



0093874

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

11-EMD-0023

JAN 20 2011

Mr. E. R. Skinnarland  
Nuclear Waste Program  
State of Washington  
Department of Ecology  
3100 Port of Benton Boulevard  
Richland, Washington 99354

Dear Mr. Skinnarland:

TRANSMITTAL OF THE HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT PERMIT PUREX PART A FORM, REVISION 0 (S-2-1, TS-2-6)

Enclosed for your concurrence is the PUREX Part A Form, Revision 0. The PUREX Part A Form combines the Part A Forms for the PUREX Storage Tunnels (Revision 7) and the PUREX Plant (Revision 12). The PUREX Part A Form is being submitted to support the public comment period for Permit Revision 9. Therefore, the Part A Form will not become effective until the effective date of Permit Revision 9 and will supersede the PUREX Storage Tunnels and PUREX Plant Part A Forms.

A draft of the PUREX Part A Form was provided to Ecology staff electronically for review and comment. Ecology's review found the Part A Form acceptable. The U.S. Department of Energy Richland Operations Office is requesting Ecology's concurrence of the PUREX Part A Form, Revision 0, prior to Permit Revision 9 public comment periods; for it to become effective with the effective date of Permit Revision 9.

If you have any questions, please contact me, or your staff may contact Ray J. Corey, Assistant Manager for Safety and Environment on (509) 376-0108.

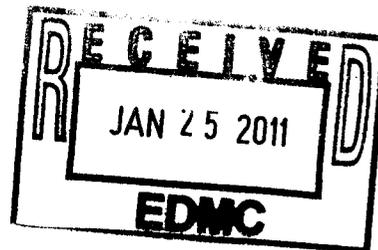
Sincerely,

Matt McCormick  
Manager

EMD:ACM

Enclosure

cc: See page 2



TS-2-6  
S-2-1

11-EMD-0023

Mr. E. R. Skinnerland  
11-EMD-0023

-2-

JAN 20 2011

cc w/encl:

P. G. Harrington, ORP  
Environmental Portal, LMSI, A3-95  
Ecology NWP Library  
HF Operating Record (S. Thompson, MSA, H7-28)  
Administrative Record, H6-08 (TSD S-2-1, TS-2-6))

cc w/o encl:

F. W. Bond, Ecology  
J. A. Hedges, Ecology  
J. G. Lehew, CHPRC  
A. E. Cawrse, CHPRC

ATTACHMENT

CHPRC-1002839  
CONTRACT NUMBER DE-AC06-08RL14788

**DANGEROUS WASTE PERMIT APPLICATION PART A FORM  
WA7890008967, PART V  
CLOSURE UNIT GROUP 25  
PUREX, REVISION 0**

Consisting of 15 pages,  
including this cover page



WASHINGTON STATE  
 DEPARTMENT OF  
 ECOLOGY

**Dangerous Waste Permit Application  
 Part A Form**

Date Received			Reviewed by:				Date:		
Month	Day	Year	Approved by:				Date:		

**I. This form is submitted to: (place an "X" in the appropriate box)**

Request modification to a final status permit (commonly called a "Part B" permit)

Request a change under interim status

Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).

Establish interim status because of the wastes newly regulated on: \_\_\_\_\_ (Date) \_\_\_\_\_

List waste codes: \_\_\_\_\_

**II. EPA/State ID Number**

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

**III. Name of Facility**

US Department of Energy – Hanford Facility

**IV. Facility Location (Physical address not P.O. Box or Route Number)**

**A. Street**

825 Jadwin

<b>City or Town</b>	<b>State</b>	<b>ZIP Code</b>
Richland	WA	99352

<b>County Code (if known)</b>	<b>County Name</b>
0 0 5	Benton

<b>B. Land Type</b>	<b>C. Geographic Location</b>	<b>D. Facility Existence Date</b>
	Latitude (degrees, mins, secs)      Longitude (degrees, mins, secs)	Month      Day      Year
F	Refer to TOPO Map (Section XV.)	0 3      0 2      1 9 4 3

**V. Facility Mailing Address**

**Street or P.O. Box**

P.O. Box 550

<b>City or Town</b>	<b>State</b>	<b>ZIP Code</b>
Richland	WA	99352

<b>VI. Facility contact (Person to be contacted regarding waste activities at facility)</b>													
<b>Name (last)</b>						<b>(first)</b>							
McCormick						Matthew							
<b>Job Title</b>						<b>Phone Number (area code and number)</b>							
Manager						(509) 376-7395							
<b>Contact Address</b>													
<b>Street or P.O. Box</b>													
P.O. Box 550													
<b>City or Town</b>						<b>State</b>		<b>ZIP Code</b>					
Richland						WA		99352					
<b>VII. Facility Operator Information</b>													
<b>A. Name</b>									<b>Phone Number</b>				
Department of Energy Owner/Operator CH2M HILL Plateau Remediation Company Co-Operator for PUREX*									(509) 376-7395 (509) 376-0556*				
<b>Street or P.O. Box</b>													
P.O. Box 550 P.O. Box 1600 *													
<b>City or Town</b>						<b>State</b>		<b>ZIP Code</b>					
Richland						WA		99352					
<b>B. Operator Type</b>			F										
<b>C. Does the name in VII.A reflect a proposed change in operator?</b>						<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> No				
If yes, provide the scheduled date for the change:						<b>Month</b>		<b>Day</b>		<b>Year</b>			
<b>D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C.</b>									<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> No	
<b>VIII. Facility Owner Information</b>													
<b>A. Name</b>						<b>Phone Number (area code and number)</b>							
Matthew S. McCormick, Operator/Facility-Property Owner						(509) 376-7395							
<b>Street or P.O. Box</b>													
P.O. Box 550													
<b>City or Town</b>						<b>State</b>		<b>ZIP Code</b>					
Richland						WA		99352					
<b>B. Owner Type</b>			F										
<b>C. Does the name in VIII.A reflect a proposed change in owner?</b>						<input type="checkbox"/> Yes			<input checked="" type="checkbox"/> No				
If yes, provide the scheduled date for the change:						<b>Month</b>		<b>Day</b>		<b>Year</b>			
<b>IX. NAICS Codes (5/6 digit codes)</b>													
<b>A. First</b>						<b>B. Second</b>							
5	6	2	2	1		Waste Treatment & Disposal	9	2	4	1	1	0	Administration of Air & Water Resource & Solid Waste Management Programs
<b>C. Third</b>						<b>D. Fourth</b>							
5	4	1	7	1		Research & Development in the Physical, Engineering, & Life Sciences							

X. Other Environmental Permits (see instructions)												
A. Permit Type		B. Permit Number										C. Description
E		A	I	R	0	6	-	1	0	2	6	WAC-246-247, NOC
E		F	F	-	0	1						WAC-246-247, NOC Radioactive Air

**XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)**

The Plutonium-Uranium Extraction (PUREX) Plant is located in the southeast portion of the 200 East Area, and includes the 202-A Building and various support structures. The PUREX Plant was used for the recovery of uranium and plutonium from irradiated reactor fuel. Liquid processes were used to separate the plutonium and uranium. The 202-A Building is a reinforced concrete structure approximately 306 meters long, 36 meters wide, and 30 meters high, with approximately 12 meters of the height below grade. The 202-A Building consists of three main structural components: (1) a thick-walled concrete canyon containing remotely operated process equipment (in cells mostly below grade); (2) pipe and operating sample and storage galleries; and (3) an annex that included offices, process control rooms, laboratories, and building services.

Process Code X99:

The PUREX Storage Tunnels are designated as a Miscellaneous Unit (WAC 173-303-680). Process code X99 is used for storage of mixed waste subject to the requirements of WAC 173-303-680. PUREX Storage Tunnels Number 1 & 2 store waste from the PUREX Plant and other onsite sources. Since being placed into service, mixed waste has been stored in the tunnels on railcars; however, not all the material stored in the tunnels contains mixed waste.

Construction of PUREX Storage Tunnel Number 1 was completed in 1956. Tunnel Number 1 is approximately 5.8 meters (19 feet) wide by 6.7 meters (22 feet) high by 109 meters (358 feet) long and provides storage space for eight railcars. Between June 1960 and January 1965, eight railcar positions were filled and Tunnel Number 1 was sealed. The combined volume of the equipment stored on the eight railcars in Tunnel Number 1 is approximately 596 cubic meters (780 cubic yards). The maximum process design capacity for storage in Tunnel Number 1 is approximately 4,129 cubic meters (5,400 cubic yards).

Construction of PUREX Storage Tunnel Number 2 was completed in 1964. Tunnel Number 2 is approximately 5.8 meters (19 feet) wide by 6.7 meters (22 feet) high by 514 meters (1,686 feet) long and provides storage space for 40 railcars. In December 1967, the first railcar was placed in Tunnel Number 2. As of August 2000, 28 railcars are in Tunnel Number 2. The volume of equipment stored on the 28 railcars in Tunnel Number 2 is approximately 2,204 cubic meters (2,883 cubic yards). The maximum process design capacity for storage in Tunnel Number 2 is approximately 19,878 cubic meters (26,000 cubic yards).

The waste stored in the tunnels could include barium (D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009), selenium (D010), silver (D011), and light mineral oil (WT02, state-only, toxic, dangerous waste) contained in oil absorption material. The silver is predominately in the form of salts and is considered ignitable (D001), because of the presence of silver nitrate (AgNO3). The Cadmium could be considered state-only, toxic, dangerous waste (WT02).

Process Code T01/S02:

T01 and S02 are used to indicate a historical use of the tanks for storage and treatment. The tanks once used in this process have been drained and flushed and are awaiting final disposition. S02 references vessels that are permitted to store mixed waste. The PUREX Vessel Table includes the tank identification numbers, tank locations, and tank capabilities for the permitted tanks. The total process design capacity for tank storage is 1,263,233 liters.

Process Code S06:

S06 is used to indicate a containment building subject to the requirements of 40 CFR 265, Subpart DD, as prescribed in WAC 173-400 interim status facility standards. A steel open top skid containing concrete chips from the floor of E-Cell is stored in F-Cell. The solid mixed waste in the canyon could consist of contaminated discarded canyon process equipment, jumpers (or isolated components thereof), or other material from the various onsite sources.

Treatment and storage capacities are provided to reflect past operations. PUREX activities do not propose utilization of treatment or storage capacity beyond what has been agreed to for the facility transition purposes under the Hanford Federal Facility Agreement and Consent Order, Section 8.

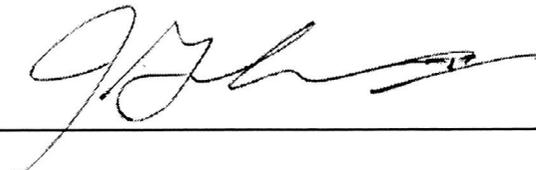
**EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ* vitrification.**

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes								
Line Number	A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	Line Number	A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	D. Process Description		
				1. Amount	2. Unit of Measure (enter code)							1. Amount			2. Unit of Measure (enter code)	
X	1	S	0	2	1,600	G	002	X	1	T	0	4	700	C	001	In situ vitrification
X	2	T	0	3	20	E	001									
X	3	T	0	4	700	C	001									
	1	X	9	9	24,007	C	002		1							
	2	T	0	1	392,000	V	008		2							
	3	S	0	2	1,263,233	L	045		3							
	4	S	0	6	430	C	001		4							
	5								5							
	6								6							
	7								7							
	8								8							
	9								9							
1	0								1	0						
1	1								1	1						
1	2								1	2						
1	3								1	3						
1	4								1	4						
1	5								1	5						
1	6								1	6						
1	7								1	7						
1	8								1	8						
1	9								1	9						
2	0								2	0						
2	1								2	1						
2	2								2	2						
2	3								2	3						
2	4								2	4						
2	5								2	5						

<b>XIV. Description of Dangerous Wastes</b>														
Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.														
Line Number	A. Dangerous Waste No.				B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Processes							
							(1) Process Codes				(2) Process Description [If a code is not entered in D (1)]			
X 1	D	0	0	2	400	P	S	0	1	T	0	1		
X 2	D	0	0	1	100	P	S	0	2	T	0	1		
X 3	D	0	0	2										Included with above
1	D	0	0	5	454	K	X	9	9					Includes Debris
2	D	0	0	6	454	K	X	9	9					Includes Debris
3	W	T	0	2		K	X	9	9					Includes Debris
4	D	0	0	7	454	K	X	9	9					Includes Debris
5	D	0	0	8	8,000	K	X	9	9					Includes Debris
6	D	0	0	9	45	K	X	9	9					Includes Debris
7	D	0	1	0	454	K	X	9	9					Includes Debris
8	D	0	1	1	680	K	X	9	9					Includes Debris
9	D	0	0	1		K	X	9	9					Includes Debris
10	W	T	0	2	454	K	X	9	9					Includes Debris
11	W	P	0	1	0	K	T	0	1	S	0	2		
12	W	P	0	2		K	T	0	1	S	0	2		
13	W	T	0	1		K	T	0	1	S	0	2		
14	W	T	0	2		K	T	0	1	S	0	2		
15	D	0	0	1		K	T	0	1	S	0	2		
16	D	0	0	2		K	T	0	1	S	0	2		
17	D	0	0	3		K	T	0	1	S	0	2		
18	D	0	0	4		K	T	0	1	S	0	2		
19	D	0	0	5		K	T	0	1	S	0	2		
20	D	0	0	6		K	T	0	1	S	0	2		
21	D	0	0	7		K	T	0	1	S	0	2		
22	D	0	0	8		K	T	0	1	S	0	2		
23	D	0	0	9		K	T	0	1	S	0	2		
24	D	0	1	0		K	T	0	1	S	0	2		
25	D	0	1	1		K	T	0	1	S	0	2		



<p><b>XV. Map</b>                  Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.</p>
<p>Topographic map is located in the Ecology Library</p>
<p><b>XVI. Facility Drawing</b>                  All existing facilities must include a scale drawing of the facility (refer to Instructions for more detail).</p>
<p><b>XVII. Photographs</b>                  All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to Instructions for more detail).</p>

<p><b>XVIII. Certifications</b></p>		
<p>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.</p>		
<p><b>Operator</b>                  Name and Official Title (type or print)                  Matthew S. McCormick, Manager                  U.S. Department of Energy                  Richland Operations Office</p>	<p><b>Signature</b>  </p>	<p><b>Date Signed</b>                  1/20/11</p>
<p><b>Co-Operator*</b>                  Name and Official Title (type or print)                  John G. Lehew, III                  President and Chief Executive Officer                  CH2M HILL Plateau Remediation Company</p>	<p><b>Signature</b>  </p>	<p><b>Date Signed</b>                  11/19/10</p>
<p><b>Co-Operator – Address and Telephone Number*</b>                  P.O. Box 1600                  Richland, WA 99352                  (509) 376-0556</p>		
<p><b>Facility-Property Owner</b>                  Name and Official Title (type or print)                  Matthew S. McCormick, Manager                  U.S. Department of Energy                  Richland Operations Office</p>	<p><b>Signature</b></p>	<p><b>Date Signed</b></p>

**Comments**

**PUREX Plant Vessels**

**Storage Vessels Inside Canyon**

Vessel ID	Location	Capacity (Liters)
TK-D5	D Cell	19,851
TK-E6	E-Cell	19,813
TK-F3	F-Cell	19,964
TK-F4	F-Cell	19,593
T-F5	F-Cell	1,132
TK-G1	G Cell	18,662
TK-G2	G Cell	7,064
TK-G2	G Cell	8,248
TK-G5	G Cell	55,403
TK-G8	G Cell	19,881
TK-H1	H Cell	19,593
T-H2	H Cell	7,003
E-H4	H Cell	10,137
TK-J1	J Cell	19,926
TK-J3	J Cell	19,911
T-J6	J Cell	6,057
T-J7	J Cell	6,730
TK-J21	J Cell	1,162
T-J22	J Cell	568
T-J23	J Cell	393
TK-K1	K Cell	19,828
T-K2	K Cell	5,194
T-K3	K Cell	6,507
TK-K6	K Cell	19,593
T-L2	L Cell	447
TK-L3	L Cell	488
T-L4	L Cell	139
TK-M2	M Cell	6,852

Cell locations noted on the building illustrations

**Storage Vessels Outside Canyon**

TK-Q21	Q Cell AMU	81
TK-Q22	Q Cell AMU	968
TK-R1	R Cell	18,121
TK-R2	R Cell	6,746
T-R2	R Cell	8,282
TK-R7	R Cell	35,174
TK-P4	203-A	402,930
TK-40	211-A	247,360
TK-156	AMU	1,533

**Treatment and Storage Vessels Inside Canyon**

TK-E5	E Cell	19,873
E-F11	F-Cell	9,804
TK-F15	F-Cell	19,419
TK-F16	F-Cell	19,870
TK-F18	F-Cell	19,798
TK-G7	G Cell	50,827

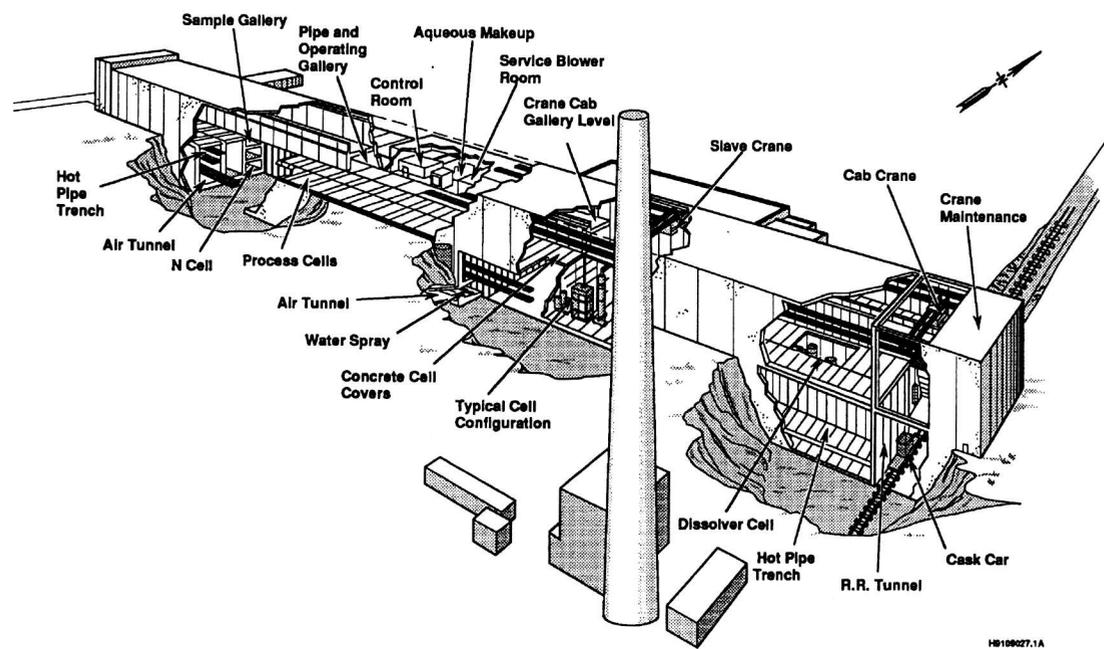
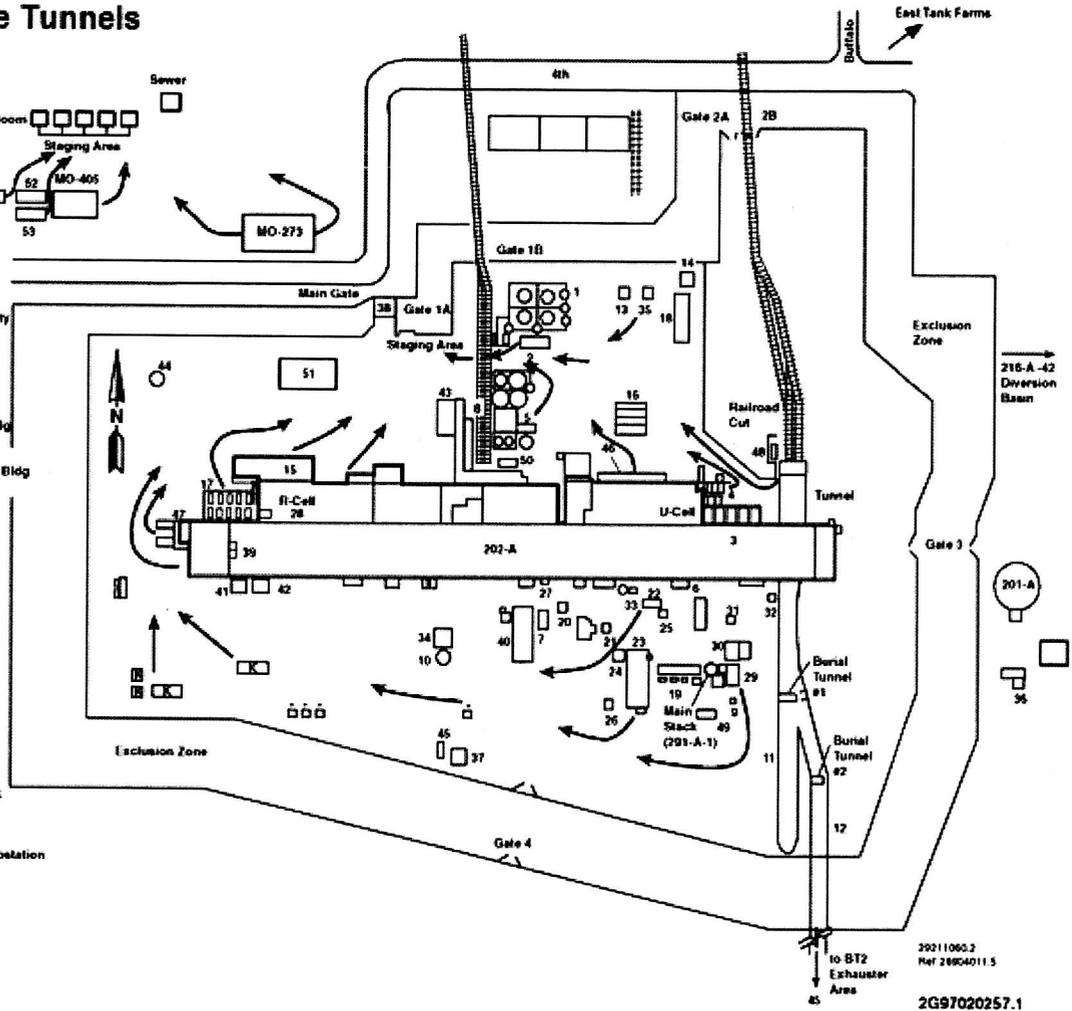
**Treatment and Storage Vessels Outside Canyon**

TK-U3	U Cell	31,124
TK-U4	U Cell	31,184

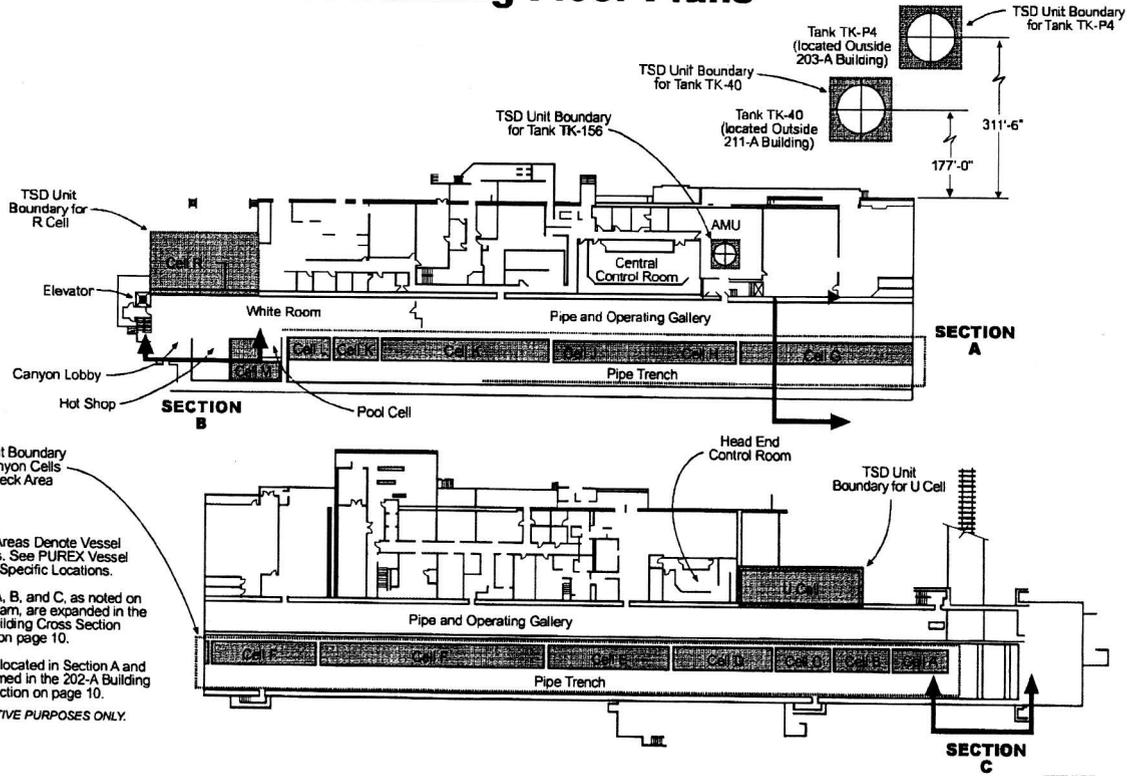
Total Capacity 1,263,233

### PUREX Storage Tunnels

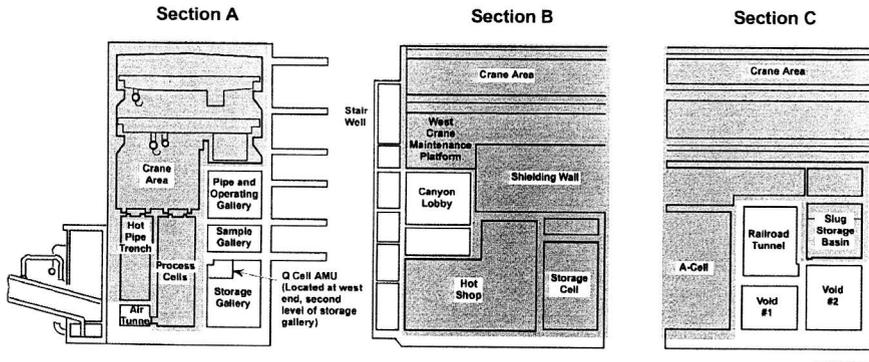
1. 203-A Storage Area
  2. 203-A UNH Pump House/Control Room
  3. 204-A U-Cell
  4. 206-A Fractionator Bldg
  5. 211-A Demineralizer Bldg
  6. 212-A Load Out
  7. 213-A Reg. Maint. Workshop
  8. 214-A, B, C, D
  9. 216-A Spent Cellar Sample Pit
  10. 218-A-5 PDD Pit
  11. 218-E-18 Storage Tunnel
  12. 218-E-15 Storage Tunnel
  13. 225-EC TEDF Monitoring Bldg
  14. Electrical Switch Station
  15. 271-AB PUREX Maintenance Facility
  16. MO-409
  17. 276-A R Cell
  18. 281-A Emergency Generators
  19. 291-A Exhaust Fans
  20. 291-AB Sample Shack
  21. 291-AC Instr. Shack
  22. 291-AD Ammonia Off Gas Filter Bldg
  23. 291-AE #4 Filter Bldg
  24. 291-AQ Instr. Shack
  25. 291-AH Ammonia Off Gas Sampler Bldg
  26. 291-AJ Instr. Shack
  27. 291-AK Air Tunnel Enclosure
  28. 292-AA PR Stack Sample
  29. 292-AB Main Stack Bldg
  30. 293-A Dissolver Off Gas Bldg
  31. 294-A Off Gas Instr. Shack
  32. 295-A ASD (Ammonia Scrubber)
  33. 295-AA SCD (Steam Condensate)
  34. 295-AB PDD (Process Distillate)
  35. 295-AC CSL Sample Bldg
  36. 295-AD CWL (Cooling Water)
  37. 295-AE New PDD Monitoring Bldg
  38. 2701-AB Badge House
  39. 2701-AC Patrol Guard Shack
  40. Electrical Substation
  41. 2711-A-1 Air Compressor Bldg
  42. 2712-A Pumphouse
  43. 2714-A Chemical Warehouse
  44. 2901-A Water Tank
  45. BT2 Exhauster Area
  46. Laboratory Sample Receiving Deck
  47. PR-40ca
  48. Railroad Storage Shed
  49. SAMCON Unit
  50. Surveillance Lighting Electrical Substation
  51. MO-405
  52. MO-388
  53. MO-347
  54. MO-046
- Storage Shacks  
 K - Kaiser Trailers



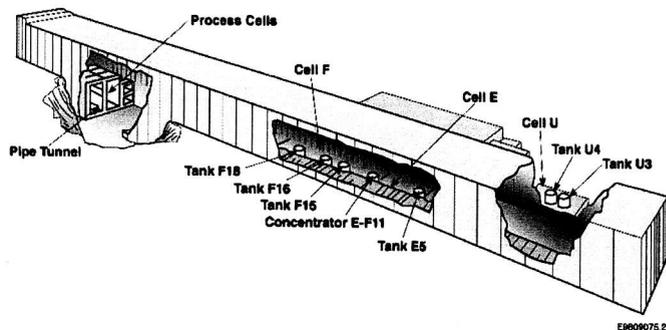
## 202-A Building Floor Plans



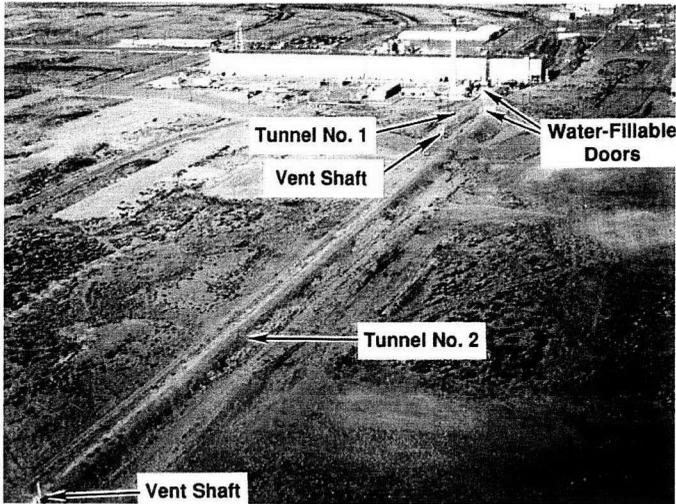
NOTE 1: Shaded Areas Denote Vessel Locations. See PUREX Vessel Table for Specific Locations.  
 NOTE 2: Section A, B, and C, as noted on this diagram, are expanded in the 202-A Building Cross Section diagram on page 10.  
 NOTE 3: Q-Cell is located in Section A and is diagramed in the 202-A Building Cross Section on page 10.  
 FOR ILLUSTRATIVE PURPOSES ONLY.



(Not to Scale)  
 Note: Shaded portions denote areas that are within the TSD boundary.

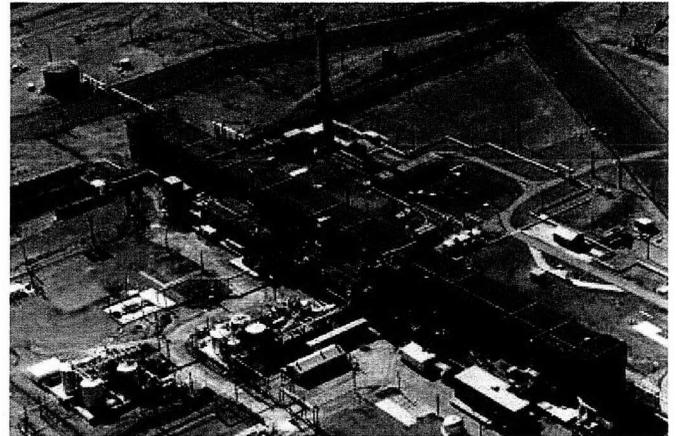


PUREX Plant Cutaway (202-A Building)



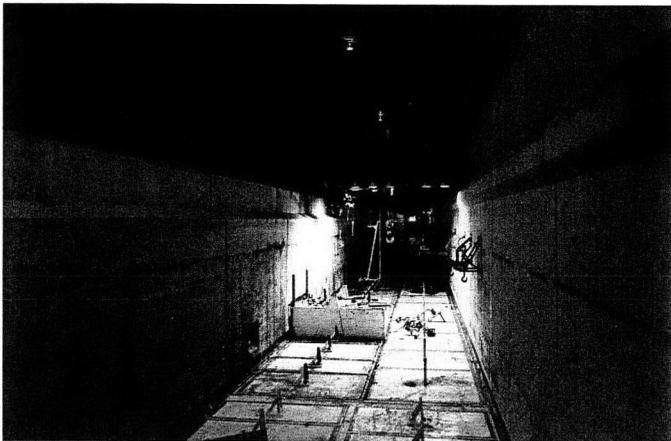
PUREX Storage Tunnels

89100252-3CN  
Photo Taken 1989



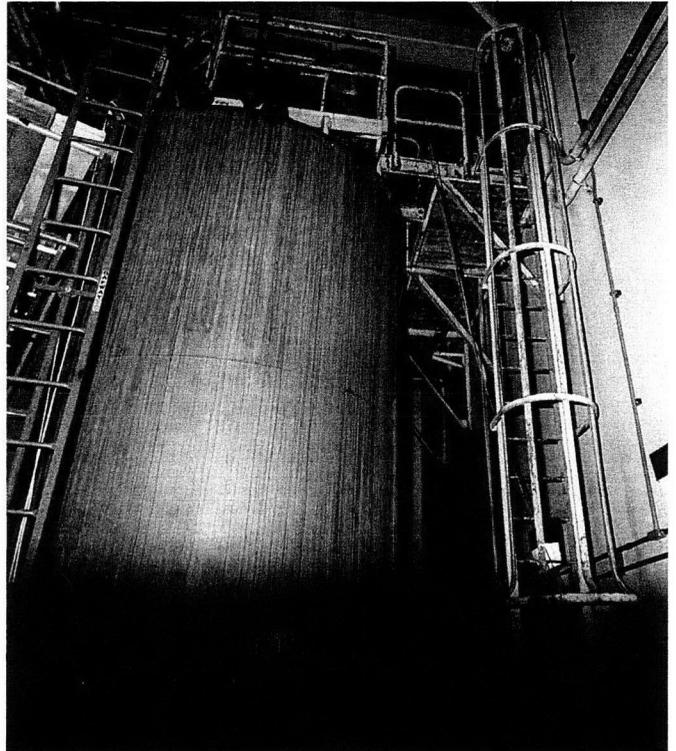
PUREX Plant

97060044-12CN



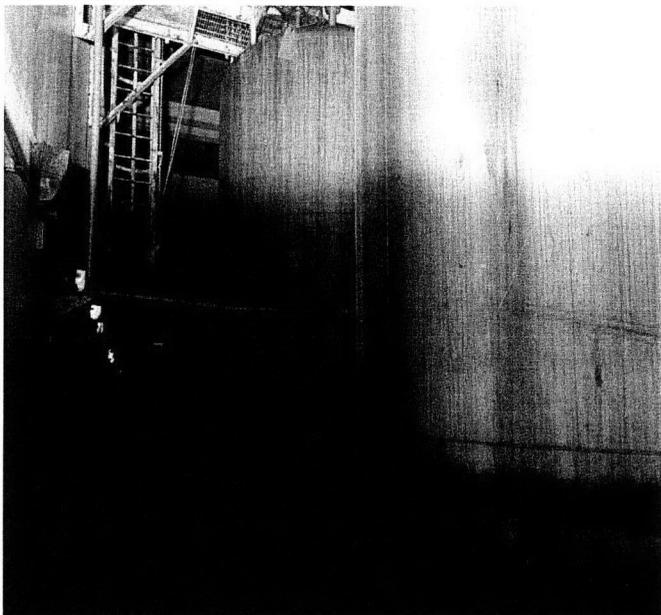
Interior Canyon  
West-East View

60478-4CN  
Photo Taken 1973



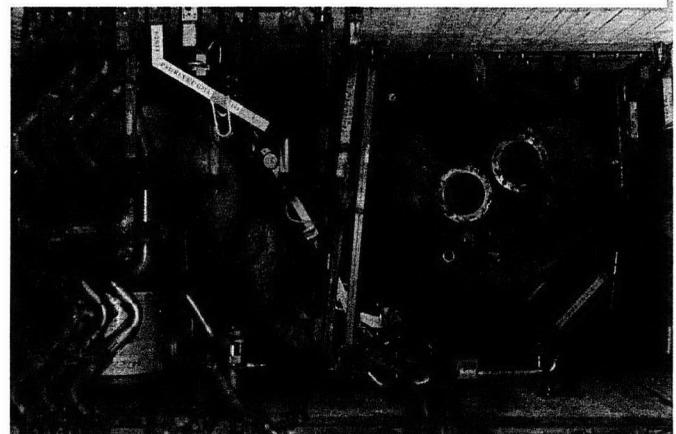
U Cell  
Typical of Tank U4

92102839-10CN  
Photo Taken 1992



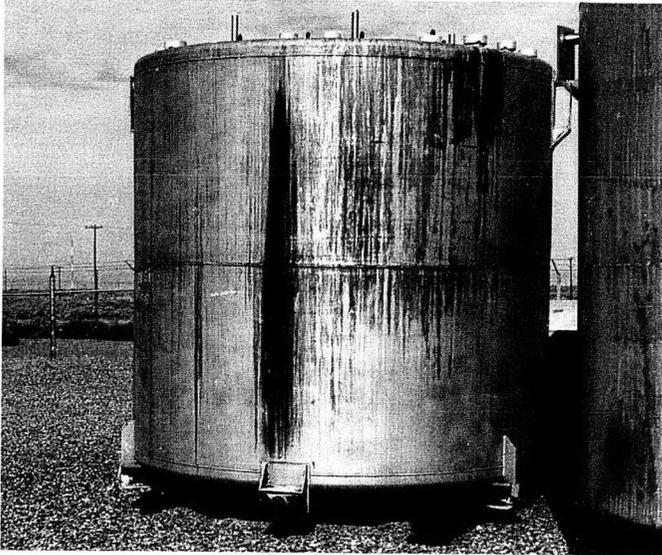
U Cell  
Tank U3 & Tank U4

92102839-7CN  
Photo Taken 1992



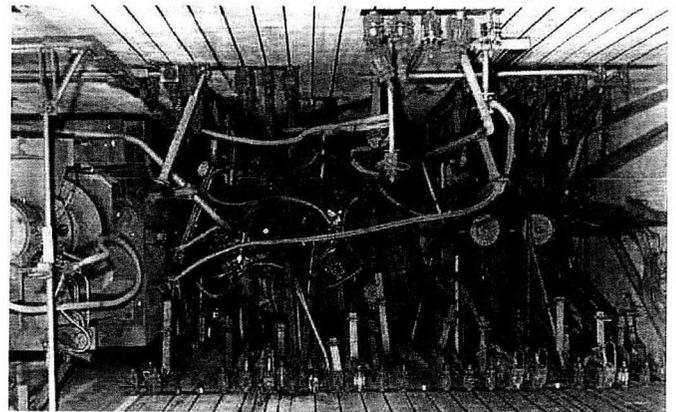
F-Cell  
Looking Down

99948-48CN  
Photo Taken 1982



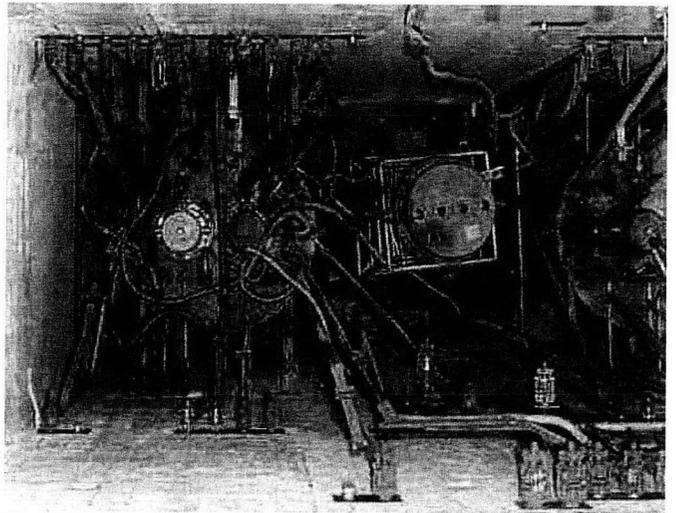
**Standard 18,927-Liter Tank**  
(Typical of E5, F15, F16, & F18)

8706243-5CN  
Photo Taken 1987



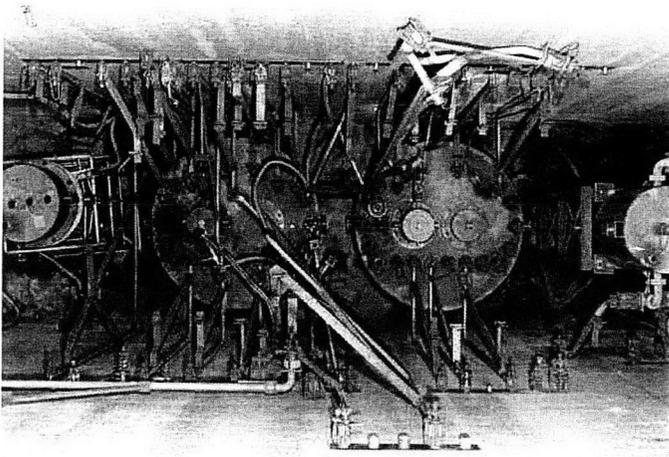
**Tank E5**  
Top Pipe Trench Wall

09948-38CN  
Photo Taken 1982



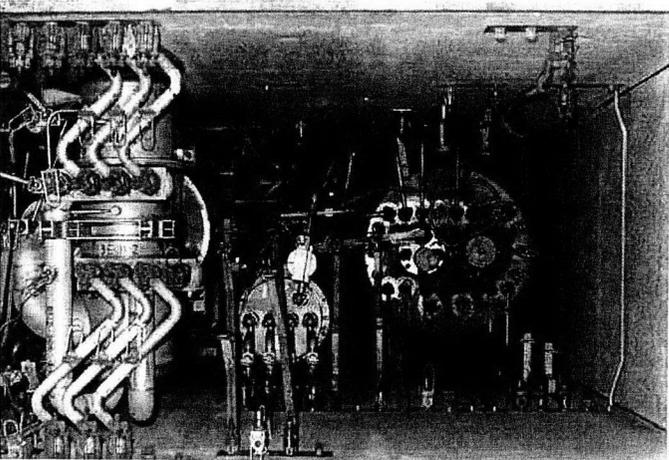
**Tank F18**  
Top Pipe Trench Wall

09948-74CN  
Photo Taken 1982



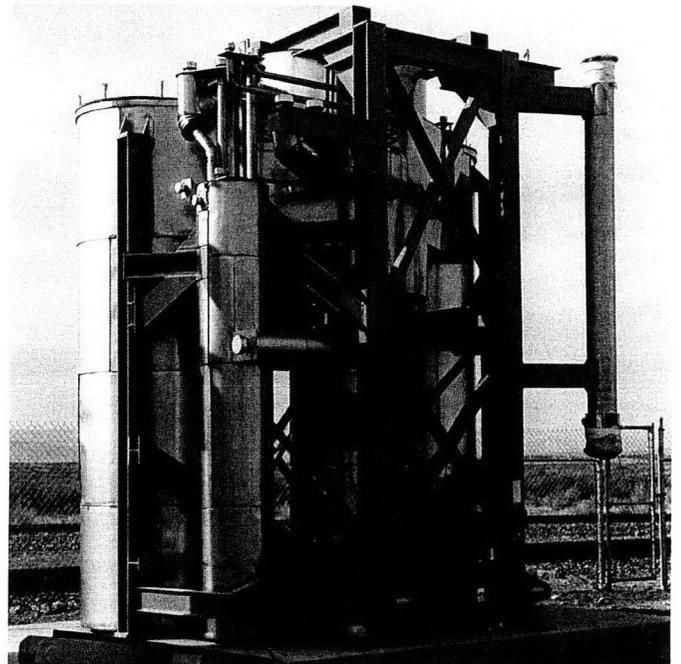
**Tank F15 & Tank F16**  
Top Pipe Trench Wall

09948-71CN  
Photo Taken 1982



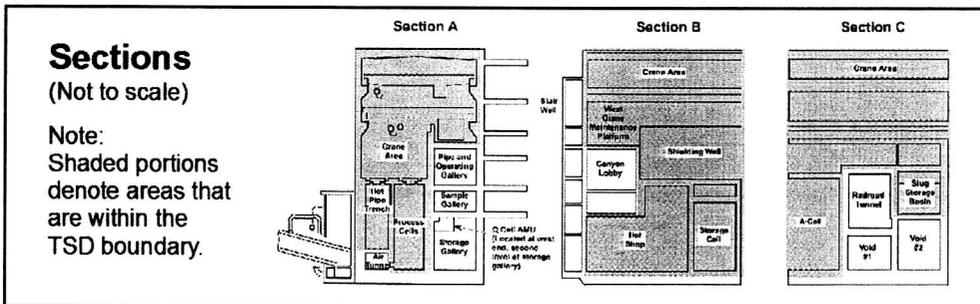
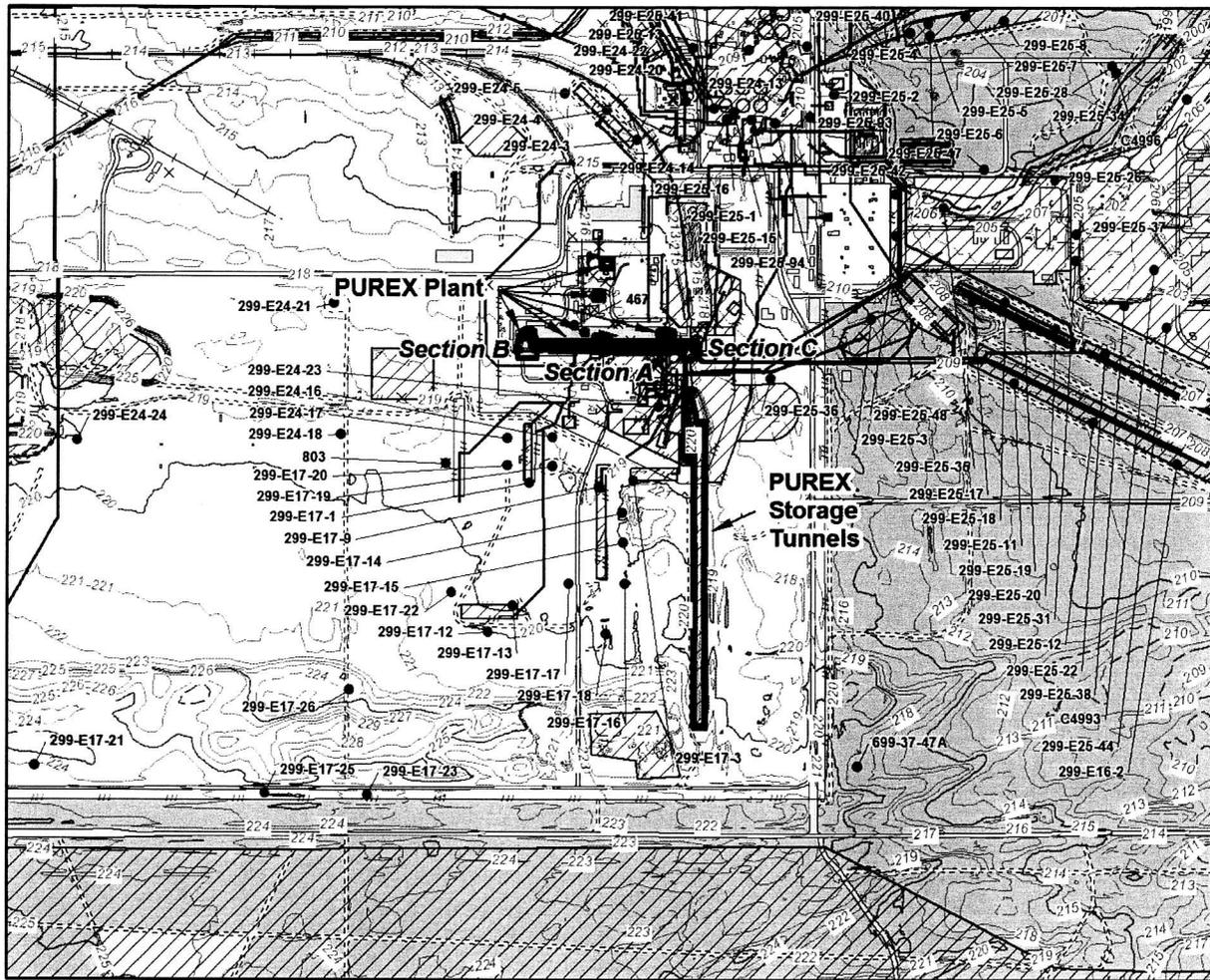
**E-F11 Concentrator**  
Top Pipe Trench Wall

09948-64CN  
Photo Taken 1982



**E-F11 Concentrator**

8706243-8CN  
Photo Taken 1987



**PUREX**

**Hanford Site**



**Unit Location**

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- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings and Mobiles
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences



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