation and providing hazardous waste disposition instructions as required.

5.3.4.7 Building Emergency Director

BED responsibilities include the following:

- Acting as the emergency coordinator
- Assessing incidents to determine response necessary to protect the personnel, facility, and the environment
- Arranging for care of any injured personnel
- Remaining available for fire, patrol, and other authorities on the scene, and provides all required information
- Ensuring proper containerization, packaging, and labeling of recovered spill materials
- Assisting in preparing the necessary post-incident documentation.

5.3.5 General Shipper

Personnel who prepare and sign waste movement documentation for onsite transfers or offsite shipments of dangerous waste are categorized as General Shipper.

5.3.6 Waste Designator

Personnel who perform and/or complete waste designations are categorized as a Waste Designator.

5.4 Required Training

Attachment 1 is a matrix of required RCRA training courses. Training for emergency procedures, emergency equipment, and emergency systems to meet the requirements of WAC 173-330(1)(d) is included in these courses as specified in the course description. Attachment 2 provides required training for personnel by job category.

Personnel who have completed training offsite are required to provide a certificate or other suitable evidence of training course(s) that meet the requirements of WAC 173-303 and this DWTP.

5.5 Non-Hanford Facility Personnel

Non-Hanford Facility personnel who perform work at WRAP must complete the appropriate level of training determined by line management according to the tasks they will perform.

WRAP management is responsible for ensuring that non-Hanford Facility personnel training requirements are met before granting access. Some personnel are granted access without the required training because they are either escorted or supervised by qualified personnel within WRAP.

5.6 Conduct of Training

The training program uses a systematic approach to training. Training design, development, and implementation are based on learning objectives derived from the analysis of the specific job/task. Training is provided using classroom instruction, on-the-job training, required reading, computer-based training methods, individualized instruction, and/or by providing drills. Training is developed and provided by personnel knowledgeable in dangerous waste management policies and/or procedures.

5.7 Documentation of Training

Classroom training is documented on course completion rosters, which are signed by personnel. Written examinations are signed by personnel at the time of taking the examination and when reviewed with the instructor who grades the examination.

Training record files on WRAP personnel are stored in the TMX computer database, which is accessed by the facility records specialist. A report is generated from the database to inform WRAP management when training for personnel is within 90 days of expiration. A TMX report example is included as Attachment 3. Copies of completed TSD unit-specific training certifications/qualifications are available from the WMH training department. Additional information regarding training records can be accessed through the Human Resources Information System (HRIS). HRIS is managed by the Hanford Training Records organization.

Training records summaries for support organization personnel also are stored in the HRIS. Training records of former personnel are kept on the HRIS for 3 years from the date last worked at WRAP. Original signed and dated training records are maintained by the Hanford Training Records organization. These records are transferred quarterly to the Records Holding Facility in Richland, Washington. After approximately 1 year at the Records Holding Center, the original training records are archived.

5.7.1 Access of Training Records

When a training record is requested during an inspection, an electronic data storage record will be provided. If an electronic data storage record does not satisfy the inspection concerns, a hard copy training record will be provided. Training records on former personnel might not be readily available and could require a representative from the Hanford Training Records organization to access this information.

5.7.2 Determining Current Training Status

The electronic data storage training record, coupled with this DWTP, provides the training status of personnel in the field.

5.7.3 Personnel List

A list of personnel for Advanced General Workers, General Managers, General Shippers, and Waste Designators is maintained on TMX, including the direct link between these positions and the personnel filling the positions. The TMX is updated quarterly.

6.0 REFERENCES

DOE/RL, 1994, DOE-RL/U.S. Army Corps of Engineers to Ecology "State of Washington Department of Ecology Administrative Order No. DE94NM-063" dated April 14, 1994, items 3 and 4.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste*, Permit Number WA7890008967, Washington State Department of Ecology, Olympia, Washington, modified periodically.

7.0 ATTACHMENTS

ATTACHMENT 1. RCRA TRAINING PROGRAM COURSE DESCRIPTIONS

ATTACHMENT 2. REQUIRED TRAINING FOR WASTE RECEIVING AND PROCESSING FACILITY PERSONNEL

ATTACHMENT 3. EXAMPLE OF TMX DATABASE REPORT

ATTACHMENT 1. RCRA TRAINING PROGRAM COURSE DESCRIPTIONS

The following constitute the RCRA training program courses as determined by (1) WAC 173-303, (2) the Hanford Facility RCRA Permit, and (3) correspondence between DOE-RL and Ecology on dangerous waste training.

Title	**000001 Hanford General Employee Training**
Description	Course covers DOE Orders and applicable policies pertaining to employer and personnel rights and responsibilities, general radiation training, hazard communications, dangerous waste, fire prevention, personal protective equipment, safety requirements, emergency preparedness, accident reporting, and avenues for addressing safety concerns.
Mandating document(s)	Hanford Facility RCRA Permit, General Condition II.C.2 and II.C.4.
Target audience	All personnel working on the Hanford Facility.
Frequency	Annual.

Title	**02006G Waste Management Awareness**
Description	Course introduces personnel to federal laws governing chemical safety in the work place. The course provides hazardous material/waste personnel with the basic fundamentals for safe use of hazardous materials and initial accumulation or storage of dangerous or mixed waste in containers. The concepts covered in this course instruct personnel on specific waste generation procedures and requirements, which include: (1) applicable waste management practices (i.e., waste stream identification, waste segregation practices, completing container logsheets, and housekeeping requirements), (2) proper responses to incidents pertaining to the waste in the accumulation containers, (3) proper responses to dealing with waste of unknown origins, and (4) proper responses to questions posed in the field concerning the above elements.
Mandating document(s)	WAC 173-303-330(1) Letter: DOE-RL/U.S. Army Corps of Engineers to Ecology "State of Washington Department of Ecology Administrative Order No. DE 94NM-063" dated April 14, 1994, items 3 and 4. Hanford Facility RCRA Permit, General Conditions II.C.1 and II.C.4.
Target audience	Hanford Facility personnel categorized as a General Worker, Advanced General Worker, and General Manager, and subcontractors categorized as General Workers. Other courses might provide equivalent training so that credit for this course is provided when the electronic data storage training record is generated.
Frequency	One-time only. (Annual refresher training is not required because training is adequately covered through 035110 and/or 03E306.)

Title	**020159 Advanced Course 2 - Hazardous Waste Shipper Certification**
Description	Course defines responsibilities and liabilities with regard to compliance to manifesting requirements and U.S. Department of Transportation regulations, including placarding, identifying proper shipping names, and loading requirements.
Mandating document(s)	WAC 173-303-330(1), -180, -190, and -370. Hanford Facility RCRA Permit, General Condition II.Q, as applicable
Target audience	General Shippers of dangerous or mixed waste on roadways anywhere on the Hanford Facility.
Frequency	Every 3 years.

Title	**02028B Building Emergency Director Training**
Description	Course provides an overview of the responsibilities of the Building Emergency Director, identifies the building emergency organizations and actions required during an event, discusses implementing the contingency plan, and discusses drill and exercise requirements.
Mandating document(s)	WAC 173-303-330(1), -340, -350, and -360.
Target audience	Hanford Facility personnel categorized as General Managers because they perform the responsibilities of a RCRA Emergency Coordinator through the title of Building Emergency Director or alternate (e.g., On-Call Manager).
Frequency	Initial (retrained annually by 037510 Building Emergency Director/Warden Requalification).

Title	**306500 WRAP Qualification Package TRU Glovebox Operator**
Description	Course provides training in TRU glovebox operations including packet NDE and NDA, waste handling, sampling, treatment, and loadout.
Mandating document(s)	WAC 173-303-330(1)
Target audience	Personnel who will be performing TRU glovebox operations.
Frequency	24 month(s)

Title	**306511 WRAP Operations Manager/Team Leader Qualification - Phase 2 - Initial**
Description	Individualized instruction of WRAP Phase 2 operation. A performance demonstration is conducted by the candidate to demonstrate the leadership ability to direct Phase 2 processing activities.
Mandating document(s)	WAC 173-303-330(1)
Target audience	Management personnel who will be supervising WRAP operations.

Frequency	Initial (requalification every 24 months by 306550)
Title	**306550 WRAP Operations Manager/Team Leader Qualification - Phase 2 - Requalification**
Description	Individualized instruction of WRAP Phase 2 operation. A performance demonstration is conducted by the candidate to demonstrate the leadership ability to direct Phase 2 processing activities.
Mandating document(s)	WAC 173-303-330(1)
Target audience	Management personnel who will be supervising WRAP operations.
Frequency	Every 24 months

Title	**306515 WRAP Qualification Package Shipping & Receiving Operator**
Description	Course provides training in receiving, storing, and shipping waste containers.
Mandating document(s)	WAC 173-303-330(1)
Target audience	Operators who will be performing S&R operations.
Frequency	24 month(s)

Title	**306520 WRAP Qualification Package NDA Operator**
Description	Course provides training in NDA requirements and activities for containers and boxes.
Mandating document(s)	WAC 173-303-330(1)
Target audience	Operators who will be performing NDA operations.
Frequency	24 month(s)

Title	**306525 WRAP Qualification Package Low-Level Waste Glovebox Operator**
Description	Course provides training in low-level glovebox operations including waste handling, packet NDE, sampling, and treatment.
Mandating document(s)	WAC 173-303-330(1)
Target audience	Operators who will be performing LLW glovebox operations.
Frequency	24 month(s)

Title	**306530 WRAP Qualification Package - Facility Operator**
Description	Develop proficiency in working with the plant control system, data management system, electrical distribution system, fire protection system, radiation monitoring system, communications system, HVAC, compressed air system, and environmental operations.
Mandating document(s)	WAC 173-303-330(1)
Target audience	Operators who will be performing WRAP surveillance.
Frequency	24 month(s)

Title	**306750 WRAP Facility Orientation**
Description	Course includes WRAP hazard communication and building emergency plan (facility emergency and hazards information checklist, building layout, operations, communications, alarms, evacuation routes, and staging areas).
Mandating document(s)	WAC 173-303-330(1)
Target audience	Personnel who have access to the WRAP.
Frequency	12 month(s)

Title	**03E306 Building Emergency Plan for WRAP (HNF-IP-0263)**
Description	Course consists of a review of specific chemical hazards associated with operating WRAP, as covered by the WRAP Building Emergency Plan. The training is completed by the supervisor, manager, or a designated individual using a checklist. Information reviewed includes hazards in the work area and emergency response requirements, including communication and alarm systems, and response to fires. The training is completed by the immediate manager or a designated individual using a checklist.
Mandating document(s)	WAC 173-303-330(1)(d), -340, -350, and -360.
Target audience	WRAP personnel who are General Workers, Advanced General Workers, and General Managers.
Frequency	Annual.

Title	**035010 Waste Designation**
Description	Course teaches dangerous waste designation according to WAC 173-303. Class content includes section-by-section lecture on the regulations, with examples following each section. Students complete examples using a waste designation flow chart. Examples addressed include: listed waste, characteristic waste, and Washington State criteria of toxicity and persistent.
Mandating document(s)	WAC 173-303-330(1), -070, and -080 through -100.
Target audience	General Shippers and Waste Designators.
Frequency	One-time only. (Annual retrain is only required for those personnel who are required to complete 035012.)

Title	**035012 Waste Designation Qualification**
Description	Course provides qualification to be a Waste Designator.
Mandating document(s)	WAC 173-303-330(1), -070, and -080 through -100.
Target audience	Waste Designators.
Frequency	Annual.

Title	**035020 Facility Waste Sampling and Analysis**
Description	Course presents waste sampling methodologies according to U.S. Environmental Protection Agency Protocols SW-846, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods". This course also covers documentation requirements in a sampling plan and/or waste analysis plan, field and laboratory quality control/assurance, the data quality objectives process, and use of actual sampling equipment as specified by WAC 173-303-110. Finally, topics on listed waste management pertaining to sample management and available onsite sampling services are covered.
Mandating document(s)	WAC 173-303-330(1), -070, -110, and -300.
Target audience	General Managers and/or General Shippers because they perform responsibilities for sampling waste or effluent streams.
Frequency	One-time only.

Title	**035100 Container Waste Management - Initial**
Description	Course covers general training requirements pertaining to waste management of container in less-than-90-day accumulation areas and TSD units. The course incorporates WAC 173-303-200(1), -630, DOE Orders, and container management policy. Course includes practical exercises for hands-on experience with the packaging of dangerous or mixed waste, and preparation of packages for final destination. This course does not cover waste management aspects pertaining to other RCRA waste management units such as tank systems, surface impoundments, containment buildings, landfills, etc.
Mandating document(s)	WAC 173-303-330(1), -630, -200(1) and waste minimization.
Target audience	Advanced General Workers and General Managers, because they are immediate managers of or direct Advanced General Workers, who manage containers of dangerous or mixed waste.
Frequency	Initial (refresher annually by 035110 Container Waste Management Training).

Title	**035110 Container Waste Management - Refresher**
Description	Refresher Course for Container Waste Management - Initial.
Mandating document	WAC 173-303-330(1), -630, -200(1), and waste minimization.
Target audience	Advanced General Workers and General Managers, because they are immediate managers of or direct Advanced General Workers, who manage dangerous or mixed waste in containers.
Frequency	Annual.

Title	**035120 Waste Management Administration - Initial**
Description	Course is designed for personnel preparing to become shippers of dangerous and/or mixed waste. This course covers regulatory and onsite policies, forms, reports, forecasts, and plans. Topics also covered include: waste characterization, waste certification summaries, waste specification system, and solid waste storage/disposal records. In addition, personnel learn how these forms are used to complete shipping papers.
Mandating document(s)	WAC 173-303-330(1), -630, -200, -210, -220, -380, and -390.
Target audience	General Shippers because they direct Advanced General Workers in the management of containers of dangerous and mixed waste.
Frequency	Initial (refresher annually by 035130 - Waste Management Administration).

Title	**035130 Waste Management Administration - Refresher**
Description	Refresher course for Waste Management Administration - Initial.
Mandating document(s)	WAC 173-303-330(1), -630, -200, -210, -220, -380, and -390.
Target audience	General Shippers because they direct Advanced General Workers in the management of containers of dangerous and mixed waste.
Frequency	Annual.

Title	**037510 Building Emergency Director/Warden Requalification**
Description	Refresher for Building Emergency Director Training.
Mandating document(s)	WAC 173-303-330, -340, -350, and -360.
Target audience	General Managers because they have the responsibilities of the RCRA Emergency Coordinator in WAC 173-303-360.
Frequency	Annual.

ATTACHMENT 2. REQUIRED TRAINING FOR WASTE RECEIVING AND PROCESSING FACILITY PERSONNEL

Position	Job Title	Required Training
All Employee	All other Job Titles not specifically listed.	000001, 306750, 03E306
General Worker	Radiological Control Technician, Maintenance Personnel (Electrician, Instrument Technician, Insulator, Millwright, Painter, Pipefitter, Power Operator, Process Crane Operator, Rigger, Sign Painter, Truck Driver, Welder), Maintenance Manager, Radiological Control Manager.	000001, 02006G, 03E306, 306750
Advanced General Worker	Nuclear Process Operator * Operations personnel must qualify in their assigned duties unless escorted by a qualified operator. Operators are not required to maintain all qualifications.	000001, 02006G, 035100/035110, 03E306, 306500* 306515*, 306520* 306525*, 306530* 306750
General Manager	Operations Manager/Team Leader * Operations personnel must qualify in their assigned duties unless escorted by a qualified operator. Operators are not required to maintain all qualifications.	000001, 02006G, 02028B, 037510, 035100/035110, 03E306, 306500*, 306511/306550, 306515*, 306520*, 306525*, 306530* 306750
	Environmental Manager/Team Leader	000001, 02006G, 035010, 035020, 035100/035110, 03E306, 306750
	Environmental Compliance Officer	000001, 02006G, 035010, 035020, 035100/035110, 03E306, 306750
	Environmental Engineer/Scientist Plant Engineer (Environmental)	000001, 02006G, 035010, 035020, 035100/035110, 03E306, 306750

Position	Job Title	Required Training
General Manager (cont)	Hazardous Material Specialist	000001, 02006G, 035010, 035020, 035100/035110, 03E306, 306750
	Building Emergency Director	000001, 02006G, 02028B, 037510, 035100/035110, 03E306, 306750
General Shipper	Shipper	000001, 02006G, 020159, 035010, 035100/035110, 035120/035130, 03E306, 306750
Waste Designator	Waste Designator	000001, 035010, 035012, 03E306, 306750

ATTACHMENT 3. EXAMPLE OF TMX DATABASE REPORT

POSITION TRAINING REPORT

Tracking Code: Matrix Last Modified on 05/03/99 05/05/99 Position 1
Manager: 30 Days Delinquent Forecast 15:04:38 Sheet 1 of 1
Organization: SOLID WASTE MANAGEMENT
Position: Safety Engineer (AE)

	Course No.	Title	Retrain Course	Individual #1	Individual #2
M	000001	HGET	000001	02/04/99	04/20/99
M	003034	LOCK & TAG - AUTH WRKR I	003037	02/25/99	03/05/99
M	003035	LOCK & TAG: CO INITIAL	003036	02/25/99	03/05/99
M	020001	RAD WORKER II INITIAL	020003	12/16/00	01/20/01
M	020041	RESPIRATORY PROTECTION I	02R041	07/14/99	09/15/99
M	031110	24 HR RCRA TSD HAZ WASTE	032020	01/14/99	08/28/99
M	03E306	WRAP FACILITY EMERG & CH	03E306	10/14/99	12/15/99
M	300900	SW PROJECTS FACILITY ORI	---------	08/21/99	02/02/00
M	301100	SW PROJECT EMER/HAZ INFO	301100	08/21/99	02/02/99
M	306750	WRAP1 FAC ORIENT	306750	10/14/98	02/10/99
M	020130	CONFND SPC ENTRY (CSE)	---------	OK	OK
M	020140	FALL PROTECTION TRAINING	---------	OK	OK
M	020044	QUANTITATIVE MASK FIT	020044	12/15/99	02/20/00
M	02006G	WASTE MANAGEMENT AWARENE	---------	OK	OK
M	038100	HANFORD INCIDENT COMMAND	038100	7/16/99	9/15/99
M	020900	ALARA TRNG TECH SUPPORT	---------	OK	OK
M	120196	COMPUTER SECURITY TRAINI	120195	12/25/99	02/02/00
M	170500	BASIC MEDIC FIRST AID	170535	12/25/99	03/11/01
M	172701	ISMS & WORK PLANNING TEA	---------	OK	OK
M	172702	USING THE AJHA TOOL	---------	OK	OK
M	020702	RAD WORKER REFRESHER TRA	020702	03/21/00	02/02/01

Legend:

Upper case (M/R)	= Course needed by all	Date	= Course retrain date
Lower case (m/r)	= Course needed by some	OK	= Course taken; no retrain date required
<< >>	= Course delinquent	Blank	= Course not needed (lower case) and not taken
/ /	= Course needed (upper case) but not taken	****	= Course taken; retrain requirement not maintained

CONTENTS

1.0 PART A [A] 1-1

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1.0 PART A [A]

The Part A, Form 3, covers the Central Waste Complex (CWC). The original Part A, Form 3, (Revision 0) was submitted May 19, 1988 and included the Radioactive Mixed Waste Storage Facility and Waste Receiving and Processing Facility.

Revision 1, submitted October 22, 1990, was prepared to ensure agreement between annual waste quantities as identified in the Part A, Form 3 (Revision 0), and the Hanford Site annual dangerous waste report submitted in March 1990 to the Washington State Department of Ecology. Two dangerous waste numbers (D012 and D016) and 26 new dangerous waste numbers, based on the U.S. Environmental Protection Agency *Final Rule Change*, "Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions" (55 FR 61), were added.

Revision 2, submitted October 7, 1994, added dangerous waste numbers (F039, P057, U248, U249, U328, U353, and U359) and removed dangerous waste numbers (U230, WC01, P052, and U013). Revision 3, submitted January 25, 1995, was revised to separate the CWC and the Waste Receiving and Processing Facility Part A, Form 3s from the former Hanford CWC Part A, Form 3.

Revision 3 also added 23 dangerous waste numbers to existing Process Codes S01 (container-storage) and T04 (treatment-other).

Revision 4, submitted October 1, 1996, identified a new co-operator of CWC.

Revision 5, submitted June 1, 1998, was revised to clarify the treatment process and redefine the treatment, storage, and/or disposal (TSD) unit boundary. Revision 5 also removed three dangerous waste numbers and added 61 dangerous waste numbers per the revised federal and state regulations. Revision 5 also was revised to clarify the names of various storage buildings/modules.

Revision 6, submitted for inclusion into Modification E of the *Hanford Facility Resource Conservation and Recovery Act Permit*, was revised to update the CWC Site Plan. Revision 6 also added seven dangerous waste numbers.

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Please print or type in the unshaded areas only
(fill- in areas are spaced for elite type, i.e., 12 character/inch).

FORM **3**

DANGEROUS WASTE PERMIT APPLICATION

1. EPA/STATE I.D. NUMBER: W A 7 8 9 0 0 0 8 9 6 7

I OFFICIAL USE ONLY

PLICATION APROVED	DATE RECEIVED *(mo., day, & yr.)*	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. if this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

MO.	DAY	YR.
03	22	43

* FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*
* The date construction of the Hanford Facility commenced.

☐ 2. NEW FACILITY *(Complete item below.)*

MO.	DAY	YR.

FOR NEW FACILITIES, PROVIDE THE DATE, *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *9place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☒ 2. FACILITY HAS A FINAL PERMIT

III. PROCESSES – CODES AND CAPACITIES

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the codes(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. PROCESS DESIGN CAPACITY – For each code entered in column A enter the capacity of the process.

1. AMOUNT – Enter the amount.

2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	*ACRES OR HECTARES*
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U

UNIT OF MEASURE	UNIT OF MEASURE CODE
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H

UNIT OF MEASURE	UNIT OF MEASURE CODE
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECATRES	Q

EXAMPLE FOR COMPLETING SECTION III *(shown in line numberS X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.*

LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	B. 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	B. 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY
X-1	*S 0 2*	*600*	*G*		*5*				
X-2	*T 0 3*	*20*	*E*		*6*				
1	S01	22,710,000	L		*7*				
2	T04	45,420	V		*8*				
3					*9*				
4					*10*				

CONTINUE ON REVERSE

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "TO4"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

The Central Waste Complex (CWC) began waste management operations in August of 1988.

T04 (Treatment-Other)

Treatment available at the CWC includes the absorption and solidification of free liquids, neutralization of corrosive materials, and stabilization and encapsulation of solid waste matrices. The maximum treatment design capacity at the CWC is 45,420 liters (11,999 gallons) per day.

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER – Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2			T 0 3 D 8 0	included with above

CONTINUE ON PAGE 3

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	D001	4,600	K	S01	T04			Storage - Container/Treatment - Other
2	D002	1,000						
3	D003	↓						
4	D004	300						
5	through	↓						
6	D007	↓						
7	D008	45,400						
8	D009	300						
9	through	↓						
10	D043	↓						
11	WSC2	↓						
	WT01	363,200						
13	WT02	36,000						
14	WP01	3,700						
15	through	↓						
16	WP03	↓						
17	W001	10,000						
18	F001	3,700						
19	through	↓						
20	F012	↓						
21	F019	↓						
22	F020	↓						
23	F021	300						
24	through	↓						
	F023	↓	↓	↓	↓			↓
26								

(enter "A," "B," "C," etc., behind the "3" to identify photo copied pages)

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	F026	300	K	S01	T04			Storage - Container/Treatment - Other
2	through							
3	F028							
4	F039							
5	U001							
6	through							
7	U012							
8	U014							
9	through							
10	U039							
11	U041							
12	through							
13	U053							
14	U055							
15	through							
16	U064							
17	U066							
18	through							
19	U099							
20	U101							
21	through							
22	U103							
23	U105							
24	through							
25	U138							
26								

CONTINUE ON REVERSE

(enter "A," "B," "C," etc., behind the "3" to identify photo copied pages)

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	U140	300	K	S01	T04			Storage - Container/Treatment - Other
2	through							
3	U174							
4	U176							
5	through							
6	U194							
7	U196							
8	U197							
9	U200							
10	through							
	U223							
	U225							
13	through							
14	U228							
15	U230							
16	through							
17	U240							
18	U242							
19	through							
20	U244							
21	U246							
22	through							
23	U249							
24	U271							
26								

CONTINUE ON REVERSE

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	U277	300	K	S01	T04			Storage - Container/Treatment - Other
2	through							
3	U280							
4	U328							
5	U353							
6	U359							
7	U364							
8	through							
9	U367							
10	U372							
11	U373							
12	U375							
13	through							
14	U379							
15	U381							
16	through							
17	U387							
18	U389							
19	through							
20	U396							
21	U400							
22	through							
23	U404							
24	U407							
25								
26								

CONTINUE ON REVERSE

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	U409	300	K	S01	T04			Storage - Container/Treatment - Other
2	through							
3	U411							
4	P001							
5	through							
6	P018							
7	P020							
8	through							
9	P024							
10	P026							
	through							
	P031							
13	P033							
14	P034							
15	P036							
16	through							
17	P051							
18	P054							
19	P056							
20	through							
21	P060							
22	P062							
23	through							
24	P078							
	P081							
26	P082							

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	P084	300	K	S01	T04			Storage - Container/Treatment - Other
2	P085							
3	P087							
4	through							
5	P089							
6	P092							
7	through							
8	P099							
9	P101							
10	through							
11	P116							
12	P118							
13	through							
14	P123							
15	P127							
16	P128							
17	P185							
18	P188							
19	through							
20	P192							
21	P194							
22	P196							
23	through							
24	P199							
25								
26								

CONTINUE ON REVERSE

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*				D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	P201	300	K	S01	T04			Storage - Container/Treatment - Other
2	through	↓	↓	↓	↓			↓
3	P205	↓	↓	↓	↓			Included With Above.
4								
5								
6								
7								
8								
9								
10								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
26								

CONTINUE ON REVERSE

Continued from the front.

IV. DESCRIPTION OF DANGEROUS WASTE (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

V. FACILITY DRAWING Refer to attached drawing(s).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS Refer to attached photograph(s).

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawings and photos.

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information," place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
Keith A. Klein, Manager U.S. Department of Energy Richland Operations Office		6/25/99

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED

CONTINUE ON PAGE 5

X. OPERATOR CERTIFICATION

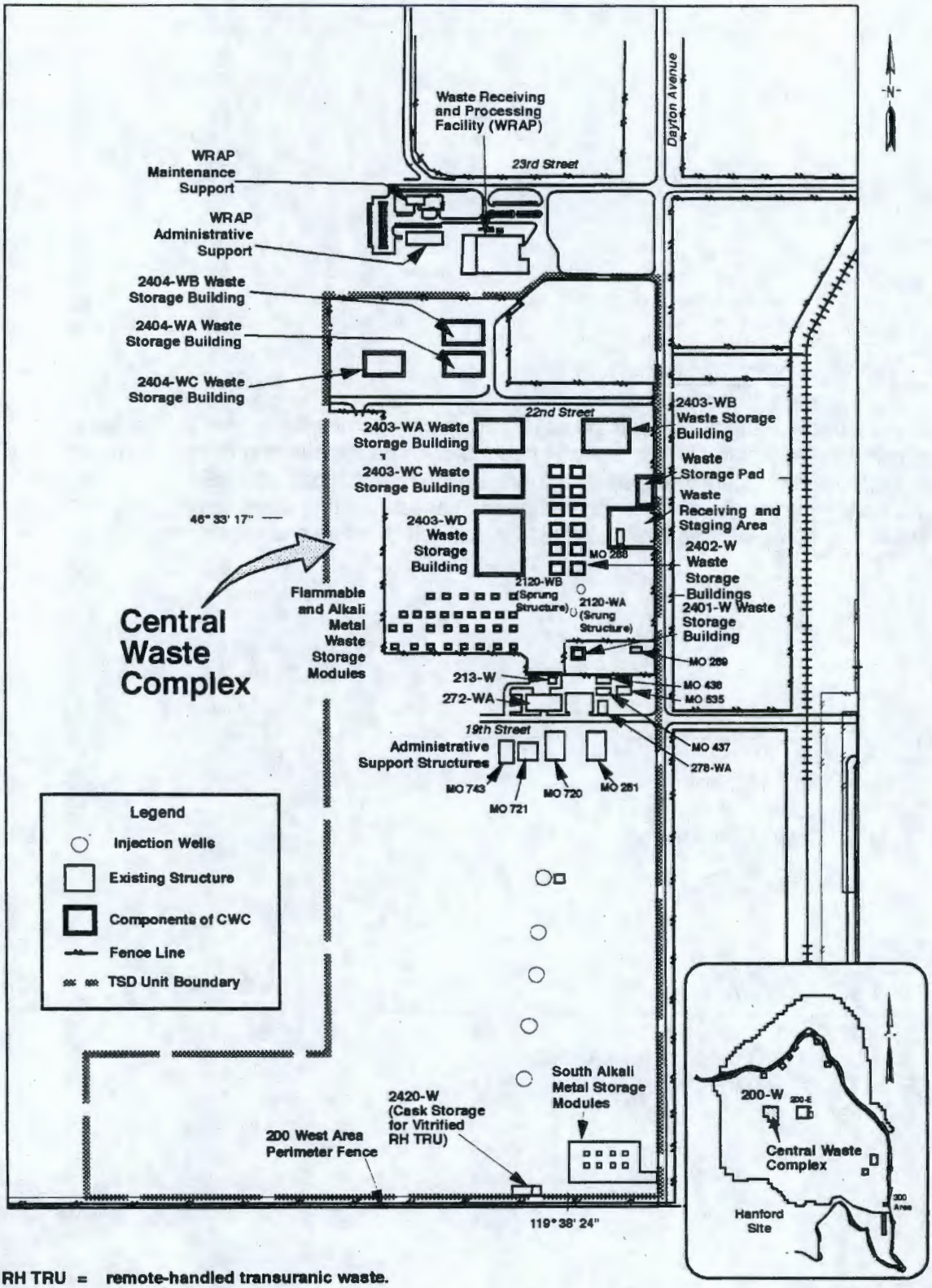
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

6/28/99
Date

R. D. Hanson,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.
Co-operator

6/21/99
Date



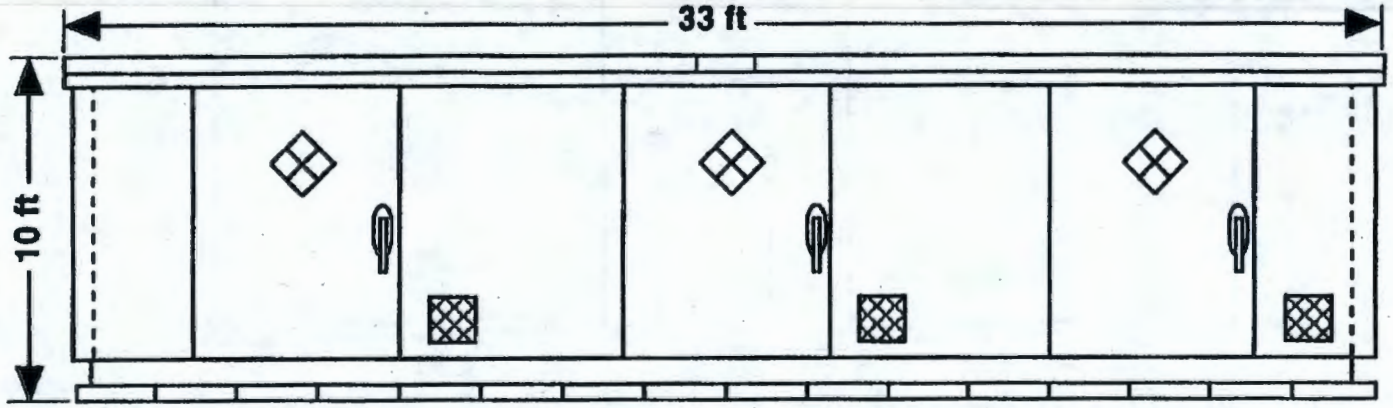
RH TRU = remote-handled transuranic waste.

Not to scale.

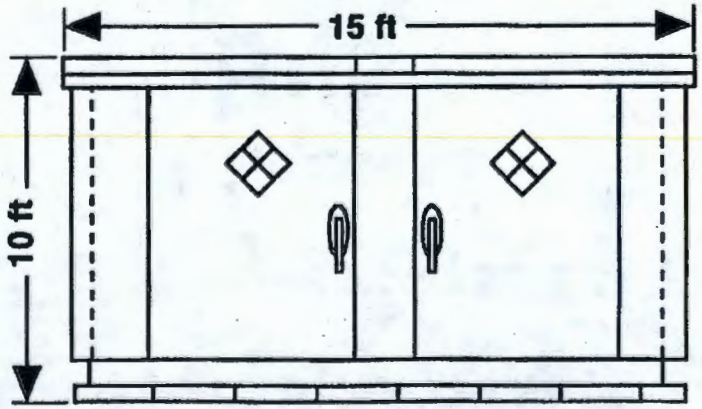
Refer to topographic map (H-13-000003) for detail.

H99040178.11R3

Typical Large Waste Storage Module
Front View



Typical Small Waste Storage Module
Front View

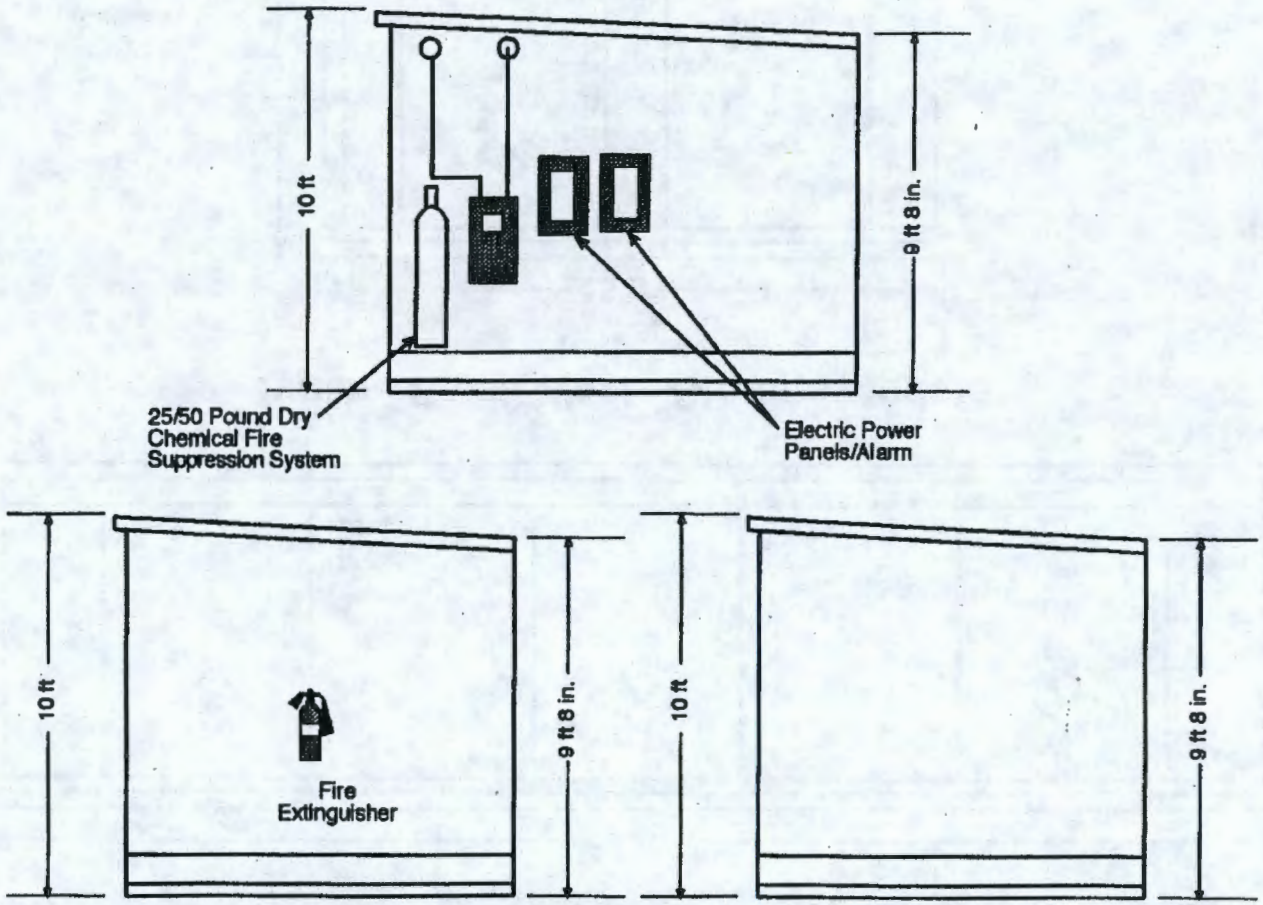


Note: To convert feet to meters, multiply by 0.3048.

H98040178.7

Flammable and Alkali Metal Waste Storage Module

Side View

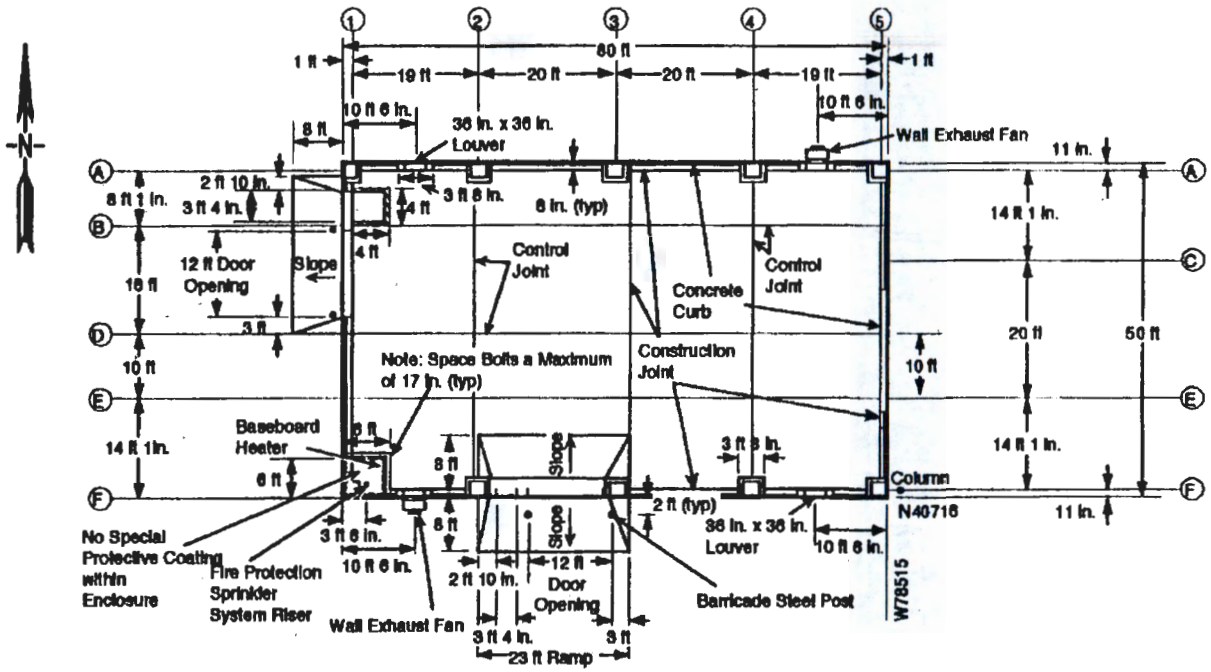


Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.
To convert to pounds to kilograms, multiply by 0.453.
Lights, electrical panels, and fire suppression systems have been deactivated in selected modules.

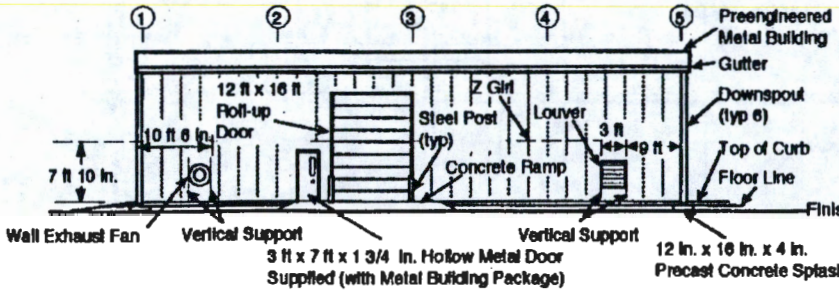
H98010038.1R1

2401-W Waste Storage Building

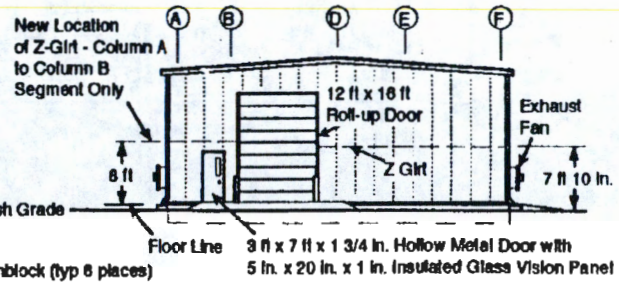
Plan and Elevations



Foundation/Floor Plan



South Elevation



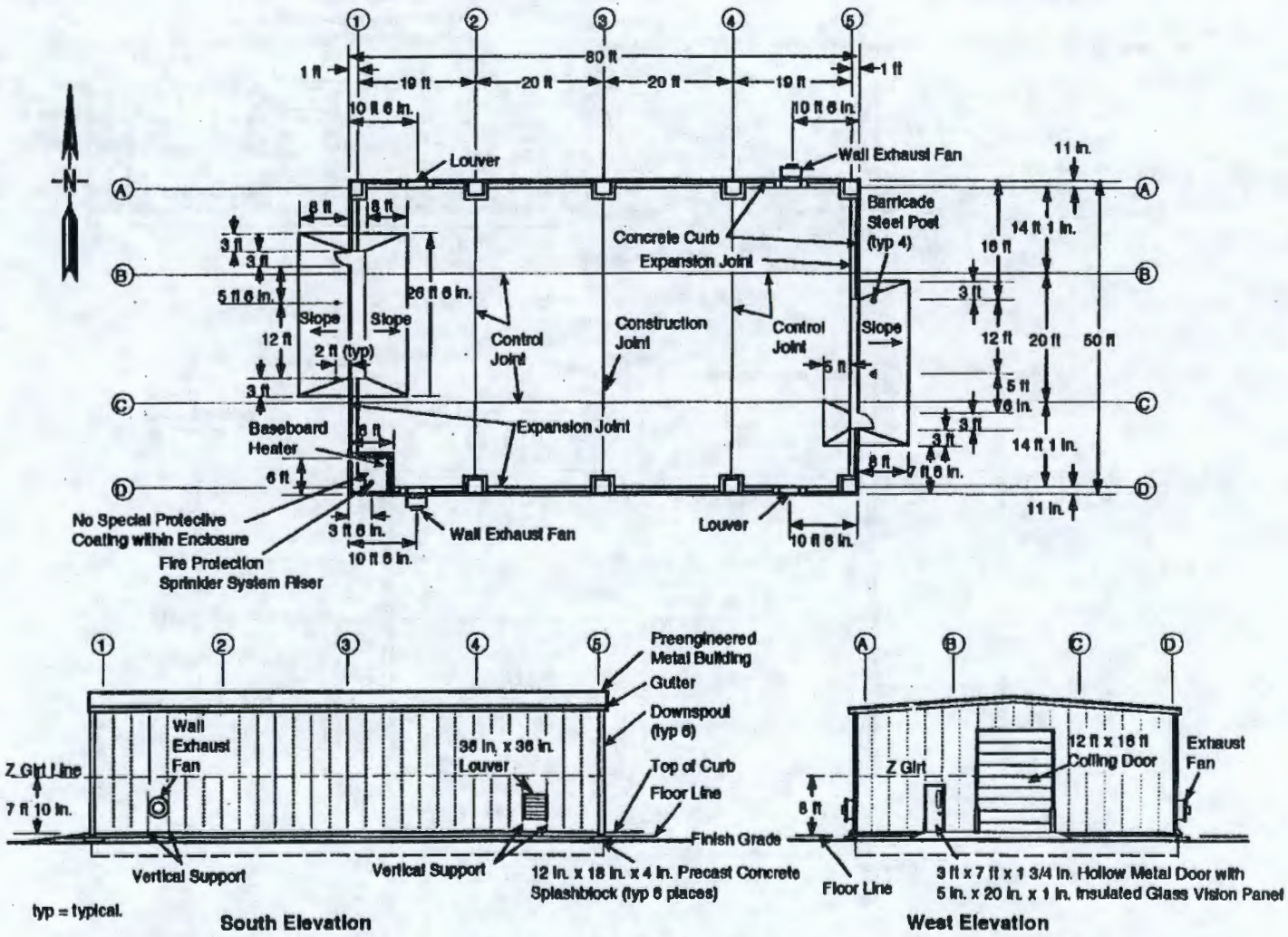
West Elevation

typ = typical.

Note: To convert feet to meter, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H9804017 8R1

Typical Waste Storage Buildings (2402-W and 2402-WB through 2402-WL)
Plan and Elevations

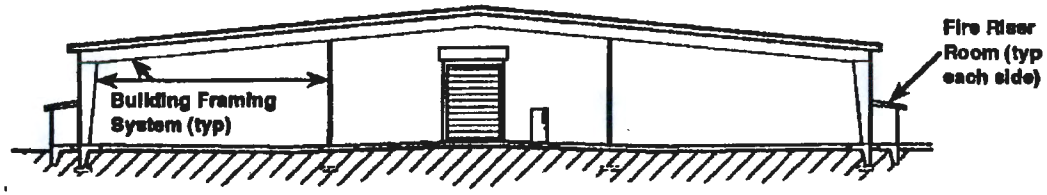


Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

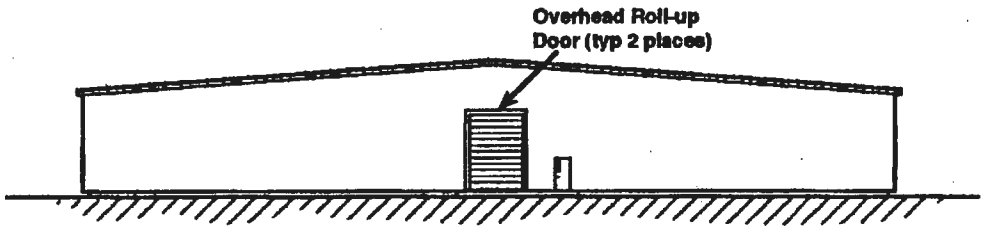
H9640178.6a

Typical Waste Storage Building (2403-WA through WC)

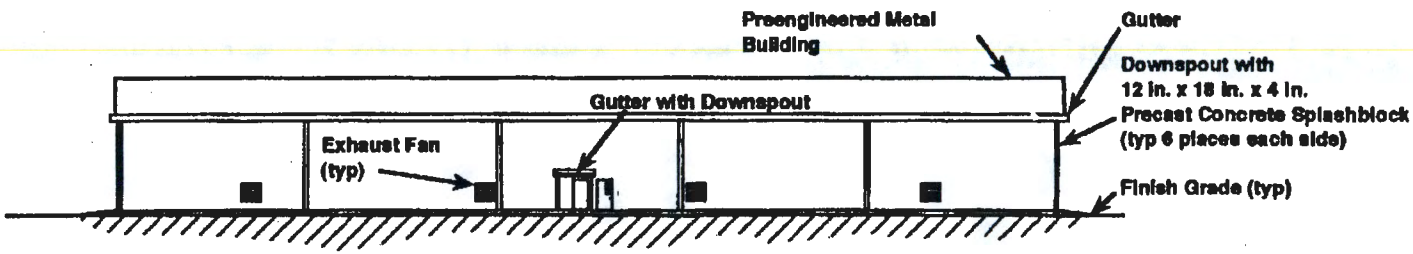
Elevations



Section



East Elevation (West Elevation Similar)



North Elevation (South Elevation Similar)

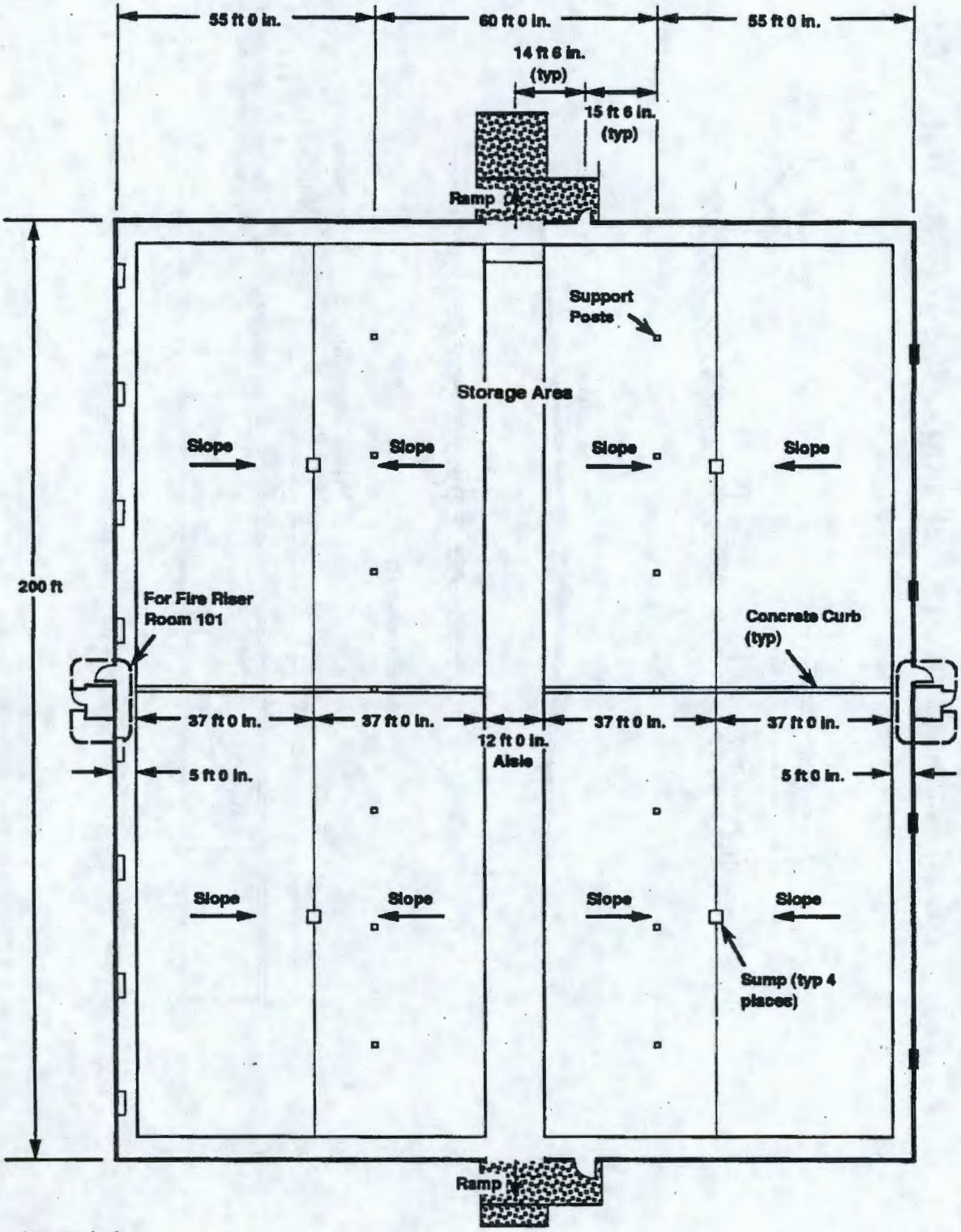
typ = typical.

Not to scale.

Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H98040178.4R2

Typical Waste Storage Building (2403-WA through WC)
Plan



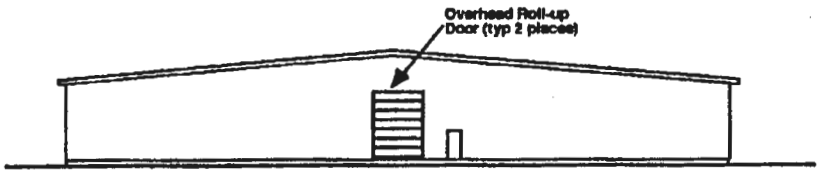
typ = typical.

Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

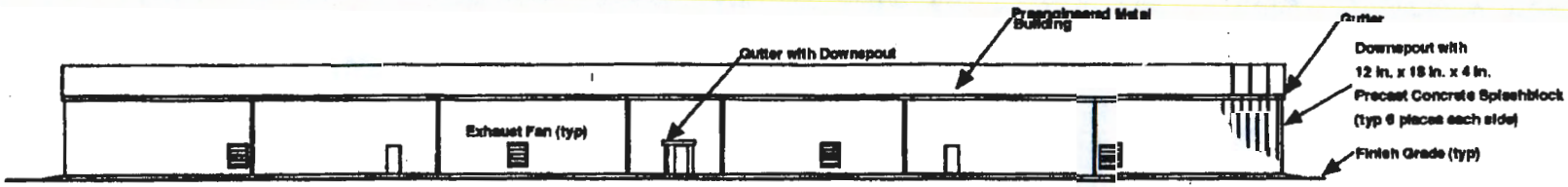
H98040178.3

Waste Storage Building (2403-WD)

Section



North Elevation

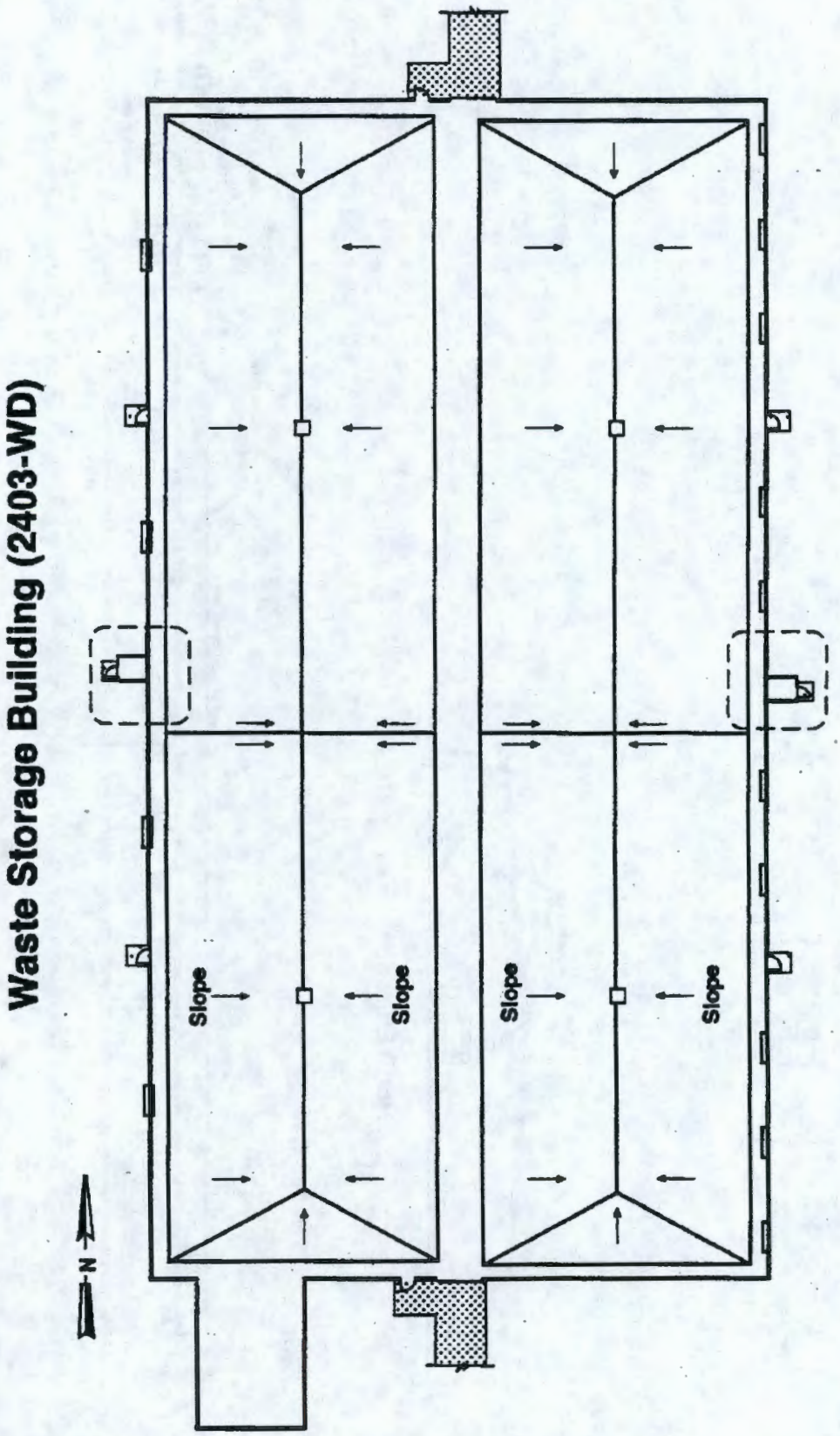


West Elevation

Metric Conversion: 2.54 centimeters per inch
0.305 meter per foot

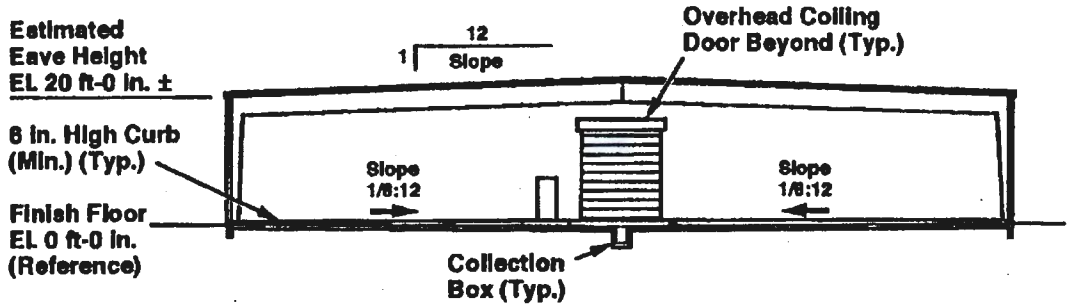
typ = typical.

39304068.11R2

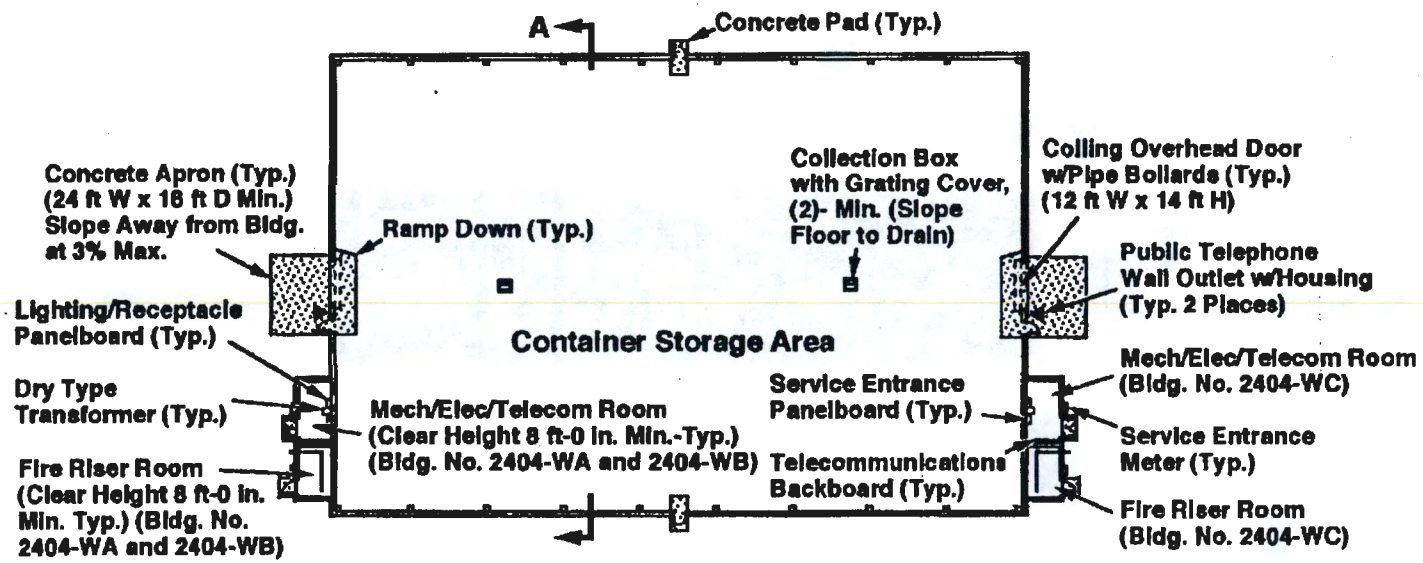

Waste Storage Building (2403-WD)
Slope
Slope
Slope
Slope
N
H96040178.2

Not to scale.

Typical Waste Storage Building (2404-WA through WC)



A Section

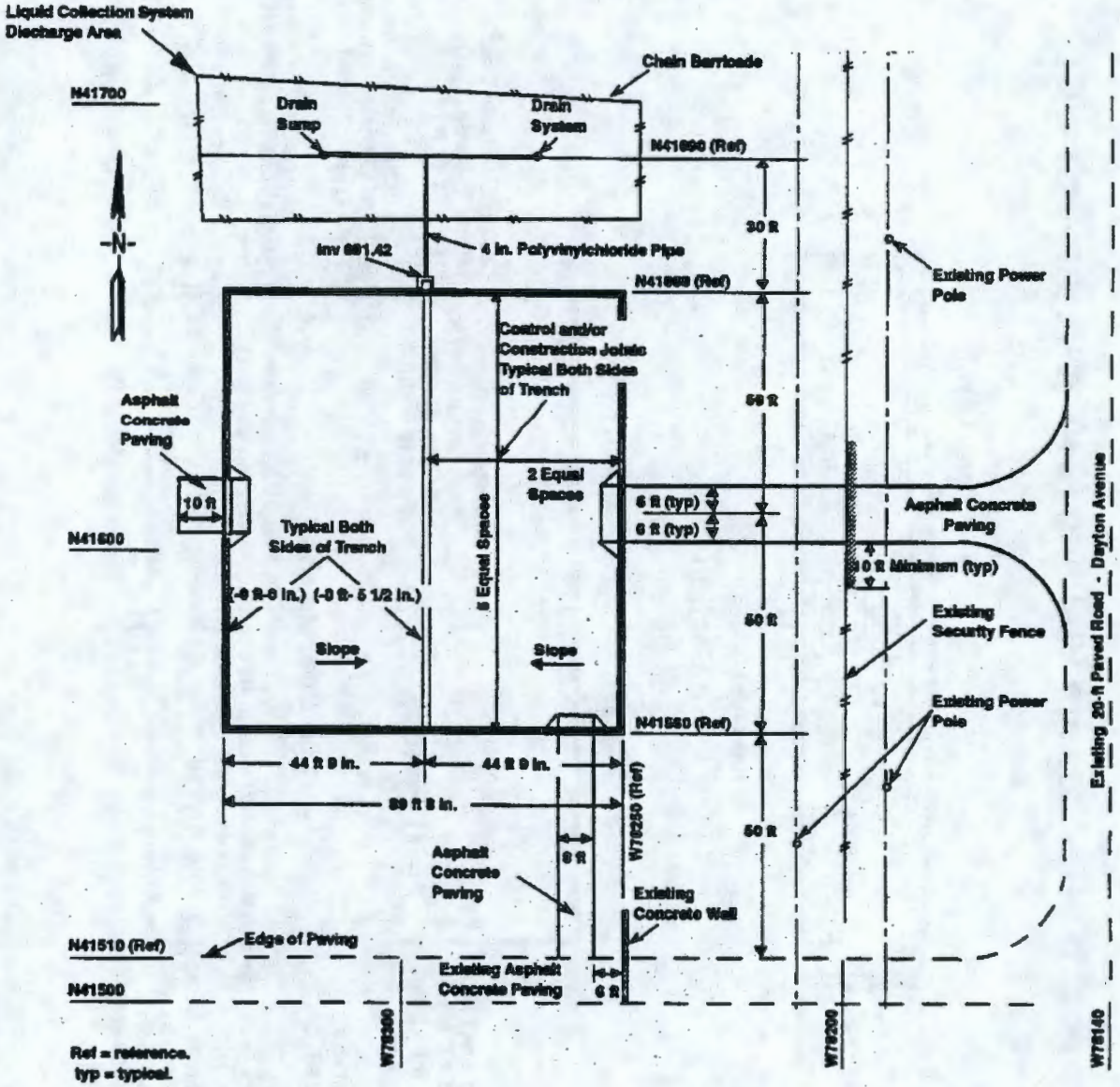


Floor Plan

Min = minimum.
Typ = typical.
Not to scale.
Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H96060291.1R2

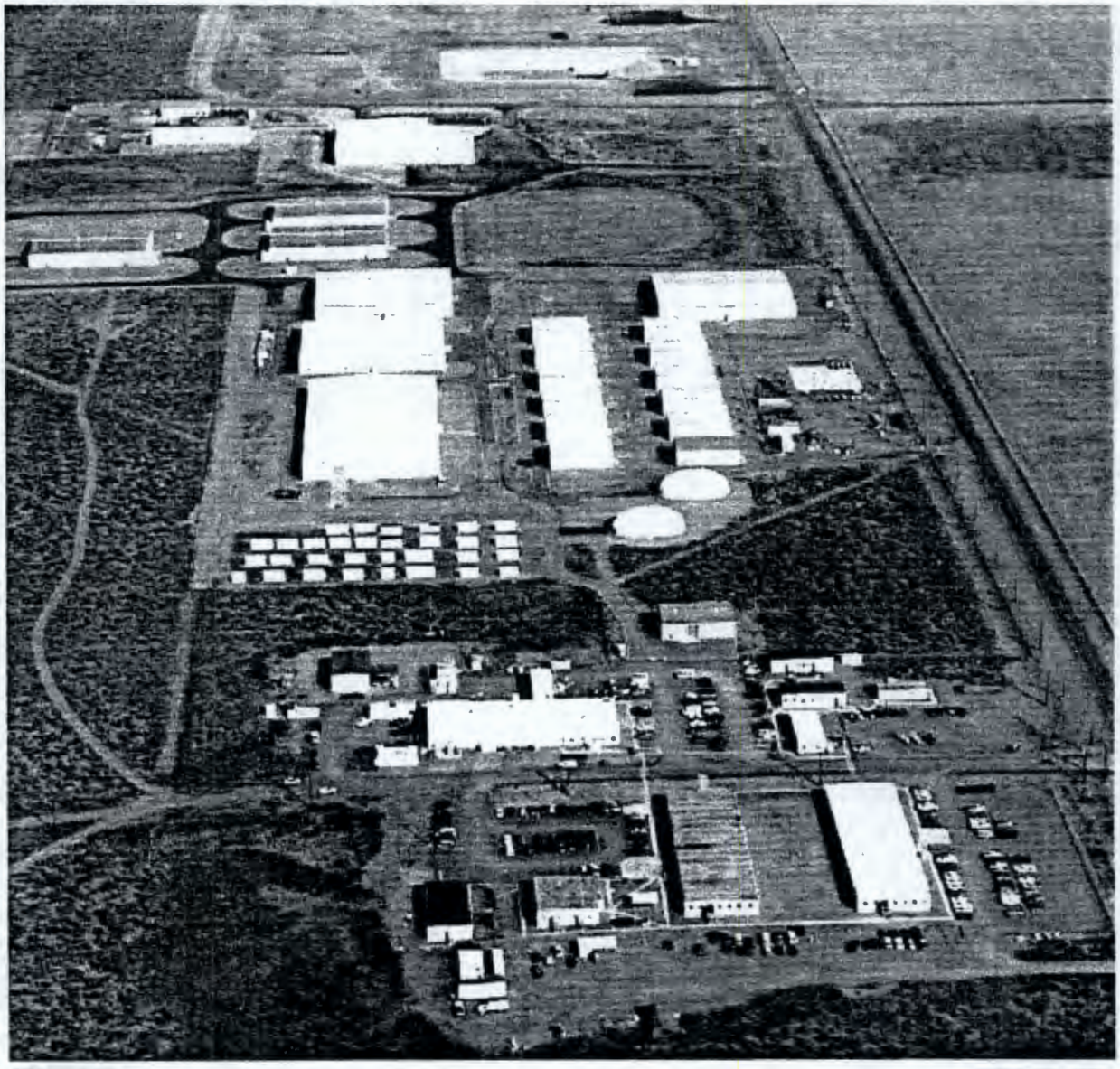
Waste Storage Pad
Civil Plan



Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.

H96018038.6 R2

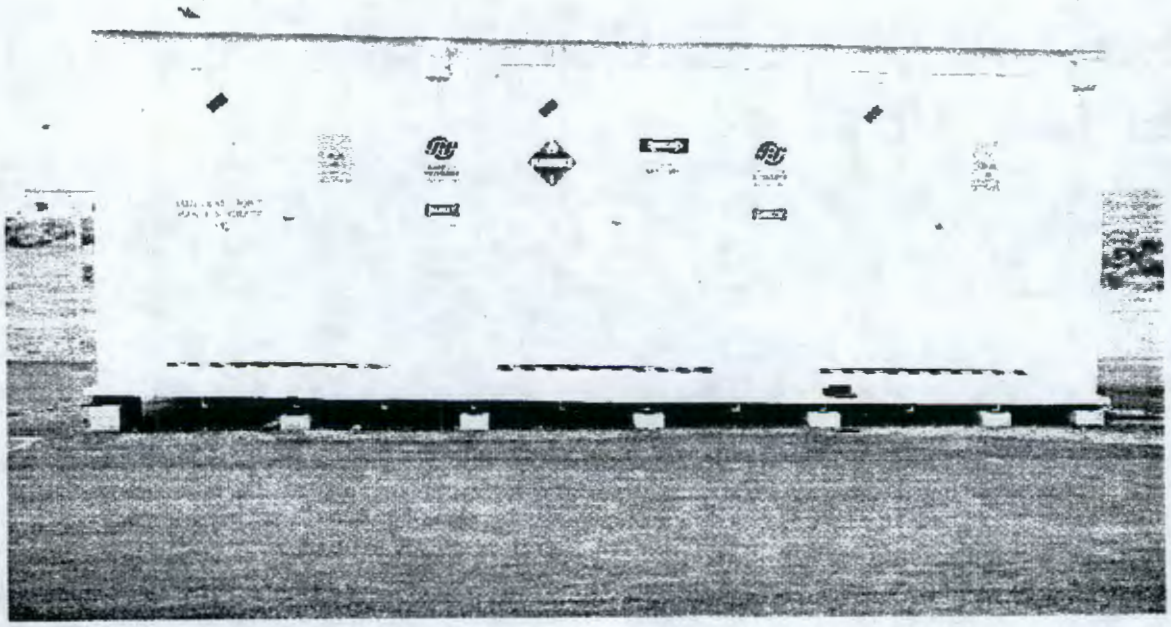
CENTRAL WASTE COMPLEX AERIAL VIEW



46°33'17"
119°38'24"

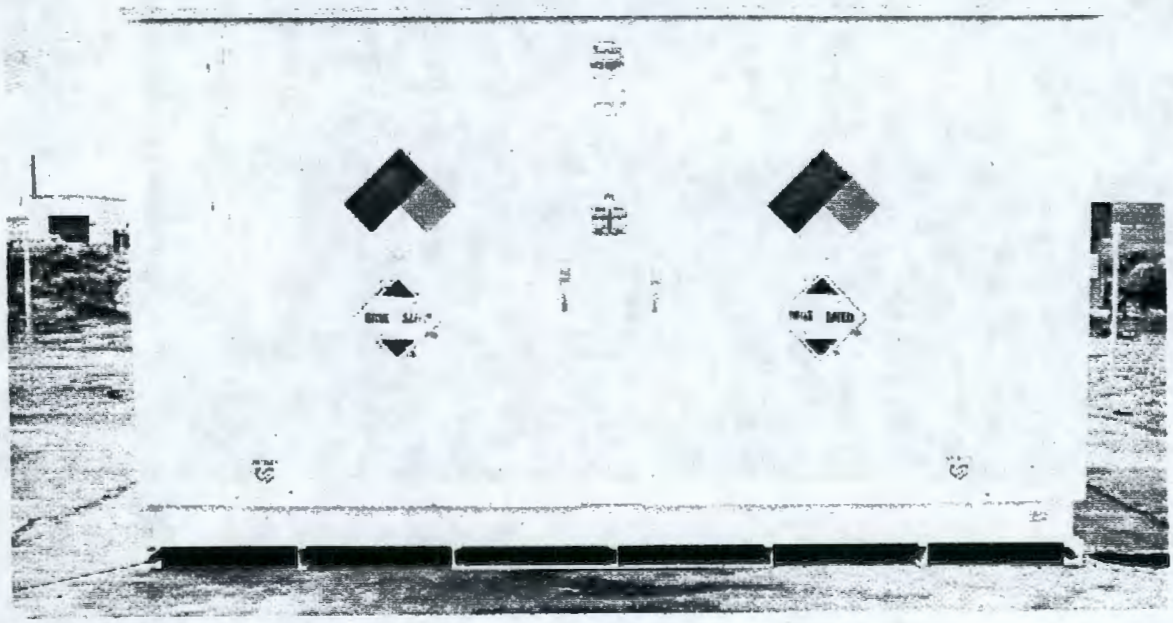
98030102-41CN
(PHOTO TAKEN 1998)

CENTRAL WASTE COMPLEX FLAMMABLE AND ALKALI METAL WASTE STORAGE MODULES



TYPICAL (LARGE)
46°33'17"
119°38'24"

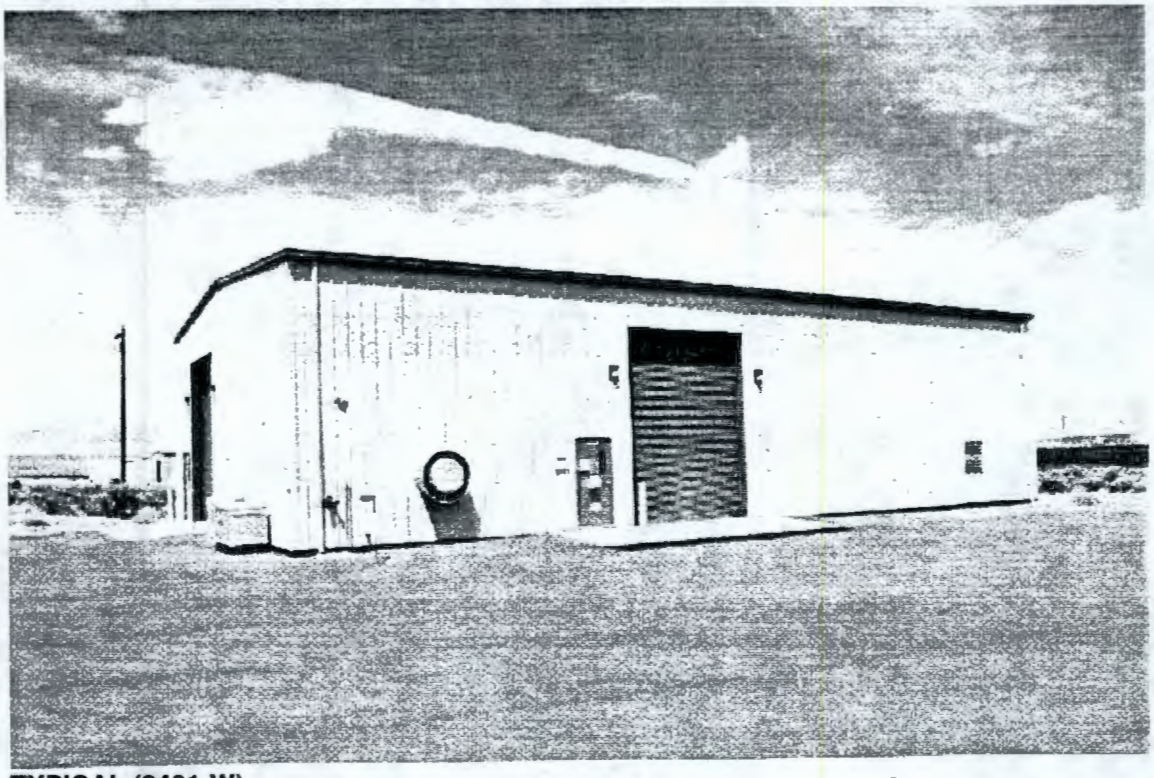
93040010-9CN
(PHOTO TAKEN 1993)



TYPICAL (SMALL)
46°33'17"
119°38'24

93040010-11CN
(PHOTO TAKEN 1993)

CENTRAL WASTE COMPLEX WASTE STORAGE BUILDING



TYPICAL (2401-W)
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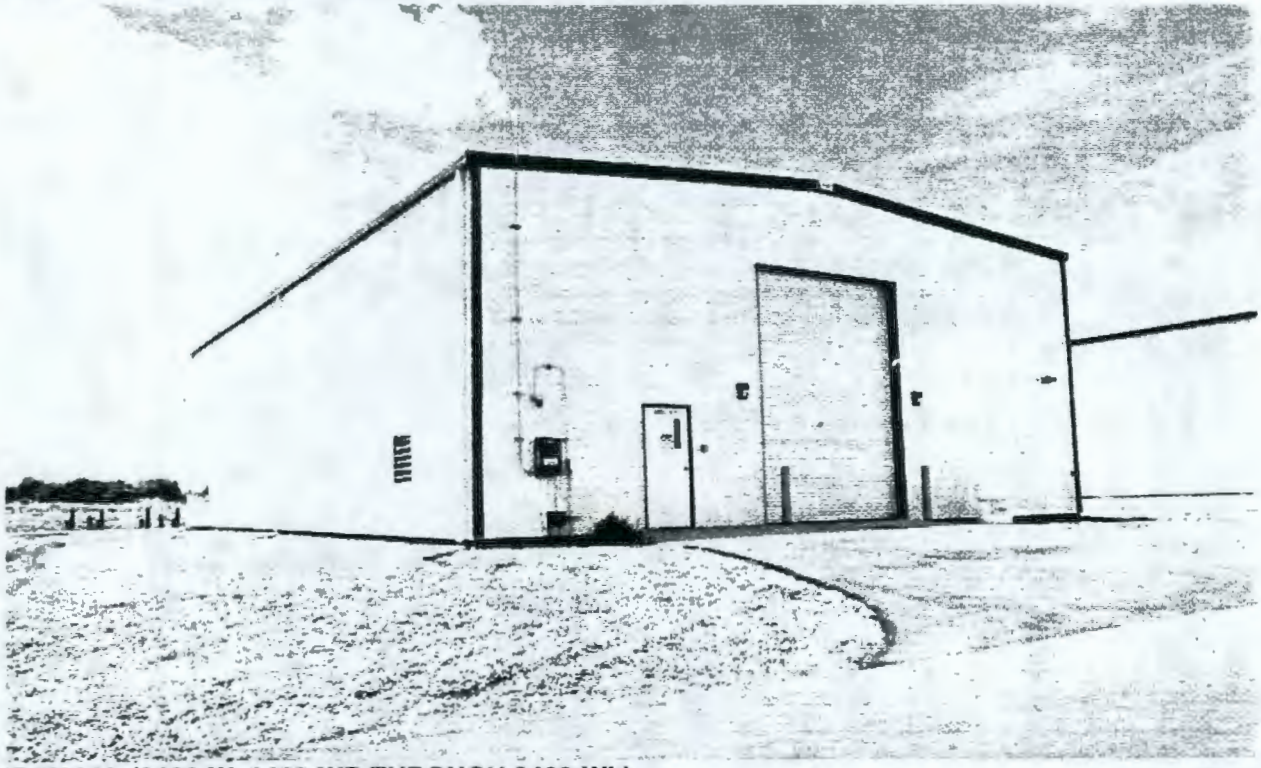
119°38'24"

90061110-44CN
(PHOTO TAKEN 1990)

CENTRAL WASTE COMPLEX
WASTE STORAGE BUILDING



TYPICAL (2402-W, 2402-WB THROUGH 2402-WL)
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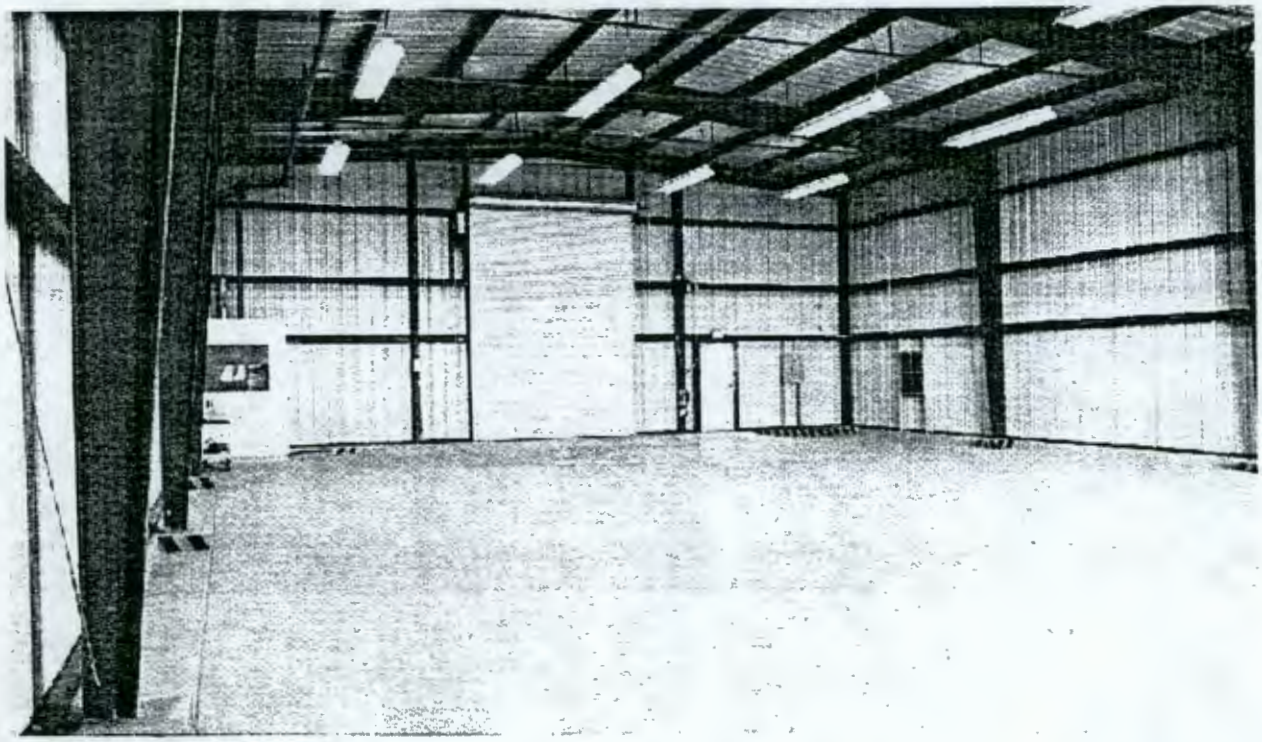
119°38'24"

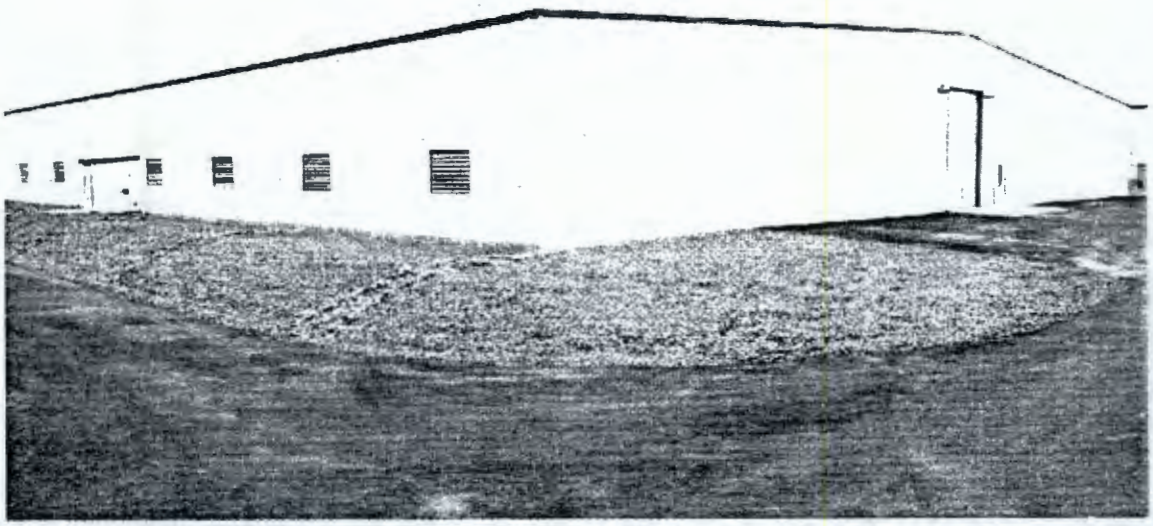
90061110-26CN
(PHOTO TAKEN 1990)



TYPICAL (INTERIOR)
46°33'17"
119°38'24"

90061110-10CN
(PHOTO TAKEN 1990)

CENTRAL WASTE COMPLEX WASTE STORAGE BUILDING



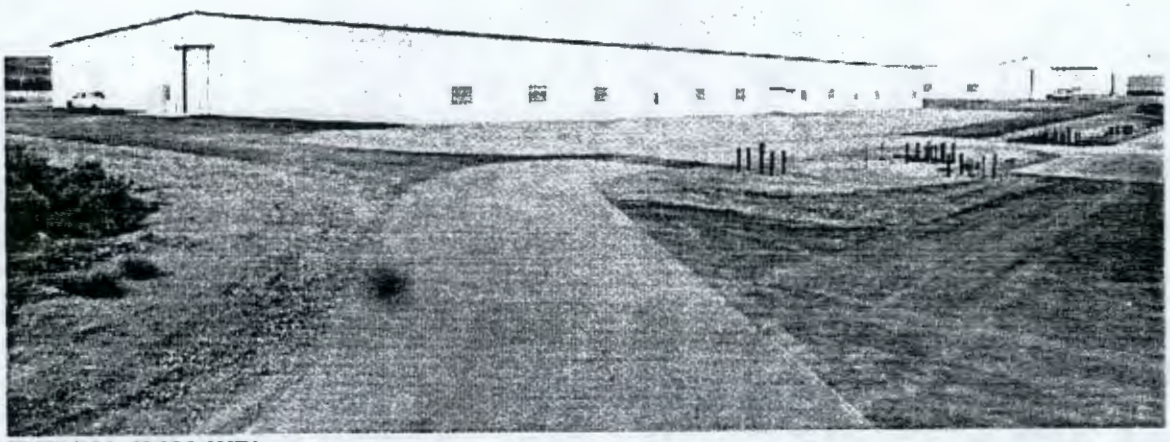
TYPICAL (2403-WA, WB, AND WC)
46°33'17"
119°38'24"

93040010-22CN
(PHOTO TAKEN 1993)

TYPICAL (INTERIOR)
46°33'17"
119°38'24"

93040010-25CN
(PHOTO TAKEN 1993)

CENTRAL WASTE COMPLEX WASTE STORAGE BUILDING



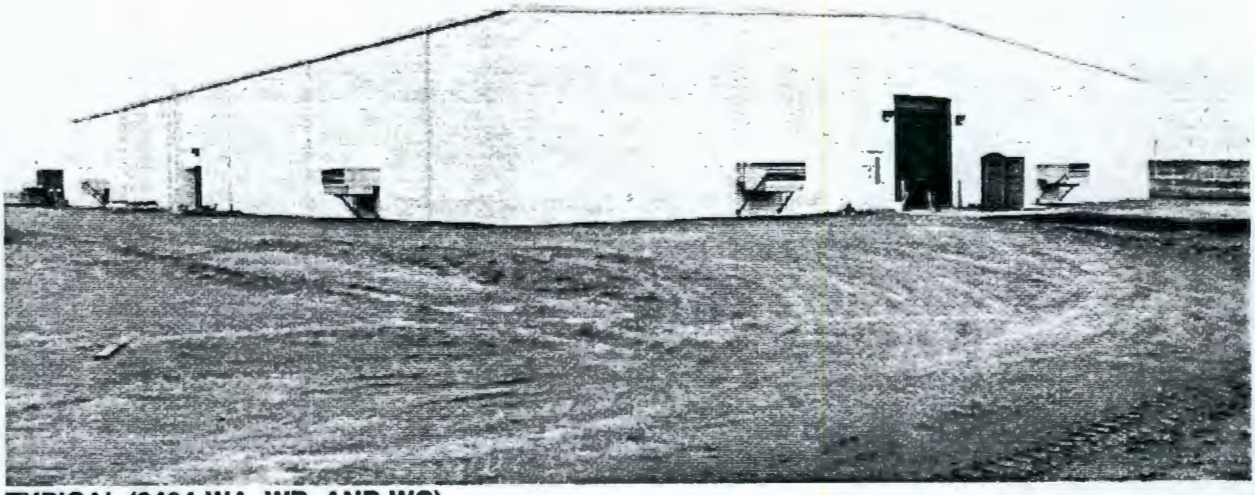
TYPICAL (2403-WD)
46°33'17"
119°38'24"

93040010-13CN
(PHOTO TAKEN 1993)

TYPICAL (INTERIOR)
46°33'17"
119°38'24"

93040010-16CN
(PHOTO TAKEN 1993)

CENTRAL WASTE COMPLEX WASTE STORAGE BUILDING



TYPICAL (2404-WA, WB, AND WC)
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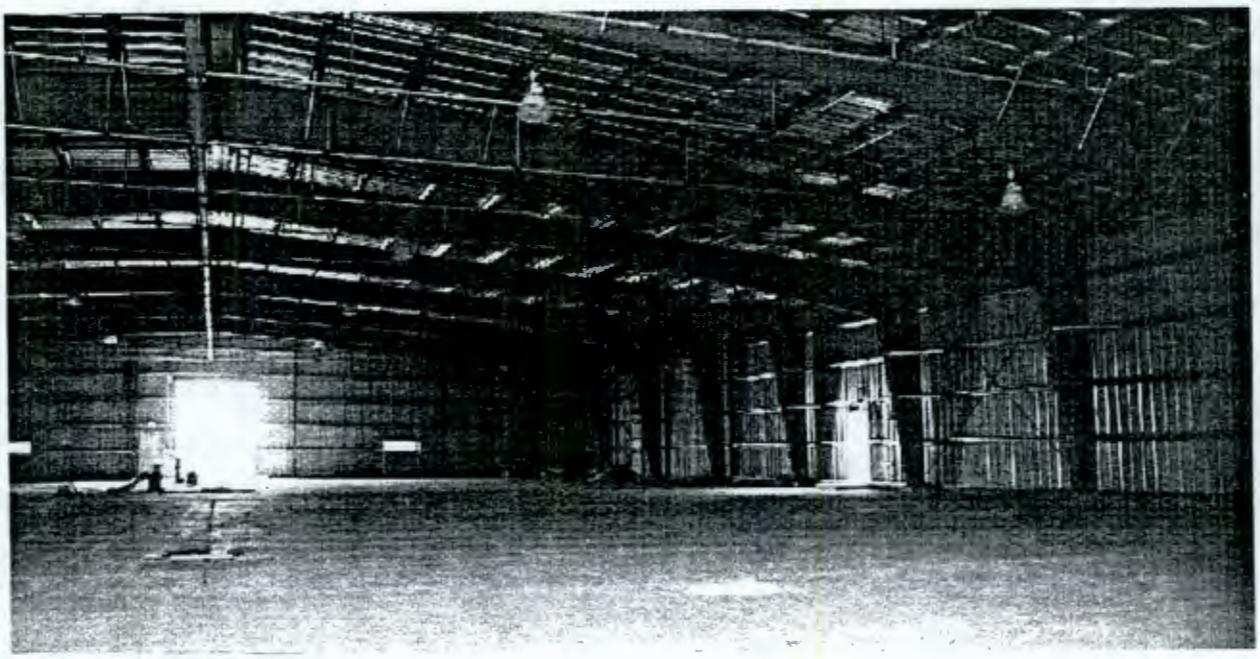
96080579-29CN
(PHOTO TAKEN 1996)



TYPICAL (INTERIOR)
46°33'17"
119°38'24"

96080579-32CN
(PHOTO TAKEN 1996)

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2A TOPOGRAPHIC MAP ..... APP 2A-i

FIGURE

2-1. Waste Routes in the 200 West Area F2-1

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B AND E]

This chapter briefly describes the CWC location and provides an overview of CWC operations, including the following:

- General description
- Topography
- Traffic information.

The CWC, located in the 200 West Area (Chapter 1.0), provides storage and treatment for dangerous, mixed, and/or radioactive waste generated on or off the Hanford Facility. Treatment includes absorption and solidification of free liquids, neutralization of corrosive materials, and stabilization and encapsulation of solid waste matrices. A more detailed discussion of the waste types and known characteristics of the waste and the identification of the methods of storage and treatment are provided in Chapters 3.0 and 4.0, respectively. Although the storage and treatment of radioactive waste is not within the scope of this permit application, the information is provided for general knowledge.

The CWC currently consists of the following:

- Flammable and Alkali Metal Waste Storage Modules
- Waste Storage Buildings
- Waste Storage Pad
- Waste Receiving and Staging Area.

These buildings, storage modules, and the storage pad (Chapter 1.0) provide space for waste containers. Storage structures with physical features that provide for segregated storage areas are operated to maintain appropriate separation between arrays of incompatible waste (incompatibility is defined in WAC 173-303-395).

2.1 CENTRAL WASTE COMPLEX DESCRIPTION [B-1 and B-1a]

Descriptions of CWC structures are provided in the following sections.

These structures, sometimes referred to as radioactive and/or mixed waste structures, were designed to manage various waste categories concurrently, and to comply with storage requirements. This allows for compatible combinations of waste to be stored.

2.1.1 Flammable and Alkali Metal Waste Storage Modules

The Flammable and Alkali Metal Waste Storage Modules are pre-engineered structures (Chapter 1.0). The size and weight of the storage modules vary among manufacturers. As a result, there is no set 'standard' module. The floor support system is designed for loads up to 0.12 kilogram per square centimeter.

The front, back, and side walls of all the Flammable and Alkali Metal Waste Storage Modules are constructed of 10-gauge steel and are coated inside with chemical-resistant epoxy paint or have a corrosion-resistant covering. All roofs are constructed of 12-gauge steel. Three of the Flammable Waste

Storage Modules have fire-retardant plywood floors and ceilings within the metal skin. The remaining Flammable and Alkali Metal Waste Storage Modules are constructed of metal. All modules have a vented catch sump under the storage floor. This provides spill containment, as well as precluding spills from affecting other containers by keeping the storage deck clean. Each sump has a capacity of 1,500 to 7,600 liters depending on the manufacturer. Water supply presently is not provided but could be made available if necessary. Under no circumstances would water be provided to the Alkali Metal Waste Storage Modules.

The Flammable and Alkali Metal Waste Storage Modules are designed to meet all the storage requirements for ignitable, reactive, and corrosive dangerous, mixed, radioactive, and/or *Toxic Substances Control Act* (TSCA) *of 1976* waste of this type. Most of the Flammable and Alkali Metal Waste Storage Modules currently store low-level radioactively contaminated flammable and alkali metal waste. Only compatible waste occupies any one storage module or dedicated secondary containment system at any one time. Two of the Flammable Waste Storage Modules are modified for transuranic flammable waste. The remaining Flammable and Alkali Metal Waste Storage Modules, and any future Flammable and Alkali Metal Waste Storage Modules, also could be modified for a specific use depending on storage needs.

2.1.2 2401-W Waste Storage Building

The 2401-W Waste Storage Building is a pre-engineered steel structure for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), 15.2 meters wide by 24.4 meters long by 6.1 meters high (to the eave), with a clear span in the 15.2-meter direction. The 26-gauge metal structure has two 3.6-meter by 4.9-meter-high rollup truck doors and two personnel doors. The foundation is integrated into a perimeter concrete curb 15.2 centimeters abovegrade. The floor accommodates a 908-kilogram forklift and an approximate 1,000 container equivalent load, not to exceed the floor loading limit of 0.22 kilogram per square centimeter. Ramps are across the curb for loading and unloading operations.

Utilities and services for the 2401-W Waste Storage Building include sanitary water, which is required to serve the fire suppression system (Appendix 2A). A 100-ampere (240-volt) service panel is provided for fire suppression, heaters, lighting, and the electronic fire alarm system.

The 2401-W Waste Storage Building is maintained at atmospheric pressure; heating and cooling are not required for operations. The 2401-W Waste Storage Building is uninsulated with the exception of the heated sprinkler risers that are in an enclosure within the building. The purpose of the enclosures is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with the Uniform Building Code occupancy requirements (ICBO 1996).

2.1.3 2402-W Waste Storage Buildings

The 2402-W Waste Storage Buildings are pre-engineered steel structures for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), 15.2 meters wide by 24.4 meters long by 6.1 meters high (to the eave), with a clear span in the 15.2-meter direction. The 26-gauge metal structures have two 3.6-meter by 4.9-meter-high rollup truck doors and two personnel doors. The foundation is integrated into a perimeter concrete curb 15.2 centimeters abovegrade. The floor accommodates a 908-kilogram forklift and an approximate 1,000 container equivalent load, depending on waste management criteria not to exceed the floor loading limit of 0.34 kilogram per square centimeter for the 2402-W Waste

Storage Building and 0.98 kilogram per square centimeter for the 2402-WB through WL Waste Storage Buildings. Ramps are across the curb for loading and unloading operations.

Electrical power is supplied to the 2402-W Waste Storage Buildings by underground cables. Power to the 2402-W Waste Storage Buildings are supplied as single phase, 120/240 volts to 100-ampere service panels. Power is supplied to wall exhausters, and low-voltage circuits (120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles.

Only sanitary water is used in the 2402-W Waste Storage Buildings. The sanitary water is routed to the 2402-W Waste Storage Buildings from a looped supply system (Appendix 2A).

The 2402-W Waste Storage Buildings are maintained at atmospheric pressure; heating and cooling are not required for operations. The 2402-W Waste Storage Buildings are uninsulated with the exception of the heated sprinkler risers that are in enclosures within the buildings. The purpose of the enclosures is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with ICBO requirements.

2.1.4 2403-WA through WC Waste Storage Buildings

The 2403-WA through WC Waste Storage Buildings, for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), are 51.8 meters wide, 61 meters long, and 6.1 meters high (to the eave), each with a total of 3,159 square meters. The 2403-WA through WC Waste Storage Buildings each accommodate approximately 11,600 208-liter containers. Spill pallets are available for storage of containerized TSCA waste.

The 2403-WA through WC Waste Storage Buildings are steel-supported, sheet-metal-covered structures with an eave height of 6.1 meters and a roof slope ratio of 0.3 to 3.7 meters. The structural system chosen is modular beam and column with a rigid frame. Each rigid frame (7.6 meters on center) is supported by two interior columns, spaced at a distance of one third of the overall width of the storage building (17.6 meters on center). The roof and wall panels are 26-gauge steel sheets with exterior finish. Exterior rolling service doors are 3.7 meters wide and 5.5 meters high with uninsulated steel slats, which have bottom weather seals and weatherstripping. The service doors have a manual or electrical chain-hoist operation. Personnel doors are manufacturers' standard reinforced-steel doors.

All steel columns and rigid frames rest on reinforced concrete pierfootings designed to receive the primary building loads. The perimeter has a reinforced concrete foundation carried to a depth of 97 centimeters below grade. The floors accommodate a 908-kilogram forklift and an approximate 11,600 container equivalent load, not to exceed to the floor loading limit of 0.98 kilogram per square centimeter.

Floor areas are divided into quadrants by approximately 12.7-centimeter-high concrete curbs and are sealed with an impervious epoxy resin floor surfacing system that is compatible with the stored waste (Chapter 4.0, Appendix 4C). An aisle is provided through the centers of the 2403-WA through WC Waste Storage Buildings to accommodate loading and unloading operations. Curbs are arranged so that the curbs do not interfere with forklift travel, and ramps are provided over curbs. Access and maneuverability areas around the 2403-WA through WC Waste Storage Buildings are stabilized with asphalt or gravel. Adjacent areas are stabilized and are graded to slope away from the 2403-WA through WC Waste Storage Buildings to preclude water collection. The interior of the buildings, with the

exception of the floor and the sprinkler riser enclosure, remains unfinished. All exposed steel is primed. Wall and roof panels are coated on the interior surface with the manufacturers' standard finish.

Power and telephone lines are extended from the aerial lines through underground concrete-encased conduits to a centrally located distribution point. The central distribution point contains pad-mounted transformers and service equipment for electrical power and a pedestal terminal box for telephones. Power and telephone lines branch out from the centrally located distribution point through underground conduits to the 2403-WA through WC Waste Storage Buildings.

Electrical power is supplied by an aerial 13.3-kilovolt power line located along the west side of Dayton Avenue. Power is supplied as 3-phase, 120/208 volts and the buildings have 125-ampere service. Power (3-phase, 208-volt) is supplied to wall exhausters, while low-voltage circuits (single-phase, 120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles.

Only sanitary water is used in the 2403-WA through WC Waste Storage Buildings. The sanitary water is routed from a looped supply system (Appendix 2A).

The 2403-WA through WC Waste Storage Buildings are maintained at atmospheric pressure; heating and cooling are not required for operations. The 2403-WA through WC Waste Storage Buildings are uninsulated with the exception of the heated sprinkler risers that are in enclosures attached to the buildings. The purpose of the enclosures is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with ICBO requirements .

2.1.5 2403-WD Waste Storage Building

The 2403-WD Waste Storage Building for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0), is a large storage building that is 51.8 meters wide, 99 meters long, and 6.1 meters high (to the eave), for a total of 5,120 square meters. This storage building accommodates approximately 17,500 208-liter containers. Spill pallets are available for storage of containerized TSCA waste.

The 2403-WD Storage Building is a steel-supported, sheet-metal-covered structure with a roof slope ratio of 0.3 to 3.7 meters. The structural system chosen is modular beam and column with a rigid frame. Each rigid frame (7.6 meters on center) is supported by two interior columns, spaced at a distance of one third of the overall width of the storage building (17.6 meters on center). The roof and wall panels are 26-gauge steel sheets with exterior finish. Exterior rolling service doors are 3.7 meters wide and 5.5 meters high with uninsulated steel slats, which have bottom weather seals and weatherstripping. The service doors have a manual or electrical chain-hoist operation. Personnel doors are manufacturers' standard reinforced-steel doors.

All steel columns and rigid frames rest on reinforced concrete pier footings designed to receive the primary building loads. The perimeter has a reinforced concrete foundation carried to a depth of 97 centimeters below grade. The floor accommodates a 908-kilogram forklift and an approximate 17,500 container equivalent load, not to exceed to the floor loading limit of 0.98 kilogram per square centimeter.

Floor areas are divided into quadrants by approximately 12.7-centimeter-high concrete curbs and are sealed with an impervious epoxy resin floor surfacing system that is compatible with the stored waste. An aisle is provided through the center of the 2403-WD Storage Building to accommodate loading and unloading operations. Curbs are arranged so that the curbs do not interfere with forklift travel. Ramps

are provided over curbs. Access and maneuverability areas around the 2403-WD Storage Building are stabilized with asphalt or gravel. Adjacent areas are stabilized and are graded to slope away from the 2403-WD Waste Storage Building to preclude water collection. The interior of the 2403-WD Waste Storage Building, with the exception of the floor and the sprinkler riser enclosure, remains unfinished. All exposed steel is primed. Wall and roof panels are coated on the interior surface with the manufacturers' standard finish.

Power and telephone lines are extended from the aerial lines through underground concrete-encased conduits to a centrally located distribution point. The central distribution point contains a pad-mounted transformer and service equipment for electrical power and a pedestal terminal box for telephones. Power and telephone lines branch out from the centrally located distribution point through underground conduits to the 2403-WD Waste Storage Building.

Electrical power is supplied to the 2403-WD Waste Storage Building by an aerial 13.3-kilovolt power line located along the west side of Dayton Avenue. Power is supplied as 3-phase, 120/208 volts and the building has 125-ampere service. Power (3-phase, 208-volt) is supplied to wall exhausters, while low-voltage circuits (single-phase, 120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles.

Only sanitary water is used in the 2403-WD Waste Storage Building. The sanitary water is routed from a looped supply system (Appendix 2A).

The 2403-WD Waste Storage Building is maintained at atmospheric pressure; heating and cooling are not required for operations. The 2403-WD Waste Storage Building is uninsulated with the exception of the heated sprinkler risers that are in an enclosure attached to the building. The purpose of the enclosure is to provide a heated space within which the sprinkler system risers can be housed and kept from freezing. Ventilation complies with ICBO requirements.

2.1.6 2404-W Waste Storage Buildings

The 2404-W Waste Storage Buildings, for dangerous, mixed, radioactive, and/or TSCA waste (Chapter 1.0) are 37 meters wide, 55 meters long, and 6.1 meters high (to the eave), each with a total of 2,035 square meters of floor area. The 2404-W Waste Storage Buildings each accommodate approximately 4,600 208-liter containers of waste.

The 2404-W Waste Storage Buildings are steel-supported, sheet-metal-covered structure with a roof slope ratio of 0.3 to 3.7 meters. The structural system chosen is a free span building with metal beams and columns with a rigid frame. The beams are spaced at 6.1 meter centers on the side of the building and 7.3 meter centers on the ends of the building. The roof is 24 gauge and the wall panels are 26-gauge steel sheets with exterior finish. Exterior rolling service doors are 3.7 meters wide and 4.3 meters high with uninsulated steel slats, which have bottom weather seals and weatherstripping. The service doors have a manual or electrical chain-hoist operation. Personnel doors are manufacturers' standard reinforced-steel doors.

All steel columns and rigid frames rest on reinforced concrete pier footings designed to receive the primary building loads. The perimeter has reinforced concrete footings that are 1.86 square meters and a concrete floor slab 17.8 centimeters thick. The floors accommodate a 908-kilogram forklift and an approximate 4,600 container equivalent load, not to exceed to the floor loading limit of 0.98 kilogram

per square centimeter. The foundation is integrated into a perimeter concrete curb 15.2 centimeters abovegrade.

The interior floors are sloped with raised perimeter curbing to contain and direct spilled liquids to collections sumps. The floors are sealed with an impervious epoxy resin floor surfacing system that is compatible with the stored waste. An aisle is provided through the center of the 2404-W Waste Storage Buildings to accommodate loading and unloading operations. Curbs are arranged so that the curbs do not interfere with forklift. Ramps are provided over curbs. Access and maneuverability areas around the 2404-W Waste Storage Building are stabilized with asphalt or gravel. Adjacent areas are stabilized and are graded to slope away from the 2404-W Waste Storage Buildings to preclude water collection. All exposed steel is primed.

Power and telephone lines are extended from aerial lines through underground concrete-encased conduits to a centrally located distribution point. The central distribution point contains an underground electrical vault with a transformer (from 13.8 kilovolts to 480 volts) and feeds service equipment in the mechanical equipment and telecommunication room for electrical power and a pedestal terminal box for telephones. Power and telephone lines branch out from a centrally located distribution point through underground conduits to the 2404-W Waste Storage Building mechanical equipment and telecommunication rooms.

Electrical power is supplied by an aerial 13.8-kilovolt power line located along the west side of Dayton Avenue. Power to the 2404-W Waste Storage Buildings is supplied as 3-phase, 480/277 volts and single phase 240/120 volt power after the transformer. The 2404-W Waste Storage Buildings have 225-(Panel A) and 150-(Panel B) ampere service. Power (3-phase, 480/277-volt) is supplied to the roof exhausters, while low-voltage circuits (single-phase, 240/120 volt) provide power for all lighting, fire sprinkler equipment, and convenience receptacles. One special outlet is provided in each building for 30 ampere/480 volt service to run any potential temporary special equipment.

Only sanitary water is used in the 2404-W Waste Storage Buildings. The sanitary water is routed to the 2404-W Waste Storage Buildings from a looped supply system (Appendix 2A).

The 2404-W Waste Storage Buildings are maintained at atmospheric pressure; heating and cooling are not required for operations. Ventilation complies with ICBO requirements of four air changes per hour. The 2404-W Waste Storage Buildings are not insulated. However, two heated and insulated rooms attached but not connected (by doors) to the storage buildings contain the fire riser and all of the electrical and telecommunication boards.

2.1.7 Waste Storage Pad

The Waste Storage Pad, approximately 18-centimeter-thick concrete, is designed to support loading up to 0.56 kilogram per square centimeter. The Waste Storage Pad is curbed with 15.2 centimeters of concrete and provided with an impervious epoxy sealant to prevent contaminants from entering the concrete. Information on the epoxy sealant is located in Chapter 4.0, Appendix 4C. The Waste Storage Pad is provided with an access ramp and a rainwater collection and removal system. Monitoring and/or sampling for contaminated rainwater are performed (Chapter 4.0).

2.1.8 Waste Receiving and Staging Area

The Waste Receiving and Staging Area is an asphalt pad approximately 61 meters long and 46 meters wide (2,787 square meters). The allowable floor loading is 0.56 kilogram per square centimeter. The Waste Receiving and Staging Area is used for container handling and staging of waste destined for the various storage buildings. Components of the Waste Receiving and Staging Area include access for loading and unloading operations.

2.1.9 Other Environmental Permits

Environmental permits that are required to support operation of the CWC are identified in the *Annual Hanford Site Environmental Permitting Status Report* (e.g., DOE/RL-96-63).

2.1.10 Construction Schedule [B-1b]

Any proposed new construction for the CWC will be managed as described in the *Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste* (HF RCRA Permit) (Ecology 1994).

2.2 TOPOGRAPHIC MAP [B-2]

A topographic map (Drawing H-13-000003) is located in Appendix 2A.

2.3 CENTRAL WASTE COMPLEX ROADWAYS [B-4]

General traffic information for the Hanford Facility is presented in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28).

Waste is transported to CWC in vehicles ranging from pickup trucks to tractor trailer rigs, depending on the size of the load.

Trucks going to CWC enter the 200 West Area through Gate 611 or Gate 609 from Route 3, shown on Figure 2-1. The paved roads provide adequate all-weather access to CWC. Parking areas for CWC personnel also are provided. Existing paved roads provide satisfactory all-weather access during operation.

2.4 RELEASE FROM SOLID WASTE MANAGEMENT UNITS [E]

Information concerning releases from SWMUs is discussed in the General Information Portion (DOE/RL-91-28).

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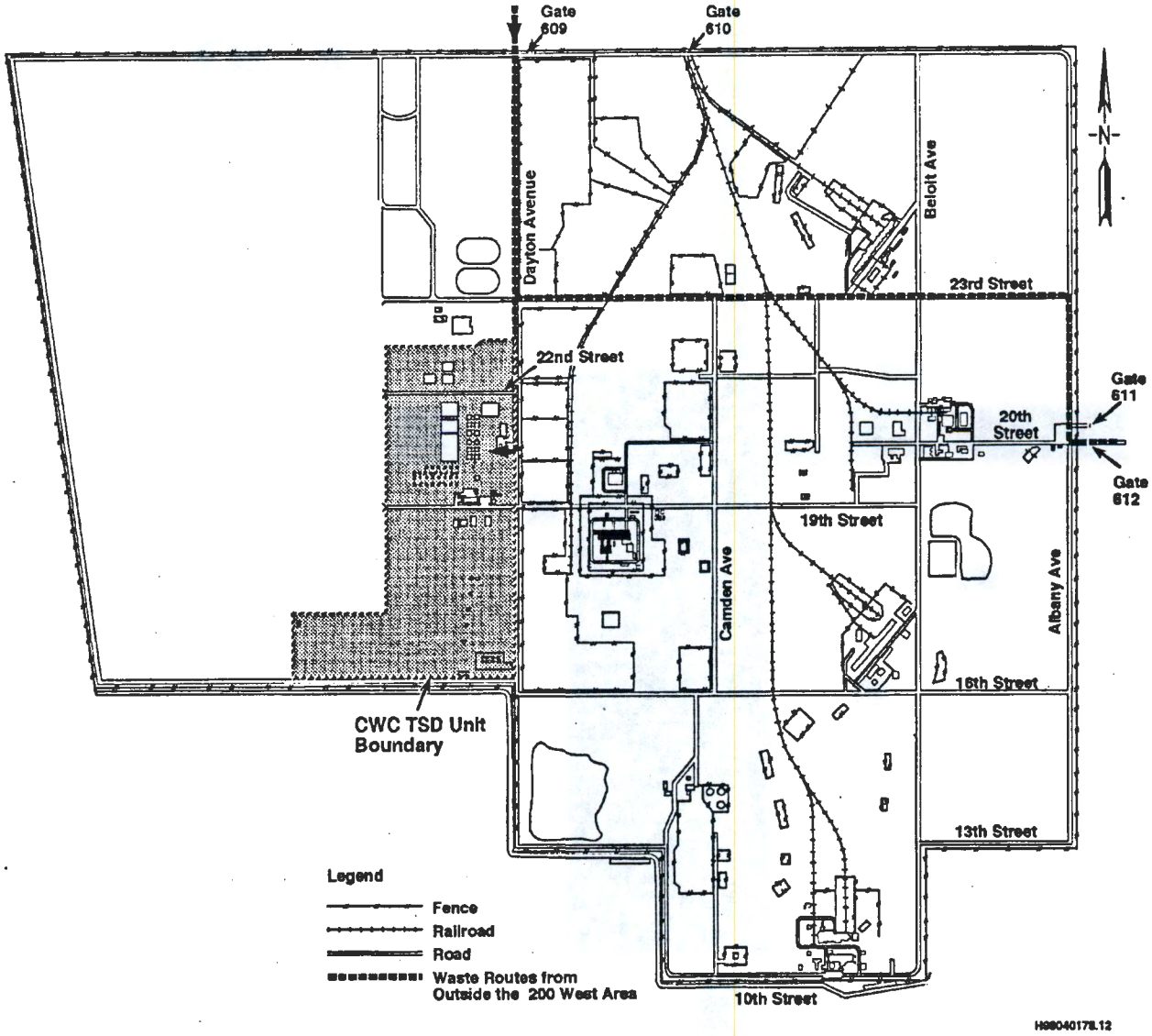

Figure 1. Waste Routes in the 200 West Area.

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CONTENTS

14.0 PART B CERTIFICATION [K] 14-1

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14.0 PART B CERTIFICATION [K]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

Date 5/22/98

Co-operator
H. J. Hatch,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

Date May 14, 1998

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14.0 PART B CERTIFICATION [K]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

6/21/99
Date

Co-operator
R. D. Hanson,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

6/21/99
Date

Note: This certifies the following Revision 1A Chapters and Appendices: Chapter 1.0, Chapter 2.0, Appendix 2A, Appendix 3A, Appendix 4A, Appendix 7A, and Appendix 8A.

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APPENDIX 2A

TOPOGRAPHIC MAP

APPENDIX 2A

CONTENTS

H-13-000003 CENTRAL WASTE COMPLEX TOPOGRAPHIC MAP
ECN 650955, 05/10/99

ENGINEERING CHANGE NOTICE

1. ECN 650955

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental ◉ Direct Revision ○ Change ECN ○ Temporary ○ Standby ○ Supersedure ○ Cancel/Void ○	Fred Sargent, Waste Management Hanford, T4-03, 373-2106	◉ Yes ○ No	May 3, 1999
	6. Project Title/No./Work Order No. 2401-W Facility Update	7. Bldg./Sys./Fac. No. 2401-W	8. Approval Designator S E
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) Drawing H-13-000003, Sheet 1, R.1	10. Related ECN No(s). NA	11. Related PO No. NA

12a. Modification Work	12b. Work Package No.	12c. Modification Work Completed	12d. Restored to Original Condition (Temp. or Standby ECNs only)
○ Yes (fill out Blk. 12b) ◉ No (NA Blks. 12b, 12c, 12d)	NA	NA Design Authority/Cog. Engineer Signature & Date	NA Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? ○ Yes ◉ No

Update Dwg. H-13-000003, Sht. 1, Rev. 1, to show changes at 2401-W Facility. Update changes in the fence line surrounding the 2401-W Facility and in the outline of the asphalt pavement in the facility, as shown on Page 3 of 3 of this ECN.

14a. Justification (mark one)	14b. Justification Details
Criteria Change ○ Design Improvement ○ Environmental ○ Facility Deactivation ○ As-Found ◉ Facilitate Const. ○ Const. Error/Omission ○ Design Error/Omission ○	Incorporate existing field layout of 2401-W Facility into general site layout.

15. Distribution (include name, MSIN, and no. of copies)

FD Sargent	T4-03
JR Rosser	T4-03
BM Barnes	T4-04
G Saueressig	H6-24
ıg Doc Files	T4-03

RELEASE STAMP

MAY 10 1999
DATE:
STA: 5
HANFORD RELEASE
ID: 12

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 650955

16. Design Verification Required	17. Cost Impact		18. Schedule Impact (days)
	ENGINEERING	CONSTRUCTION	
○ Yes	Additional ○ $ _____	Additional ○ $ _____	Improvement ○ _____
◉ No	Savings ○ $ _____	Savings ○ $ _____	Delay ○ _____

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐
Equipment Spec.	☐	Maintenance Procedure	☐	ASME Coded Item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☐	Operating Procedure	☐	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	Tickler File	☐
Environmental Report	☐	Inspection Plan	☐	_____	☐
Environmental Permit	☐	Inventory Adjustment Request	☐	_____	☐

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision

21. Approvals

	Signature	Date		Signature	Date
Design Authority	FD Sargent	5/3/99	Design Agent		
Cog. Eng.	FD Sargent	5/3/99	PE		
Cog. Mgr.	JR Rosser	5/4/99	QA		
QA	NA		Safety		
Safety	NA		Design		
Environ.	BM Barnes	5/4/99	Environ.		
Other			Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

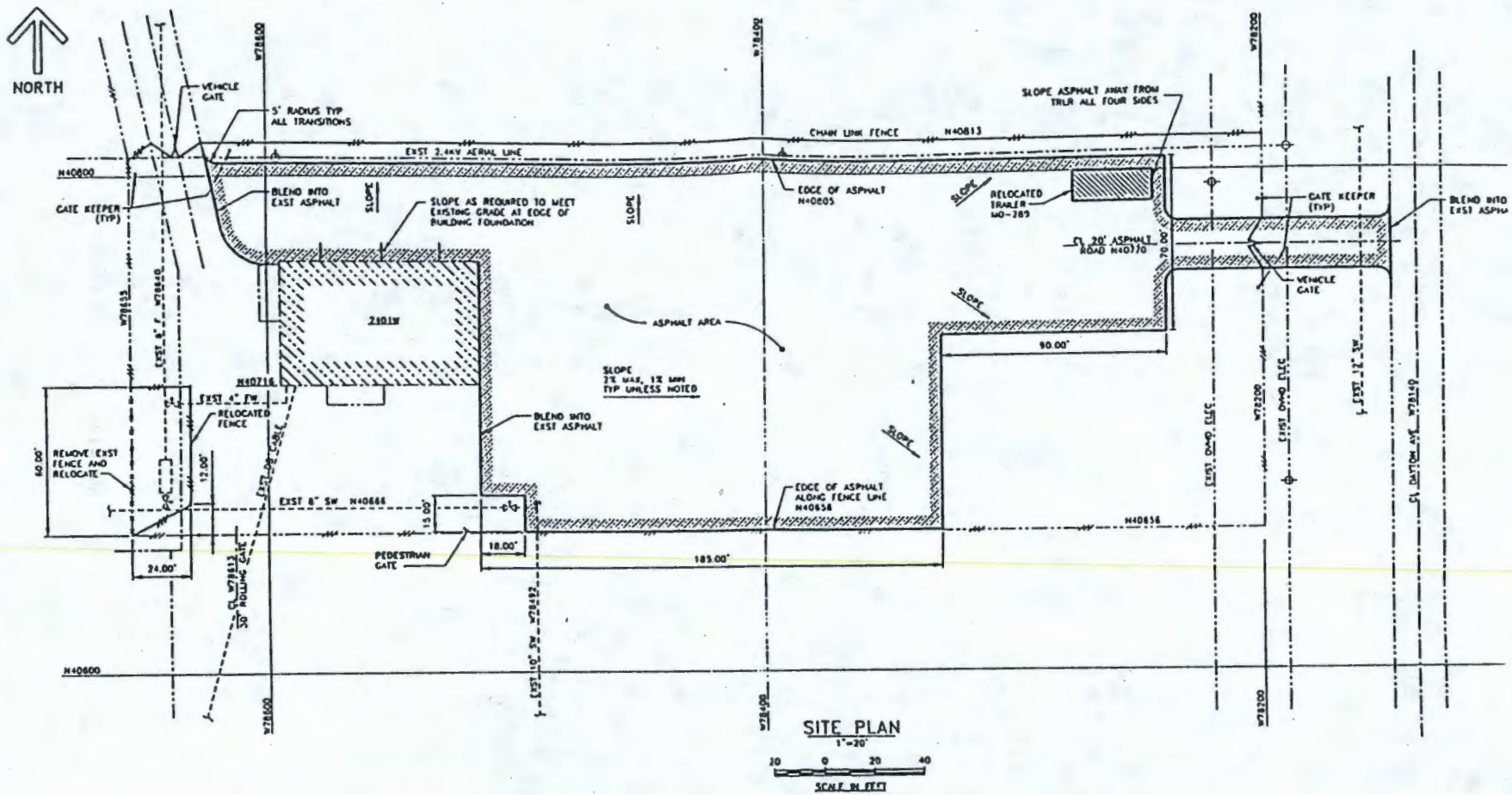
ADDITIONAL

ENGINEERING CHANGE NOTICE CONTINUATION SHEET

Page 3 of 3

ECN 650955

Date May 3, 1999



A-7900-013-4 (10/97)

APPENDIX 3A

CENTRAL WASTE COMPLEX WASTE ANALYSIS PLAN

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GLOSSARY

ALARA	as low as reasonably achievable
ASTM	American Society for Testing and Materials
AWMP	alternative waste management plan
CAP	corrective action plan
COLIWASA	composite liquid waste sampler
CFR	Code of Federal Regulations
CWC	Central Waste Complex
DOE-RL	U.S. Department of Energy, Richland Operations Office
DQO	data quality objectives
Ecology	Washington State Department of Ecology
HNF	Hanford Nuclear Facility (document identifier)
LDR	land disposal restriction
LLBG	Low-Level Burial Grounds
MSDS	material safety data sheet
NDA	nondestructive assay
NDE	nondestructive examination
PCB	polychlorinated biphenyl
PES	performance evaluation system
pH	negative logarithm of the hydrogen-ion concentration
QA/QC	quality assurance and quality control
RCRA	*Resource Conservation and Recovery Act of 1976*
RCW	Revised Code of Washington
SWITS	solid waste information tracking system
SWMU	solid waste management unit
TRU	transuranic
WAC	Washington Administrative Code
WAP	waste analysis plan
WSRd	waste specification record
°C	degrees Celsius

METRIC CONVERSION CHART

The following conversion chart is provided to the reader as a tool to aid in conversion.

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

1.0 UNIT DESCRIPTION

The purpose of this waste analysis plan (WAP) is to document the waste acceptance process, sampling methodologies, analytical techniques, and overall processes that are undertaken for waste accepted for storage at the Central Waste Complex (CWC), which is located in the 200 West Area of the Hanford Facility, Richland, Washington. Because dangerous waste does not include the source, special nuclear, and by-product material components of mixed waste, radionuclides are not within the scope of this documentation. The information on radionuclides is provided only for general knowledge.

1.1 DESCRIPTION OF UNIT PROCESSES AND ACTIVITIES

The CWC is a nonland-based unit consisting of various buildings, storage modules, and storage pad (Figure 1-1). The CWC structures are used for the storage of waste and are subject to *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303 and 40 Code of Federal Regulations (CFR) 761.

The CWC consists of the 2401-W, 2402-W, 2403-W, and 2404-W waste storage buildings, Flammable and Alkali Metal Waste Storage Modules, the waste storage pad, and the waste receiving and staging area (Figures 1-2 through 1-8). Further discussion on these structures can be found in Chapter 2.0 of the *Hanford Facility Dangerous Waste Permit Application, Central Waste Complex* (DOE/RL-91-17).

1.1.1 How Waste is Accepted, Moved, Processed, and Managed

The following sections describe the different types of information and knowledge used for waste acceptance. The movement, processing, and management of waste at the CWC is described in Chapter 4.0 of the CWC dangerous waste permit application documentation (DOE/RL-91-17).

1.1.1.1 Narrative Process Descriptions

The onsite generating unit, offsite generator, and treatment, storage, and/or disposal (TSD) unit transferring waste to the CWC is hereafter referred to as a 'generator' unless otherwise denoted in this WAP.

Waste that meets land disposal restriction (LDR) requirements, as specified in 40 CFR 268 and WAC 173-303-140, is stored in the CWC. Waste not meeting LDR requirements, but awaiting further treatment offsite or onsite either at the Waste Receiving and Processing Facility (WRAP) or the T Plant Complex (T Plant) can be stored at the CWC. The CWC unit-specific operating record will contain information necessary to meet LDR requirements for any waste awaiting further treatment. Containerized waste that is not fully characterized or is awaiting sampling results can be stored in CWC (DOE/RL-91-17). The Hanford Facility is required to sample certain waste depending on the type of treatment standard to ensure that the waste or treatment residuals are in compliance with applicable LDR requirements. Such testing is performed according to the frequency specified in this WAP.

1.1.1.2 Waste Acceptance Process

CWC waste acceptance process consists of following activities:

- Waste Stream Approval. The generator provides information concerning each waste stream on a waste profile sheet. The waste stream information is reviewed against the CWC waste acceptance criteria. If the waste stream information is sufficient and meets the applicable acceptance criteria, the waste stream is approved. In addition, the initial verification frequency for the waste is determined in accordance with the requirements found in the performance evaluation program (PES) (Section 1.1.1.3). For a more complete description of the waste stream approval process, refer to Section 2.1.1.

- Waste Shipment Approval. The generator provides specific data for each waste container on the container data sheet. The container data are reviewed against the waste profile sheet data and the CWC acceptance criteria before being approved for shipment. In addition, the CWC operating organization determines if any of the containers require verification based on the verification frequency as determined by PES. For a more complete description of the waste shipment approval process, refer to Section 2.1.2.

- Verification. Verification activities include container receipt inspection, physical screening, and/or chemical screening. A percentage of waste shipments and containers are selected for receipt verification during the waste shipment approval process. These containers can be inspected visually, verified by NDE, or sampled for field or laboratory analysis to confirm that the waste matches the waste profile and container data information supplied by the generator. Any discrepancies between the verification results and the waste profile sheet must be resolved before final acceptance at CWC in accordance with the conformance issue resolution process found in Section 1.1.1.3.3.

1.1.1.2.1 Types of Acceptable Knowledge

When collecting documentation on a waste stream or container, the CWC operating organization or representative organization, hereafter referred to the 'CWC operating organization', must determine if the information provided by the generator is acceptable knowledge. Acceptable knowledge requirements are met using any one or a combination of the following types of data:

- Mass balance from a controlled process that has a specified input for a specified output
- Material safety data sheets (MSDSs) on unused chemical products
- Test data from a surrogate sample
- Analytical data on the waste or a waste from a similar process.

In addition, acceptable knowledge requirements can be met using a combination of analytical data or screening results and one or more of the following:

- Interview information
- Logbooks
- Procurement records
- Qualified analytical data
- Radiation work package
- Procedures and/or methods
- Process flow charts
- Inventory sheets
- Vendor information
- Mass balance from an uncontrolled process (e.g., spill cleanup)
- Mass balance from a process with variable inputs and outputs (e.g., washing/cleaning methods).

If the information is sufficient to quantify constituents and characteristics as required by the regulations and CWC acceptance criteria, the information is considered acceptable knowledge. The CWC acceptance criteria is defined as the requirements found in the WAP and the associated Part A, Form 3, (DOE/RL-91-17, Chapter 1.0).

1.1.1.3 Description of Performance Evaluation System

A PES is used to determine initial physical screening frequency of the generator. PES provides a periodic status of an individual generator's performance for waste received. Also, PES provides a mechanism for determining corrective actions and physical screening frequency adjustments when a problem has been discovered after waste has arrived at CWC.

1.1.1.3.1 Initial Physical Screening Frequency Determination

The initial physical screening frequency is determined based on the following process.

- CWC operating organization reviews the generator waste profile information to determine the relative potential for misdesignation or inappropriate segregation based on all relevant information, including any previous experience with the generator. Based on this review, CWC operating organization identifies any concerns associated with the following criteria:

  - documented waste management program
  - waste stream characterization information
  - potential for inappropriate segregation.

- Based on the identification of concerns during the review, the CWC operating organization establishes the initial physical screening frequency for the new generator's waste stream based on the following criteria:

  - Initial physical screening frequency of, at a minimum, 20 percent: No concerns identified (e.g., cleanup of contaminated soil where the soil has been well characterized and no other waste generation processes are occurring at that location)

  - Initial physical screening frequency of, at a minimum, 50 percent: Concern(s) identified in one criterion (e.g., a facility with many different processes that generate debris that have differing management paths)

  - Initial physical screening frequency of 100 percent: Concerns identified in two or more criteria (e.g., a facility with many different process and questionable segregation controls).

1.1.1.3.2 Monthly Performance Evaluation

A performance evaluation is used to trend a generator's performance and is used to raise the generator's overall physical screening frequency. The evaluation should be objective and should consider the conformance issues documented during the Preshipment Review and Verification functions. The CWC operating organization will: (1) perform monthly evaluations based on deficiencies and conformance issues identified, (2) evaluate unsatisfactory performance for corrective actions, and (3) adjust physical screening rates accordingly.

1.1.1.3.3 Conformance Issue Resolution

Conformance issues during verification could result in a waste container that does not meet CWC waste acceptance criteria. If a possible conformance issue is identified, the following actions are taken to resolve the issue.

- CWC operating organization compile all information concerning the possible conformance issue(s).

- The generator is notified and requested to supply additional knowledge to assist in the resolution of the concern(s). If the generator supplies information that alleviates the concern(s) identified, no further action is required.

- On determination that a conformance issue has been identified, the CWC operating organization personnel and the generator discuss the conformance issue and identify the appropriate course of action to resolve the container/shipment in question, i.e., pick another sample set, return the container/shipment, divert the container/shipment to another TSD unit that can accept the container/shipment and resolve the issue, or the generator resolves the issue at the TSD unit. If the conformance issue(s) results in the failure of a shipment, the physical screening frequency for all streams from the generator are adjusted to 100 percent until the issue(s) adequately can be addressed.

- On resolution of the initial conformance issue, CWC operating organization requests the generator to provide a corrective action plan (CAP) that clearly states the reason for the failure and describes the actions to be completed to prevent re-occurrence. The generator could request a reduction in verification of unaffected streams. This request must be accompanied by a justification that identifies why this stream(s) would not exhibit the same conformance issue.

- CWC operating organization reviews the CAP and stream justification for adequacy. If the CAP is inadequate, the generator remains at a physical screening rate of 100 percent. If the stream justification is adequate, CWC operating organization could provide an alternative frequency as denoted in Section 1.1.1.3.2.

1.1.1.3.4 Process for Reducing the Physical Screening Frequency

Screening rate frequencies and changes to those frequencies could be applied to a specific waste stream, to a specific contractor, or to a specific offsite generator based on the circumstances surrounding the conformance issue. After the initial screening frequency for a given waste stream has been established or increased, the physical screening frequency can be reduced in accordance with the following.

The physical screening frequency will be reduced in three steps. Reduction for all steps is based on the ability to demonstrate that five containers from the waste stream in question pass verification. In addition, reduction to the minimum frequency requires that the CWC operating organization documents an acceptable evaluation of the corrective action plan, and the corrective action plan is fully implemented. At no time will the physical screening frequency be reduced below 5 percent for waste generated onsite or below 10 percent for offsite generators.

- Step 1. Reduce frequency by 66 percent after five containers from the waste stream in question pass verification.

- Step 2. Reduce frequency established in Step 1 by 50 percent or to the minimum allowable, whichever results in a greater frequency after five containers from the waste stream in question pass verification.

- Step 3. Reduce frequency to the minimum allowable after five containers from the waste stream in question pass verification. The CWC operating organization documents an acceptable evaluation of the corrective action plan, and the corrective action plan is fully implemented.

The screening rate reduction will be established during periodic performance evaluation system team meetings.

1.1.2 Process Flow Diagram

Refer to Figure 1-9 for CWC waste analysis plan flowchart and Section 1.1 for description.

1.1.3 Operating Conditions

The following conditions and constraints apply to waste accepted at CWC. The waste container weight must be known and proper handing procedures imposed to ensure safe operations. The waste container radiation dose must be known and procedures must ensure that personnel exposure is kept as low as is reasonably achievable (ALARA). The quantity of fissile material within the waste must be determined and must be low enough to prevent a criticality hazard. Liquid waste can be received if packaged in inner glass, metal, or plastic containers and surrounded by sufficient sorbent to sorb twice the amount of liquid present. Containers of waste that cause pressurization must be vented. Radionuclide and dangerous waste constituent inventories in waste containers must be kept low enough to ensure that personnel emergency exposure limits are not exceeded.

1.2 IDENTIFICATION AND CLASSIFICATION OF WASTE

Waste is accepted for treatment (mixed waste) and/or storage (mixed and dangerous) in CWC except for the following waste types:

- Bulk liquid waste
- Explosive waste
- Shock sensitive waste
- Class IV oxidizer waste
- Infectious waste.

Refer to DOE/RL-91-17, Chapter 4.0 for precautions that are taken when ignitable, reactive, or incompatible waste is stored.

CWC manages the following waste types:

- Labpack liquids
- Solids/debris
- Sludges/soils.

These waste types could be classified as transuranic, low-level, mixed, and/or dangerous. Unless otherwise prohibited by this WAP, the waste could exhibit the characteristics of ignitable, toxic, corrosive, and/or reactive. In addition to the waste received at CWC for verification or processing, CWC generates mixed and dangerous waste. This waste material consists of items such as personal protective equipment (PPE), rags, and spent equipment contaminated with dangerous cleaning agents, lubricants,

paints, or other dangerous materials. Process knowledge, field screening, or sampling and analysis are used as appropriate to characterize these waste materials. Field screening and sampling are in accordance with this WAP and occur at the point of waste generation or at the location where the waste materials are stored.

1.2.1 Dangerous Waste Numbers, Quantities, and Design Capacity

The Part A, Form 3, permit application for CWC identifies dangerous waste numbers, quantities, and design capacity (DOE/RL-91-17, Chapter 1.0).

1.2.2 Alternative Waste Management Plan

For waste that cannot be stored and disposed in accordance with the requirements set forth in this WAP, an alternative waste management plan (AWMP) could be submitted to the Washington State Department of Ecology (Ecology) for review. Because many activities associated with or necessary to support waste management projects readily would not be predictable, some flexibility in timeframes for submitting, reviewing, and completing waste management plans would be necessary. In general, the following schedules should be observed.

- Submit the AWMP to the Ecology Project Manager at least 120 days before the project is expected to begin. The cover letter would state that "no reply within 45 days constitutes approval".

- Ecology reviews and provides comments (if any) within 45 days after receiving the AWMP.

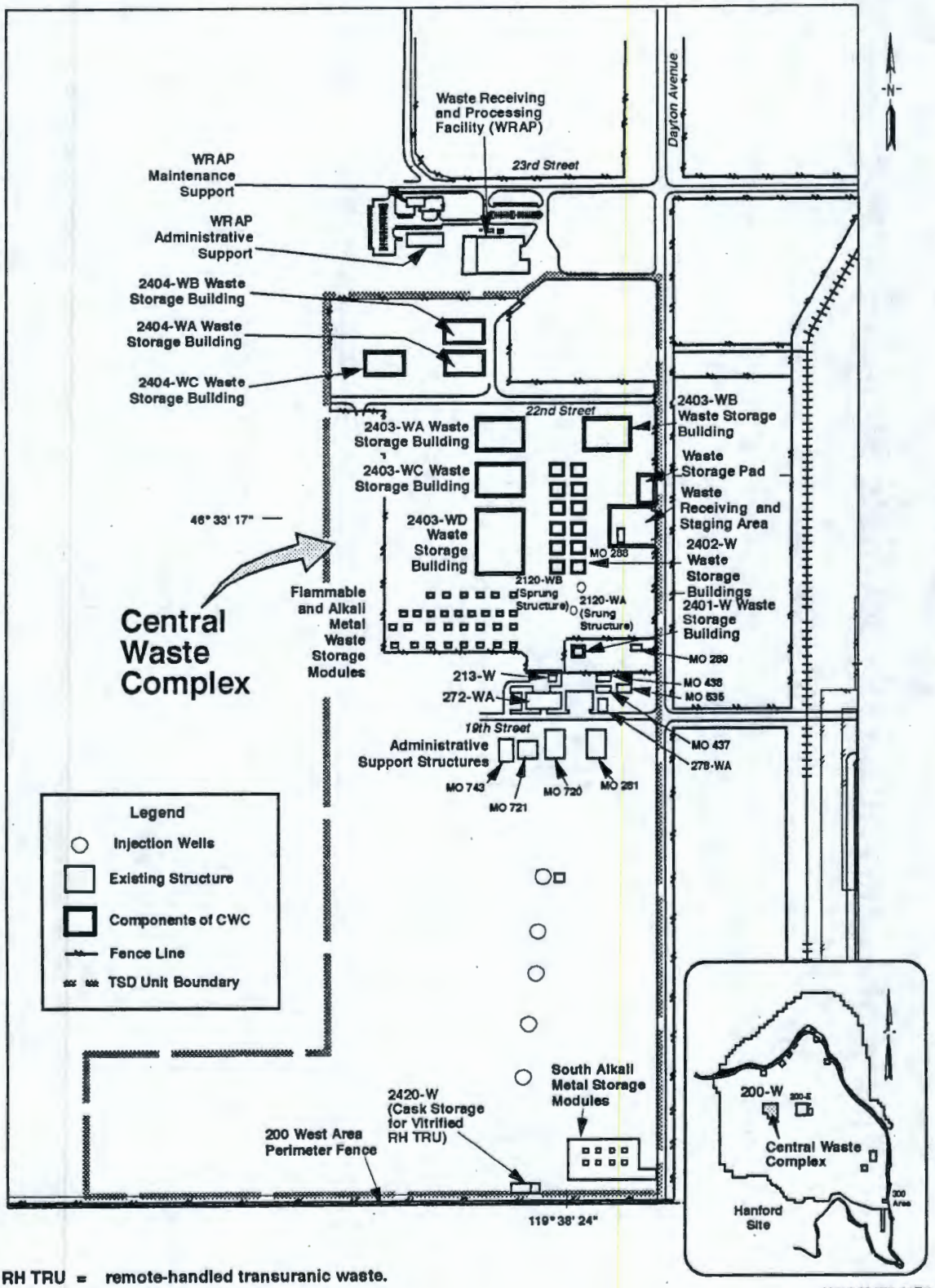
- On receipt, comments would be resolved through project manager meetings or other workshops as agreed to by the U.S. Department of Energy, Richland Operations Office (DOE-RL) and Ecology. When the AWMP is resubmitted following resolution of Ecology's comments, the same review timeframes would be applicable.

- If no comments are received from Ecology within 45 days after the AWMP is submitted, the plan would be denoted as approved.

These timeframes could be adjusted by mutual agreement to account for project-specific needs and priorities. The AWMP review would ensure the following.

- The project does not endanger human health and the environment.
- The course of action chosen is well justified.

On gaining written or automatic approval, the DOE-RL would proceed as described in the AWMP. Should the plan require revision because of unforseen circumstances, the DOE-RL would resubmit the plan before continuing. On conclusion of the project, the DOE-RL would supply Ecology with a report outlining the activities performed and the results of these activities. During the next permit modification cycle and no later than 1 year, a modification to the WAP would be submitted. Approval for a AWMP that violates a specific prohibition outlined in the WAP is not permitted without first receiving a modification to the permit.



RH TRU = remote-handled transuranic waste.

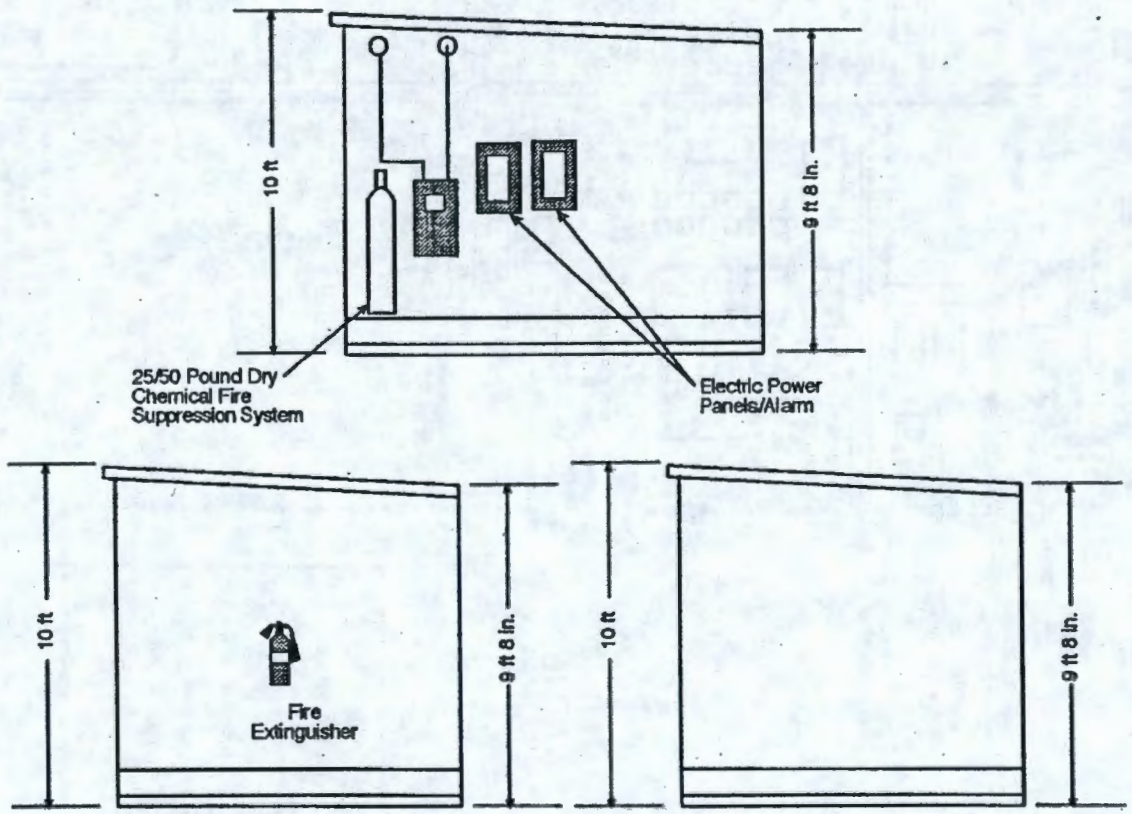
Not to scale.

Refer to topographic map (H-13-000003) for detail.

Figure 1-1. Central Waste Complex Site Plan.

Flammable and Alkali Metal Waste Storage Module

Side View



Note: To convert feet to meters, multiply by 0.3048.
To convert inches to centimeters, multiply by 2.54.
To convert to pounds to kilograms, multiply by 0.453.
Lights, electrical panels, and fire suppression systems have been deactivated in selected modules.

H98010038.1R1

Figure 1-2. Flammable and Alkali Metal Waste Storage Building.

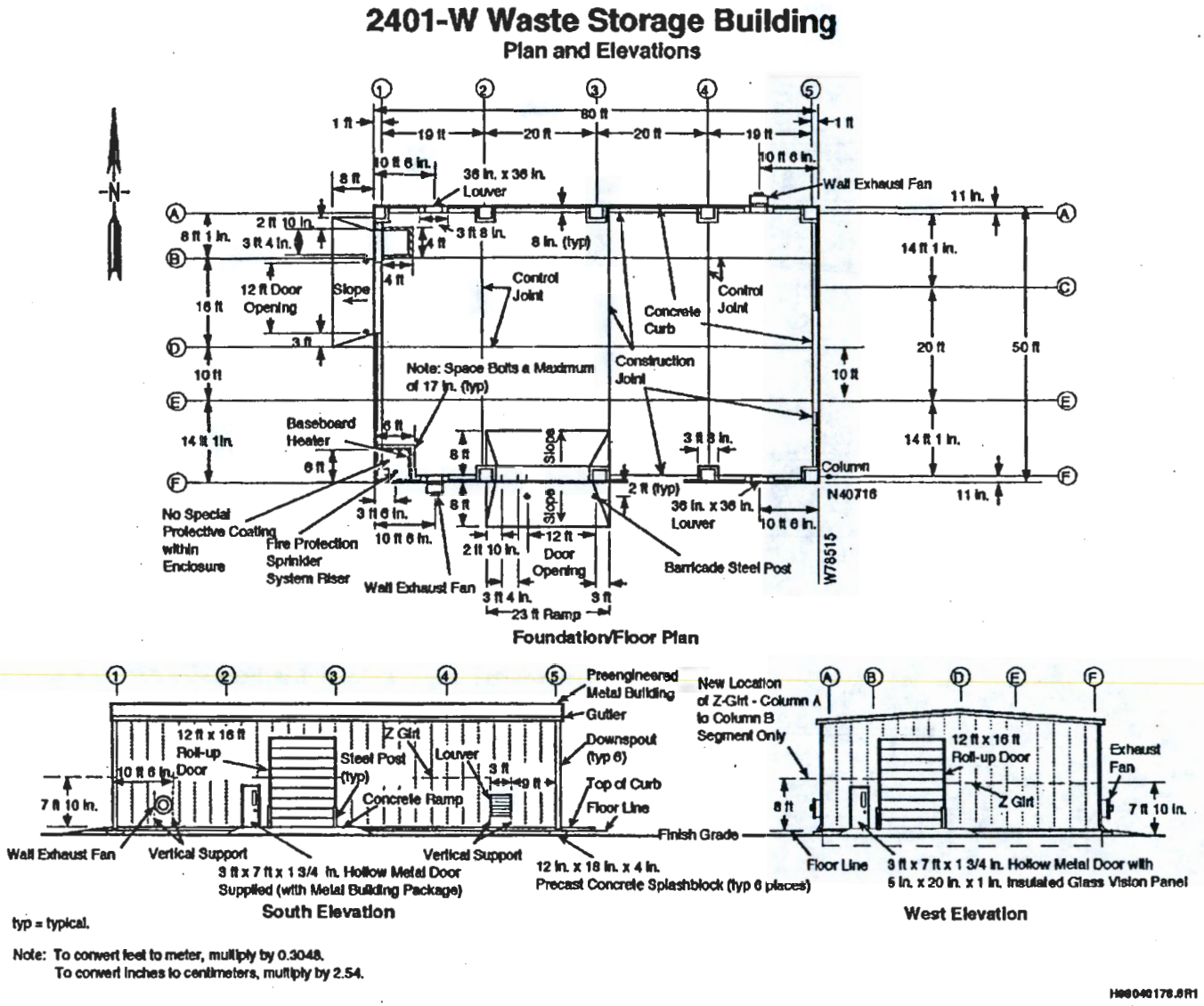


Figure 1-3. 2401-W Waste Storage Building.

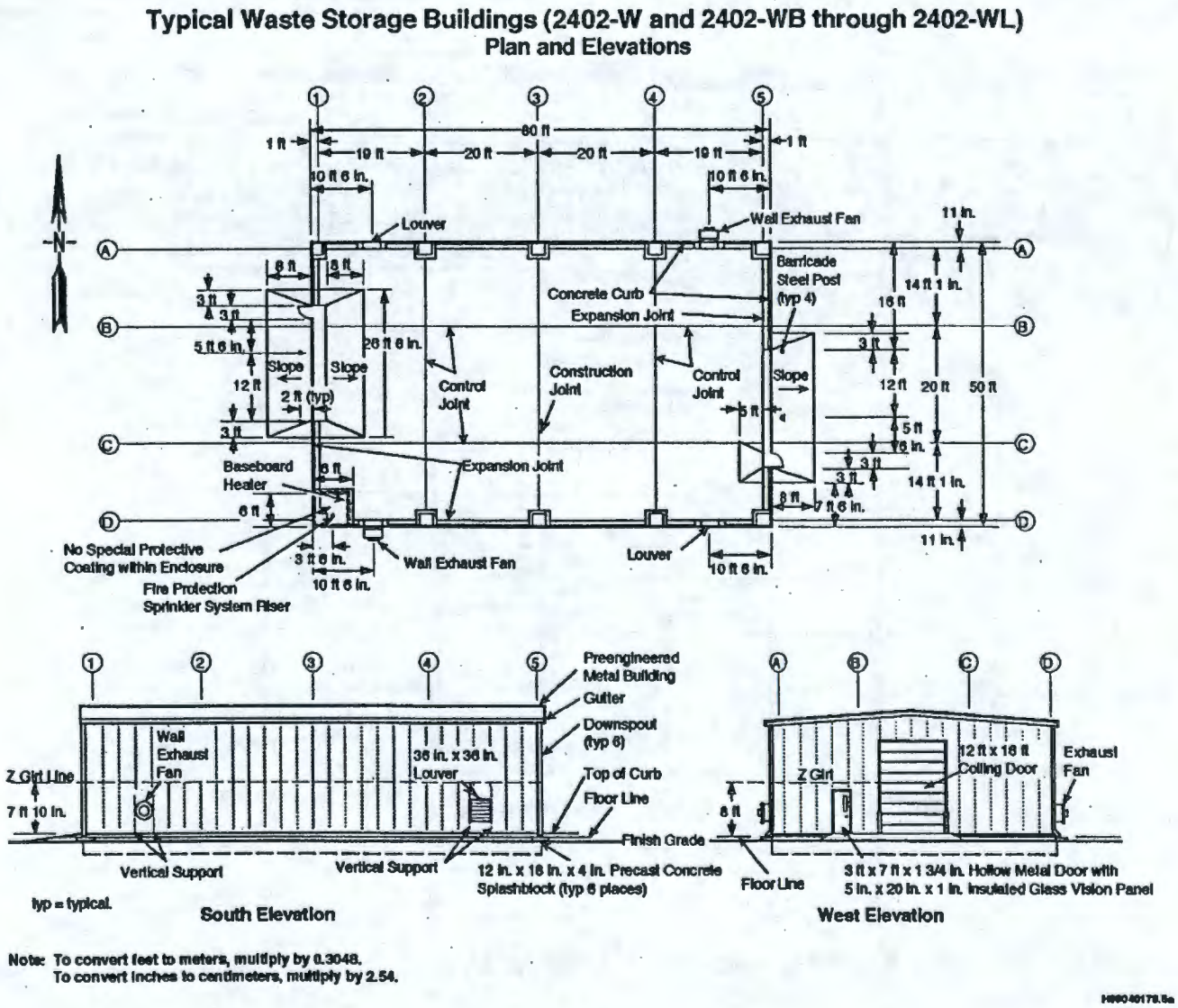
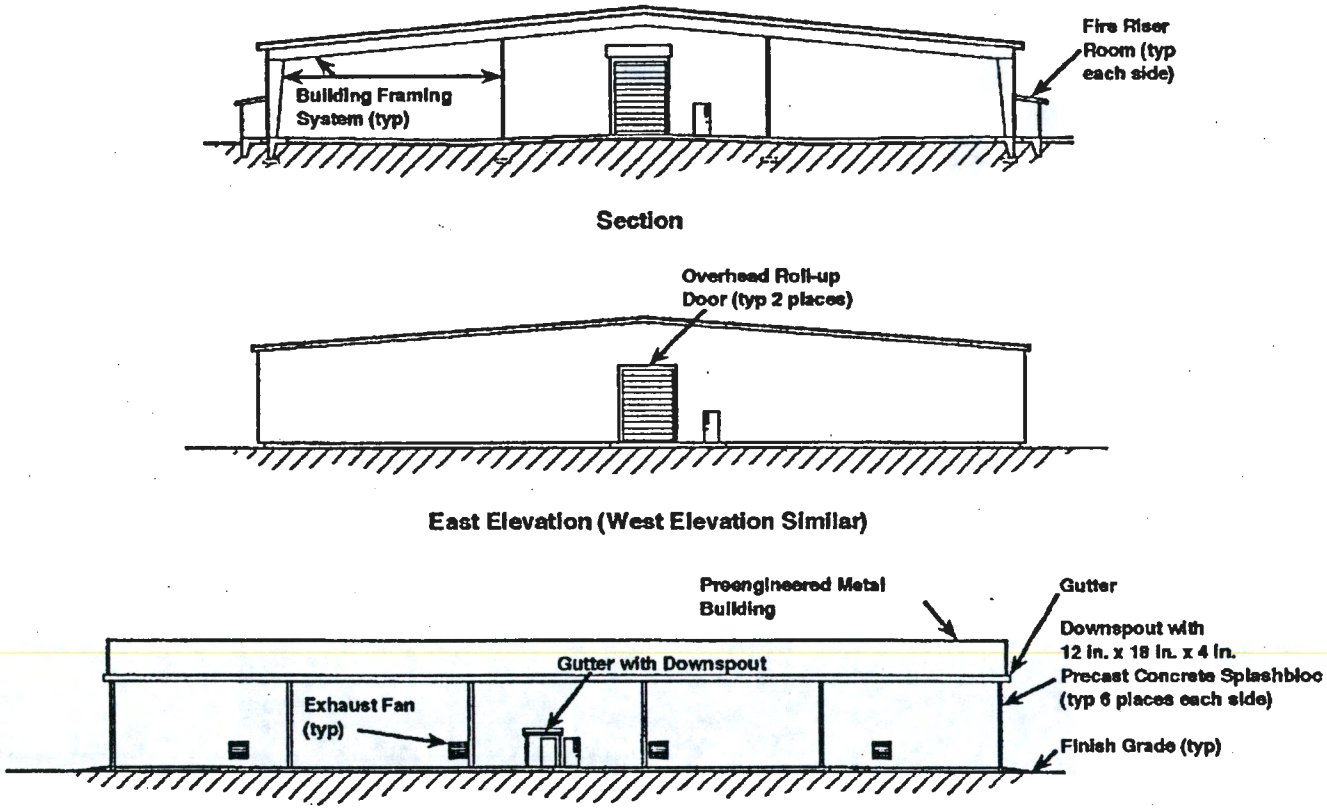


Figure 1-4. 2402-W Waste Storage Building.

Typical Waste Storage Building (2403-WA through WC)

Elevations



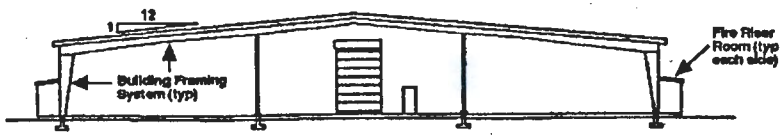
typ = typical.

Not to scale.

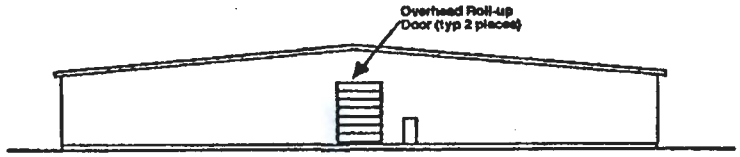
Note: To convert feet to meters, multiply by 0.3048.

Figure 1-5. 2403-WA through WC Waste Storage Building.

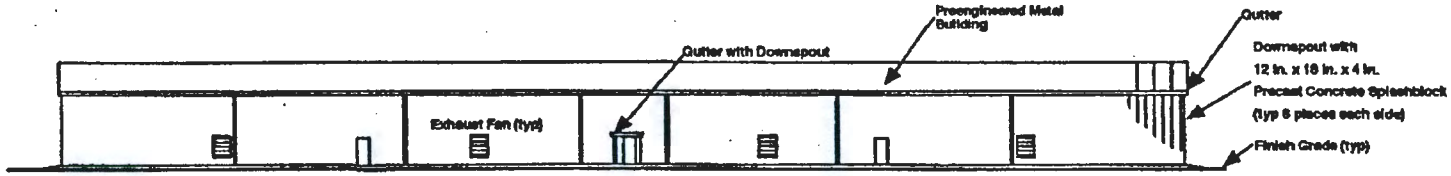
Waste Storage Building (2403-WD)



Section



North Elevation



West Elevation

Metric Conversion: 2.54 centimeters per inch
0.305 meter per foot

typ = typical.

39304068.11R2

Figure 1-6. 2403-WD Waste Storage Building.

Typical Waste Storage Building (2404-WA through WC)

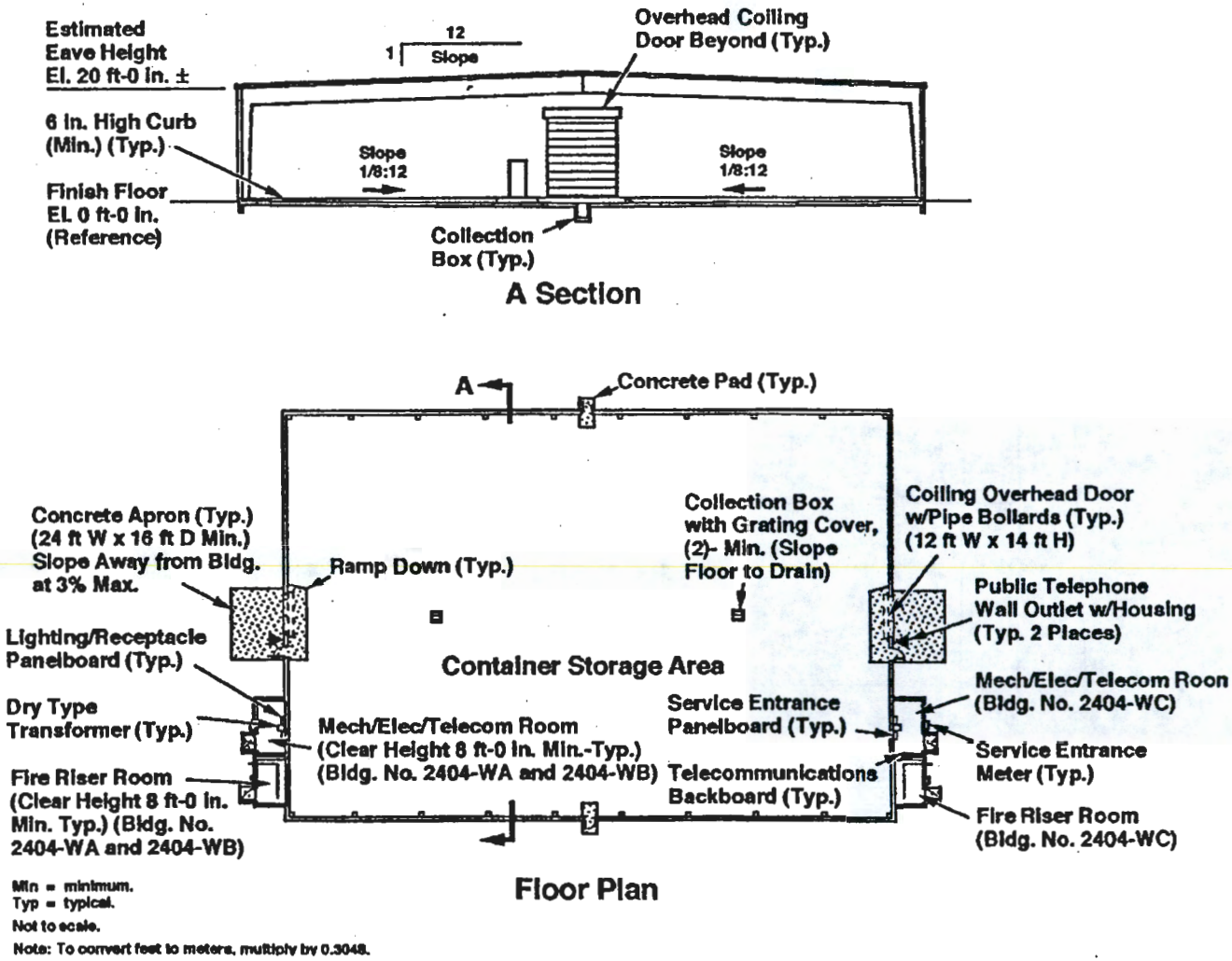


Figure 1-7. 2404-W Waste Storage Buildings.

Waste Storage Pad
Civil Plan

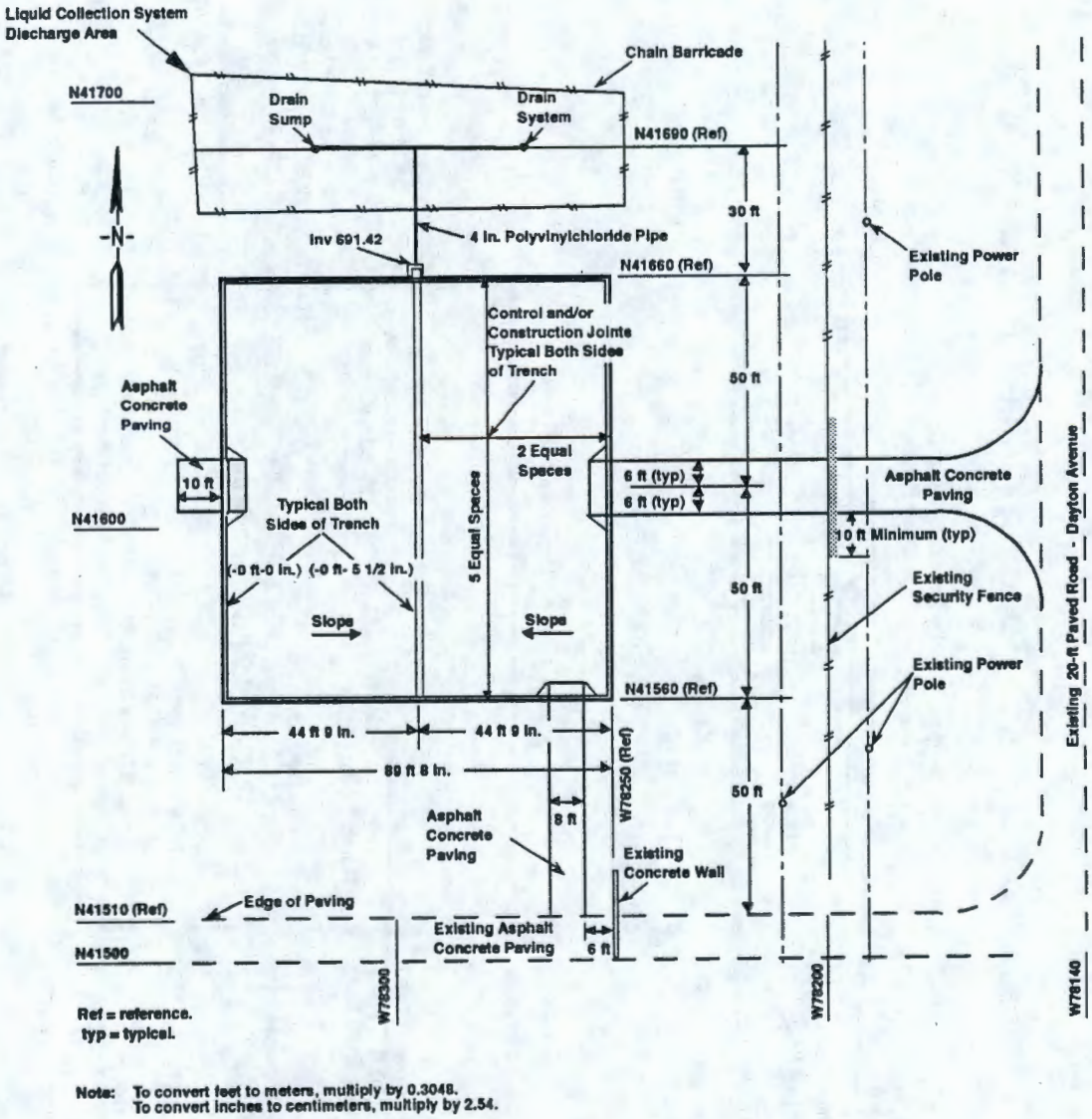
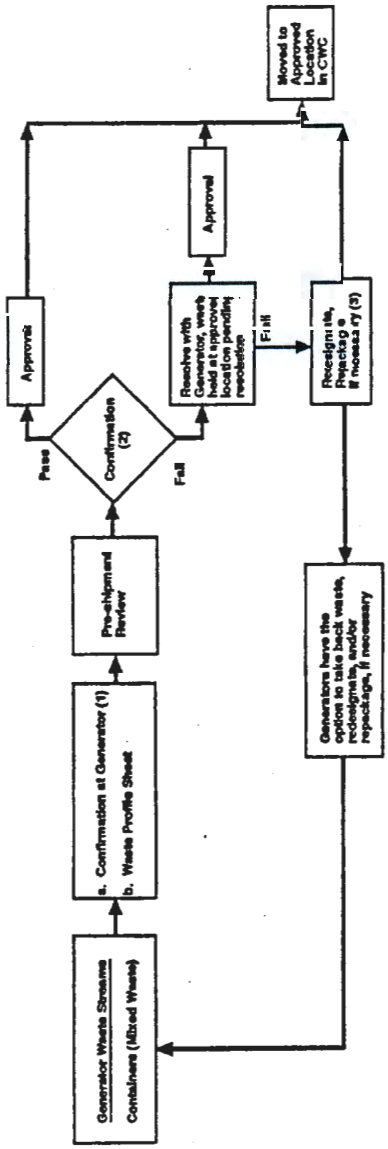


Figure 1-8. Waste Storage Pad.



(1) If possible, confirmation to be performed at generator location before receipt at CWC. If possible, to be confirmed by independent authorized agent in accordance with CWC WAP. In some instances, waste could be confirmed as it is generated (packaged).

(2) For waste streams not confirmed at generator location, including all offsite waste and waste to be nondestructively examined, confirmation to take place at an approved location after packaging. In some instances, following nondestructive examination, confirmation could be accomplished in conjunction with confirmation in accordance with CWC WAP.

(3) If redesignating and/or repackaging cannot be performed, the waste will be transported to an approved treatment, storage and/or disposal unit for disposition.

CWC = Central Waste Complex
WAP = Waste Analysis Plan

H971102841

Figure 1-9. Central Waste Complex Waste Analysis Plan Flowchart.

2.0 CONFIRMATION PROCESS

The confirmation process includes completing appropriate pre-shipment reviews and verification steps and/or parameters. The requirement to confirm appears twice in WAC 173-303-300 and applies to two different scenarios.

Scenario 1: The process that an owner or operator uses to ensure knowledge supplied by the generator or TSD unit is acceptable knowledge to ensure that the waste is managed properly [WAC 173-303-300(1)]. This is accomplished by a pre-shipment review.

Scenario 2: The process that a facility owner or operator receiving offsite facility shipments uses to determine, by analysis if necessary, that each waste received at the facility matches the identity of the waste specified on the accompanying manifest or shipping paper [WAC 173-303-300(3)]. This is accomplished during verification.

2.1 PRE-SHIPMENT REVIEW

Pre-shipment review takes place before waste can be scheduled for transfer or shipment to CWC. The review focuses on whether the waste stream is defined accurately, meets the CWC waste acceptance criteria, and the LDR status is determined correctly. Only waste determined to be acceptable for treatment and/or storage is scheduled. This determination is based on the information provided by the generator. The pre-shipment review consists of the waste stream approval and waste shipment approval process. The following sections discuss the pre-shipment review process. The information obtained from the generator during the pre-shipment review, at a minimum, includes all information necessary to safely treat and/or store the waste. The pre-shipment review ensures the waste has been characterized and the data provided qualify as 'acceptable knowledge' (Section 2.1.3).

2.1.1 Waste Stream Approval Process

The waste stream approval process consists of reviewing stream information supplied on a waste stream profile and attached analysis. At a minimum, the profile requests the following information:

- Generator information (e.g., name, address, point-of-contact, phone number)
- Waste stream name
- Waste generating process description
- Radiological knowledge (e.g., classification, reportable radionuclides, characterization method)
- Chemical characterization information (e.g., characterization method(s), chemicals present, concentration ranges)
- Designation information
- LDR information including identification of underlying hazardous constituents if applicable

- Waste type information (e.g., physical state, absorbents used, inert materials, stabilizing agents used)

- Packaging information (e.g., container type, maximum weight, size)

- Attachments could consist of container drawings, process flow information, analytical data, etc.

This information is reviewed against the CWC waste acceptance criteria to ensure the waste is acceptable for receipt. If discrepancies are found during this review, additional information is requested that could include analytical data or a sample to be analyzed. If the waste cannot be received, the CWC operating organization will pursue acceptance of the waste at an alternative TSD unit or request the generator to pursue acceptance at an offsite facility.

On determination that the waste is acceptable, the CWC operating organization assigns the profile to a waste management path and establishes a waste verification frequency based on the requirements found in Sections 1.1.1.3 and 2.2.2.2.

2.1.2 Waste Shipment Approval Process

For each waste transfer or shipment that is a candidate for treatment and/or storage, the generator provides the following information:

- Container identification number
- Profile number
- Waste description
- Generator information (e.g., name, address, point-of-contact, telephone number)
- Container information (e.g., type, size, weight)
- Waste numbers
- Extremely hazardous waste or dangerous waste
- Dose rate information
- Reportable radionuclides and quantities
- Waste composition
- Packaging materials and quantities.

The pertinent information is entered into Solid Waste Information Tracking System (SWITS). Figure 2-1 is the waste acceptance process.

Where potential nonconformances exist in the information provided, (i.e., waste characteristics do not match the waste profile information, or additional constituents are expected to be present that do not appear on the documentation), the generator is contacted by the CWC operating organization or its representative for resolution. Refer to Section 6.0 for discussion on repeat and review frequency.

For each container, a technical review, physical screening determination, and chemical screening determination are performed as follows.

- **Technical review.** The individual container data are compared to the waste profile data to ensure the information is accurate. Every transfer or shipment is reviewed to ensure the waste meets the CWC waste acceptance criteria.

Based on waste identification information provided, the waste designation is reviewed to ensure consistency with waste designations per WAC 173-303-070, as well as for technical accuracy to ensure the waste meets the waste acceptance criteria.

If the transfer or shipment information is found to be acceptable, the CWC operating organization determines if any of the waste containers will be physically or chemically screened.

- **Physical screening determination.** Containers are chosen based on the methodology described in this section. The first criterion is based on whether pre-shipment review activities (document and characterization review) identify areas of potential concern. The second criterion is reviewing the current physical screening percentage (calculated using the following method) of containers received from said stream from said generator that have been received over the past 12 months as compared to those that have been physically screened. This criterion ensures that the minimum physical screening confirmation rates required by this WAP are met.

  - The number of containers selected for physical screening in shipments is determined by multiplying the total number of containers received during the previous 12 months or the date of the last physical screening adjustment, whichever occurs first. The rate will be applied for that stream including the containers identified in the shipment by the applicable verification rate, rounded up to the next integer. This selected group of containers constitutes a sample set.

  - Individual containers within a shipment are selected based on a review of the contents listed in the associated shipment documentation.

  - Containers are selected at random unless variability within the stream is noted. In this case containers representing different variations are selected (e.g., wood debris vs metallic debris).

- **Chemical screening determination.** Individual containers within a shipment are selected based on a review of the contents listed in the associated shipment documentation. Containers are selected at random unless variability within the stream is noted. In this case, containers representing different variations are selected (e.g., used oil, spent solvent).

On determining whether the shipment will be verified, the shipment is scheduled.

2.1.3 Acceptable Knowledge Requirements

The CWC operating organization ensures that all information used to make waste management decisions will be based on the requirements found in the following sections. For information determined to be 'acceptable knowledge', the CWC operating organization must determine if the information is adequate for management of the waste.

2.1.3.1 General Acceptable Knowledge Requirements

Adequate acceptable knowledge requires (1) general waste knowledge requirements, (2) LDR waste knowledge requirements, and/or (3) waste knowledge exceptions.

(1) **General Waste Knowledge Requirements**. At a minimum, the generator supplies enough information for the waste to be treated and/or stored at CWC. The minimum level of acceptable knowledge consists of designation data where the constituents causing a waste number to be

assigned are quantified, and data that address any CWC operational parameters necessary for proper management of the waste.

Where the available information does not qualify as acceptable knowledge or is not sufficient to characterize a waste for management, the sampling and testing methods outlined in WAC 173-303-110 must be used to determine whether a waste designates as toxic characteristic, corrosive, and/or contains free liquids.

If a generator's process knowledge indicates that constituents, which if present in the waste might cause the waste to be regulated, are input to a process but not expected to be in the waste, sampling and analysis must be performed to ensure the constituents do not appear in the waste. This requirement can be met through chemical screening. This sampling and analysis is required only for initial characterization of the waste stream.

(2) **LDR Waste Knowledge**. Waste is stored in CWC while awaiting analytical results for LDR requirements. The CWC operating record contains all information required to document that the appropriate treatment standards have been met or will be met after the waste is treated.

For the purposes of this WAP, a representative sample is required to demonstrate compliance with a concentration-based treatment standard (refer to Section 4.5). Corroborative testing for the sample could be accomplished in the following manner.

- Generators could use onsite laboratories or other laboratories to certify that the waste meets LDR requirements. For waste that does not meet LDR requirements, the generator must supply information on the treatment methods necessary to meet LDR requirements and in accordance with WAC 173-303-380(1)(o).

- The CWC operating organization uses these analytical data to meet applicable requirements found in 40 CFR 268.7 and WAC 173-303-140(4).

(3) **Waste Knowledge Exceptions**. In some situations, full characterization of waste for cradle-to-grave management is not possible or feasible before receipt at CWC for storage. For storage purposes, waste analysis requirements could be met through application of acceptable knowledge when such knowledge provides sufficient information to ensure that waste will be stored properly. Acceptable knowledge could be used to accommodate storage at CWC for the following.

- Waste previously disposed before the effective date of the regulation that has been or will be retrieved for storage at CWC, and for which adequate information has been obtained to ensure proper storage at CWC.

- Waste placed in storage before the effective date of this permit for which adequate information has been obtained to ensure proper storage at CWC.

- Newly-generated waste for which adequate information has been obtained to ensure proper storage at CWC.

For situations in which acceptable knowledge has been used to accommodate storage, such information will be supplemented as necessary before treatment and/or disposal of the waste.

2.1.3.2 Methodology to Ensure Compliance with Land Disposal Restrictions Requirements

All generators are subject to LDR requirements and are required to submit all information notifications and certifications described in WAC 173-303-380(1)(n) or (o). Mixed waste not meeting the treatment standards, but meeting the CWC waste acceptance criteria, can be stored at CWC (refer to Chapter 1.0, Section 1.1.1.1). The following are general requirements for offsite notifications or onsite information and supporting documentation.

- The waste is subject to LDR and the generator has treated the waste. The generator supplies the appropriate LDR certification information (40 CFR 268).

- The waste is subject to LDR and the generator has determined that the waste meets the LDR for disposal. The generator develops the certification based on process knowledge, and/or analytical data, and supplies the appropriate LDR certification information necessary to demonstrate compliance with the LDR treatment standards of 40 CFR 268 and WAC 173-303-140. State-only LDRs do not require this type of certification.

- The waste is subject to LDR and requires further treatment to meet applicable treatment standard. The generator supplies additional information concerning the waste and details any treatment necessary to meet applicable treatment standards.

A representative sample of the waste must be submitted for analysis to ensure that concentration-based LDR treatment standards are met. This sample could be taken by the CWC operating organization or the generator, and is required to comply with the treatment standards contained in 40 CFR 268.40 and 268.48 for underlying hazardous constituents.

2.2 VERIFICATION

Verification is an assessment performed by the CWC operating organization to substantiate that the waste received at CWC is the same as represented by the analysis supplied by the generator for the pre-shipment review. Verification is performed on waste received by CWC. Verification includes container receipt inspection, physical screening, and chemical screening. Waste is not accepted by CWC for treatment and/or storage until required elements of verification have been completed, including evaluation of any data obtained from verification activities.

All discrepancies identified during the verification process are resolved in accordance with Section 1.1.1.3.3.

2.2.1 Container Receipt Inspection

The container receipt inspection is a mandatory element of the confirmation process. Therefore, 100 percent of the transfers/shipments are inspected for damage and to ensure the waste containers are those indicated on the documentation. This activity is a mechanism for identifying any document discrepancies or damaged containers before acceptance. The container receipt inspection is performed by the CWC operating organization at CWC or at another onsite location. When another onsite location is chosen, the container receipt inspection will be completed within 24 hours of waste receipt. The CWC operating organization will ensure that the shipment: (1) is received in good condition, (2) is the waste

indicated on the manifest or shipping papers, (3) has not been opened improperly after physical and/or chemical screening was performed, and (4) is complete.

2.2.2 Physical Screening Process

Physical screening is considered an additional verification element. This section describes the requirement pertaining to methods, frequency, and exceptions concerning the use of physical screening as a verification activity. Physical screening could be performed before the waste is shipped to CWC. When screening is performed at a location not within the Solid Waste Project (e.g., WRAP, T Plant Complex, Low-Level Burial Grounds), tamper resistant seals are applied to each container examined.

2.2.2.1 Physical Screening Methods

Each of the following physical screening methods, listed in order of preference, complies with the requirement to verify a waste. If a method other than 1 or 2 is used, the reasoning behind the method chosen must be documented in the operating record. Choosing method 3 or 4 is not permitted if the basis for choosing 3 or 4 is because the nondestructive examination (NDE) units are not functional.

1. Visual inspection (opening the container)
2. NDE
3. Nondestructive assay (NDA)
4. Dose rate profile.

Refer to Section 2.2.5 for quality control pertaining to physical screening.

2.2.2.2 Physical Screening Frequency

Physical screening frequency is 5 percent for onsite generating units, applied per waste stream per subcontractor per year. For offsite generators, the minimum physical screening frequency is 10 percent per waste stream per generator per year. The CWC operating organization adjusts the physical screening frequency for generators based on objective performance criteria (refer to Section 1.1.1.3.1).

In the event that one of the containers in the original sample set fails, a second sample set of equal size, or a minimum of three additional containers, is selected from the shipment. First and second sample sets are selected using the rationale described in the pre-shipment review section (Section 2.1). A second failure in either the first or the second sample set constitutes failure of the shipment. If the second sample set passes the inspection the single failed container is considered an anomaly and the remainder of the shipment passes verification. All failed containers and shipments are dispositioned via the PES.

2.2.2.3 Physical Screening Exceptions

The following exceptions to the physical screening process outlined previously have been developed.

- Shielded, classified, and remote-handled mixed wastes are not required to be physically screened; however, the CWC operating organization must perform a more rigorous documentation review and obtain the raw data used to characterize the waste (<1 percent of current waste receipts). Ecology will be notified and have the opportunity to review information on these wastes before shipment. For classified waste, it is necessary to have an appropriate U.S. Department of Energy security clearance and a need to know the information as defined by the classifying organization or agency.

- Waste that physically cannot be screened at CWC or associated screening facility must be physically screened at the generator location (e.g., large components, containers that can not be opened, are greater than 20 mrem per hour, contain greater than 10 nanocuries per gram of transuranic radionuclides, or will not fit into the NDE unit). Physical screening at the generator location consists of observing the packaging of the waste. If no location can be found to perform the physical screening, no screening is required.

- Waste that is packaged by the TSD unit authorized independent agent are considered to have met the physical screening requirements denoted in this WAP [e.g., CWC operating organization packaged waste that is transferred to Waste Management Federal Services of Hanford, Inc. managed TSD units or Pacific Northwest National Laboratory (PNNL) packaged waste that is transferred to PNNL operated TSD units]. On closure of the container, tamper-resistant seals must be applied to ensure the integrity of the contents.

2.2.3 Chemical Screening Process

Chemical screening is considered an additional verification element. This section describes methods, frequency, and exceptions for chemical screening. Chemical screening could be performed before the waste is shipped to CWC. When screening is performed at a location not within the Solid Waste Project, tamper-resistant seals are applied to each outer container examined.

Selection and interpretation of chemical screening methods is conducted by qualified personnel. Unless otherwise noted, tests are qualitative, not quantitative. The objective of screening is to obtain reasonable assurance that the waste is generally consistent with the description in the shipping documentation. The following tests are selected depending on the waste matrix and the applicability of the method. A minimum of three listed screening tests, including pH screening, are conducted on each sample. If less than five of the following methods are selected, the rationale is recorded by the qualified analyst.

The following tests are conducted on all samples collected for chemical screening:

- pH
- Peroxide
- oxidizer
- Water reactivity.

Additionally, the following screening tests could be performed as needed:

- HOC (chlor-n-oil/water/soil)
- Headspace
- Sulfide
- Cyanide
- Paint filter.

Refer to Section 2.2.5 for quality control pertaining to chemical screening.

2.2.3.1 Chemical Screening Frequency

At a minimum, 10 percent of the mixed waste containers verified by physical screening (Section 2.2.2.2) must be screened chemically. Although grab samples are acceptable, the CWC operating organization obtains a representative sample.

Small containers of waste (labpacks), not otherwise identified in the exceptions, packaged in accordance with 40 CFR 264.316, 40 CFR 265.316, and WAC 173-303-161 are screened chemically in accordance with waste stream's chemical screening frequency as determined by PES (Section 1.1.1.3). Inner containers are segregated by physical appearance. At least one container from each group (or three containers if all are similar) are screened chemically.

2.2.3.2 Chemical Screening Exceptions

There are cases in which chemical screening is not required. The exceptions are as follows:

- Small containers of waste in overpacked containers (labpacks) packaged in accordance with WAC 173-303-161 and not prohibited under LDR specified in WAC 173-303-140
- Waste exempted from the physical screening requirements (Section 2.2.2.3) is exempted from chemical screening
- Commercial chemical products in the original product container(s) (e.g., off-specification, outdated, or unused products)
- Chemical containing equipment removed from service, (e.g., ballasts, batteries, etc.)
- Waste containing asbestos
- Waste, environmental media, and/or debris from the cleanup of spills or release of single substance or commercial product or otherwise known material (e.g., material for which an MSDS can be provided)
- Confirmed noninfectious waste (e.g., xylene, acetone, ethyl alcohol, isopropyl alcohol) generated from laboratory tissue preparation, slide staining, or fixing processes
- Hazardous debris as defined in WAC 173-303-040
- Other special-case could be exempted on a case-by-case basis with prior approval by Ecology.

2.2.4 Sampling for Confirmation Screening

Sampling methods will be performed in accordance with WAC 173-303-110(2), with the following exceptions. At all times, a best effort is employed to obtain a representative sample. When a representative sample cannot be obtained, selective sampling is performed at a location in the matrix that visually appears to have the greatest potential for dangerous constituent contamination. The chemical screening methods described in Section 3.0 do not require any sample preservation methods because the screening tests are performed at the time and location of sampling, or as soon as possible thereafter.

During the interim period, the samples are stored in a manner that maintains chain of custody and protects the sample composition.

2.2.5 Quality Assurance and Quality Control for Confirmation Process

The following QA and quality control (QC) elements are used by the CWC operating organization to ensure confirmation activities provide sufficient data to provide an indication that waste received is as described in the shipping documentation.

2.2.5.1 Physical Screening Quality Control

Physical screening QC is used only to ensure that quality data are obtained when performing nondestructive examination. Visual inspection does not consist of the use of instrumentation or chemical tests. Therefore, QC for visual inspection depends on appropriate training for the individual(s) performing the test. If NDE is used to meet the physical screening requirements, 5 percent per year of the containers that have been nondestructively examined are opened to ensure the method is providing accurate data. Containers opened for other reasons, such as chemical screening or to investigate inconsistencies, could be used to meet this requirement. This requirement is based on the total number of containers reviewed, not on a shipment or general waste stream basis. The CWC operating organization is required, at a minimum, to meet this requirement over a running 3-month average with a minimum of one container being opened for every month NDE is operated. If the evaluation of NDE shows that a false negative has occurred, a review of the NDE operation is required to determine if the false negative was due to operator error, equipment malfunction, or equipment limitations. Based on the review, corrective actions are required to be implemented before further use of NDE as a physical screening tool.

2.2.5.2 Chemical Screening Quality Control

The following QC elements are used when performing chemical screening parameters.

- Using appropriate sample containers and equipment. New disposable sampling equipment is used whenever possible.

- Using field QA/QC samples.

  - 5 percent of the total number of field samples taken are field blanks and field replicates. The percentage is calculated over a running 12-month period.

  - Field blanks--Field blanks refer to an artificial sample designed to monitor the introduction of artifacts into the sample preparation and analysis process. Typically reagent water is used as a blank matrix. A universal blank matrix however does not exist for solid samples. Results of the field blank analyses checks the water and reagents used for field screening.

  - Field replicates--Field replicates are defined as independent samples collected in such a manner that the samples are equally representative. For confirmation purposes, the field replicate is tested in the field for the same parameters for which the original sample was tested. If the field replicates do not agree, an additional two samples are tested. If the second duplicate pair of samples do not agree, all reagents for the test are checked and the test is not used until corrective

action is taken. Replicates are run on an as-needed-basis to meet the requirement stated in this section.

- Equipment Checks

Test kit reagents are checked regularly as recommended by the manufacturer. Field instrumentation have current calibrations, and reagents that are past their expiration dates, if applicable, are not used.

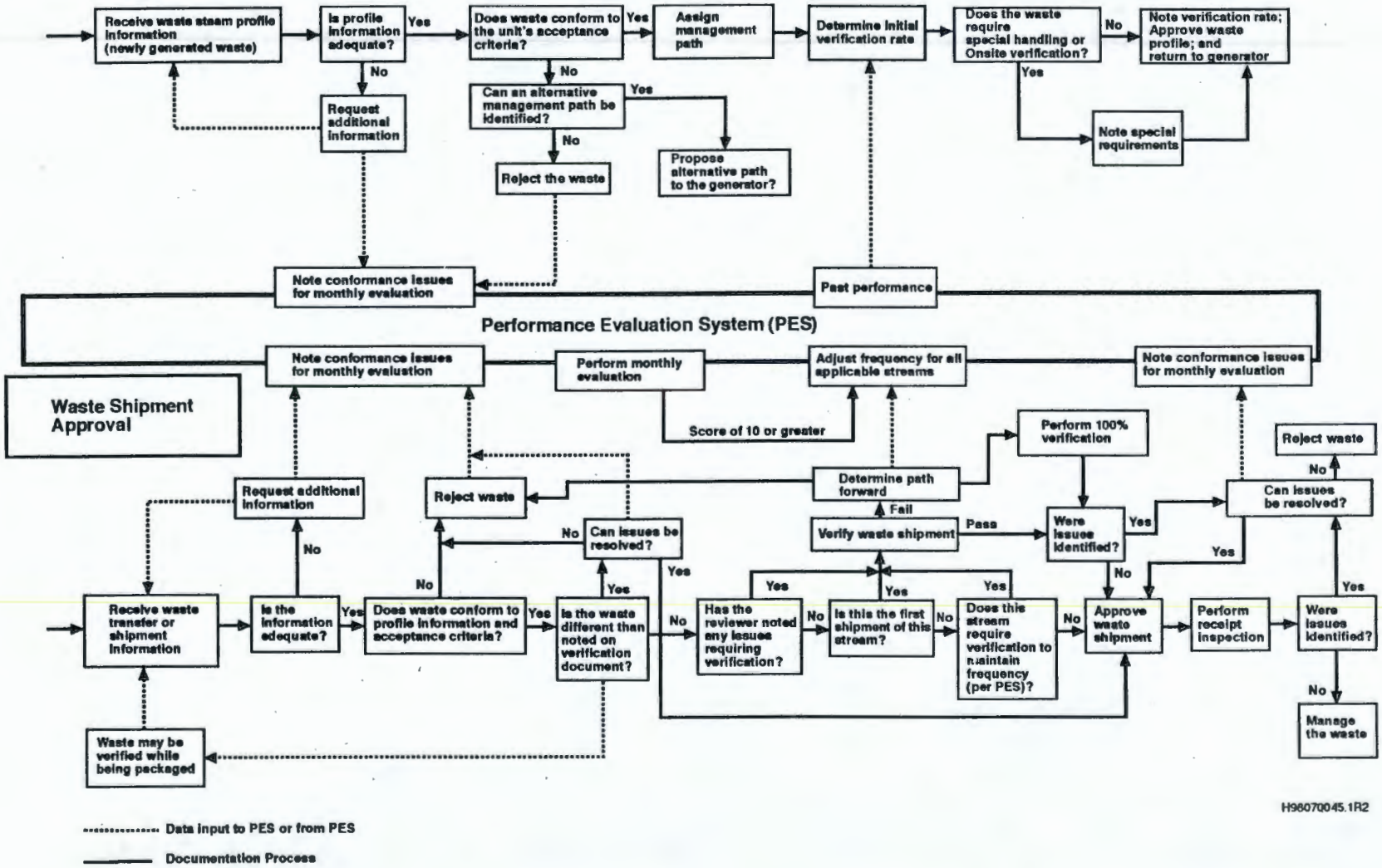


Figure 2-1. Waste Acceptance Process.

3.0 SELECTING WASTE ANALYSIS PARAMETERS

Analytical screening parameters that could be used for waste received at the CWC for confirmation purposes, waste designation requirements, and LDR requirements are discussed in the following sections.

3.1 PHYSICAL SCREENING PARAMETERS

The following methods could be used to perform physical screening. These methods are listed in order of preference. If a method other than 1 or 2 is used, the reasoning behind the method selection will be documented.

(1) Visual inspection (preferred method for physical screening):

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying shipment documentation.

Method: The container is opened and the contents are removed as needed for visual examination. Homogenous loose solids could be probed to determine the presence of material not documented on the shipping documentation, or for improperly absorbed liquids. Visual observations are compared with the applicable profile information and the container specific information in the shipment documentation.

Failure criteria: A container fails the inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles or materials listed in Section 1.2; (c) discovery of material not consistent with the applicable waste stream profile; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, metal).

(2) NDE:

Rationale. This method meets the requirement to ensure consistency between waste containers and the accompanying shipment documentation. This method also is subject to the QA checks listed in Section 2.2.5.1. Containers that are not easily amenable to visual inspection due to physical or radiological content, or facility availability, can be safely and economically examined.

Method: The container is scanned with a NDE system. Data are observed on a video monitor and captured on video tape. Personnel experienced with the interpretation of NDE imagery record their observations. These observations are compared to the contents listed on the shipping documentation.

Failure criteria: A container fails the inspection for any of the following reasons; (a) undocumented, improperly packaged, or inadequately absorbed liquids; (b) discovery of prohibited articles listed in Section1.2; (c) image data not consistent with the applicable waste stream profile; and (d) variability greater than 25 percent by volume in listed constituents (e.g., paper, plastic, cloth, metal).

(3) NDA:

Rationale. This method is available for obtaining data that can be compared with accompanying shipping documentation for consistency on containers that cannot be opened for visual inspection, and cannot be examined by NDE (e.g., high container dose rate, shielding.) The reason for selection of this method is documented.

Method. Radioactive waste is assayed in one or both of two different assay systems. The assay systems include gamma energy analysis (GEA) and imaging passive/active neutron (IPAN). Gamma emitting radionuclides are detected in the GEA assay system. This instrument determines the type and quantity of radionuclides based on their gamma energy spectrum. The IPAN uses passive and active neutron detection to determine the presence of fissionable radionuclides. Passive detection results are equated with Pu-240 and active detection results are equated with Pu-239. The curie amount of low energy gamma emitting radionuclides, other fissile and non-fissile alpha emitting radionuclides, and beta emitting radionuclides are calculated from the GEA and IPAN data and the generator supplied radionuclide information. Radionuclide ratios are calculated by dividing the activity of each radionuclide reported by the activity of the most prominent radionuclide.

Failure criteria. A container fails the assay if the difference between the reported radionuclide ratios and the measured ratios and the reported and measured curie amounts exceed 50 percent. The failure criteria are adjusted based on the density of the waste and the amount of fissionable material present.

(4) Dose rate profile:

Rationale. This method is used to obtain data that can be compared for consistency with the shipment documentation for a container. This method is used only when the previous three methods cannot be performed for technological or ALARA reasons (e.g., container size, weight, shielding, dose rate). The reason for selection of this method is documented.

Method. A portable dose rate meter is used to determine the contact dose rate at six evenly distributed points on the exterior of the waste package. The six readings obtained are recorded and averaged. The average reading is compared with the container contact dose rate recorded on the shipment documentation.

Failure criteria. If the average dose rate observed during the dose rate profile examination differs from that recorded on the shipping documentation by more than 100 percent, the container fails.

3.2 CHEMICAL SCREENING PARAMETERS

The following methods could be used to perform chemical screening.

(1) Ignitability and/or headspace volatile organic compound screening

Rationale: To determine the potential ignitability and the presence or absence of volatile organic compounds in waste, and to ensure personnel adequately are protected. This method is used when containers are opened for inspection. This method can be applied to any matrix.

Method: A sample of the headspace gases in a container is analyzed by one or more of the following types of portable instrumentation: organic vapor monitor, colorimetric gas sampling tubes, or a lower explosive level meter.

Tolerance: High organic vapor readings in matrices not documented as having volatile organic content constitutes failure.

(2) Peroxide screening:

Rationale: To determine the presence of organic peroxides in solvent wastes, to alert personnel to potential hazards, to ensure safe segregation and storage of incompatible wastes, and to confirm consistency with the shipping documentation. The test is sensitive to low parts per million ranges.

Method: A peroxide test strip is dampened with a pipet sample of liquid waste. Solids are tested by first wetting the test strip with water and contacting a small sample of the waste. A blue color change indicates a positive reaction. The color change can be compared with a chart on the packaging to determine an approximate organic peroxide concentration.

Tolerance: Peroxide concentrations greater than 20 parts per million in liquid waste constituents that are known organic peroxide formers not documented as having been stabilized constitutes failure.

(3) Paint filter liquids test:

Rationale: To verify the presence or absence of free liquid in solid or semisolid material.

Method: To a standard paint filter, 100 cubic centimeters or 100 grams of waste are added and allowed to settle for 5 minutes. Any liquid passing through the filter signifies failure of the test.

Tolerance: Failure of the test in waste matrices not documented as having free liquids constitutes failure of the container. Small quantities of condensate trapped in inner plastic liner folds are acceptable.

(4) pH screen:

Rationale: To identify the pH and corrosive nature of an aqueous or solid waste, to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation.

Method: Full range pH paper is used for the initial screening. If the initial screen indicates a pH below 4 or above 10, a pH meter could be used, or a narrow range pH paper. Solids are mixed with an equal weight of water and the liquid portion of the solution is tested. The extractant of the sample is placed on the pH paper and not dipped into the sample.

Tolerance: pH paper for this test has a sensitivity of +/-1.0pH units. If the pH of a matrix appears to exceed regulatory limits (<2.0 or >12.5) in wastenot documented as being regulated for this property, the container fails the test.

(5) Oxidizer screen:

Rationale: To determine if a waste exhibits oxidizing properties to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation. This test can be applied to waste liquids, solids, and semisolids.

Method: Acidified potassium iodide (KI) test paper is applied to solid or liquid waste. A darkening of the paper is a positive indication.

Tolerance: This method is very sensitive to oxidizing properties. A positive indication in a waste that can not be explained by documented constituents constitutes failure.

(6) Water reactivity screen:

Rationale: To determine if the waste has the potential to vigorously react with water, form gases, or other reaction products. This information is used to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation.

Method: Water is added to a sample of solid or liquid waste. The solution is observed for evidence or fuming, bubbling, spattering, or temperature change. These reactions are considered to be positive evidence that the waste is water reactive.

Tolerance: A positive indication in a waste that cannot be explained by documented constituents constitutes a failure.

(7) Cyanide screen:

Rationale: To indicate if waste could release hydrogen cyanide upon acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible waste, and to confirm consistency with the shipping documentation.

Method: To a test tube or watch dish containing approximately 2 milligrams of sample, an equal amount of freshly prepared ferrous ammonium citrate is added. 3 Normal hydrochloric acid is used to reduce the pH of the solution to near 2.0. A deep blue color indicates the presence of cyanide.

Tolerance: A positive indication in a waste that can not be explained by documented constituents constitutes a failure.

(8) Sulfide screen:

Rationale: To indicate if the waste could release hydrogen sulfide upon acidification near pH 2. This information is used to ensure safe segregation and storage of incompatible wastes, and to confirm consistency with the shipping documentation.

Method: Approximately 2 milligrams of sample is added to a watch dish or test tube and enough 3 Normal hydrochloric acid is added to bring the pH down to near 2.0. A sulfide test strip is placed in the solution. If the paper turns brown or silvery black, the presence of sulfides in the sample is indicated.

Tolerance: A positive indication in a waste that can not be explained by documented constituents constitutes a failure.

(9) HOC screen:

Rationale: To indicate whether PCBs or other chlorinated solvents are present in the waste. This information is used to ensure safe segregation and storage of incompatible waste, to confirm consistency with the shipping documentation, and to determine if the waste needs to be managed in accordance with the regulations prescribed in the *Toxic Substance Control Act of 1976.*

Methods: Field organic chlorine tests appropriate to the matrix, such as those offered by the Dexsil Corporation (e.g. Chlor-N-Oil, Chlor-N-Soil) are used. These screening tests are available with several detection limits. At a minimum, the 50 parts per million test is performed on oily matrices.

Tolerance: A positive indication of chlorinated organics in a waste not documented as having chlorinated organic content constitutes failure.

3.3 OTHER SAMPLE AND ANALYSIS PARAMETERS

Sampling and analysis parameters used to meet LDR requirements for waste stored and treated at CWC are detailed in Appendix A. Refer to Appendix A for parameters, methods, and rationale.

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4.0 SELECTING SAMPLING PROCESSES FOR DESIGNATION

Specific sampling procedures and techniques depend on both the nature of the material and the type of packaging. This section describes the sampling methodology used to obtain representative samples.

4.1 SAMPLING STRATEGIES

Table 4-1 contains waste forms and sample equipment used to sample referenced waste. Sampling of these waste forms is performed in accordance with Table 4-1.

4.2 SAMPLING METHODS

The appropriate personnel are responsible for arranging all sampling and laboratory support for sample analysis. Samples are processed at one of several laboratories qualified to perform analysis of waste samples (refer to Section 5.0). Sampling methods are those described in WAC 173-303 110(2).

The basic sampling sequence is as follows:

- Obtain a unique sample number and complete the sample tag before sampling
- Obtain a precleaned sampler and sample bottles
- Attach sample label to sample bottles
- For sampling liquid waste, a sampler or pipet will be used to sample for two phase liquids. Homogeneous liquids in small containers will be poured into a sample bottle
- For sampling solid waste, use a scoop, trier, or hand auger to obtain a sample of the waste. For large containers of waste, composite several augers or scoops to ensure samples are representative
- Fill sample containers in the following sequence: volatile organics, semivolatile organics, metals, ignitability, pH (corrosivity)
- For solid waste, wipe the exterior surfaces of the sample bottles with a dry rag
- Attach sample labels to outer plastic bags
- Place samples in an appropriate receptacle for transfer to the laboratory
- Complete the chain-of-custody forms
- Seal and mark the receptacle in accordance with WAC 173-303-071(3)(1)
- Transfer receptacle to the analytical laboratory as appropriate to meet sample holding times
- Properly clean and decontaminate nondisposable sampling equipment or package for return to central sampling equipment decontamination area according to onsite requirements.

4.3 SELECTING SAMPLING EQUIPMENT

Sampling equipment selection is detailed in Table 4-1. Sampling equipment needed to sample waste is maintained and decontaminated as necessary by the CWC operating organization.

4.4 SAMPLE PRESERVATION

Sample preservation follows SW-846 protocol or other approved sample preservation method for waste in accordance with 62 FR 62079.

4.5 ESTABLISHING QUALITY AND QUALITY CONTROL FOR SAMPLING

The sampling team ensures all samples are labeled with a unique identifier.

Sample collectors prepare a permanent log of sampling activities. Log entries include as appropriate: date of collection, time of collection, location, batch number, sample number, tank number, copy of the chain-of-custody form, sampling methodology, container description, waste matrix (liquid), description of generating process (e.g., decontamination activities), number and volume of samples, field observations, field measurements (e.g., pH, percent lower explosive limit), laboratory destination and laboratory number, and signature. These logs entries are made by the appropriate personnel while the sampling is performed. The logs or copies of logs are maintained by the appropriate personnel after completion of sampling activities.

A chain-of-custody record accompanies samples at all times. The record contains a unique sample number for each sample, date and time of collection, sample type, sample location, methods of transfer, and signatures (or electronic equivalent, e.g., signature password) of the collector and all subsequent custodians.

During all sampling activities, strict compliance with applicable industrial hygiene and safety standards is mandatory. If samplers accidentally contact waste material and sampling personnel, decontamination of sampling personnel is performed immediately. Transportation of samples is performed in accordance with all applicable Hanford Site and U.S. Department of Transportation requirements.

The following QA/QC elements are used by the CWC operating organization to ensure sampling activities for designation purposes result in acceptable laboratory data:

- Representative sampling methods as defined by WAC 173-303-110(2), 40 CFR 261 Appendix I, and/or SW-846 Chapter 9
- Appropriate sample containers and equipment
- Samples numbered
- Traceable labeling system
- Field QA/QC samples (applicable sampling and analysis plan)

- Equipment calibration (current as appropriate)
- Chain of custody.

Table 4-1. Central Waste Complex Chemical Screening Sampling Equipment.

Waste form	Reference in SW-846	
	Waste type	Equipment*
Liquids	Free-flowing liquids and slurries	COLIWASA, SW-846, Chapter 9, glass thief or pipet
Solidified liquids	Sludges	Trier, SW-846, Chapter 9, scoops and shovels
Sludges	Sludges	Trier, SW-846, Chapter 9, scoops and shovels
Soils	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels
Absorbents	Large-grained solids	Large trier, SW-846, Chapter 9, scoops and shovels
Wet absorbents	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
Process solids and salts	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
	Dry powders or granules	Thief, SW-846, Chapter 9, scoops and shovels
	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels
	Large-grained solids	Large trier, SW-846, Chapter 9, scoops and shovels
Ion exchange resins	Moist powders or granules	Trier, SW-846, Chapter 9, scoops and shovels
	Dry powders or granules	Thief, SW-846, Chapter 9, scoops and shovels
	Sand or packed powders and granules	Auger, SW-846, Chapter 9, scoops and shovels

COLIWASA = composite liquid waste sampler.
* other ASTM approved equipment could be used to collect samples.

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5.0 SELECTING A LABORATORY, LABORATORY TESTING, AND ANALYTICAL METHODS

The following sections discuss selecting a laboratory for analyzing samples for QA/QC elements.

5.1 SELECTING A LABORATORY

The following laboratory QA/QC requirements apply to laboratory analyses of generator waste.

- The daily quality of analytical data generated in contracted analytical laboratories is controlled by the implementation of an analytical laboratory QA plan.

- Before commencement of the contract for analytical work, the laboratory submits their QA plan for approval. At a minimum, the plan documents the following:
  - Sample custody and management practices
  - Sample preparation and analytical methods
  - Instrument maintenance and calibration methods
  - Internal QA/QC measures, including the use of method blanks
  - Sample preservatives used
  - Analyses requested.

When required, replicate testing usually is accomplished by analyzing two samples, one by the generator and another by the CWC operating organization.

5.2 SELECTING TESTING AND ANALYTICAL METHODS

CWC identifies the type of testing and analytical method to be used at the laboratory (e.g., for metals analysis, the type of determination method will be stated, such as inductively coupled plasma metals by atomic absorption).

CWC identifies the decision level necessary for each analytical parameter. If the decision level is found in a regulation, the generator references the regulation.

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6.0 SELECTING WASTE RE-EVALUATION FREQUENCIES

The re-evaluation (repeat and review) frequency to review profile information is yearly, or more often if the waste generation process changes.

CWC re-evaluates a waste profile if:

- A generator notifies CWC operating organization that the generating process has changed
- Inspection or analysis indicates that the waste received at CWC does not match the profile and/or shipping documentation.

When a waste profile is re-evaluated, the CWC operating organization could request the generator to do one of the following:

- Verify the current waste profile is accurate
- Supply a new waste profile
- Submit a sample for parameter analysis.

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7.0 SPECIAL PROCEDURAL REQUIREMENTS

This section discusses any special process requirements for receiving mixed waste at CWC.

7.1 PROCEDURES FOR RECEIVING WASTE GENERATED ONSITE

In general, mixed waste received from onsite generator units is managed the same as waste received from offsite generators. Differences include, but not limited to, verification rates, shipping documentation, and LDR requirements.

7.2 PROCEDURES FOR RECEIVING WASTE GENERATED OFFSITE

Waste received from offsite is handled in the same manner as mixed waste received from onsite except as denoted in Section 7.1.

7.3 PROCEDURES FOR IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE

CWC accepts ignitable, reactive, or incompatible waste (refer to Section 1.2). The following precautions are taken before ignitable, reactive, or incompatible waste is accepted at CWC.

- Pre-shipment review and/or chemical screening identifies whether the waste is ignitable, reactive, or incompatible.

- CWC waste acceptance criteria identifies storage requirements for ignitable, reactive, and incompatible waste, ensuring the waste is stored in a safe manner.

The types of prohibited waste not accepted at CWC are listed in Section 1.2.

7.4 PROVISIONS FOR COMPLYING WITH FEDERAL AND STATE LAND DISPOSAL RESTRICTION REQUIREMENTS

Although CWC does not treat LDR waste, sampling could be performed at CWC to support LDR certification. The following sections are required for treatment of LDR waste.

State-only and federal LDR requirements restrict the land disposal of certain types of waste subject to *Resource Conservation and Recovery Act* (RCRA) *of 1976* and the *Hazardous Waste Management Act*. Waste managed on the Hanford Facility falls within the purview of these LDRs per 40 CFR 268 and WAC 173-303-140. Waste constituents that are subject to LDRs are identified in 40 CFR 268.40 and referenced by WAC 173-303-140. Waste must meet certain treatment standards, as specified in 40 CFR 268.40 and WAC 173-303-140, if the waste is to be land disposed.

Generators (as defined in the regulation and not per Section 1.1.1.1) determine if LDRs apply to the waste based on knowledge or testing [40 CFR 268.7(a)]. Each waste is analyzed for those LDR constituents contained in the listed and characteristic waste numbers identified by the generator, if the generator's knowledge is not sufficient to make a determination. If the LDR waste does not meet the applicable treatment standards, the generator (Section 1.1.1.1) provides with each shipment of waste

information stating so, in accordance with WAC 173-303-380(1)(j)(k)(n) or (o). If the waste meets the standards, the generator must send a certification that the waste meets the treatment standards.

7.4.1 Waste Treatment

Retrieved and newly generated waste is treated to meet LDR as specified in 40 CFR 268.40 and WAC 173-303-140 with the exception of transuranic mixed waste. Transuranic mixed waste is treated to the applicable standards required by Waste Isolation Pilot Plant or other generator requirements. An onsite TSD unit potentially can pretreat certain waste before shipment to a permitted offsite facility that could perform full treatment of the specific waste to meet full LDR. Waste requiring treatment other than what an onsite TSD unit can provide is repackaged, labeled, and transferred to a TSD unit for storage pending identification or development of an appropriate treatment.

LDR requirements apply to all mixed waste except a small class of state-only waste. When evaluating the treatability of certain characteristic waste, consideration must be given to any additional underlying hazardous constituents that might be found in the waste. The treatment standards, for the most part, are concentration-based. If the constituent concentrations for the waste fall below those specified in 40 CFR 268.40 and/or 268.48 for underlying hazardous constituents and in WAC 173-303-140, the waste can be land disposed without being treated. If the concentrations exceed these limits, the waste must be treated before disposal.

Specific treatments performed onsite include, but are not limited to, deactivation, encapsulation, stabilization, and amalgamation.

Deactivation is used to remove the hazardous characteristics of the waste due to its ignitability (D001), corrosivity (D002), solid corrosive acid (WSC2), and/or reactivity (D003). Treatment techniques include neutralization, cementing, absorption, controlled reaction with water, and macroencapsulation.

- Neutralization is the primary method of treatment for corrosive waste that has a pH ≤ 2 and/or ≥ 12.5. Examples of bases that could be used as neutralizing agents include sodium hydroxide, calcium hydroxide, or calcium carbonate. Examples of acids that could be used to neutralize bases are hydrochloric acid and sulfuric acid.

- Absorption is the primary method of treatment for ignitable waste, which include waste that is liquid and has a low total organic carbon content (<10 percent). Absorbent material that could be used includes polyacrylates, polypropylene, polymer type, superabsorbent polymer, cellulose, or other absorbent materials meeting various disposal requirements.

- Cementing or grouting is the primary method of treatment for ignitables consisting of metal fines or other corrosive materials. These types of waste are deactivated by mixing and binding it with an inert cementacious material.

- Controlled reaction with water is the primary method of treatment for reactive materials such as sodium metal. This process will deactivate the material and allow for further disposition.

- Macroencapsulation with polyethylene plastic containers is the primary treatment for debris. For elemental lead, macroencapsulation is performed in accordance with Table 1 of 40 CFR 268.42.

Stabilization methods used include cementing or grouting, sealing, and absorption. Particulates and/or liquid waste containing hazardous constituents could be cemented or grouted to meet either RCRA LDR, Waste Isolation Pilot Plant waste acceptance criteria, and/or the disposal criteria of future TSD units. These types of waste are stabilized by mixing and binding the waste with an inert material. The inert material generally used is Portland cement. When dealing with some waste streams such as sludges that might contain an inconsistent or excess liquid content, absorbent could be added to the waste to provide a drier matrix to allow identification of the proper combination of ingredients to ensure a successful stabilization effort.

Amalgamation of liquid elemental mercury (D009) is achieved using inorganic reagents such as copper, zinc, nickel, gold, and sulfur. The resultant matrix is a nonliquid, solid, or semi-solid visually inspected to verify compliance.

Treatment of state-only extremely hazardous waste (WT01, WP01, and WP03) will be performed in accordance with RCW 70.105.050(2) and/or WAC 173-303-140(4)(a) as applicable.

7.4.2 Sampling and Analytical Methods

If waste is sampled and analyzed to demonstrate an LDR has been met, only U.S. Environmental Protection Agency or equivalent methods are used. Waste is analyzed using the methods outlined in 40 CFR 268.40 and WAC 173-303-140(4)(b) or any other reliable method allowed by regulations.

Samples of waste are transferred to the sample management area for packaging and transferred to an onsite laboratory or shipped offsite to a laboratory for analysis. Samples are collected and analyzed in accordance with SW-846 or any other method allowed by regulations. Storage is provided for waste containers while waiting for laboratory analysis results.

7.4.3 Land Disposal Restriction Certification of Treatment

When LDR treatment has been completed and sample results (if applicable per 40 CFR 268.40 and WAC 173-303-140) have verified the LDR treatment is successful, certification of the LDR treatment is required. The certification statement is prepared by the onsite TSD unit in accordance with 40 CFR 268.7.

Where a LDR waste does not meet the applicable treatment standards set forth in 40 CFR 268.40 and WAC 173-303-140, or exceeds the application prohibition levels set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, this information is placed in the CWC operating record, in accordance with WAC 173-303-380(1)(k) and (o).

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8.0 RECORDKEEPING

Recordkeeping requirements that are applicable to this WAP are described in Chapter 12.0, Table 12-1, *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28) and within this WAP.

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9.0 REFERENCES

DOE/RL-91-17, *Hanford Facility Dangerous Waste Permit Application, Central Waste Complex*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, U.S. Department of Energy, Richland Operations Office, Richland, Washington, revised periodically.

EPA SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

EPA-600/4-7-020, *Methods for Chemical Analysis of Water and Wastes*, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

62 FR 62079, *Mixed Waste Testing Guidance*, November 20, 1997.

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APPENDIX A

ANALYTICAL PARAMETERS, METHODS, AND RATIONALE FOR WASTE RECEIVED AT CENTRAL WASTE COMPLEX

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Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex

Parameter		Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
General chemistry					
Flashpoint		1010/1020	Liquid	To provide documentation for safe storage conditions	To determine regulatory status as D001 waste, to provide proper waste designation and applicability of LDR requirements
pH	Liquid	9040	Liquid, sludge	To indicate the degree of corrosivity for safe handling; to provide for proper waste designation; and to identify waste that might compromise container integrity	To determine regulatory status as D002 waste, to provide proper waste designation, applicability of LDR requirements and state-only requirements.
	Solid	9045c	Solid		
Hydroxide		9040	Liquid	To provide documentation for safe treatment and storage conditions; and to comply with CWC waste acceptance criteria.	To provide proper waste designation and applicability of LDR requirements.
Water reactivity		*Field method*	Liquid, sludge	To determine whether the waste has a potential to violently react with water to form gases or generate heat; to provide documentation for safe treatment and/or storage conditions for waste designation; and to comply with CWC waste acceptance criteria.	To provide proper waste designation; safe storage and management.
Free liquids		9095A	Liquid, sludge, solid	To determine applicability of LDRs and for characterization of appropriate treatment	To determine appropriate state-only LDR status of the waste.

Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Cyanide	9010B/9012A	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.
Sulfide	9030B	Liquid, sludge, solid	For safe storage; for proper waste designation; applicability of LDR; and characterization of appropriate treatment	To provide proper waste designation and applicability of LDR requirements.
Organic analyses				
PCBs	8081A/8082	Liquid, sludge, solid	To determine proper waste designation for management of waste in accordance with the *Toxic Substance Control Act of 1976 (TSCA)* and WAC 173-303.	To provide proper waste designation and to meet TSCA and LDR requirements.
Total organic carbon	9060	Liquid, sludge, solid	To determine applicability of LDR and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements, to meet LDR requirements, and comply with CWC waste acceptance criteria.
Total organic halides	9020B/9021/9022	Liquid, sludge	To determine proper waste designation and applicability to state-only requirements.	To provide proper waste designation and applicability to state-only requirements.
Persistent constituents	9075/9076/9077/ 9211/9212/9214/ 9250/9251/9253			
Total suspended solids	160.2[b]	Liquid, sludge	To determine applicability of LDR and status as a wastewater	To provide applicability of LDR and status as a wastewater.

Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Volatile organic compounds	1311/8260B	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.
Semivolatile organic compounds	1311/8270A	Liquid, sludge, solid	To determine proper waste designation, applicability of LDRs, and characterization of appropriate treatment.	To provide proper waste designation, regulatory status, and applicability of LDR requirements.
Chlorinated herbicides	8151A	Liquid	Not applicable	To provide proper waste designation and applicability to state-only requirements.
Inorganic analyses				
Arsenic	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Barium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Cadmium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.

Analytical Parameters, Methods, and Rationale for Waste Received at Central Waste Complex

Parameter	Analytical method[a]	Media type	Rationale for selection of waste acceptance parameters	Rationale for analysis
Chromium	1311/6010B	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Lead	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Mercury	1311/7470	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Silver	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Selenium	1311/6010	Liquid, sludge, solid	To provide for proper waste designation, applicability of LDRs, and for characterization of appropriate treatment.	To determine proper waste designation, regulatory status as a toxic characteristic waste, and applicability of LDR requirements.
Nickel	6010	Liquid, sludge, solid	To determine applicability of LDRs, and for characterization of appropriate treatment.	To meet LDR requirements.

[a] EPA SW-846, unless otherwise noted.
[b] EPA-600/4-7-020, unless otherwise noted.
LDR = land disposal restriction.
PCB = polychlorinated biphenyls.

APPENDIX 4A

DESIGN DRAWINGS

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APPENDIX 4A

DESIGN DRAWINGS

This appendix contains the following design drawings:

Drawing number	Revision number	ECN	Description
H-2-80543	3	640845 (02/04/99) 649620 (02/04/99) 637393 (03/04/98) and 623646 (09/21/95)	CIVIL/ARCH/STRL/HVAC PLANS, EL, SECT & DETAILS
H-2-80545.1	2		ARCH/STRL ELEVATIONS & DETAILS (SHEET 1 OF 2)
H-2-80545.2	1		ARCH/STRL ELEVATIONS & DETAILS (SHEET 2 OF 2)
H-2-80580.1	4	623646 (09/21/95)	CIVIL STORAGE PAD PLAN, SECT & DET (SHEET 1 OF 2)
H-2-80580.2	3	623646 (09/21/95)	CIVIL STORAGE PAD SECT & DET (SHEET 2 OF 2)
H-2-80605	3		ARCH/STRL PLAN, EL, SECTIONS & DETAILS
H-2-80606.1	2	637479 (09/14/98)	ARCH/STRL SECTIONS & DETAILS (SHEET 1 OF 2)
H-2-80606.2	1	637479 (09/14/98)	ARCH/STRL SECTIONS & DETAILS (SHEET 2 OF 2)
H-2-80739	2	637479 (09/14/98) 620864 (05/08/95)	ARCH/STRL PLAN, ELEVATIONS, SECTIONS & DET
H-2-80901.1	2		STRL FOUNDATION PLAN & DETAILS (SHEET 1 OF 2)
H-2-80901.2	2	617742 (02/24/95) 605651 (01/31/94)	STRL FOUNDATION PLAN & DETAILS (SHEET 2 OF 2)
H-2-131541.1	2	615400 (10/20/94)	STRL FOUNDATION PLAN & DETAILS (SHEET 1 OF 2)
H-2-131541.2	1	615400 (10/20/94)	STRL FOUNDATION PLAN & DETAILS (SHEET 2 OF 2)
H-2-823226	0		Structural Foundation Floor Plan (WC)
H-2-823227	0		Structural Foundation Floor Plan (WC)
H-2-823228	0		Structural foundation Section & Notes

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IPF #10
IPF #4

ESSENTIAL
ENGINEERING CHANGE NOTICE

Page 1 of 8

1. ECN 640845

Proj. ECN S

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	Kevin Axt, FDNW, B4-39, 373-7640	Already ~~Revised~~ Reviewed Ed Elias on SW-USQ-98-039 [] Yes [X] No	Jan 26, 1999
	6. Project Title/No./Work Order No. 65100701 Task Order 32 2401W Facility Modifications	7. Bldg./Sys./Fac. No. 2401W	8. Approval Designator NA
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) SEE BLOCK 13a	10. Related ECN No(s). NA	11. Related PO No. NA

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	NA	NA Design Authority/Cog. Engineer Signature & Date	NA Design Authority/Cog. Engineer Signature & Date

13a. Description of Change — 13b. Design Baseline Document? [] Yes [X] No — SC3

ITEM #1: Dwg H-2-80543 SH 1, REV 3 - Add information shown on ECN pages 3-7.

~~ITEM #2: Dwg H-2-80544 SH 1, REV 7~~ - Modify as shown on page 8.

14a. Justification (mark one)

Criteria Change	[]	Design Improvement	[X]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Facility upgrades required for new mission.

RONALD G. HOLLENBECK — STATE OF WASHINGTON — 25750 — REGISTERED PROFESSIONAL ENGINEER — 1-26-99

15. Distribution (include name, MSIN, and no. of copies)

Const Doc Control	S2-53	IPF#4 H6-26
S. G. Arnold	T4-56	IPF#10 53-96
N. P. Emerson	T3-04	
. D. Sargent	T4-03	
). R. Pyzel	T4-04	
R. L. Louie	B4-09	

RELEASE STAMP

R. KEITH NEWHOUSE — STATE OF WASHINGTON — 29208 — REGISTERED PROFESSIONAL ENGINEER — 1/28/99

EXPIRES 3/17/00

FEB 04 1999 — DATE: — HANFORD RELEASE — STA: 5 — ID: 12

EXPIRES 5/16/99

A-7900-013-1

ENGINEERING CHANGE NOTICE	Page 2 of 8	1. ECN (use no. from pg. 1) 640845

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	2/1/99 ~~NA~~ []	Inventory Adjustment Request	[]		[]

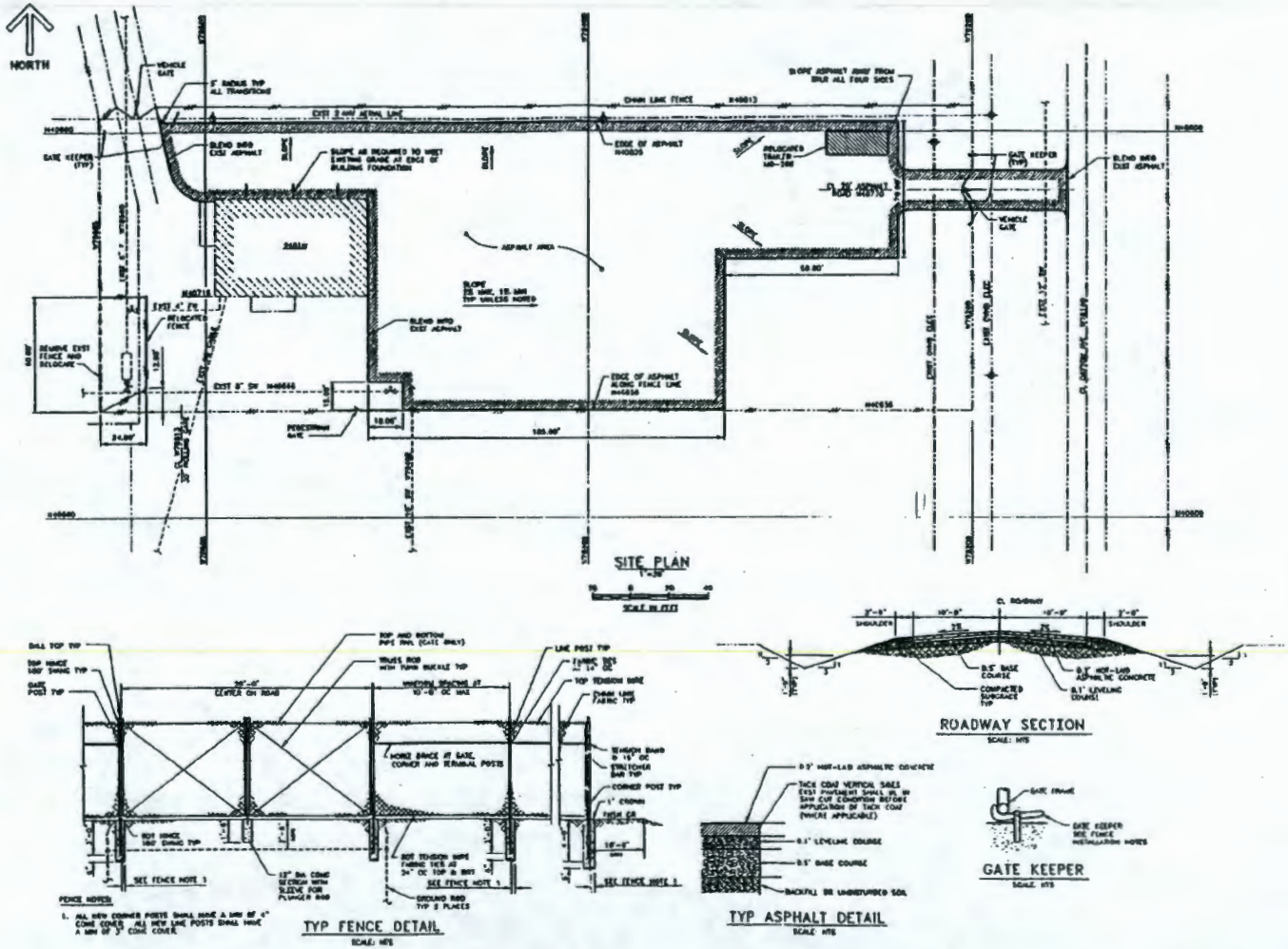
indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
(1) RCRA Permit Class change Determination.		

21. Approvals

	Signature	Date		Signature	Date
Design Authority	FD Sargent	2/1/99	Design Agent	R Hollenbeck	1-28-99
Cog. Eng.	FD Sargent	2/1/99	PE		
Cog. Mgr.	J. R. Rosser	2/1/99	QA	NA	
~~QA~~ ~~Stet Fd~~ ~~Safety~~	B. BAKER		Safety	NA	
	Bobby Baker	2/2/99	Design	R L Hollenbeck	1-26-99
~~Environ.~~		NA	Environ.	NA	
Other Brett Barnes for Permit Class change	Brett M Barnes	2/2/99	Other		
Operations	JE Mitchell	2/2/99	DEPARTMENT OF ENERGY		
			Signature or a Control Number that tracks the Approval Signature		
			ADDITIONAL		

FLUOR DANIEL NORTHWEST, INC.				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80543	1	3	KR AXT	GREG LISLE	640845	3 of 8



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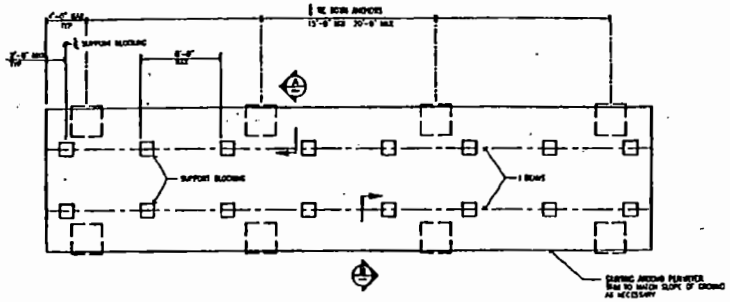
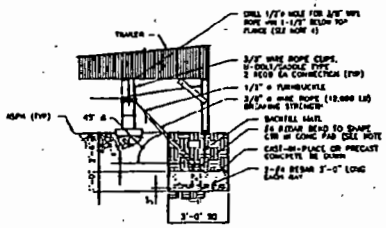
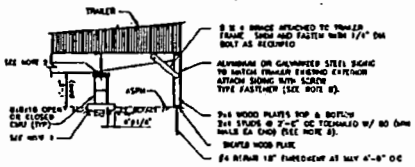
FLUOR DANIEL NORTHWEST, INC.			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80543	1	3	KR AXT	GREG LISLE	640845	4 of 8



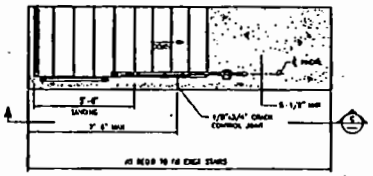
TRAILER TIE-DOWN PLAN
SCALE: 1/4" = 1'-0"



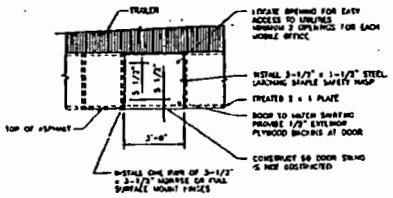
TIE DOWN DETAIL - TYP
SCALE: 1/2" = 1'-0"



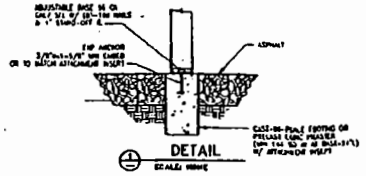
SKIRTING & SUPPORT BLOCKING - TYP
SCALE: 1/2" = 1'-0"



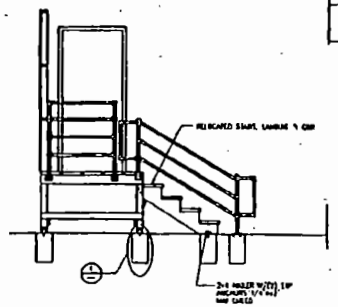
TYP STAIR PLAN
SCALE: NONE



TYPICAL SKIRTING ACCESS DOOR
SCALE: 1/2" = 1'-0"



DETAIL
SCALE: NONE



TYP STAIR ELEVATION
SCALE: NONE

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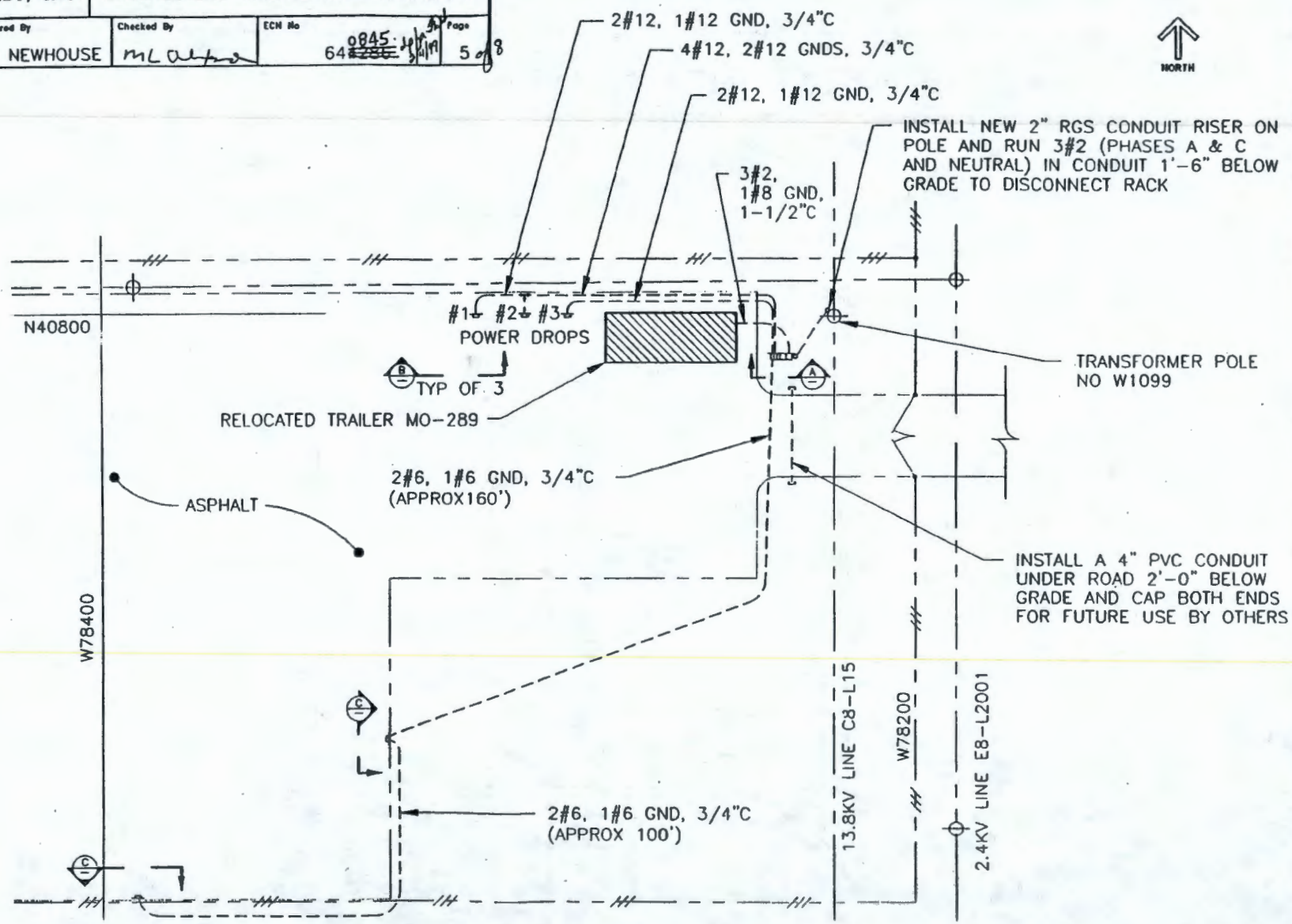
FLUOR DANIEL NORTHWEST, INC.				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80543	1	3	RK NEWHOUSE	ML Alpha	64 ~~289E~~ 0845	5 of 8

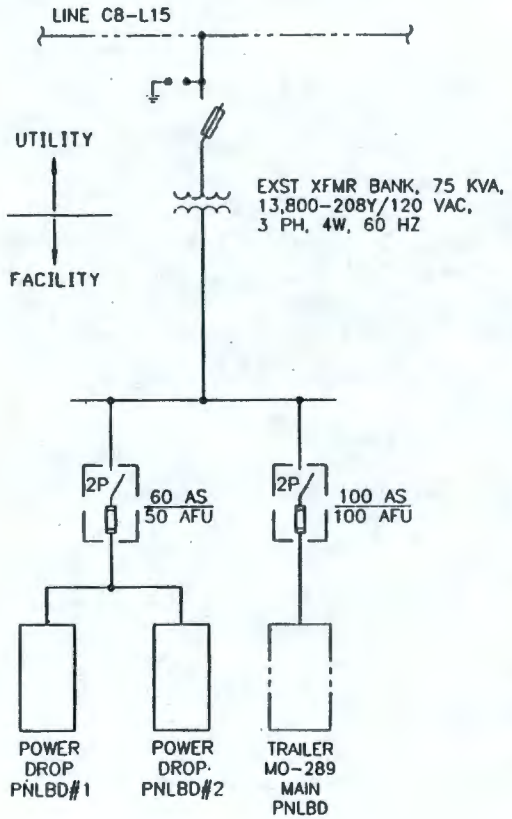
ADD SHEET 2:



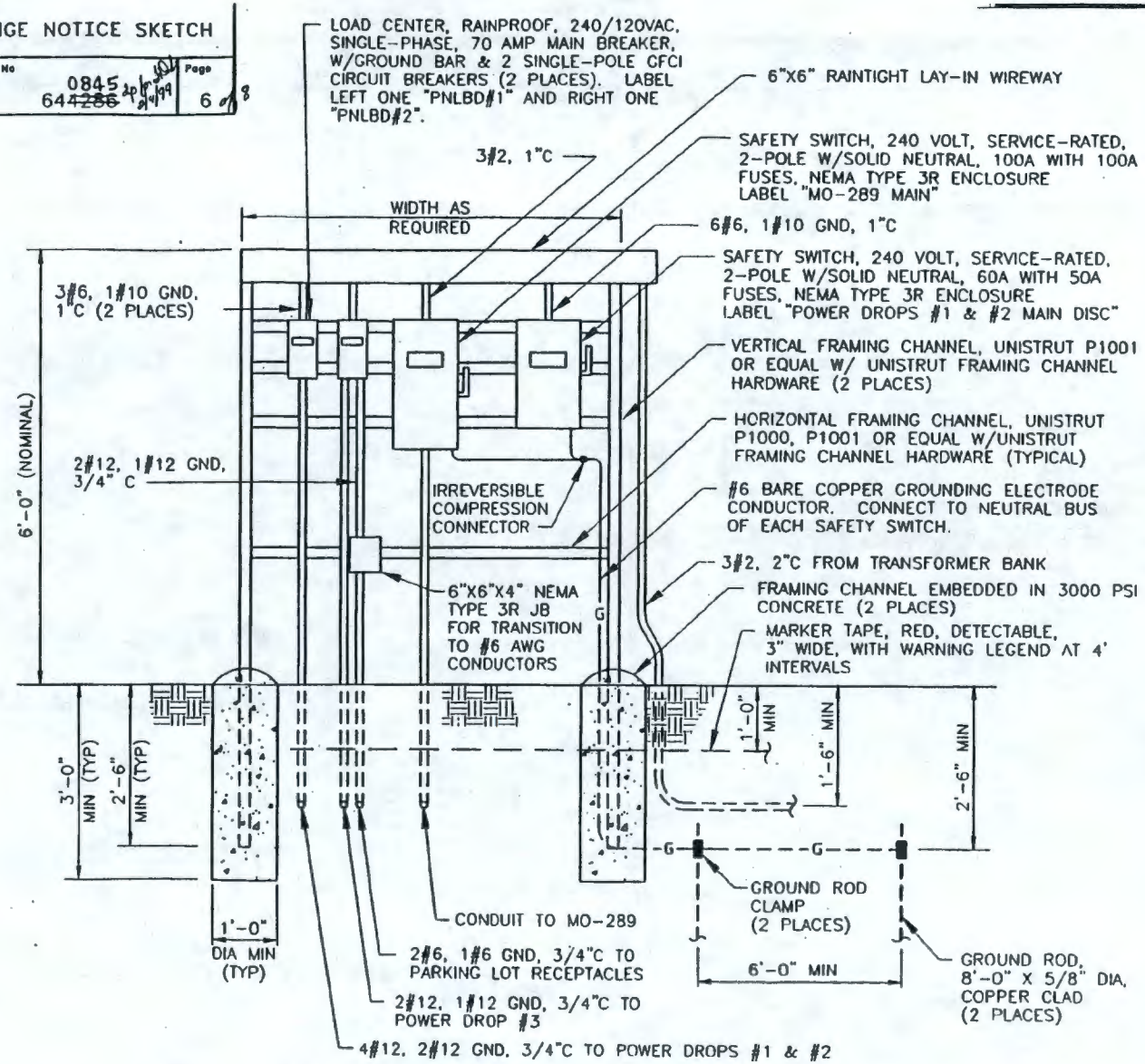
CAD FILE: ECN289E1 PLOT SCALE:

FLUOR DANIEL NORTHWEST, INC.			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80543	1	3	RK NEWHOUSE	M L Alford	0845 ~~644286~~ 2/4/99	6 of 8

ADD SHEET 2:



ONE-LINE DIAGRAM
SCALE: NONE



A ELEVATION - DISCONNECT RACK
NTS

CAD FILE: ECN289E2 PLOT SCALE:

FLUOR DANIEL NORTHWEST, INC.				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80543	1	3	RK NEWHOUSE	mcarter	0845 ~~1286~~	7 of 8

ADD SHEET 2:

PANELBOARD PD 1 LOCATION _____ VOLTS 120 VAC 1PH, 2W
MFG & TYPE _____ CKT BRKR TYPE _____
POWER SUPPLIED FROM _____
NEMA TYPE ENCL 3R ☐ MAIN CKT BRKR ☐ PANELBOARD GROUND FAULT PROTECTION 70 AMP BUS
■ SURFACE MOUNTED ■ MAIN LUGS ONLY 70 AMP NEUT
☐ FLUSH MOUNTED ☐ TOP ☐ BOT ☐ GROUND BUS

SERVICE	KVA	NO.		NO.	KVA	SERVICE
POWER DROP #1	1200	1	A 70A * 15A 15A	2	1200	POWER DROP #2
SPACE		3		4		SPACE
SPACE		5		6		SPACE
SPACE		7		8		SPACE

* NO CONNECTION TO THIS BUS
NOTE: ALL BRANCH CIRCUIT BREAKERS SHALL BE GFCI

PANELBOARD PD 2 LOCATION _____ VOLTS 120 VAC 1PH, 2W
MFG & TYPE _____ CKT BRKR TYPE _____
POWER SUPPLIED FROM _____
NEMA TYPE ENCL 3R ☐ MAIN CKT BRKR ☐ PANELBOARD GROUND FAULT PROTECTION 70 AMP BUS
■ SURFACE MOUNTED ■ MAIN LUGS ONLY 70 AMP NEUT
☐ FLUSH MOUNTED ☐ TOP ☐ BOT ☐ GROUND BUS

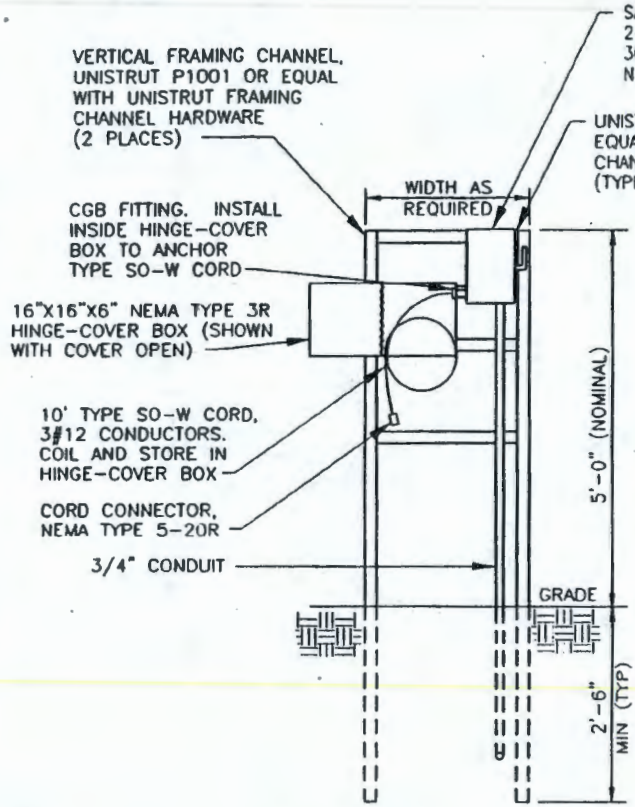
SERVICE	KVA	NO.		NO.	KVA	SERVICE
POWER DROP #3	1200	1	C 70A * 15A 20A	2	720	PARKING LOT RCPTS
SPACE		3		4		SPACE
SPACE		5		6		SPACE
SPACE		7		8		SPACE

* NO CONNECTION TO THIS BUS
NOTE: ALL BRANCH CIRCUIT BREAKERS SHALL BE GFCI

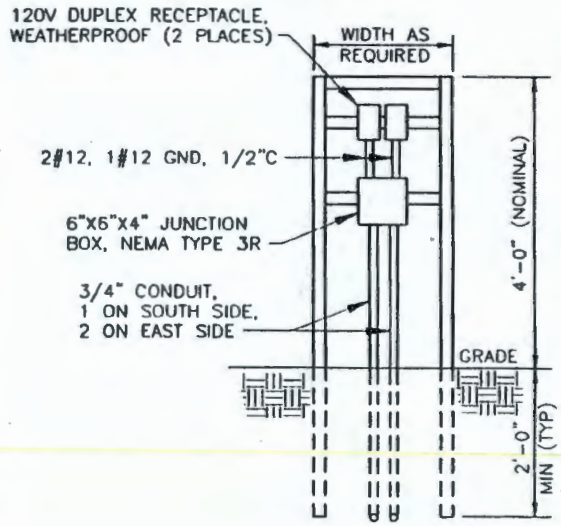
PANELBOARD SCHEDULES

ADD TO NOTES:

1. CONDUITS BURIED UNDER ROADWAY OR PARKING AREAS SHALL BE 2'-0" MIN BELOW GRADE; OTHERS SHALL BE 1'-6" MIN BELOW GRADE.
2. THE ELECTRICAL INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF NFPA 70, 1996.
3. THE POLE RISER INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF IEEE C2, 1997.
4. STEEL CONDUIT INSTALLED BELOW GRADE SHALL HAVE PVC COATING.
5. CONDUITS INSTALLED BELOW GRADE MAY BE TYPE A PVC.



B ELEVATION
NTS



VERTICAL AND HORIZONTAL FRAMING CHANNELS AS IN ELEVATION B

C ELEVATION
NTS

CAD FILE: ECN289E3 PLOT SCALE:

FLUOR DANIEL NORTHWEST, INC.				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
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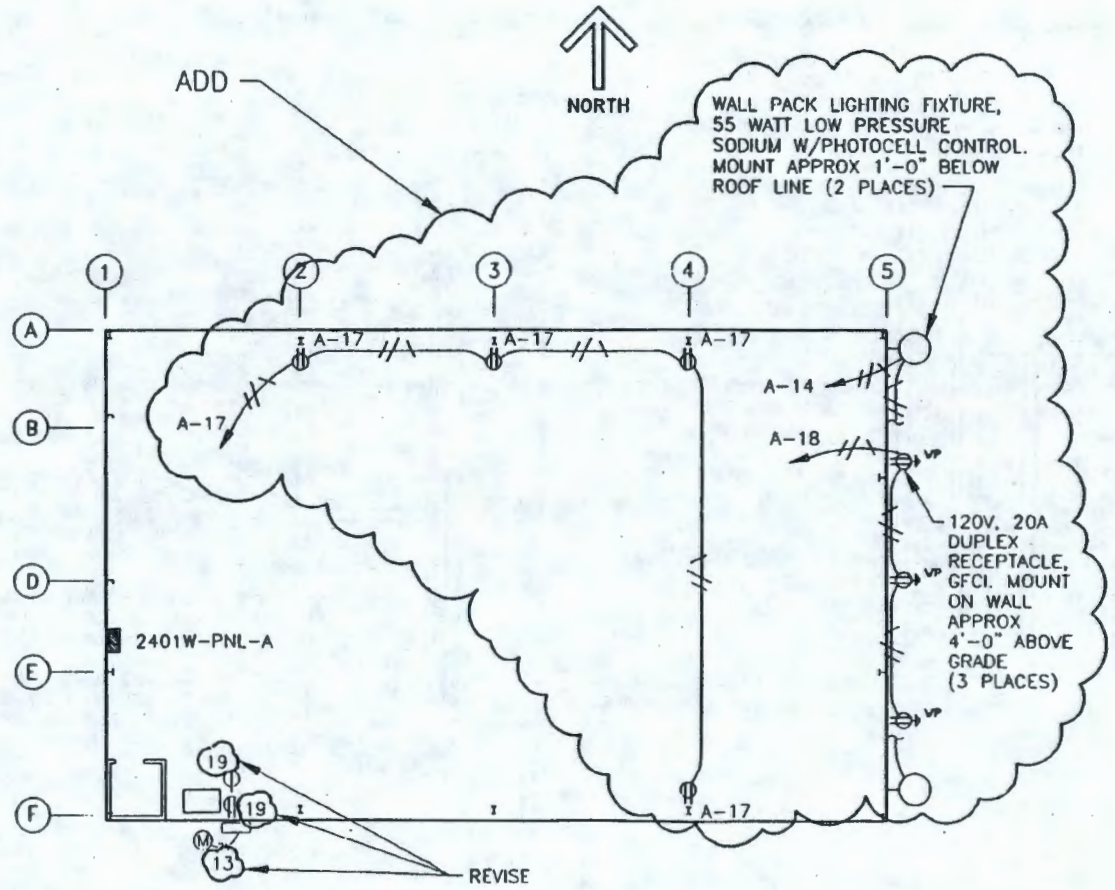


POWER/LIGHTING PLAN

CAD FILE: ECN289E4 PLOT SCALE:

IPF #10
IPF #4

ESSENTIAL
ENGINEERING CHANGE NOTICE

Page 1 of 8

1. ECN 649620

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [X] Cancel/Void []	RK Newhouse, FDNW, G3-08, 376-2392	[X] Yes [] No	Jan 25, 1999
	6. Project Title/No./Work Order No.	7. Bldg./Sys./Fac. No.	8. Approval Designator
	65100731 Task Order 32 Bldg 2401W Service Upgrade	2401W	S
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.)	10. Related ECN No(s).	11. Related PO No.
	See Block 13	649619	NA

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	NA	NA Design Authority/Cog. Engineer Signature & Date	NA Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [X] Yes [] No

This ECN supercedes ECN #649619.

DOCUMENTS AFFECTED:

H-2-80543, Sheet 1, Rev. 3
H-2-80544, Sheet 1, Rev. 7
H-2-80544, Sheet 2, Rev. 1

R. KEITH NEWHOUSE STATE OF WASHINGTON 29208 REGISTERED PROFESSIONAL ENGINEER

R. Keith Newhouse 1/26/99

EXPIRES 5/16/99

See Page 3 for Description of Change

14a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Client request for facility upgrades required for new mission.
Design verification is performed by Independent Review

15. Distribution (include name, MSIN, and no. of copies)

Constr Doc Control	S2-53	CK Stephensen	S2-53
SG Arnold	T3-07		
NP Emerson	T3-04	IPF #4	H6-26
FD Sargent	T4-03	IPF #10	S3-96
DR Pyzel	S6-30		
RL Louie	G3-17		
JT DePousie	S2-57		

RELEASE STAMP

FEB 04 1999
DATE:
STA: 5
HANFORD RELEASE
ID: 12

A-7900-013-2 (05/96) GEF095

A-7900-013-1

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 649620

16. Design Verification Required	17. Cost Impact				18. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[X] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[] No	Savings	[] $	Savings	[] $	Delay	[]

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
(1) Rad Permit & Class Change determination		

21. Approvals

	Signature	Date		Signature	Date
Design Authority	FD Sargent	2/1/99	Design Agent	GPMcRae	1-26-99
Cog. Eng.	FD Sargent	2/1/99	PE		
Cog. Mgr.	JR Rosser	2/1/99	QA	N/A	
~~QA~~			Safety	N/A	
Safety	B. BAKER Bobby Baker	2/2/99	Design	R.K. Newhouse	1/25/99
~~Environ.~~		NA	Environ.	N A	
Other Brett Barnes for Permit Class change	BJ M Barnes	2/2/99	Other		
IND. REVIEW		1/27/99			
Operations	JE Mitchell	2/2/99	DEPARTMENT OF ENERGY		
			Signature or a Control Number that tracks the Approval Signature		
			ADDITIONAL		

H-2-80543, Sh1, Rev 3:

Delete Section A in zone F-8. Add new sheet 2 to drawing. Convert 2.4KV line serving building 2401W to 13.8KV. Replace pole W782, line conductors, transformer, and 60-amp service with new 200-amp service as shown on page 4.

H-2-80544, Sh 1, Rev 7:

Replace panelboard in building 2401W with new 200-amp panelboard and replace panelboard schedule as shown on page 8. Delete Section View A from drawing.

H-2-80544, Sh 2, Rev 1:

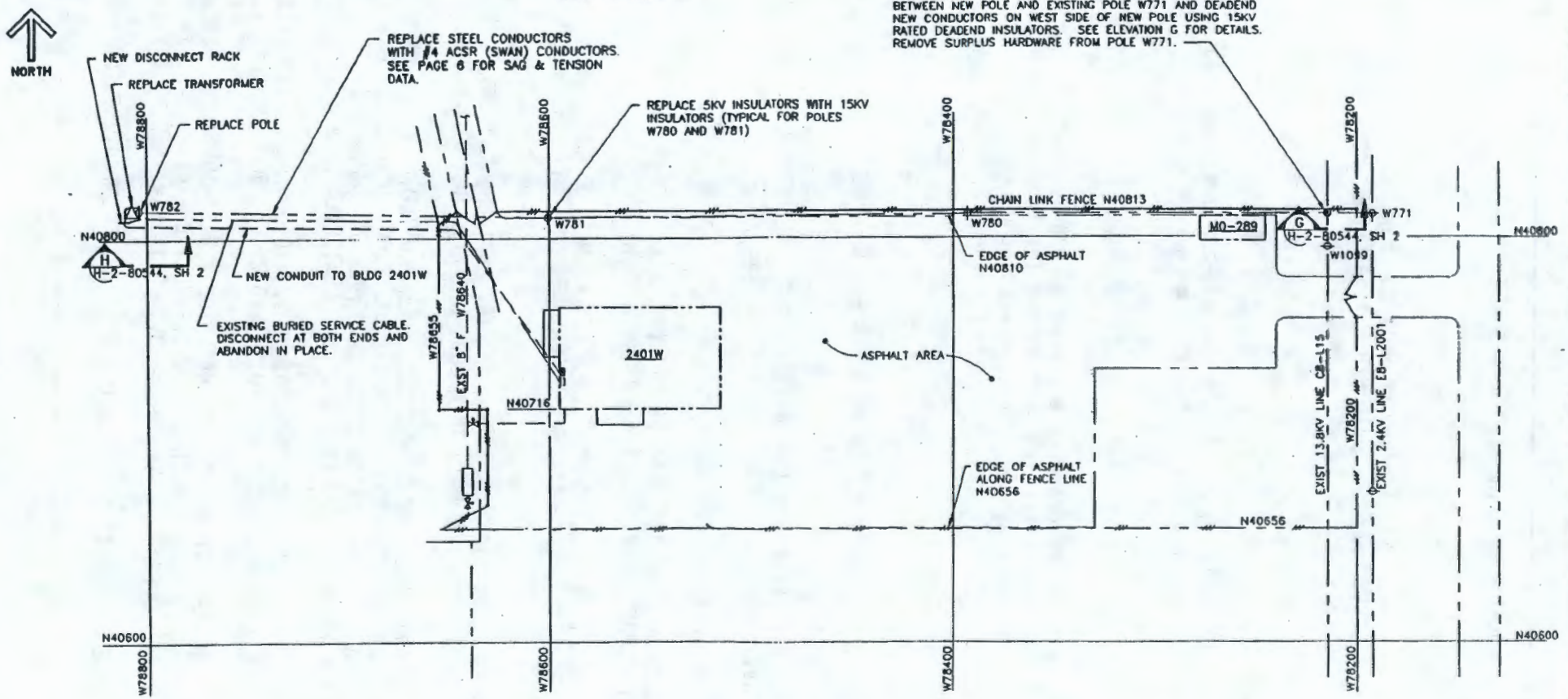
Install new poles and disconnect rack as shown on pages 5, 6 & 7. Relocate existing disconnect switch for Low Flashpoint Storage Modules from pole to new rack and install handhole to facilitate extending modules' service conductors to new rack.

CONSTRUCTION NOTES:

1. WORK SHALL BE PERFORMED IN ACCORDANCE WITH ANSI C2, NFPA 70, AND THE DRAWINGS.
2. WORK ON THE UPPER PORTION OF POLES SHALL BE PERFORMED BY QUALIFIED LINEMEN IN ACCORDANCE WITH WAC 296-45 AS APPLICABLE.
3. ABBREVIATIONS ARE PER ASME Y1.1.
4. UNDERGROUND CONDUIT SHALL BE PVC INSTALLED 24" BELOW GRADE. INSTALL RED MAGNETIC MARKER TAPE 12" BELOW GRADE OVER CONDUIT.
5. POLES SHALL BE WESTERN RED CEDAR CUT FROM LIVE STOCK, SHALL CONFORM TO ANSI STANDARD 5.1, AND SHALL BE AIR SEASONED AND BUTT TREATED IN ACCORDANCE WITH AWPA C7.
6. CROSSARMS SHALL BE SOLID DOUGLAS FIR, PENTACHLOROPHENOL-PETROLEUM TREATED, DRILLED AND MANUFACTURED IN ACCORDANCE WITH REA STANDARD M-19 AND SPEC DT-5B.
7. TRANSFORMER SHALL BE OIL-FILLED, POLE-MOUNTED, FOR USE ON A 13.8KV DELTA SYSTEM AND SHALL CONFORM TO ANSI C57.12.00 & C57.12.20 AND NEMA TRI-1980. IT SHALL HAVE TWO 2-1/2% TAPS ABOVE NORMAL AND TWO 2-1/2% TAPS BELOW NORMAL, COPPER WINDINGS, AND R-TEMP COOLANT CERTIFIED LESS THAN 1 PPM PCB.
8. CUTOUTS SHALL BE RATED 15KV, 95KV BIL, 10,000 AMPS ASYMMETRICAL, LEAKAGE DISTANCE TO GROUND 8.5" MIN, WITH BRONZE EYE BOLT CONNECTOR, PER ANSI C37.41.
9. LIGHTNING ARRESTERS SHALL BE HEAVY DUTY DISTRIBUTION CLASS, SILICON RUBBER HOUSED, METAL OXIDE WITH DUTY CYCLE VOLTAGE RATING OF 18KV RMS, MAXIMUM CONTINUOUS OPERATING VOLTAGE (MCOV) OF 15.3KV, PER ANSI/IEEE C62.11.
10. HANDHOLE AND COVER SHALL BE UTILITY VAULT COMPANY SERIES 1324 OR EQUAL.

FLUOR DANIEL NORTHWEST, INC.				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80543	1	3	RK NEWHOUSE		649620	4 of 8

ADD SHEET 2



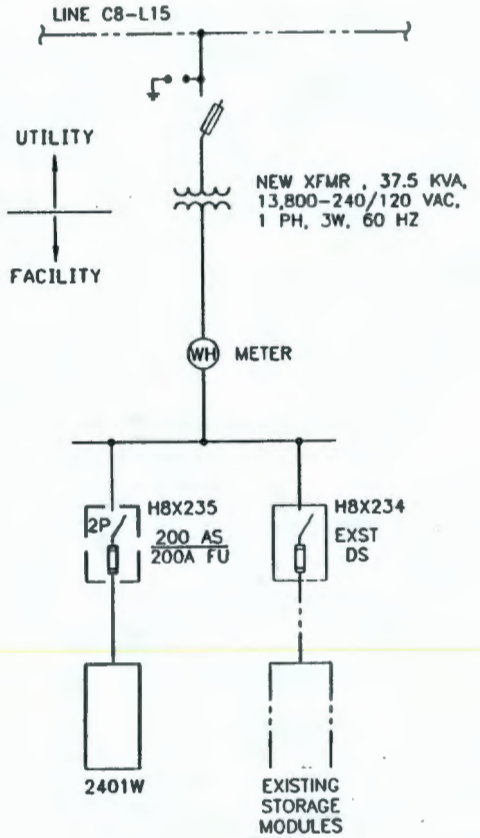
SITE PLAN

20 0 20 40

SCALE IN FEET

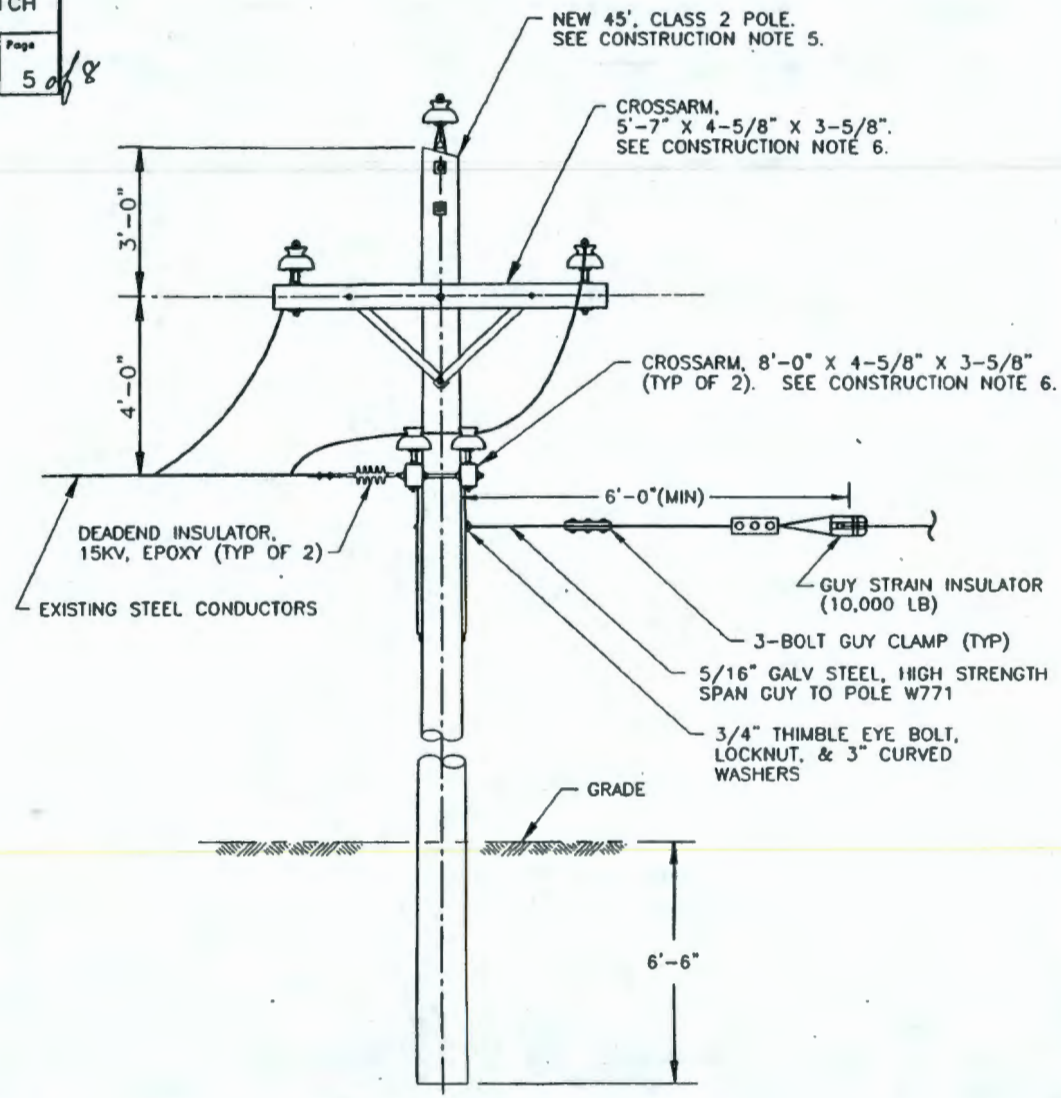
CAD FILE: EC2401AR PLOT SCALE:

FLUOR DANIEL NORTHWEST, INC.			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80544	2	1	RK NEWHOUSE	L. hl	649620	5 of 8



ONE-LINE DIAGRAM

SCALE: NONE



G ELEVATION

H-2-80543 NTS

CAD FILE: EC2401BR PLOT SCALE:

FLUOR DANIEL NORTHWEST, INC.			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
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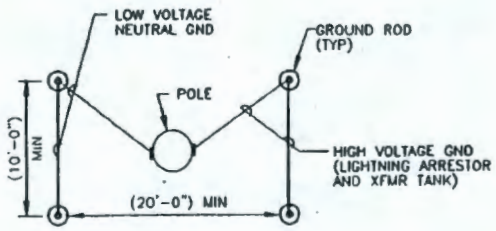
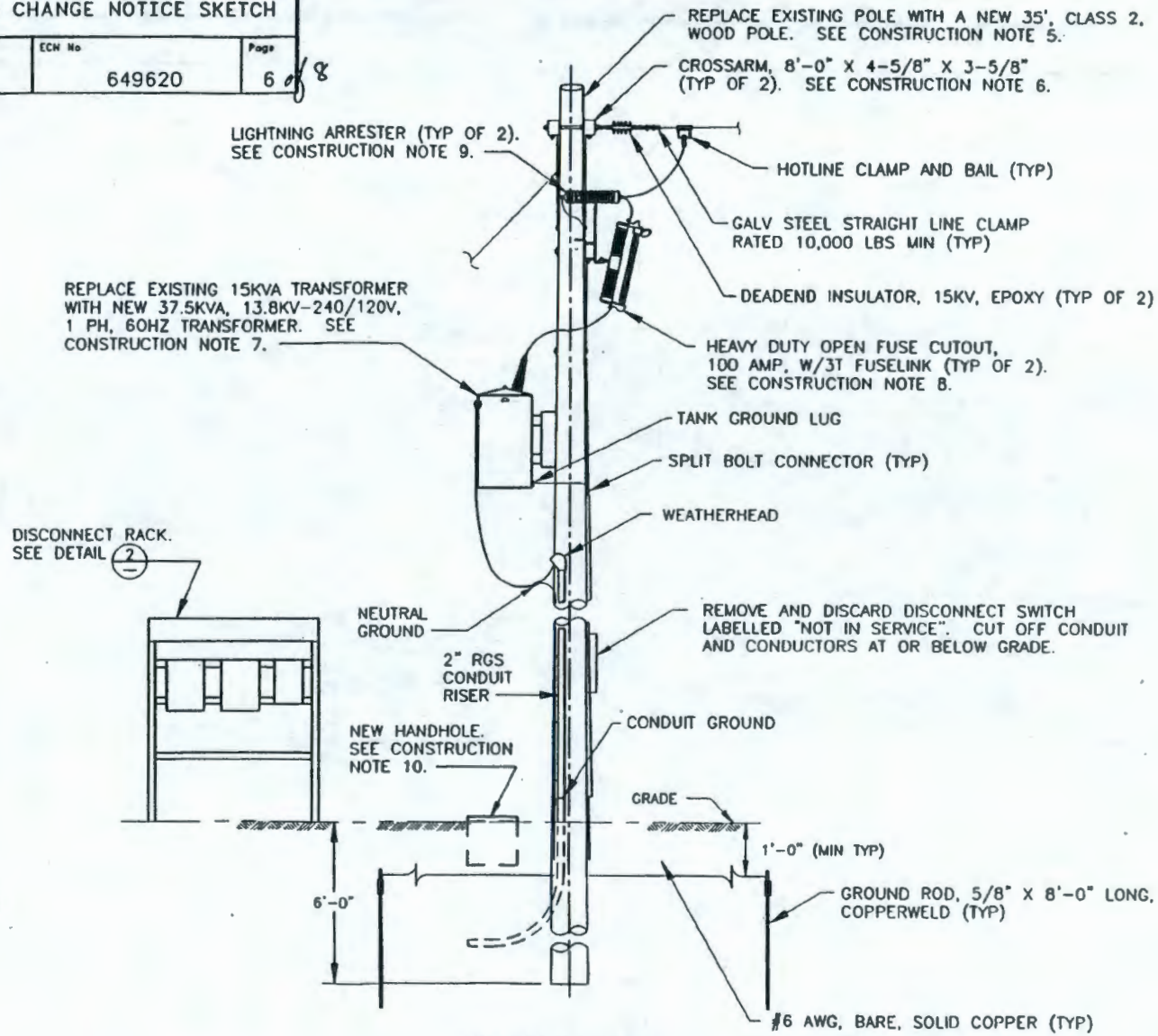
SAG & TENSION TABLE		
INITIAL CONDITIONS		
TEMP (DEG F)	SAG (FEET)	TENSION (LBS)
15	0.51	573
30	0.58	505
60	0.77	372
90	1.16	251
120	1.82	161
FINAL CONDITIONS		
TEMP (DEG F)	SAG (FEET)	TENSION (LBS)
15	0.54	542
30	0.63	466
60	0.91	322
90	1.45	202
120	2.25	130
MAXIMUM DOWN GUY TENSION: 4322 LBS		
MAXIMUM SPAN GUY TENSION: 1667 LBS		



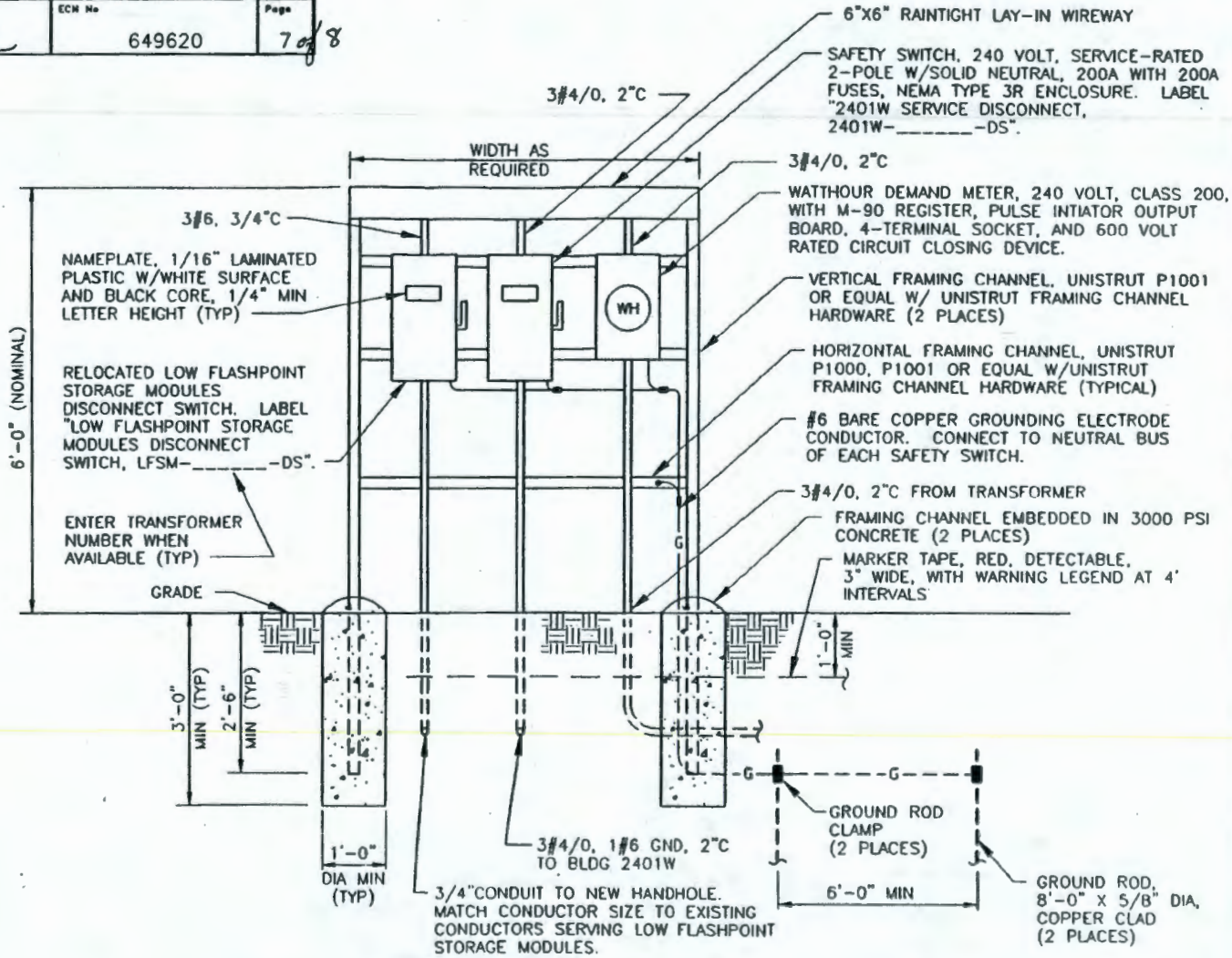
HIGH & LOW VOLTAGE GROUNDING PLAN



H ELEVATION
H-2-80543 NTS

CAD FILE: EC2401CR PLOT SCALE:

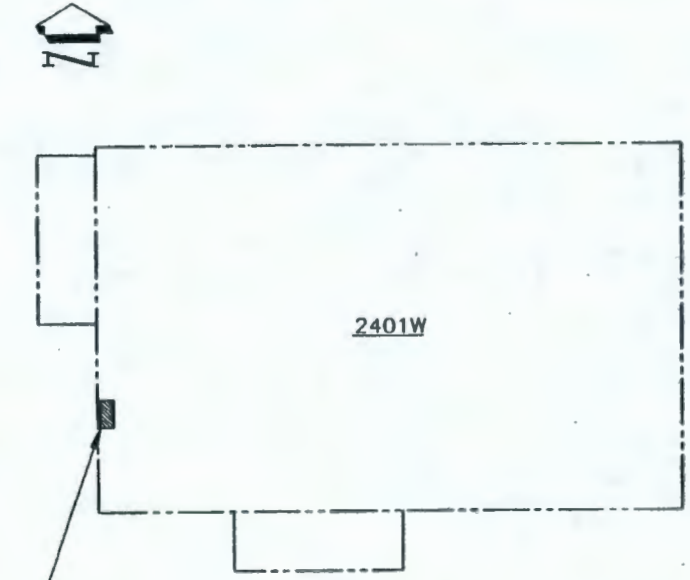
FLUOR DANIEL NORTHWEST, INC.			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80544	2	1	RK NEWHOUSE	C. Ale	649620	7 of 8



2 DETAIL - DISC RACK
NTS

CAD FILE: EC2401DR PLOT SCALE:

FLUOR DANIEL NORTHWEST, INC.				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-80544	1	7	RK NEWHOUSE	C. Ce	649620	8 of 8



REPLACE EXISTING PANELBOARD ON WALL. INSTALL #2 GROUNDING ELECTRODE CONDUCTOR FROM PANELBOARD GROUND BUS TO NEW 8' GROUND ROD. ALSO PROVIDE CONNECTION TO EXISTING GROUND ROD AND BUILDING STEEL USING IRREVERSIBLE COMPRESSION CONNECTORS. RECONNECT ALL CIRCUITS AS SHOWN IN PANELBOARD SCHEDULE.

PANELBOARD A LOCATION 2401W VOLTS 120/240 VAC 1PH, 3W
MFG & TYPE _____ CKT BRKR TYPE _____
POWER SUPPLIED FROM _____
NEMA TYPE ENCL 1
☒ SURFACE MOUNTED ☐ FLUSH MOUNTED
☒ MAIN CKT BRKR ☐ MAIN LUGS ONLY
☒ TOP ☐ BOT
☐ PANELBOARD GROUND FAULT PROTECTION
☒ GROUND BUS
225 AMP BUS
225 AMP NEUT

SERVICE	KVA	NO.	A	B	NO.	KVA	SERVICE
			200A				
WEST LIGHTS	1440	1	20A	20A	2	360	NE AIR SAMPLER RCPTS
EAST LIGHTS	1440	3	20A	20A	4	750	FIRE RISER RM BASE BD HTR
ENCL, EXT & LIGHTING	340	5	20A	20A	6	500	FIRE RISER RM AIR CPRSR
SW RECEPTACLES	360	7	20A	20A	8	830	NE EXHAUST FAN
BACKFLOW BLDG HTR	2000	9	20A	20A	12	480	BACKFLOW BLDG LTG & RCPT
SW EXHAUST FAN	360	13	20A	20A	14	110	EAST OUTSIDE LIGHTS
			20A	20A	16		SPARE
NORTH WALL RCPTS	720	17	20A	20A	18	540	EAST OUTSIDE RCPTS
SW AIR SAMPLER RCPTS	360	19	20A	20A	20		SPARE
SPACE		21	–	–	22		SPACE
SPACE		23	–	–	24		SPACE
SPACE		25	–	–	26		SPACE
SPACE		27	–	–	28		SPACE
SPACE		29	–	–	30		SPACE
SPACE		31	–	–	32		SPACE
SPACE		33	–	–	34		SPACE
SPACE		35	–	–	36		SPACE
SPACE		37	–	–	38		SPACE
SPACE		39	–	–	40		SPACE
SPACE		41	–	–	42		SPACE

PANELBOARD SCHEDULE

CAD FILE: EC2401ER PLOT SCALE:

ENGINEERING CHANGE NOTICE

Page 1 of 3

1. ECN 637479

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	RW Whitlock/32A40/T4-03/ 373-1737	[] Yes [X] No	5/5/98
	6. Project Title/No./Work Order No. Central Waste Complex KA26782-T03	7. Bldg./Sys./Fac. No. CWC	8. Approval Designator N/A
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) see block 13	10. Related ECN No(s). 623646 & 637480	11. Related PO No. N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [X] Yes [] No

See page 3 of this ecn.

14a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Drawings on the essential and support drawing list have been re-evaluated. The support drawings were determined to be essential drawings per HNF-PRO-242.

15. Distribution (include name, MSIN, and no. of copies)

RW Whitlock T4-03 (1)
File T4-03 (1)
~~CB Sacco T4-03 (1)~~ 8/24/98
BJ Graf T4-55 (1)
RF Boolen T4-03 (1)
FD Sargent T4-03 (1)

RELEASE STAMP

SEP 14 1998

DATE:

STA: 5

HANFORD RELEASE

ID: 12

A-7900-013-2 (05/96) GEF095

A-7900-013-1

ENGINEERING CHANGE NOTICE	Page 2 of 2	1. ECN (use no. from pg. 1) 637479

16. Design Verification Required	17. Cost Impact						18. Schedule Impact (days)		
	ENGINEERING			CONSTRUCTION					
[] Yes	Additional	[]	$	Additional	[]	$	Improvement	[]	
[X] No	Savings	[]	$ N/A	Savings	[]	$	Delay	[]	N/A

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
WHC-SD-WM-TI-404 REV. 4 (This is changed simultaneously by ECN 637480.)		

21. Approvals

	Signature	Date		Signature	Date
Design Authority	RR ANES	5/6/98	Design Agent		
Cog. Eng.	RW WHITLOCK	5/5/98	PE		
Cog. Mgr.	JR Rosser	5/6/98	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other			Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

A-7900-013-3 (05/96) GEF096

Change the drawing status as follows:

~~H-2-80544 sht 1 rev. 6 to ESSENTIAL~~ RWW per telecon 9/14/98 dmp
H-2-80743 sht 1 rev. 5 to ESSENTIAL
H-2-80743 sht 2 rev. 1 to ESSENTIAL
H-2-80743 sht 3 rev. 1 to ESSENTIAL
H-2-80923 sht 1 rev. 6 to ESSENTIAL
H-2-80924 sht 1 rev. 6 to ESSENTIAL
H-2-80925 sht 1 rev. 6 to ESSENTIAL
~~H-2-131547 sht 1 rev. 5 to ESSENTIAL~~
~~H-2-131547 sht 2 rev. 2 to ESSENTIAL~~ RWW per telecon 9/14/98 dmp
H-2-823233 sht 1 rev. 1 to ESSENTIAL
H-2-823233 sht 2 rev. 0 to ESSENTIAL
H-2-823234 sht 1 rev. 1 to ESSENTIAL
H-2-72500 sht 1 rev. 1 to ESSENTIAL

H-2-80606 sht 1 rev. 2 to SUPPORT
H-2-80606 sht 2 rev. 1 to SUPPORT
H-2-80739 sht 1 rev. 2 to SUPPORT
H-2-72499 sht 1 rev. 1 to SUPPORT
H-2-72499 sht 2 rev. 0 to SUPPORT

~~H-2-72501 sht 1 rev. 2 to GENERAL~~
~~H-2-72501 sht 2 rev. 2 to GENERAL~~ RWW per telecon 9/14/98 dmp

APPENDIX 7A

BUILDING EMERGENCY PLAN FOR THE CENTRAL WASTE COMPLEX

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This plan covers the following buildings and structures: 285-W Sanitary Water Shed, 286-W Sanitary Water Shed, MO-288, 2401-W, 2402-W, 2402-WB through 2402-WL, 2403-WA through -WD, and 2404-WA through -WC Waste Storage Buildings, Flammable and Alkali Metal Waste Storage Modules, Waste Receiving and Staging Area, 2120-WA Sprung Structure, 2120-WB Sprung structure, and the Waste Storage Pad.

Approved:

Building Emergency Director	5/13/98 Date
Manager, Solid Waste Project	5/13/98 Date
Hanford Fire Department	5-13-98 Date
Emergency Preparedness	5-13-98 Date

This plan will be reviewed annually and updated as required by the Building Emergency Director and modified pursuant to Washington Administrative Code (WAC) 173-303-830 and in accordance with the Hanford Facility RCRA Permit. This document will be approved by the Manager of Emergency Preparedness (or delegate) and the Hanford Fire Department.

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1.0 GENERAL INFORMATION

The Central Waste Complex (CWC) is located on the Hanford Site, a 560-square-mile U.S. Department of Energy (DOE) operational site in southeastern Washington State. The CWC is located in the western portion of the 200 West Area. The Hanford Site Emergency Preparedness Program is based upon the incident command system which allows a graded approach for response to emergency events. This plan contains a description of unit specific emergency planning and response. It is used in conjunction with DOE/RL-94-02, *Hanford Emergency Response Plan*. Response to events is performed using unit specific and/or Site level emergency procedures. The CWC subordinate documents implement DOE/RL-94-02.

1.1 FACILITY NAME: U.S. Department of Energy Hanford Site
Central Waste Complex

1.2 FACILITY LOCATION: Benton County, Washington; within the 200 West Area.

The following buildings/structures are covered by this plan:

*285-W	Sanitary Water Shed
*286-W	Sanitary Water Shed
*MO-288	Mobile Office Building
*2120-WA	Sprung Structure Miscellaneous Material/Equipment Storage
*2120-WB	Sprung Structure Miscellaneous Material/Equipment Storage
2401-W	Waste Storage Building
2402-W	Waste Storage Building
2402-WB	Waste Storage Building
2402-WC	Waste Storage Building
2402-WD	Waste Storage Building
2402-WE	Waste Storage Building
2402-WF	Waste Storage Building
2402-WG	Waste Storage Building
2402-WH	Waste Storage Building
2402-WI	Waste Storage Building
2402-WJ	Waste Storage Building
2402-WK	Waste Storage Building
2402-WL	Waste Storage Building
2403-WA	Waste Storage Building
2403-WB	Waste Storage Building
2403-WC	Waste Storage Building
2403-WD	Waste Storage Building
2404-WA	Waste Storage Building
2404-WB	Waste Storage Building
2404-WC	Waste Storage Building

Flammable Waste Storage Modules (1 through 27)
Alkali Metal Waste Storage Modules (1 through 4)
Waste Receiving and Staging Area
Waste Storage Pad

* Not part of the CWC treatment and storage activities; therefore, not subject to Washington Administrative Code 173-303 regulations.

1.3 **OWNER:** U.S. Department of Energy
Richland Operations Office
825 Jadwin Avenue
Richland, Washington 99352

FACILITY MANAGER: Waste Management Federal Services of Hanford, Inc.
P.O. Box 700
Richland, Washington 99352

1.4 DESCRIPTION OF THE FACILITY AND OPERATIONS

The CWC provides storage for dangerous, mixed, and radioactive waste. Buildings, storage modules, and storage pads provide space for waste containers.

1.5 BUILDING EVACUATION ROUTING (BUILDING LAYOUT)

Figure 1 provides identification of the primary and secondary staging areas and a general overview of the CWC.

1.5.1 Building Evacuation Routes

Figure 1 provides identification of emergency evacuation routes from the CWC.

1.5.2 Building Evacuation Routes (Building to Staging Area)

The primary staging area for the CWC is located southeast of the Waste Receiving and Staging Area. The alternate staging area for the CWC is located at the northwest corner of the MO-720/721 parking lot. Evacuation alarms are described in Section 7.1; responses to alarms are described in Section 7.2.

2.0 PURPOSE

This Building Emergency Plan describes both the hazards and the basic responses to off-normal and/or emergency conditions at CWC. "Emergency" as used in this document includes events meeting the Washington Administrative Code (WAC) 173-303 definition of Emergency, as well as U.S. Department of Energy (DOE) Order 232.1 categories of Unusual Occurrence and Emergency. These events include spills or releases as a result of waste management, fires and explosions, transportation activities, movement of materials, storage of hazardous materials, packaging, and natural and security contingencies. When used in conjunction with DOE/RL-94-02, *Hanford Emergency Response Plan*, this plan meets the requirements for contingency planning as required by WAC 173-303.

3.0 BUILDING EMERGENCY ORGANIZATION

The CWC maintains a weekly on-call list for technical expert notification. Upon notification, the on-call person will notify the primary or alternate Building Emergency Director (BED) to respond to the scene in person as necessary. The on-call technical expert will maintain contact with the on-scene Incident Commander (IC) until arrival of CWC personnel.

Building emergency organizations are discussed in the following sections.

3.1 BUILDING EMERGENCY DIRECTOR

Emergency response will be directed by the BED until the IC arrives. The incident command structure and staff with supporting on-call personnel fulfill the responsibilities of the Emergency Coordinator as discussed in WAC 173-303-360.

During events, CWC personnel perform response duties under the direction of the BED. The Incident Command Post (ICP) is managed by either the senior Hanford Fire Department member present on the scene or senior Hanford Patrol member present on the scene (security events only). These individuals are designated as the Incident Commander (IC) and as such have the authority to request and obtain any resources necessary for protecting people and the environment. The BED becomes a member of the ICP and functions under the direction of the IC. In this role the BED continues to manage and direct CWC operations.

A listing of the primary and alternate BEDs by title, work location and work telephone numbers is contained in a separate, internally controlled document. The BED is on the premises or is available through an 'on-call' list 24 hours a day. Emergency Preparedness maintains a listing of BED names, work and home telephone numbers at the Patrol Operations Center (POC) in accordance with *Hanford Facility RCRA Permit*, Dangerous Waste Portion, General Condition II.A.4.

3.2 OTHER MEMBERS

As a minimum, the BED appoints and ensures training is provided to individuals who perform as Personnel Accountability Aides and Staging Area Managers. The Accountability Aides are responsible for facilitating the implementation of protective actions (evacuation or take cover) and for facilitating the accountability of personnel after the protective actions have been implemented. Staging Area Managers are responsible for coordinating/conducting activities at the Staging Area.

In addition, the BED may identify additional support personnel (radiological control [RC], maintenance, engineering, hazardous material coordinators, etc.) to be part of the building emergency organization.

The building emergency organization listing of positions, names, work locations, and telephone numbers for the CWC is maintained in a separate location in a format approved by CWC management. Copies are distributed to

appropriate facility locations and to Emergency Preparedness. The building emergency organization list for the CWC is posted at the RL-Emergency Operations Center, MO-288, and at the ICP in MO-720 in the 200 West Area.

4.0 IMPLEMENTATION OF THE PLAN

To meet the requirements of WAC 173-303-360, this plan will be considered to be implemented when the BED has determined that a release, fire, or explosion that could threaten human health or the environment (WAC 173-303-360 Emergency) has occurred at CWC. The incident classification process is described in DOE/RL-94-02, Section 4.2.

Under the DOE guidance, this plan will be considered implemented whenever the BED determines that one of the incidents listed in Section 6.0 has or will occur and that the severity is or will be such that there is a potential to threaten human health or the environment (DOE Unusual Occurrence or Emergency). The BED will implement this plan through DOE/RL-94-02, *Hanford Emergency Response Plan*, and CWC and/or site-specific procedures (see Attachment A). DOE declared emergencies are assigned to three classifications, which are listed in order of increasing severity: alert emergency, site area emergency, and general emergency. The CWC implements these DOE emergencies through identified criteria in DOE-0223, RLEP 1.1, Appendix 1-2.D; this plan; and other documents listed in Attachment A.

The BED must assess each incident to determine the response necessary to protect personnel, CWC, and the environment. If assistance from Hanford Patrol, Fire, or ambulance units is required, the Hanford Emergency Response Number 911 (373-3800 if using a cellular telephone) must be used to contact the Patrol Operations Center and request the desired assistance. To request other resources or assistance from outside the CWC, the Patrol Operations Center business number is used (373-3800). The Emergency Duty Officer (EDO) is requested when making the initial 911 call.

5.0 FACILITY HAZARDS

Hazards at the CWC potentially include radiological, chemical, and industrial hazards.

5.1 HAZARDOUS MATERIALS

Hazardous materials include (but might not be limited to) the following: spray adhesive, sorbent, diesel fuel, hydraulic oil, propane, road salt, industrial cleaner and degreaser, and unleaded gasoline. The use, storage, and inventory of hazardous materials is controlled. Hazardous material inventories and material safety data sheets (MSDS) are maintained in MO-288.

5.2 INDUSTRIAL HAZARDS

Industrial hazards could include injuries from falls, transportation incident, accidents with moving equipment, exposure to spilled waste or chemicals, or from radiological or chemical exposure from spills. Potential material handling mishaps are associated with forklift or crane operations. These include potential rupture of packages due to misalignment of the forklift tines or a load dropped during a crane operation.

5.3 WASTE STORAGE LOCATIONS

Waste is stored in the following locations:

2401-W Waste Storage Building
2402-W Waste Storage Building
2402-WB Waste Storage Building
2402-WC Waste Storage Building
2402-WD Waste Storage Building
2402-WE Waste Storage Building
2402-WF Waste Storage Building
2402-WG Waste Storage Building
2402-WH Waste Storage Building
2402-WI Waste Storage Building
2402-WJ Waste Storage Building
2402-WK Waste Storage Building
2402-WL Waste Storage Building
2403-WA Waste Storage Building
2403-WB Waste Storage Building
2403-WC Waste Storage Building
2403-WD Waste Storage Building
2404-WA Waste Storage Building
2404-WB Waste Storage Building
2404-WC Waste Storage Building
Flammable Waste Storage Modules (1 through 27)
Alkali Metal Waste Storage Modules (1 through 4)
Waste Receiving and Staging Area
Waste Storage Pad.

5.4 CRITICALITY

Criticality has been evaluated as being 'incredible,' less than one chance in a million in a year, in the authorization basis. Therefore, there are no facility specific actions required.

6.0 POTENTIAL EMERGENCY CONDITIONS

The credible types of and extent of emergencies caused are described here, unless identified as Not Applicable (N/A). The response action for each type of emergency is listed in Section 7.0.

Potential emergency conditions, under both WAC 173-303 and DOE guidance, may include one of three basic categories: operations (process upsets, fires and explosions, loss of utilities, spills, and releases), natural phenomena (earthquakes), and security contingencies (bomb threat, hostage situation, etc.).

6.1 FACILITY OPERATIONS EMERGENCIES

The following sections include a description of the 'worst-case' accident anticipated for each of the identified credible emergencies. This information typically is derived from the safety analysis report, hazards evaluation, or risk assessment for the unit.

6.1.1 Loss of Utilities

- Loss of Electricity. Electricity powers two louvered exhaust fan systems in each of the 2402-W series and 2404-W series buildings and four louvered exhaust fan systems in the 2403-W series buildings. Loss of electrical power will result in deactivation of the fixed-head air sampler and exhaust fans but does not constitute an emergency situation.

- Loss of Water. Loss of fire sprinkler systems in the 2402-W series buildings, the 2403-W series buildings, and the 2404-W series buildings negatively impacts fire fighting capabilities.

- Loss of Ventilation. In the event of leaking containers, loss of fan ventilation in the storage buildings might result in the buildup of toxic or explosive vapors.

- Loss of Steam - N/A.

- Loss of Air - N/A.

6.1.2 Major Process Disruption/Loss of Plant Control - N/A.

6.1.3 Pressure Release

Potential pressure hazards at the CWC involve pressure buildup in stored containers.

6.1.4 Fire and/or Explosion

Potential fire hazards include smoke inhalation, burns, damage to equipment and/or structures, and release of hazardous materials or dangerous, mixed, and radioactive waste constituents from containers.

A fire or an explosion in the CWC might result in a dangerous, mixed, or radioactive waste release.

The combustion potential for chemicals such as peroxides or pyrophorics within containers is controlled by the management of waste packaging in accordance with onsite methods. The WAC 173-303 regulations prohibit the storage of chemically incompatible materials in common containers. Additionally, WAC 173-303 prohibits mixing containers of incompatible waste within common storage areas.

The 2401-W, 2402-W, 2403-W and 2404-W series buildings are equipped with individual fire system alarms. Fire alarm pull boxes are located at each exit and at the main entrance.

6.1.5 Hazardous Material Spill

Hazardous materials are stored in the CWC. Spills or releases of hazardous materials could result in the following conditions:

- Spill of Hazardous Material. Hazards associated with a spill include potential exposure to dangerous constituents as well as potential environmental damage. Releases likely would be confined within the CWC.

- Toxic Fumes Hazards. Hazardous materials stored at the CWC is a potential airborne contamination hazard. Volatile materials such as concentrated caustics and solvents might generate toxic fumes.

- Fires or Explosions Involving Hazardous Material. A fire or chemical reaction in the CWC could result in the release of dangerous constituents to the air or soil.

- Reactive Chemical/Corrosive Material Hazards. Misrepresented shipments and/or transfers of incompatible hazardous materials stored at the CWC could potentially cause chemical reactions resulting in fire, explosion, and dangerous waste releases. Acidic and basic solutions are corrosive and could cause chemical burns.

- Thermal Reactions/Hazards. Thermal reactions could cause burns, chemical burns, and toxic fumes, and cause pressure hazards in sealed containers.

- Flammable Material/Liquids Hazards. Hazards associated with flammable materials and liquids include fire, explosion, and release of dangerous waste.

- Asbestos Release. The CWC structure does not contain asbestos, but dangerous waste containing asbestos could be stored inside containers stored within the structure. Release of friable asbestos waste could result in an inhalation hazard.

- Explosive Materials/Munitions Hazards - N/A.

6.1.6 Dangerous and Mixed Waste Spill

A dangerous, mixed, and/or radioactive waste spill could result in potential personnel contamination through skin contact or via airborne contamination. Environmental impact could include contaminated water or soil.

- Spill of Dangerous and Mixed Waste. Hazards associated with a spill include potential exposure to dangerous, mixed, and/or radioactive constituents as well as potential environmental damage. Releases likely would be confined to a local area because container contents routinely are not in a liquid or powder form.

- Toxic Fumes Hazards. Dangerous, mixed, and radioactive waste stored at the CWC is a potential airborne radioactive contamination hazard. Volatile materials such as concentrated caustics and solvents might generate toxic fumes. Plutonium, an alpha emitter, is known to generate hydrogen (H_2) gas when hydrogenous materials are present in the waste; however, catalytic recombiners are used to maintain H_2 gas concentrations below 1 percent in waste containers and are replaced whenever the waste is repackaged. The recombiners used onsite are projected to maintain the oxygen (O_2) concentration below 0.5 percent, and the H_2 concentration below 1 percent.

NOTE: Container damage resulting in material upset without the $H_2 + O_2$ recombiner could lead to a hydrogen explosion and subsequent release to onsite populations and the environment.

Waste acceptance criteria require that the offsite generators and onsite generating units document waste with gas-generating potential and that the requirement for gas recombiners be specified on the waste tracking forms.

- Fires or Explosions Involving Dangerous and Mixed Waste. A fire or chemical reaction in the CWC could result in the release of dangerous and/or radioactive constituents to the air or soil.

- Reactive Chemical/Corrosive Hazards. Misrepresented shipments and/or transfers of incompatible dangerous or mixed waste managed at the CWC could potentially cause chemical reactions resulting in fire, explosion, and dangerous, mixed, and/or radioactive waste releases. Acidic and basic solutions are corrosive and could cause chemical burns.

- Thermal Reactions/Hazards - Thermal reactions could cause burns, chemical burns, and toxic fumes, and cause pressure hazards in sealed containers.

- Flammable Material/Liquids Hazards. Fire involving flammable materials/liquids could cause damage to containers resulting in potential dangerous, mixed, and or radioactive waste releases. Liquid waste stored at the CWC could include containers with lab packs (e.g., vials of liquids packed with absorbent solids) or

containers containing solvent-soaked rags that are packed with absorbent material. Except for lab packs, containers with free liquid cannot have greater than 10 percent unabsorbed liquid. If a fire occurs involving these items, a 'worst case' (e.g., assume entire container is liquid) will be assumed until the containers can be opened and inspected.

- Asbestos Release. Asbestos materials are potential components of waste stored at the CWC. Damage to these containers could result in an unplanned release of friable asbestos to the environment, creating an inhalation health hazard.

- Explosive Materials/Munitions Hazards - N/A .

6.1.7 Transportation and/or Packaging Incidents

Potential consequences of transportation and/or packaging incidents are spills or spread of radioactive contamination, chemical contamination, or personnel contamination. A forklift-damaged container could result in fire or explosion.

6.1.8 Radiological Material Release

- Gaseous Effluent Discharges (Stack Releases) - N/A.

- Liquid Effluent Discharges - N/A.

- Significant Contamination Spread/Releases. Significant contamination spread or release might involve hazards resulting from exposure to dangerous, mixed, and/or radioactive waste. The major potential cause of spread or a release includes damaged containers, high winds, or a fire that might disperse contaminated airborne particles.

6.1.9 Criticality

The CWC is a Limited Control Facility because the CWC can contain more than one-third of a minimum critical mass, but the form or distribution of the fissionable material precludes a criticality accident.

6.1.10 Dangerous, Mixed, and Radioactive Waste Not Acceptable (and Cannot be Transported)

Acceptable reasons for denying receipt of a dangerous, mixed, and/or radioactive waste transfer/shipment are as follows.

- The CWC is not capable of managing the dangerous waste type.

- A significant discrepancy exists between the transfer/shipment and the waste listed on the manifest or tracking form.

- The waste arrives in a condition that presents an unreasonable hazard to operations or personnel.

6.2 NATURAL PHENOMENA

Natural phenomena are discussed in the following sections.

6.2.1 Seismic Event

Depending on the magnitude of the event, severe structural damage could occur resulting in serious injuries or fatalities and the release of dangerous, mixed, and/or radioactive waste. Damaged electrical circuits and wiring could result in the initiation of multiple fires.

6.2.2 Volcanic Eruption/Ashfall

Ashfall could cause shorts in electrical equipment and plug ventilation system filters.

6.2.3 High Winds/Tornados

High winds or tornados might cause structural damage to systems containing dangerous, mixed, and/or radioactive waste resulting in a release of these constituents to the environment.

6.2.4 Flood - N/A.

6.2.5 Range Fire

The hazards associated with a range fire include those associated with a building fire plus potential site access restrictions and travel hazards such as poor visibility.

6.2.6 Aircraft Crash

In addition to the potential serious injuries or fatalities, an aircraft crash could result in the direct release of dangerous, mixed, and/or radioactive waste or cause a fire that could lead to the release of dangerous, mixed, and/or radioactive waste.

6.3 SECURITY CONTINGENCIES

Security contingencies are discussed in the following sections.

6.3.1 Bomb Threat

A bomb threat might be received by anyone who answers the telephone or receives mail. The major effect on CWC is that personnel will need to perform an emergency shutdown for personnel to be evacuated. If a bomb explodes, the effects are the same as those discussed under fire and explosion.

6.3.2 Hostage Situation

A hostage situation could pose an emergency situation if there is the potential to adversely impact CWC. This can be as a result of losing control (operators removed from their stations) or when the situation results in the coercion of personnel to take some malevolent action.

6.3.3 Suspicious Object

The major effect on CWC is that personnel will need to perform an emergency shutdown for personnel to be evacuated.

7.0 INCIDENT RESPONSE

The initial response to any emergency is to immediately protect the health and safety of persons in the affected area. Identification of released material is essential to determine appropriate protective actions. Containment, treatment, and disposal assessment will be the secondary responses.

The following sections describe the process for implementing basic protective actions as well as descriptions of response actions for the events listed in Section 6.0. DOE/RL-94-02, Section 1.3, provides concept of operations for emergency response on the Hanford Site.

7.1 PROTECTIVE ACTIONS RESPONSES

Protective actions responses are discussed in the following sections.

7.1.1 Evacuation

If an evacuation is ordered or the evacuation siren sounds at CWC, personnel shall proceed to the following staging areas:

Central Waste Complex Staging Areas	Area	Location
Primary staging area	Central Waste Complex	Southeast of the Waste Receiving and Staging Area
Secondary staging area	MO-720/721 Complex	Northwest corner of parking lot

The BED or Staging Area Manager directs the evacuation; however, to ensure that evacuations are conducted promptly and safely, all personnel shall be familiar with the correct evacuation procedure. The order to evacuate normally will be passed via the site Crash Alarm Telephone system.

Area evacuations are either rapid or controlled, as pointed out in the following steps. When possible, the following steps must be conducted concurrently.

Area Evacuation Procedure
Halt any operations or work and place the equipment and structures in a safe condition. Use emergency shutdown procedures for rapid evacuation.
Use whatever means are available (bullhorns, runners, etc.) to pass the evacuation information to personnel.
Evacuate personnel to the staging area; group personnel as follows: potentially contaminated protective clothing, keys immediately available for vehicles, those needing rides.
Conduct personnel accountability. Report personnel accountability results to the RL-Emergency Operations Center (RL-EOC) (373-1786, 373-3876, 376-8612, 376-4712).
Inform IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) once the IC arrives at the ICP.
Relay pertinent evacuation information (routes, destination, etc.) to drivers.
Dispatch vehicles as soon as the vehicles are loaded.
Report status to the RL-EOC, request additional transportation if required, and report if any personnel remain who are performing late shutdown duties.

7.1.2 Take Cover

When the Take Cover Alarm is activated, personnel must take cover in the nearest building or trailer and report their location to line management or the Building Emergency Director. Normally, the CWC will be alerted of a Take Cover via the Area Crash Alarm Telephone System at MO-288 and/or the area emergency sirens. A message followed by the Take Cover siren will be transmitted over the area emergency sirens. The following actions must be taken or considered:

- Shut doors and windows and wait for further instructions
- Secure ventilation system
- Follow normal exit procedures from radiological areas
- Lock up classified documents and prepare for a possible evacuation
- Report your location to the Accountability Aid or the BED
- Accountability Aides will provide accountability status to the Staging Area Manager for facility personnel during an event.

7.2 RESPONSE TO FACILITY OPERATIONS EMERGENCIES

Depending on the severity of the event, the BED reviews site-wide procedures, the unit-specific emergency response guide, specific sections of this plan, and/or plant operating procedures (POPs) and classifies the event, initiates area protective actions (facility and area sirens, notifications, etc.) and activates the site emergency response organization. Attachment A provides a list of procedures and emergency response guides.

7.2.1 Loss of Utilities

- Loss of Electricity. Personnel notify the BED and the appropriate maintenance personnel for repair.
- Loss of Water. Loss of water to a fire protection system is classified as an emergency condition. Personnel notify the Hanford Fire Department, and establish a fire watch.
- Loss of Ventilation. Personnel notify the BED and the appropriate maintenance personnel for repair.
- Loss of Steam - N/A.
- Loss of Air - N/A.

7.2.1.1 Utility Disconnect Plan for Central Waste Complex

Use these steps to place the utilities in a safe and secure condition when an emergency has been declared, or when directed by the BED.

- Heating, Ventilation, and Air Conditioning (HVAC)

  2401-W Building. Place the "Northeast Fan" and "Southwest Fan" switches (located in the main electrical distribution control panel on the west wall) in the OFF position.

  2402-W Series Buildings. Place the "Fan NE" and "Fan SW" switches (located in the main electrical distribution control panel on the east or west wall) in the OFF position.

  2403-W Series Buildings. Place disconnect switches in the main panel in the OFF position. Each of the four fan units has an electrical disconnect located on the north wall near the unit. Specific electrical service locations are as follows.

  - Main electrical service disconnect is located 29.53 feet south of the 2403-WA building.
  - Interior building electrical disconnects are located near the center on the east and north walls of 2403-WA and 2403-WB buildings.

- Disconnects for 2403-WC and 2403-WD buildings are located near the center of the west and north walls.

2404-WA and 2404-WB Place the two disconnect switches located on the interior of the west end of the building just south of the west personnel door in the OFF position. In addition, both buildings have an emergency shut off switch located on the exterior of the west side of the buildings between the personnel door and the roll up door.

The exhaust fan on top of the mechanical/electrical/telephone room is de-energized by placing circuit 2 in panel B in the OFF (open) position.

2404-WC Place the two disconnect switches located on the interior of the east end of the building just south of the east personnel door. There is an emergency shut off switch located on the east side of the exterior of the building between the personnel door and the roll up door.

The exhaust fan on top of the mechanical/electrical/telephone room is de-energized by placing circuit 2 in panel B in the OFF (open) position.

- Electrical

2401-W Building. Place the "Service Disconnect" switch (located in the main electrical distribution panel on west wall) in the OFF position.

2402-W Series Buildings. Place the "Service Disconnect" switch (located in the main electrical distribution panel on the east or west wall) in the OFF position.

2403-W Series Buildings. Place the "Service Disconnect" switch (located in the main electrical service disconnect at the outside panel on the southeast corner of 2403-WA Building on the electrical service pad) in the OFF position.

2404-W Series Buildings. Place the "Main Breaker" switch located in Panel "A" in the OFF (open) position. Panel "A" is located on the east wall of the M/E/T room in 2404-WA and 2404-WB and on the west wall of the M/E/T room in 2404-WC.

- Fire Sprinkler System (interior shutoff)

NOTE: These valves should be shut ONLY after consulting the Hanford Fire Department.

2404-W Series Buildings. Turn one of the two valves (located on either side of the backflow preventer) in the fire riser room to the closed position. Note that a tamper alarm will be received at the fire station.

- Fire Sprinkler System (exterior shutoff)

  NOTE: These valves should be shut ONLY after consulting the Hanford Fire Department.

  2401-W Building. Use the operating wrench affixed to the post-indicator valve (located south of the 285-W valve shed) to shut the valve. The valve is closed when the valve window words change from "Open" to "Shut."

  2402-W Series Buildings. Use the operating wrench to shut the valve (located about 224.7 feet west of the buildings). The valve is closed when the valve window words change from "Open" to "Closed."

  2403-W Series Buildings. Use the operating wrench affixed to the valves to shut the valves. The valve is closed when the valve window words change from "Open" to "Shut." The valves are located as follows:

2403-WA and 2403-WB	north of building
2403-WC and 2403-WD	east of building

  2404 Series Buildings. Use the operating wrench to shut off the PIV valves. The valve is closed when the valve window words change from "Open" to "Shut." The valves are located as follows:

  2404-WA valve 260 S located approximately 32.8 feet southwest of the building
  2404-WB valve 418 S located approximately 32.8 feet west of the building
  2404-WC valve 420 S located approximately 32.8 feet southeast of the building

- Sanitary Water/Sewer. For the CWC buildings, the back flow preventers cannot be disconnected by hand. Call the Hanford Fire Department at 911 (373-3800 if using a cellular phone) to disconnect.

- Process Water - N/A.

- Steam - N/A.

- Telephone Service. Call 376-6322 or 376-1611 and ask for the Telephone Service Contractor to disconnect service.

7.2.2 Major Process Disruption/Loss of Plant Control - N/A.

7.2.3 Pressure Release

On discovery of an existing or potential pressure hazard at CWC, ensure the following response:

- Notify personnel to leave the area of the hazard

- Inform the BED
- Evacuate affected areas
- Perform sampling or testing in accordance with recommendations from engineering and industrial safety, and (if indicated) repackage any containers with pressure buildup.

7.2.4 Fire and/or Explosion

Fire fighting in the CWC is complicated by the presence of large amounts of dangerous, mixed, and/or radioactive waste. To avoid contamination, it is extremely important to avoid breaching containers, buildings, or any other containment where there is dangerous, mixed, and/or radioactive waste.

In the event of a fire, the discoverer activates a fire alarm, calls 911 (373-3800 if using a cellular phone), and evacuates. Automatic initiation of a fire alarm (through the smoke detectors and sprinkler systems) also is possible.

- On actuation of the fire alarm, personnel shut down equipment, secure waste, ONLY if time permits. The alarm automatically signals the Hanford Fire Department
- Personnel leave the area/building by the nearest safe exit and proceed to the designated staging area for accountability unless otherwise instructed
- The BED proceeds directly to the MO-720 conference room and sets up the Incident Command Post. The BED will obtain all necessary information pertaining to the incident and will meet with, or send a representative to meet with, the Hanford Fire Department
- The BED informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP
- Depending on the severity of the event, the BED reviews site-wide procedures, the facility specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (facility and area sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides
- The BED informs the site organization as to the extent of the emergency (including estimates of mixed waste or radioactive material quantities released to the environment)
- If operations are stopped in response to a fire, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures

- Hanford Fire Department firefighters extinguish the fire

- The BED ensures that all emergency equipment is cleaned and fit for its intended use following completion of cleanup procedures.

7.2.5 Hazardous Material, Dangerous, Mixed, and/or Radioactive Waste Spill

Spills can result from many sources including process leaks, container spills or leaks, damaged packages or shipments, or personnel error. Spills of mixed waste are complicated by the need to deal with the extra hazard induced by the presence of radioactive materials. The appropriate response to a spill or release is identified as follows.

The discoverer performs the following actions for a spill and/or release:

- Notifies CWC personnel (including BED) of discovery of spill or release

- Initiates notifications to the Hanford Fire Department (HazMat Team) by calling 911 (373-3800 if using a cellular phone), and provides all known information, or verifies that the BED has called 911 or determined that emergency response assistance is not required

- Ensures that any personnel that have been exposed to a spilled chemical and/or have suffered an injury receive proper first aid, immediate medical attention, and that the PHMC health advocate is contacted by the EDO. In case of contact with a chemical, immediately flush eyes or skin with water for at least 15 minutes and promptly remove contaminated clothing and shoes. **Immediately** contact supervision and the Patrol Operations Center at 911 (373-3800 if using cellular phone) to report any injuries or exposure and obtain Hanford Fire Department medical response.

- Takes action to contain and/or to stop the spill or container leak only if all of the following are true:

  - The identity of the substance(s) involved is known

  - Appropriate protective equipment and control/cleanup supplies, e.g., absorbents, are readily available

  - Discoverer can safely perform the action(s) without assistance, or assistance is readily available from other trained personnel.

If any of the previous conditions are not met or if there is any doubt, evacuate the area and remain outside, upwind of the spill. The discoverer will remain available for consultation with the BED, Hanford Fire Department, or other emergency response personnel and restricts access to the area until the arrival of the BED.

The BED performs or arranges for the following:

- Establishes a command post at a safe location, and coordinates further spill mitigation activities

NOTE: The incident command post for all Solid Waste units is located in the MO-720 conference room; the command post may be moved to another location at the discretion of the BED.

- Obtains all available information pertaining to the incident and determines if the incident requires implementation of DOE/RL-94-02

- Reviews site-wide procedures, the CWC specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions (facility and area sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides

- Informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP

- Arranges for care of any injured persons

- Maintains access control at the incident site by keeping unauthorized personnel and vehicles away from the area. Security personnel can be used to assist in site control if control of the boundary is difficult (e.g., repeated incursions). In determining controlled access areas, considers environmental factors such as wind velocity and direction

- Arranges for proper remediation of the incident after evaluation

- Remains available for fire, patrol, and other authorities on the scene, and provides all required information

- Enlists the assistance of alternate BED(s), if response activities are projected to be long term

- Ensures the use of proper protective equipment, remedial techniques, transfer procedures [including ignition source control (e.g., nonsparking tools, grounding containers, isolation of ignition sources, use of explosion-proof electrical equipment, etc.) for flammable or reactive spills], and decontamination procedures by all involved personnel, if remediation is performed by CWC personnel

- Remains at the emergency command post to oversee activities and to provide information, if remediation is performed by the Hanford Fire Department Hazardous Materials Response Team or other response teams

- Ensures proper containerization, packaging, and labeling of recovered spill materials and overpacked containers

NOTE: All containers of spill debris, recovered product, etc., are managed in the same manner as waste containers. Overpacks in use are marked with information pertaining to their contents and noted as to the condition of the inner container (major leak, pinhole leak, etc.).

- If operations are stopped in response to the release, ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures

- Ensures decontamination (or restocking) and restoration of emergency equipment used in the spill remediation before resuming operations

- Provides required reports after the incident, in accordance with DOE/RL-94-02, *Hanford Emergency Response Plan*.

7.2.5.1 Receipt of Damaged or Unacceptable Shipments

In accordance with WAC 173-303-370, when a damaged shipment or transfer of dangerous, mixed, and/or radioactive waste arrives at the CWC and the shipment/transfer is unacceptable for receipt, the damaged shipment/transfer must not be moved.

If a damaged shipment or transfer results in a spill, the following actions are performed:

- Notify the BED, the Hanford Fire Department, and the appropriate personnel to advise of the situation. The BED responds and assists in the evaluation of, and response to, the incident. The BED informs the IC of conditions upon arrival

- Notify the offsite generator or onsite generating unit of the damaged shipment/transfer, and request any information necessary to assist in responding to the spill

- Proceed with remedial action, including overpacking damaged containers, cleanup of spilled material, or other necessary actions to contain the spill. Refer to Section 7.2.5 for remedial actions.

7.2.5.2 Transportation Incidents

In accordance with WAC 173-303-145, the discoverer or BED could take the following actions for leaks or spills resulting from a hazardous materials transportation incident if the actions can be performed without jeopardizing personnel safety, as appropriate:

- Determines the nature of incident
  - Personnel injuries
  - Hazardous material spill with fire
  - Hazardous material spill without fire

- Assists injured personnel

- Initiates notifications to the appropriate personnel by any means available (telephone, radio, passing motorist, etc.) to request assistance from the Hanford Fire Department (Emergency Coordinator/Incident Commander for these type of events), Hanford Patrol, and medical personnel

- Remains in a safe location and attempts to isolate the area to prevent inadvertent personnel access

- The BED informs the IC of any potentially affected personnel (i.e., injured, contaminated, exposed, etc.) when the IC arrives at the ICP.

7.2.6 Radiological Material Release

- Radioactive Gaseous Effluent Discharge. Air sampling will be performed using the appropriate equipment any time a worker is likely to be exposed to 10 percent of the isotopes Derived Air Concentration (DAC). Tritium oxide (HTO) has a DAC value of 20 $\mu Ci/m^3$. For better control of personnel exposures, the following table is included.

Airborne Concentration Equal to 5 mrem Dose Equivalent			
Concentration	**Time**	**Concentration**	**Time**
10 $\mu Ci/m^3$	4 hours	150 $\mu Ci/m^3$	15 minutes
15 $\mu Ci/m^3$	2.5 hours	200 $\mu Ci/m^3$	12 minutes
20 $\mu Ci/m^3$	2 hours	250 $\mu Ci/m^3$	10 minutes
30 $\mu Ci/m^3$	1 hour, 20 min	300 $\mu Ci/m^3$	8 minutes
50 $\mu Ci/m^3$	50 minutes	350 $\mu Ci/m^3$	7 minutes
80 $\mu Ci/m^3$	30 minutes	400 $\mu Ci/m^3$	6 minutes
100 $\mu Ci/m^3$	25 minutes	450 $\mu Ci/m^3$	5 minutes

All personnel possibly exposed to HTO will have a tritium bioassay performed as soon as possible (must be within 30 days of exposure).

- Radioactive Liquid Effluent Discharge. If fire protection water is released, the liquid will be contained and captured with absorbents if feasible. Surrounding areas will be sampled.

- Significant Contamination Spread. Stop work activities and immediately exit the area. Contact RC and stand by for survey and contamination status. Notify immediate manager and the BED.

7.2.7 Criticality

As a Limited Control Facility, the form or distribution of fissionable material precludes a criticality accident.

7.2.8 Dangerous, Mixed, Radioactive Waste not Acceptable (and Cannot be Transported)

- Solid waste operations isolates the area of unacceptable waste.
- Discoverer notifies the BED. The BED responds, evaluates, and notifies appropriate personnel. The BED informs the IC of conditions upon arrival.
- The solid waste project group assembles an investigation team.
- The investigation team determines the circumstances and the actions to be taken.
- The solid waste project group proceeds with the actions determined by the investigation team.
- The solid waste project group submits a written report to Ecology within 15 days of the incident, for dangerous and mixed waste only, in accordance with the criteria set forth in Section 4.0.

7.3 PREVENTION OF RECURRENCE OR SPREAD OF FIRES, EXPLOSIONS, OR RELEASES

The BED, as part of the incident command system, takes the steps necessary to ensure that a secondary release, fire, or explosion does not occur. The following actions are taken:

- Isolates the area of the initial incident by shutting off power, shutting off or closing ventilation systems, etc., to minimize the spread of a release and/or the potential for a fire or explosion
- Inspects containment for leaks, cracks, or other damage
- Inspects for toxic vapor generation
- Removes released material and waste remaining inside of containment structures as soon as possible
- Contains and isolates residual waste material using dikes and absorbents
- Covers or otherwise stabilizes areas where residual released materials remain to prevent migration or spread from wind or precipitation run-off
- Installs new structures, systems, or equipment to enable better management of hazardous materials or dangerous, mixed, and/or radioactive waste

- Reactivates operations in affected areas only after cleanup of residual waste materials is achieved.

7.4 RESPONSE TO NATURAL PHENOMENA

Depending on the severity of the event, the BED reviews site-wide procedures, the CWC specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective actions and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

Responses to natural phenomena are discussed in the following sections.

7.4.1 Seismic Event

The primary role of the emergency response organization in a seismic event is coordinating the initial response to injuries, fires, and fire hazards and acting to contain or control hazardous materials, and dangerous, mixed, and/or radioactive waste releases.

Individuals must remain calm and stay away from windows and hazardous material, dangerous, mixed, and/or radioactive waste locations. Once the shaking has subsided, individuals must evacuate carefully and assist those needing help. The location of any trapped individuals is reported to the BED or to 911 (373-3800 if using a cellular phone).

The BED takes whatever actions are necessary to minimize damage and personnel injuries. Actions include the following:

- Coordinating searches for personnel and potential hazardous conditions (fires, spills, etc.)
- Conducting accountability
- Securing utilities and CWC operations
- Arranging rescue efforts, and notifying 911 (373-3800 if using a cellular phone) for assistance
- Determining if hazardous materials, dangerous, mixed, and/or radioactive waste were released
- Determining current local meteorological conditions
- Warning other operations and implementing protective actions if the release poses a danger
- Providing personnel and resource assistance to other operations if required and possible.

7.4.2 Volcanic Eruption/Ashfall

When notified of an impending ashfall, the BED will implement measures to minimize the impact of the ashfall, such as:

- Installing filter media over building ventilation intakes
- Installing filter media or protective coverings on outdoor equipment that could be adversely affected by the ash (diesel generators, equipment rooms, etc.)
- Shutting down some or all operations and processes
- Sealing secondary use exterior doors
- Releasing all but essential personnel to go home.

If as a result of the ashfall other emergency conditions arise (e.g., fires due to electrical shorts or lightning), response is as described in other paragraphs of this section.

7.4.3 High Winds/Tornados

Upon notification of impending high winds, the BED takes steps necessary to secure all outdoor waste, hazardous material containers, and storage locations. Personnel must shut all doors and warn other personnel to use extreme caution when entering or exiting the building. The BED contacts the on-call manager for maintenance support as needed.

7.4.4 Flood - N/A.

7.4.5 Range Fire

If a range fire reaches the CWC, the fire could have the potential to ignite flammable stored materials. Personnel must secure ventilation systems and exterior doors on buildings to prevent sparks from entering the buildings, and notify the BED. A fire watch will be posted at the discretion of the BED.

Responses to range fires are handled by preventive measures (i.e., keeping hazardous material and waste accumulation areas free of combustible materials such as weeds and brush). If a range fire breaches the CWC boundary, the response is as described in Section 7.2.4.

7.4.6 Aircraft Crash

The response to an aircraft crash is the same as that for responding to a fire and/or explosion.

7.5 SECURITY CONTINGENCIES

Depending on the severity of the event, the BED reviews site-wide procedures, the CWC specific emergency response guide, specific sections of this plan, and/or POPs and classifies the event and initiates area protective

actions (facility and area sirens, notifications, etc.) and site emergency response organization activation. Attachment A provides a list of procedures and emergency response guides.

Security contingencies are discussed in the following sections.

7.5.1 Bomb Threat

- Telephone Threat. Individuals receiving telephoned threats try to gain as much information as possible from the caller (using a bomb threat checklist if available). On conclusion of the call, notify the BED and Security via 911 (373-3800 if using a cellular phone).

  The BED evacuates CWC and queries personnel at the staging area regarding any suspicious objects. When Security personnel arrive, follow their instructions.

- Written Threat. Receivers of written threats handle the letter as little as possible. Notify the BED and Security. Depending on the content of the letter, the CWC may or may not be evacuated. The letter is turned over to Security personnel and their instructions are followed.

7.5.2 Hostage Situation/Armed Intruder

The discoverer of a hostage situation or an armed intruder reports this to 911 (373-3800 if using a cellular phone) and to the BED if possible. The BED, after conferring with Security personnel, may covertly evacuate areas of the CWC not observable by the hostage taker(s)/intruder. No alarms will be sounded.

Security will determine the remaining response actions and will activate the Hostage Negotiating Team if necessary.

7.5.3 Suspicious Object

The discoverer of a suspicious object reports this to the BED and calls 911 (373-3800 if using a cellular phone), if possible, and ensures that the object is not disturbed.

The BED will evacuate the CWC and (based on the description provided by the discoverer) attempt to determine the identity or owner of the object. This may be done by questioning CWC personnel at the staging area. If the identity/ownership of the object cannot be determined, Security will assume command of the incident. The canine unit will be used to determine if the package contains explosives. If there is a positive indication of explosives or it cannot be assured that there are no explosives, then the Richland Police Department's Explosive Ordnance Team will be dispatched to properly dispose of the object.

8.0 TERMINATION OF EVENT, INCIDENT RECOVERY AND RESTART OF OPERATIONS

DOE/RL-94-02, Section 8.0, describes these considerations. The extent by which these actions are employed is based on the incident classification of each event. In addition, DOE/RL-94-02 also contains considerations for the management of incompatible wastes, which may apply.

8.1 TERMINATION OF EVENT

For events where the RL-EOC is activated, the RL Emergency Manager has the authority to declare event termination. This decision is based on input from the BED, IC, and other emergency response organization members. For events where the RL-EOC is not activated, the incident command structure and staff will declare event termination.

8.2 INCIDENT RECOVERY AND RESTART OF OPERATIONS

A recovery plan is developed when necessary. A recovery plan is needed following an event when further risk could be introduced to personnel, the CWC, or the environment through recovery action and/or to maximize the preservation of evidence. Depending on the magnitude of the event and the effort required to recover from the event, recovery planning might involve personnel from RL and other contractors. If a recovery plan is required, the plan is reviewed by appropriate personnel and approved by a Recovery Manager before restart. Restart of operations is performed in accordance with the approved plan.

If this plan were implemented for a WAC 173-303-360 emergency (Section 4.0), Ecology must be notified before operations can resume. DOE/RL-94-02, Section 6.1, discusses different reports to outside agencies. This notification is in addition to those required reports and must include the following statements:

- There are no incompatibility issues with the waste and released materials from the incident.
- All the equipment has been cleaned, is fit for its intended use, and placed back into service. The notification can be made via telephone conference. Additional information that Ecology requests regarding these restart conditions will be included in the required 15-day report identified in WAC 173-303-360(2)(k).

For emergencies not involving activation of the RL-EOC, the BED ensures that conditions are restored to normal before operations are resumed. If the Hanford Site Emergency Organization was activated and the emergency phase is complete, a special recovery organization could be appointed at the discretion of RL to restore conditions to normal. The makeup of this organization depends on the extent of the damage and its effects. The onsite recovery organization will be appointed by the appropriate contractor's management.

8.3 INCOMPATIBLE WASTE

After an event, the BED or the onsite recovery organization ensures that no waste that might be incompatible with the released material is treated, stored, and/or disposed until cleanup is completed. Cleanup actions are taken by CWC personnel or other assigned personnel. DOE/RL-94-02, Section 8.3, describes action to be taken, which might include, but are not limited to, any of the following:

- Neutralization of corrosive spills
- Chemical treatment of reactive materials to reduce hazards
- Overpacking or transfer of contents from leaking containers
- Use of sorbents to contain and/or absorb leaking liquids for containerization and storage and/or disposal
- Decontamination of solid surfaces impacted by released material, e.g., intact containers, equipment, floors, containment systems, etc.
- Disposal of contaminated porous materials that cannot be decontaminated and any contaminated soil
- Containerizing and sampling of recovered materials for classification and determination for proper management
- Followup sampling of decontaminated surfaces to determine adequacy of cleanup techniques as appropriate.

Waste from cleanup activities is designated and managed as newly generated waste. A field check for compatibility before storage is performed, as necessary. Incompatible waste is not placed in the same container. Containers of waste are placed in approved storage areas appropriate for their compatibility class.

If incompatibility of waste was a factor in the incident, the BED or the onsite recovery organization ensures that the cause is corrected. Examples include modification of an incompatibility chart or increased scrutiny of waste from an offsite generator or onsite generating unit when incorrectly designated waste caused or contributed to an incident.

8.4 POST EMERGENCY EQUIPMENT MAINTENANCE AND DECONTAMINATION

All equipment used during an incident is decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment is checked for proper operation before storage for subsequent use. Consumables and disposable materials are restocked. Fire extinguishers are recharged or replaced.

The BED ensures that all equipment is cleaned and fit for its intended use before operations are resumed. Depleted stocks of neutralizing and absorbing materials are replenished, self-contained breathing apparatus are cleaned and refilled, protective clothing is cleaned or disposed of and restocked, etc.

Factors to consider when establishing an equipment and personnel decontamination station are as follows:

- Water supplies
- Containment/catch basins and/or systems
- Personnel necessary to accomplish proper decontamination
- Protective clothing
- Decontamination supplies (buckets, brushes, soap, chemicals as needed)
- Risk to personnel
- Weather conditions [i.e., severe heat, cold (current and forecasted)]
- Toxicity of material
- Porosity of equipment to be decontaminated
- Disposal requirements of decontamination rinse
- Use of controlled zones to maintain contamination control.

9.0 EMERGENCY EQUIPMENT

Hanford Site emergency resources and equipment are described and listed in DOE/RL-94-02, Appendix C.

9.1 FIXED EMERGENCY EQUIPMENT

Central Waste Complex Fixed Emergency Equipment		
Type	**Location**	**Capability**
Dry pipe valve sprinkler system	2401-W 2402-W 2402-WB through 2402-WL 2403-WA through 2403-WD 2404-WA through 2404-WC	Assist in fire control
Sprinkler system fire department connections	Outside FS-19 and FS-20 (not labeled)	Assist in fire control
Fire Alarms	Storage buildings	Warn Personnel of Fire

9.2 PORTABLE EMERGENCY EQUIPMENT

Central Waste Complex Portable Emergency Equipment		
Type	**Location**	**Capability**
Fire extinguishers	Storage building	Fire control
Dry chemical	2401-W 2402-W through 2402-WK 2403-WA through 2403-WD 2404-WA through 2404-WC Flammable Waste Storage Modules 2120-WA and 2120-WB Sprung Structures Waste Storage Pad	Class A, B, and C fires
Metlx	Alkali Metal Waste Storage Modules	Class D fires

9.3 COMMUNICATIONS EQUIPMENT/WARNING SYSTEMS

Signal	Meaning	Actions
Continuous 3-5 minute siren	Evacuation	Leave area immediately as directed
Wavering 3-5 minute siren	Take cover alarm	Seek shelter immediately as directed
Crash phone	Relay emergency information	Respond as directed

9.4 PERSONAL PROTECTIVE EQUIPMENT

Central Waste Complex Protective Equipment		
Type	**Location**	**Capability**
Supplied air	Available from the Fire Department	Protection from airborne hazards
Full-face respirator	271-T Mask Station	Protection from airborne particulates
Self-contained breathing apparatus	Available from the Fire Department	Breathing air supplied for work in hazardous atmospheres
PPE clothing	MO-288 Conex MO-223 Conex	Personnel protection against exposure

9.5 SPILL CONTROL AND CONTAINMENT SUPPLIES

Spill control equipment to be used for dangerous, mixed, and/or radioactive waste during an emergency and/or recovery phase is as follows.

Central Waste Complex Spill Control Equipment		
Type	**Location**	**Capability**
Spill control kit	2401-W, 2402-W, 2402-WD, 2402-WH, 2402-WK 2403-WA North of 2404-WC Staging area	Cleanup organic solvents, inorganic solvents, acids, caustics, oxidizers, and polychlorinated biphenyl (PCB) spills; Radiation rope and signs

9.6 INCIDENT COMMAND POST

Buildings MO-720 and MO-438 contain areas for use in an emergency.

10.0 COORDINATION AGREEMENTS

RL has established a number of coordination agreements, or memoranda of understanding (MOU), with various agencies to ensure proper response resource availability for incidents involving the Hanford Site. A description of the agreements is contained in DOE/RL-94-02, Table 3-1.

11.0 REQUIRED REPORTS

Post-incident written reports are required for certain incidents on the Hanford Site. The reports are described in DOE/RL-94-02, Section 6.1.

12.0 PLAN LOCATION

Copies of this plan are maintained at the following locations:

- MO-720 Conference Room
- Office of the BED and alternate
- RL-EOC
- Hanford Local Area Network (HLAN)
- MO-288.

NOTE: In accordance with coordination agreements, the Hanford Fire Department provides direction during onsite event response and provides all needed information to support agencies that may be assisting the onsite responses. Therefore, only copies of plans for facilities where offsite agencies are the initial responders (e.g., 1163 Stores Building) will be provided to offsite support agencies.

13.0 BUILDING EMERGENCY ORGANIZATION

The complete building emergency organization listing of positions, names, work locations, and telephone numbers for the CWC is maintained in a separate, internally controlled document. Copies are distributed, at a minimum, to appropriate facility locations and to Hanford Site Emergency Preparedness. In addition, names and work and home telephone numbers of the BEDs and alternates are available from the Patrol Operations Center (373-3800), in accordance with the *Hanford Facility RCRA Permit*, Dangerous Waste Portion, General Condition II.A.4.

14.0 REFERENCES

DOE/RL-94-02, *Hanford Emergency Response Plan*, as amended.

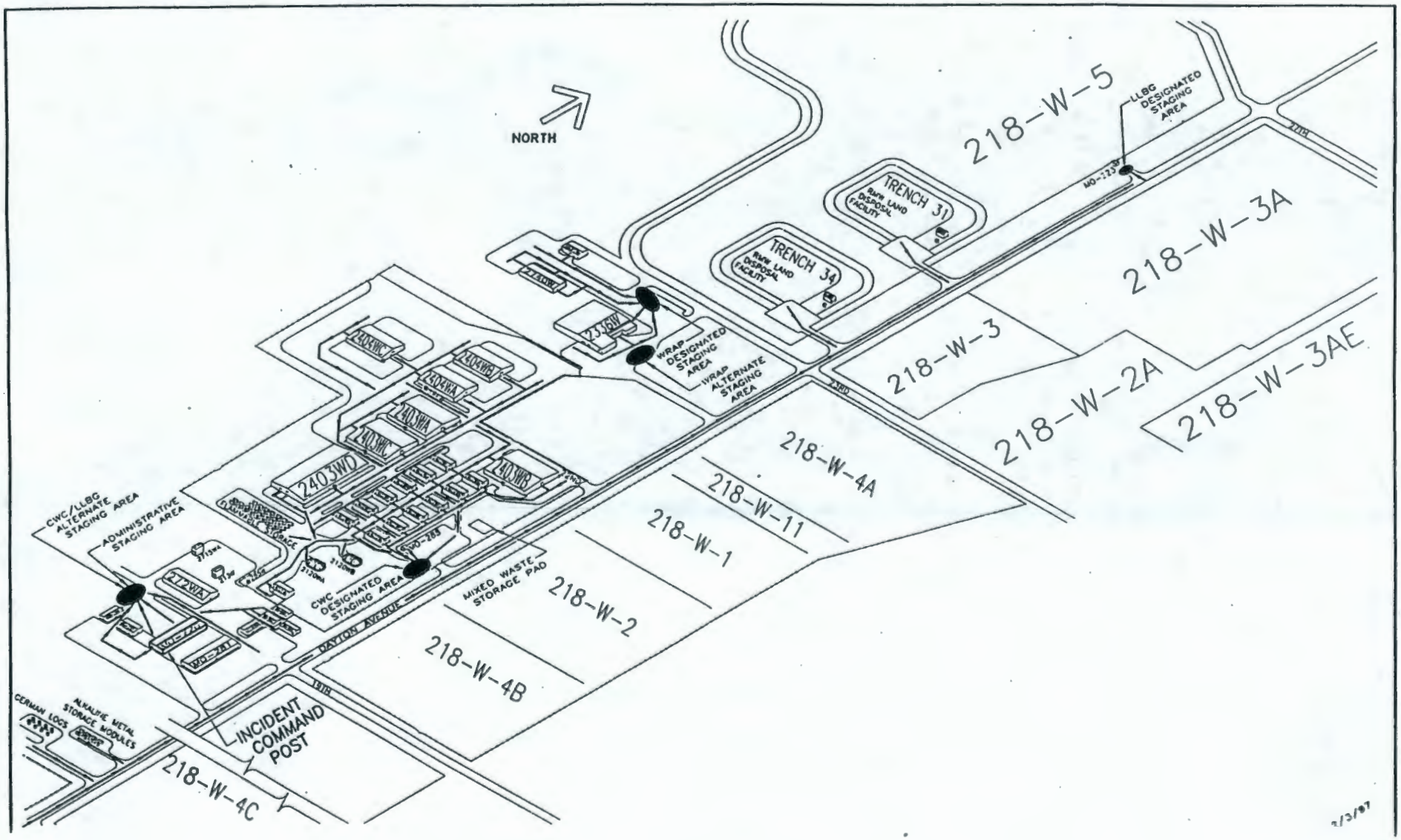
DOE Order 232.1, "Occurrence Reporting and Processing of Operations Information," U.S. Department of Energy, Washington D.C.

NIOSH, 1996, *Pocket Guide to Chemical Hazards*, National Institute of Occupational Safety and Health, U.S. Department of Health and Human Resources, Public Health Service, Centers for Disease Control, Washington, D.C.

WAC 173-303, "Washington State Dangerous Waste Regulations," *Washington Administrative Code*, Washington State Department of Ecology, Olympia, Washington, as amended.

Hanford Facility RCRA Permit, Dangerous Waste Portion, Washington State Department of Ecology, Olympia, Washington, as amended.

Figure 1. Overview of the Central Waste Complex



ATTACHMENT A

Listing of Procedures and Guides

Site-Wide Procedures

DOE-0223, *Emergency Plan Implementing Procedures*, RLEP-3.4, "Emergency Termination, Reentry, and Recovery"

DOE-0223, *Emergency Plan Implementing Procedures*, RLEP-1.1, "Hanford Incident Command System and Event Recognition and Classification"

Facility Specific Emergency Response Guide

HNF-IP-1294, *Solid Waste Management Emergency Response Guide*

NOTE: The *Solid Waste Management Emergency Response Guide* provides more detailed response direction for all emergencies identified in Chapter 7.0 of this Building Emergency Plan.

APPENDIX 8A

TRAINING

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R. W. Reddinger, Manager
Training

5/21/99
Date

R. B. Barmettlor, Manager
Solid Waste Project

5/24/99
Date

B. M. Barnes, Environmental Compliance Officer
Solid Waste Project

5/21/99
Date

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1.0 PURPOSE

This document outlines the Dangerous Waste Training Program (DWTP) for the Central Waste Complex (CWC) organization. CWC is permitted as a treatment, storage, and/or disposal (TSD) unit on the Hanford Facility. The DWTP implements the requirements of Washington Administrative Code (WAC) 173-303-330 and Title 40 Code of Federal Regulations (CFR) 264.16 for the development of a written dangerous waste training plan.

2.0 SCOPE

This DWTP applies to personnel who perform work at, or in support of, CWC. The DWTP requirements are based on an assessment of duties and responsibilities of personnel responsible for dangerous waste management (handling, treatment, storage, and/or disposal of dangerous and/or mixed waste). In addition, this training program ensures that personnel are familiar with emergency equipment and/or systems and emergency procedures to safely operate and maintain the CWC.

3.0 DEFINITIONS

NONE

4.0 RESPONSIBILITIES

Personnel responsibilities are described in the following sections.

4.1 Facility Manager

The Facility Manager has the overall responsibility to meet all training requirements of WAC 173-303-330 and Condition II.C of the Hanford Facility RCRA Permit (Ecology 1994). To meet the requirements in WAC 173-303-330(1)(a), the training director position is described in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE/RL-91-28, Chapter 8.0). Because the Facility Manager has overall responsibility in the assignment of training for personnel, the Facility Manager is involved in directing training at CWC.

4.2 Training Manager

The training manager has overall responsibility for establishing, conducting, and administering the training program for CWC to ensure personnel are trained to meet their assigned jobs.

4.3 Facility Management

Managers, under the direction of the Facility Manager, are responsible for the following:

- Determining required training for all personnel assigned to CWC, as required by job assignment.
- Ensuring that personnel assigned to CWC receive required initial training, continuing training, and retraining as needed to be qualified to perform their assigned duties in dangerous waste management.
- Maintaining up-to-date personnel training records for assigned personnel.

4.4 Training Personnel

Training personnel are responsible for the following:

- Reviewing training requirements whenever regulations change or annually, at a minimum, for adherence to regulations and to ensure the requirements reflect the current systems, procedures, and policies applicable to each position.

- Developing and conducting training on new and existing systems or equipment.

4.5 Central Waste Complex Personnel

CWC and CWC support personnel are responsible for the following:

- Working with their managers to define applicable training
- Completing necessary training to gain/maintain qualifications.

5.0 TRAINING PROGRAM

The CWC DWTP is implemented based on training requirements related to job responsibilities.

5.1 Training Requirements

Training requirements for individual personnel are tracked in the Training Matrix (TMX).

The responsible manager reviews training requirements when personnel change positions or assume new job responsibilities, when changes are identified to this training plan (other than editorial changes), or annually, as a minimum. Updates to the training requirements are made as necessary.

Personnel must meet the training requirements within 6 months of the date of hire, within 6 months of assignment to CWC, or within 6 months of assignment to a new position within the CWC. Personnel in-training will not make decisions that could affect facility safety. Personnel independently can perform specific jobs or tasks for which they are qualified. Personnel performing work who do not meet all training requirements must be supervised by a qualified person.

As new requirements are identified and indicated in this training plan, CWC personnel will comply with the new requirements within 6 months of the effective date of the requirement.

5.2 Job Titles and Descriptions

Personnel are assigned a job title and a job description. The job description includes requisite skills, work experience, education, and other qualifications, and a brief list of duties and/or responsibilities. This information is maintained by the human resources department.

5.3 Dangerous Waste Worker Position

CWC personnel are categorized into six worker positions: (1) All Employee, (2) General Worker, (3) Advanced General Worker, (4) General Manager, (5) General Shipper, and (6) Waste Designator.

Personnel are categorized into these positions based on duties and responsibilities as determined by a job analysis or management assessment. In the event personnel duties and responsibilities fall into more than one position, personnel will complete the training requirements for each position.

The duties and responsibilities described for the positions in this section, coupled with the information described in Section 5.4, provide the necessary information to determine the training for appropriate personnel. The categories are based on duties and responsibilities of personnel associated with dangerous waste management at CWC and are provided in the following sections.

5.3.1 All Employee

Personnel included in this position are those who do not fall into one of the other five positions and have no duties or responsibilities directly associated with dangerous waste management. Typical job titles of personnel in this position include secretaries, clerks, and oversight personnel.

Most visitors, categorized as All Employee, generally tour, provide oversight, or are brought onsite for interviews. Other non-Hanford Facility personnel who gain access to the CWC to complete work in controlled areas but do not become involved in the management of dangerous waste are categorized as All Employee.

5.3.2 General Worker

Personnel with limited dangerous waste management duties, such as activities associated with the generation of dangerous waste or facility maintenance or modification, are categorized as General Workers. Typical job titles of personnel in this position include maintenance personnel, health physics technicians, and transporters.

Personnel categorized as General Workers could be assigned duties and responsibilities for the following:

- Placing waste into pre-approved containers and filling out log sheets where applicable
- Completing radiological surveys of dangerous waste
- Moving containers or loading packaged containers onto trucks
- Responding to a spill or release of known contents where duties and responsibilities are limited to containing the spill/release, returning the container to an upright position, and/or placing the known spilled material or waste into a pre-approved container.
- Applying container markings or labels based on direction from an Advanced General Worker, General Manager, or General Shipper.

5.3.3 Advanced General Worker

Personnel whose duties exceed those of a General Worker for dangerous waste management are categorized as Advanced General Workers. The typical job title of personnel in this position is Nuclear Process Operator.

Responsibilities of an Advanced General Worker for management of dangerous waste in containers can include the following:

- Determining container markings and labels
- Preparing container log sheets
- Completing waste inventories
- Sampling of waste
- Packaging and transporting waste samples
- Responding to spills and releases of waste in accordance with approved procedures
- Performing inspections and surveillances
- Receiving transfers and/or shipments of waste.

5.3.4 General Manager

Personnel identified as General Managers coordinate, direct, and oversee the work of General or Advanced General Workers in the management of dangerous waste or in the operation and control of CWC. Other duties could include responsibilities during emergency events requiring implementation of the building emergency plan. Personnel at the CWC who could be categorized as General Managers include: the operations manager (OM), team leads (TLs), environmental compliance officer (ECO), cognizant engineers (Cog Engrs), persons in charge (PIC), hazardous material specialist (HMS), and building emergency director (BED). The TMX identifies personnel currently filling these positions.

5.3.4.1 Operations Manager

OM responsibilities include the following:

- Supervising, coordinating, and directing the activities of the TLs
- Maintaining control over the CWC operations in accordance with established operating procedures and policies, DOE Orders, and federal and state regulations
- Directing, controlling, and coordinating the storage and transfer of dangerous waste
- Complying with CWC permits
- Providing guidance to TLs during abnormal or emergency conditions.

5.3.4.2 Team Leads

TLs responsibilities include the following:

- Supervising and coordinating CWC operation and maintenance activities
- Maintaining control of CWC operations in accordance with established policies and operating procedures, DOE Orders, and federal and state regulations
- Conducting pre-job safety meetings with personnel
- Maintaining operational records

- Reviewing and revising CWC operations procedures
- Recognizing and responding to abnormal and/or emergency conditions
- Supervising the storage, handling, and transfer of dangerous and/or mixed waste
- Complying with CWC permits.

5.3.4.3 Environmental Compliance Officer

ECO responsibilities include the following:

- Ensuring CWC management is aware of environmental compliance requirements and issues
- Providing support to ensure compliance with applicable environmental rules and regulations
- Serving as CWC liaison on environmental issues and permits
- Advising CWC management of emerging environmental requirements and policies, and recommending implementation strategies to ensure compliance
- Ensuring compliance with CWC permits.

5.3.4.4 Cognizant Engineers

Cog Engrs responsibilities include the following:

- Ensuring emergency and monitoring equipment, process equipment, procedures, designs, etc., comply with DOE Orders, federal and state regulations, national standards, and applicable engineering procedures and management standards
- Issuing and maintaining operation documentation, operating procedures, flowsheets, specifications, process test plans and procedures, operational safety requirements, etc.
- Performing evaluations of CWC process to ensure compliance with process control requirements and permits
- Preparing and approving engineering design documents and drawings in compliance with applicable policies, procedures, and instructions per national standards and codes
- Providing technical assistance for hazardous material and dangerous waste spill response.

5.3.4.5 Person In Charge

PIC responsibilities include providing in-field direction of tasks in progress.

5.3.4.6 Hazardous Material Specialist

HMS responsibilities include the following:

- Supervising and coordinating hazardous waste storage and transfer
- Providing approved storage containers and applicable markings
- Interfacing with other organizations to ensure proper and timely disposal of hazardous waste
- Preparing and maintaining applicable hazardous waste documentation in accordance with DOE Orders and federal and state regulations
- Ensuring non-regulated alternatives are used whenever possible
- Reviewing hazardous waste documentation and providing hazardous waste disposition instructions as required.

5.3.4.7 Building Emergency Director

BED responsibilities include the following:

- Acting as the emergency coordinator
- Assessing incidents to determine response necessary to protect the personnel, facility, and the environment
- Arranging for care of any injured personnel
- Remaining available for fire, patrol, and other authorities on the scene, and provides all required information
- Ensuring proper containerization, packaging, and labeling of recovered spill materials
- Assisting in preparing the necessary post-incident documentation.

5.3.5 General Shipper

Personnel who prepare and sign waste movement documentation for both onsite transfers or offsite shipments of dangerous waste are categorized as General Shipper.

5.3.6 Waste Designator

Personnel who perform and/or complete waste designations are categorized as a Waste Designator.

5.4 Required Training

Attachment 1 is a matrix of required RCRA training courses. Training for emergency procedures, emergency equipment, and emergency systems to meet the requirements of WAC 173-330(1)(d) is included in these courses as specified in the course description. Attachment 2 provides required training for personnel by job category.

Personnel who have completed training offsite are required to provide a certificate or other suitable evidence of training course(s) that meet the requirements of WAC 173-303 and this plan.

5.5 Non-Hanford Facility Personnel

Non-Hanford Facility personnel who perform work at CWC must complete the appropriate level of training determined by line management according to the tasks they will perform.

CWC management is responsible for ensuring that non-Hanford Facility personnel training requirements are met before granting access. Some personnel are granted access without the required training because they are either escorted or supervised by qualified personnel within CWC.

5.6 Conduct of Training

The training program uses a systematic approach to training. Training design, development, and implementation are based on learning objectives derived from the analysis of the specific job/task. Training is provided using classroom instruction, on-the-job training, required reading, computer-based training methods, and/or by providing drills. Training is developed and provided by personnel knowledgeable in dangerous waste management policies and/or procedures.

5.7 Documentation of Training

Classroom training is documented on course completion rosters, which are signed by students attending the course. Written examinations are signed by the student at the time of taking the exam and when reviewed with the instructor who grades the examination.

Training record files for CWC personnel are stored in the TMX computer database, which is accessed by the Facility Records Specialist. A report is generated from the database to inform CWC management when training for personnel is within 90 days of expiration. An example of a TMX report is included in Attachment 3. Copies of completed TSD unit-specific training certifications/qualifications are available from the WMH training department. Additional information regarding training records can be accessed through the Human Resources Information System (HRIS). The HRIS is managed by the Hanford Training Records organization.

Training records summaries for support organization personnel are also stored in the HRIS. Training records for former personnel are kept on the HRIS for 3 years from the date last worked at the CWC. Original signed and dated training records are maintained by the Hanford Training Records organization. These records are transferred quarterly to the Records Holding Facility in Richland, Washington. After approximately one year at the Records Holding Center, the original training records are archived.

5.7.1 Access of Training Records

When a training record is requested during an inspection, an electronic data storage record will be provided. If an electronic data storage record does not satisfy the inspection concerns, a hard copy training record will be provided. Training records of former personnel may not be readily available to CWC personnel and may require a representative from the Training Records organization to access this information.

5.7.2 Determining Current Training Status

The electronic data storage training record, coupled with this training plan, will give the ability to quickly determine the training status of personnel in the field.

5.7.3 Personnel List

A list of personnel for Advanced General Workers, General Managers, General Shippers and Waste Designators is maintained on TMX, including the direct link between these positions and the individuals filling the positions. The TMX is updated quarterly.

6.0 REFERENCES

DOE/RL, 1994, DOE-RL/U.S. Army Corps of Engineers to Ecology "State of Washington Department of Ecology Administrative Order No. DE94NM-063" dated April 14, 1994, items 3 and 4.

DOE/RL-91-28, *Hanford Facility Dangerous Waste Permit Application, General Information Portion*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste*, Washington State Department of Ecology, Olympia, Washington, modified periodically.

7.0 ATTACHMENTS

ATTACHMENT 1. RCRA TRAINING PROGRAM COURSE DESCRIPTIONS

ATTACHMENT 2. REQUIRED TRAINING FOR CENTRAL WASTE COMPLEX PERSONNEL

ATTACHMENT 3. EXAMPLE OF TMX DATABASE REPORT

ATTACHMENT 1. RCRA TRAINING PROGRAM COURSE DESCRIPTIONS

The following constitute the RCRA training program courses as determined by (1) WAC 173-303, (2) the Hanford Facility RCRA Permit, and (3) correspondence between DOE-RL and Ecology on dangerous waste training.

Title	**000001 Hanford General Employee Training**
Description	Course covers DOE Orders and applicable policies pertaining to employer and personnel rights and responsibilities, general radiation training, hazard communications, dangerous waste, fire prevention, personal protective equipment, safety requirements, emergency preparedness, accident reporting, and avenues for addressing safety concerns.
Mandating document(s)	Hanford Facility RCRA Permit, General Condition II.C.2 and II.C.4.
Target audience	All Hanford Facility personnel working on the Hanford Facility.
Frequency	Annual.

Title	**02006G Waste Management Awareness**
Description	Course introduces personnel to federal laws governing chemical safety in the work place. The course provides the hazardous material/waste worker with the basic fundamentals for safe use of hazardous materials and initial accumulation or storage of dangerous or mixed waste in containers. The concepts covered in this course instruct personnel on specific waste generation procedures and requirements, which include: (1) applicable waste management practices (i.e., waste stream identification, waste segregation practices, completing container logsheets, and housekeeping requirements), (2) proper responses to incidents pertaining to the waste in the accumulation containers, (3) proper responses to dealing with waste of unknown origins, and (4) proper responses to questions posed in the field concerning the above elements.
Mandating document(s)	WAC 173-303-330(1) Letter: DOE-RL/U.S. Army Corps of Engineers to Ecology "State of Washington Department of Ecology Administrative Order No. DE 94NM-063" dated April 14, 1994, items 3 and 4. Hanford Facility RCRA Permit, General Conditions II.C.1 and II.C.4.
Target audience	Hanford Facility personnel categorized as a General Worker, Advanced General Worker, and General Manager. Subcontractors categorized as General Workers. Other courses may provide equivalent training so that credit for this course is provided when the electronic data storage training record is generated.
Frequency	One-time only. [Annual refresher training is not required because training is adequately covered through 035110 and/or 301100 (03E047).]

Title	**020159 Advanced Course 2 - Hazardous Waste Shipper Certification**
Description	Course defines responsibilities and liabilities with regard to compliance to manifesting requirements and U.S. Department of Transportation regulations, including placarding, identifying proper shipping names, and loading requirements.
Mandating document(s)	WAC 173-303-330(1), -180, -190, and -370. Hanford Facility RCRA Permit, General Condition II.Q, as applicable
Target audience	General Shippers of dangerous or mixed waste on roadways anywhere on the Hanford Facility.
Frequency	Every 3 years.

Title	**02028B Building Emergency Director Training**
Description	Course provides an overview of the responsibilities of the Building Emergency Director, identifies the building emergency organizations and actions required during an event, discusses implementing the contingency plan, and discusses drill and exercise requirements.
Mandating document(s)	WAC 173-303-330(1), -340, -350, and -360.
Target audience	Hanford Facility personnel categorized as General Managers because they perform the responsibilities of a RCRA Emergency Coordinator through the title of Building Emergency Director or alternate (e.g., On-Call Manager).
Frequency	Initial (retrained annually by 037510 Building Emergency Director/Warden Requalification).

Title	**300900 Solid Waste Project Facility Orientation**
Description	Introduction to the Solid Waste Project including mission, layout, hazards, and emergency response procedures.
Mandating document(s)	WAC 173-303-330 Hanford Facility RCRA Permit, General Condition II.C.
Target audience	All personnel assigned to, or working at, Central Waste Complex.
Frequency	One-time only.

Title	**300910 Solid Waste Management Operator Certification**
Description	Course provides nuclear process operators with an overview of waste management facilities, activities, and conduct of operations.
Mandating document(s)	WMH-200, Section 5.1, DOE Order 5480.20A
Target audience	Operations personnel categorized as Advanced General Workers
Frequency	Every 2 years.

Title	**300925 Solid Waste Project Management Storage Operator Certification**
Description	Qualifies nuclear process operators to operate the systems associated with the CWC including management of waste in containers.
Mandating document(s)	WAC 173-303-330, -630.
Target audience	Operations personnel categorized as Advanced General Workers.
Frequency	Every 2 years.

Title	**300930 Solid Waste Project Management Disposal Operator Qualification**
Description	Course qualifies nuclear process operators to operate the systems associated with the mixed waste trenches including management of waste in containers, tanks, and landfills.
Mandating document(s)	WAC 173-303-330, -665
Target audience	Operations personnel categorized as Advanced General Workers.
Frequency	Every 2 years.

Title	**035010 Waste Designation**
Description	Course teaches dangerous waste designation according to WAC 173-303. Class content includes section-by-section lecture on the regulations, with examples following each section. Students complete examples using a waste designation flow chart. Examples addressed include: listed waste, characteristic waste, and Washington State criteria of toxicity and persistent.
Mandating document(s)	WAC 173-303-330(1), -070, and -080 through -100.
Target audience	General Shippers and Waste Designators.
Frequency	One-time only. (Annual retrain is only required for those personnel who are required to complete 035012.)

Title	**035012 Waste Designation Qualification**
Description	Course provides qualification to be a Waste Designator.
Mandating document(s)	WAC 173-303-330(1), -070, and -080 through -100.
Target audience	Waste Designators.
Frequency	Annual.

Title	**035020 Facility Waste Sampling and Analysis**
Description	Course presents waste sampling methodologies according to U.S. Environmental Protection Agency Protocols SW-846, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods". This course also covers documentation requirements in a sampling plan and/or waste analysis plan, field and laboratory quality control/assurance, the data quality objectives process, and use of actual sampling equipment as specified by WAC 173-303-110. Finally, topics on listed waste management pertaining to sample management and available onsite sampling services are covered.
Mandating document(s)	WAC 173-303-330(1), -070, -110, and -300.
Target audience	General Managers and/or General Shippers because they perform responsibilities for sampling waste or effluent streams.
Frequency	One-time only.

Title	**035100 Container Waste Management - Initial**
Description	Course covers general training requirements pertaining to waste management of container in less-than-90-day accumulation areas and TSD units. The course incorporates WAC 173-303-200(1), -630, DOE Orders, and container management policy. Course includes practical exercises for hands-on experience with the packaging of dangerous or mixed waste, and preparation of packages for final destination. This course <u>does not cover</u> waste management aspects pertaining to other RCRA waste management units such as tank systems, surface impoundments, containment buildings, landfills, etc.
Mandating document(s)	WAC 173-303-330(1), -630, -200(1) and waste minimization.
Target audience	Advanced General Workers and General Managers, because they are immediate managers of or direct Advanced General Workers, who manage containers of dangerous or mixed waste.
Frequency	Initial (refresher annually by 035110 Container Waste Management Training).

Title	**035110 Container Waste Management - Refresher**
Description	Refresher Course for Container Waste Management - Initial.
Mandating document	WAC 173-303-330(1), -630, -200(1), and waste minimization.
Target audience	Advanced General Workers and General Managers categorized because they are immediate managers of or direct Advanced General Workers who manage dangerous or mixed waste in containers.
Frequency	Annual.

Title	**035120 Waste Management Administration - Initial**
Description	Course is designed for personnel preparing to become shippers of dangerous and/or mixed waste. This course covers regulatory and onsite policies, forms, reports, forecasts, and plans. Topics also covered include: waste characterization, waste certification summaries, waste specification system, and solid waste storage/disposal records. In addition, students learn how these forms are used to complete shipping papers.
Mandating document(s)	WAC 173-303-330(1), -630, -200, -210, -220, -380, and -390.
Target audience	General Shippers categorized because they direct Advanced General Workers in the management of containers of dangerous and mixed waste.
Frequency	Initial (refresher annually by 035130 - Waste Management Administration).

Title	**035130 Waste Management Administration - Refresher**
Description	Refresher course for Waste Management Administration - Initial.
Mandating document(s)	WAC 173-303-330(1), -630, -200, -210, -220, -380, and -390.
Target audience	General Shippers categorized because they direct Advanced General Workers in the management of containers of dangerous and mixed waste.
Frequency	Annual.

Title	**037510 Building Emergency Director/Warden Requalification**
Description	Refresher for Building Emergency Director Training.
Mandating document(s)	WAC 173-303-330, -340, -350, and -360.
Target audience	General Managers categorized because they have the responsibilities of the RCRA Emergency Coordinator in WAC 173-303-360.
Frequency	Annual.

Title	**301100 (03E047) Facility Emergency and Hazard Information Checklist for Solid Waste Project**
Description	Course consists of a review of specific chemical hazards associated with operating the Central Waste Complex, as covered by the Central Waste Complex Building Emergency Plan. The training is completed by the supervisor, manager, or a designated individual using a checklist. Information reviewed includes hazards in the work area and emergency response requirements, including communication and alarm systems, response to groundwater contamination incidents, and response to fires. The training is completed by the immediate manager or a designated individual using a checklist.
Mandating document(s)	WAC 173-303-330(1)(d), -340, -350, and -360.
Target audience	Central Waste Complex personnel categorized as General Workers, Advanced General Workers, and General Managers.
Frequency	Annual.

ATTACHMENT 2. REQUIRED TRAINING FOR CENTRAL WASTE COMPLEX

Position	Job Title	Required Training
All Employee	All other Job Titles not specifically listed.	000001, 300900
General Worker	Radiological Control Technician, Maintenance Personnel (Electrician, Instrument Technician, Insulator, Millwright, Painter, Pipefitter, Power Operator, Process Crane Operator, Rigger, Sign Painter, Truck Driver, Welder), Maintenance Manager, Radiological Control Manager.	000001, 02006G, 301100 (03E047), 300900
Advanced General Worker	Nuclear Process Operator	000001, 02006G, 035100/035110, 301100 (03E047), 300925, 300900, 300910, 300925, 300930
General Manager	Operations Manager/Team Leader	000001, 02006G, 02028B, 037510 035100/035110, 301100 (03E047), 300900
	Environmental Manager/Team Leader	000001, 02006G, 035010, 035020, 035100/035110, 301100 (03E047), 300900
	Environmental Compliance Officer	000001, 02006G, 035010, 035020, 035100/035110, 301100 (03E047), 300900
	Environmental Engineer/Scientist Plant Engineer (Environmental)	000001, 02006G, 035010, 035020, 035100/035110, 301100 (03E047), 300900
	Hazardous Material Specialist	000001, 02006G, 035010, 035020, 035100/035110, 301100 (03E047), 300900
	Building Emergency Director	000001, 02006G, 02028B/037510, 035100/035110, 301100 (03E047), 300900

Position	Job Title	Required Training
General Shipper	Shipper	000001, 02006G, 020159, 035010, 035100/035110, 035120/035130, 301100 (03E047), 300900
Waste Designator	Waste Designator	000001, 035010, 035012, 301100 (03E047), 300900

ATTACHMENT 3. EXAMPLE OF TMX DATABASE REPORT

POSITION TRAINING REPORT

Tracking Code: Matrix Last Modified on 05/03/99 05/05/99 Position 1
Manager: 30 Days Delinquent Forecast 15:04:38 Sheet 1 of 1
Organization: SOLID WASTE MANAGEMENT
Position: Safety Engineer (AE)

Course No.		Title	Retrain Course	Individual #1	Individual #2
M	000001	HGET	000001	02/04/99	04/20/99
M	003034	LOCK & TAG - AUTH WRKR I	003037	02/25/99	03/05/99
M	003035	LOCK & TAG: CO INITIAL	003036	02/25/99	03/05/99
M	020001	RAD WORKER II INITIAL	020003	12/16/00	01/20/01
M	020041	RESPIRATORY PROTECTION I	02R041	07/14/99	09/15/99
M	031110	24 HR RCRA TSD HAZ WASTE	032020	01/14/99	08/28/99
M	03E306	WRAP FACILITY EMERG & CH	03E306	10/14/99	12/15/99
M	300900	SW PROJECTS FACILITY ORI	---------	08/21/99	02/02/00
M	301100	SW PROJECT EMER/HAZ INFO	301100	08/21/99	02/02/99
M	306750	WRAP1 FAC ORIENT	306750	10/14/98	02/10/99
M	020130	CONFND SPC ENTRY (CSE)	---------	OK	OK
M	020140	FALL PROTECTION TRAINING	---------	OK	OK
M	020044	QUANTITATIVE MASK FIT	020044	12/15/99	02/20/00
M	02006G	WASTE MANAGEMENT AWARENE	---------	OK	OK
M	038100	HANFORD INCIDENT COMMAND	038100	7/16/99	9/15/99
M	020900	ALARA TRNG TECH SUPPORT	---------	OK	OK
M	120196	COMPUTER SECURITY TRAINI	120195	12/25/99	02/02/00
M	170500	BASIC MEDIC FIRST AID	170535	12/25/99	03/11/01
M	172701	ISMS & WORK PLANNING TEA	---------	OK	OK
M	172702	USING THE AJHA TOOL	---------	OK	OK
M	020702	RAD WORKER REFRESHER TRA	020702	03/21/00	02/02/01

Legend:

Upper case (M/R) = Course needed by all
Lower case (m/r) = Course needed by some
<< >> = Course delinquent
/ / = Course needed (upper case) but not taken

Date = Course retrain date
OK = Course taken; no retrain date required
Blank = Course not needed (lower case) and not taken
**** = Course taken; retrain requirement not maintained

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