



932

U.S. GOVERNMENT

SR - PLAN  
SR DOE 1994

WESTINGHOUSE  
SAVANNAH RIVER COMPANY

Actinide Packaging and  
Storage Facility

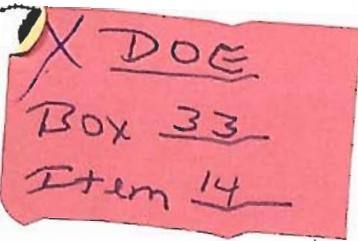
Regional Vault Case  
(Informal Proposal for Facility Upgrade)

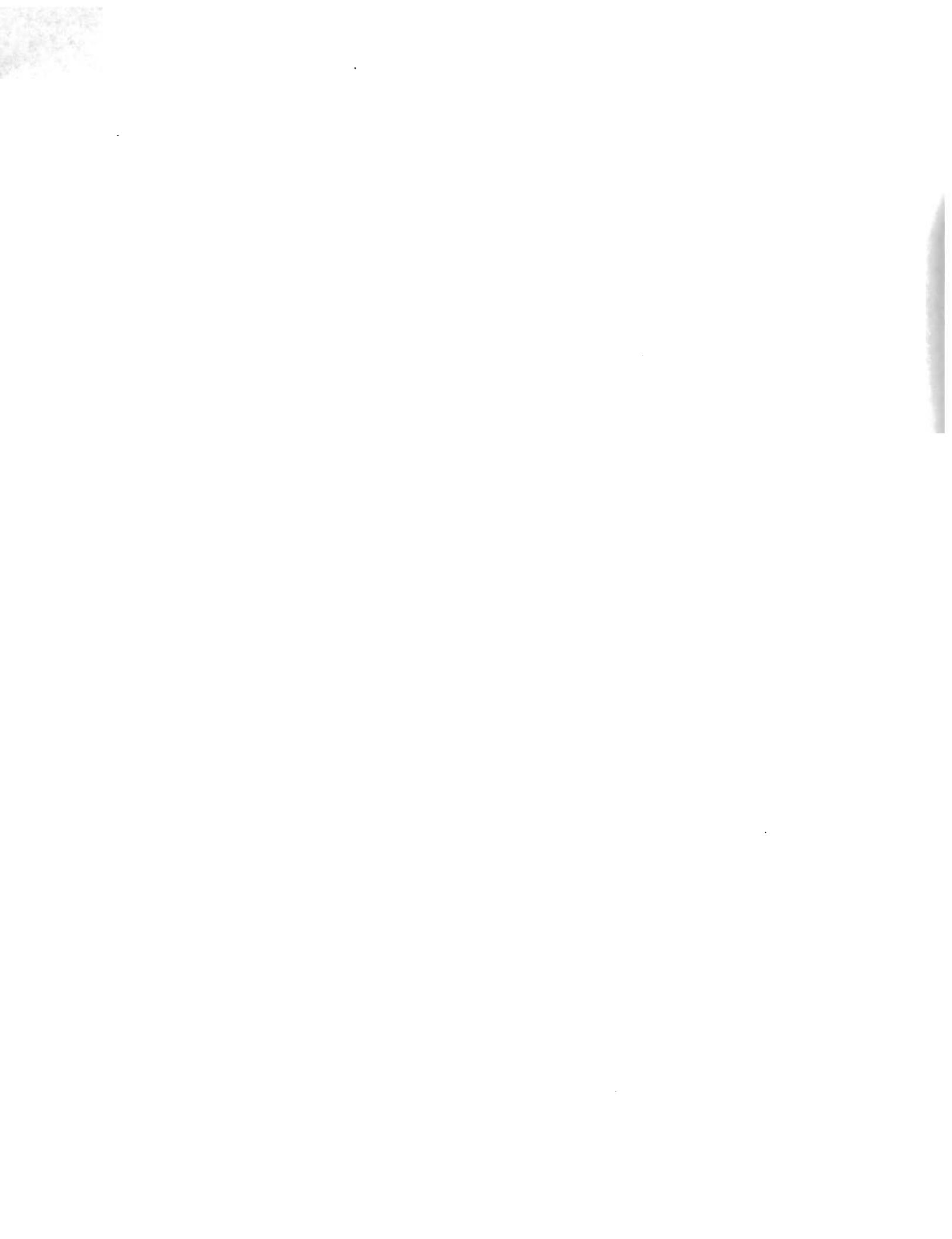
To Be Enclosed  
With SRS  
Upgrade Letter

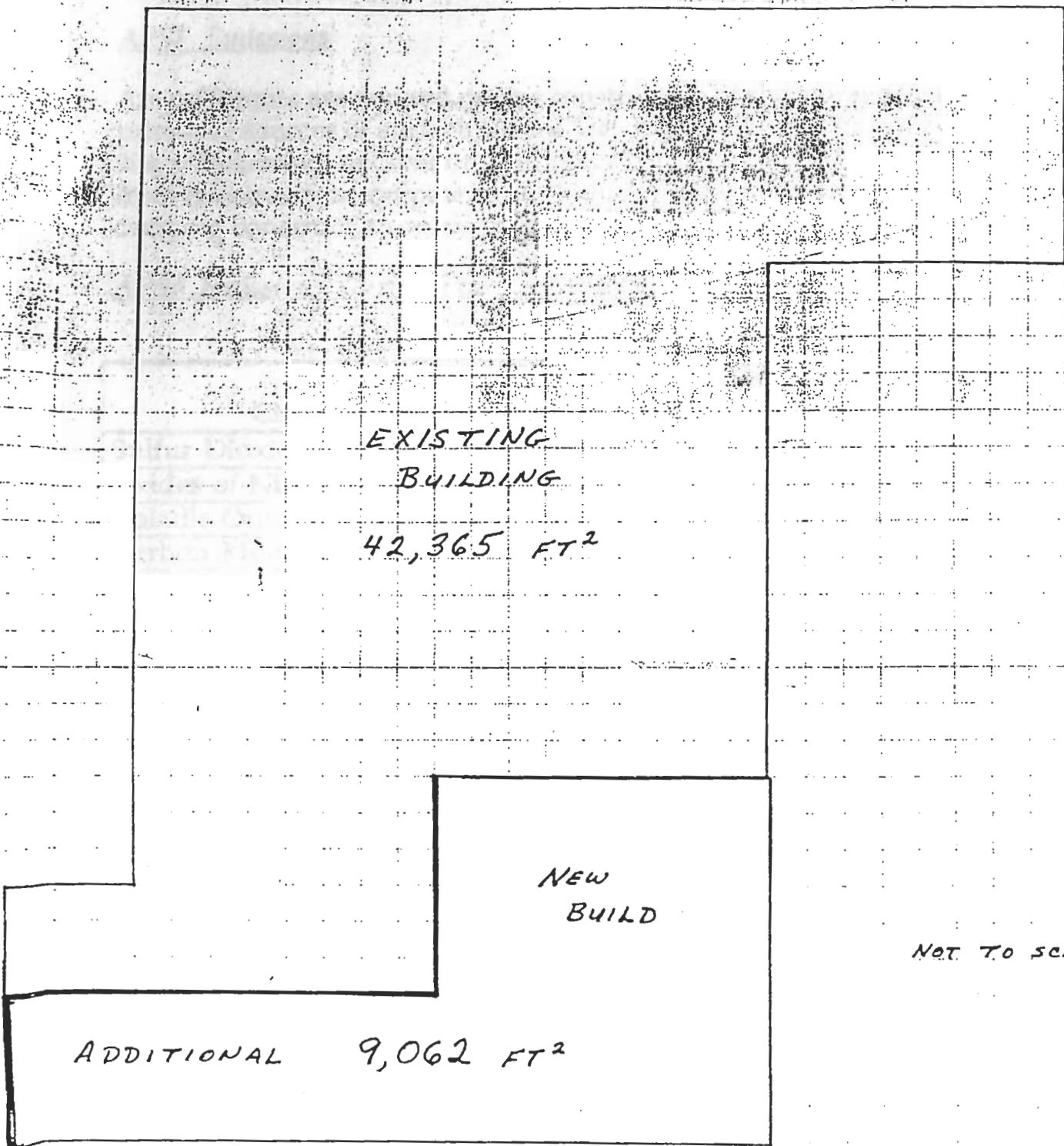
Draft Supplement  
Cost and Environmental Data

REVISED

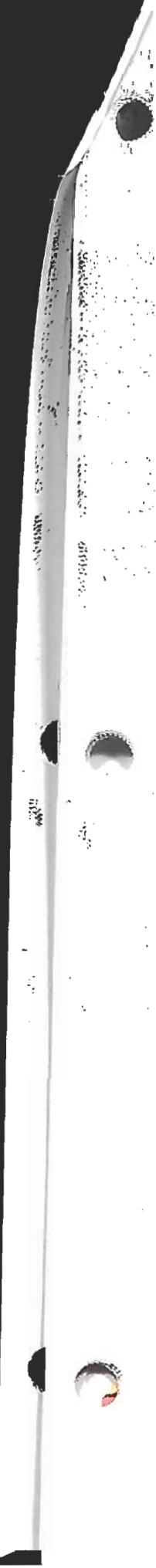
19 SEPTEMBER, 1995







CONCEPTUAL FLOOR PLAN  
OF  
APSF  
AT  
SRS



11/11

REGIONAL VAULT CASE

APSF Emissions

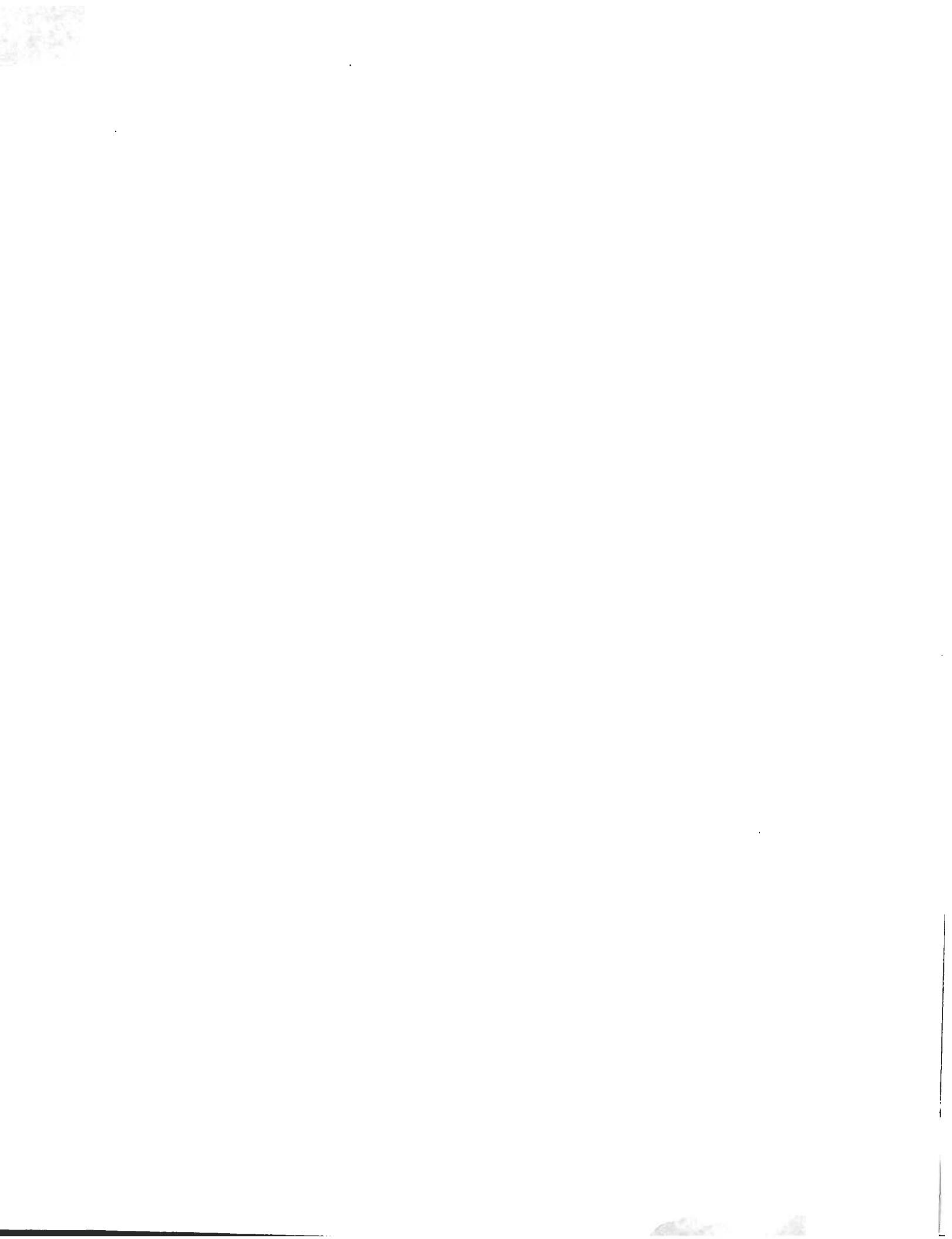
Air pollutants are emitted during construction of the storage facility. The principal sources of such emissions are: fugitive dust from land clearing, site preparation, excavation, and other construction activities; exhaust from construction equipment; and vehicles delivering materials and carrying construction workers.

APSF Emissions During Peak Construction Year

9/19/95

Chemical	Emission (Tons)	
	Current	Additional
Sulfur Dioxide	0.1	0.011
Oxides of Nitrogen	0.8	0.089
Volatile Organic Compounds	0.2	0.022
Carbon Monoxide	4.0	0.444
Particulate Matter (10 microns or smaller)	1.2	0.133
Total Suspended Particulates	2.5	0.278

- Increases are due to increased fuel consumption.



## REGIONAL VAULT CASE

### *APSF Total Wastes Generated During Construction*

9/19/95.

Waste Category	Quantity	
	Current	Additional
Concrete and Paving	90 cu. yd.	19.25 cu. yd.
Steel	9 tons	1.92 cu. yd.
Water	3,986,000 gals.	442,888 gals.
Hazardous Waste	2.0 cu. yd.*	0.43 cu. yd.

\*Includes Liquid Wastes (Lube oils, hydraulic fluids and cleaning solvents).

### Additional Construction Waste Calculations

Additional waste volumes are calculated by ratioing based on the increased square footage.

9,062 SF

$$9,062 \text{ SF} / 42,365 \text{ SF} = 0.2139$$

For Water: It is assumed that the construction manpower would remain the same and the construction time is estimated to increase by four months. Using a monthly average of 110,772 gallons given an additional requirement of 442,888 gallons.



REGIONAL VAULT CASE

APSF Additional Manpower Requirements

The additional manpower required to receive the additional material is estimated to be 6 FTEs direct and 24 FTEs indirect or support personnel. The total additional FTEs is 30.



REGIONAL VAULT CASE

*APSF Annual Chemicals Consumed During Normal Operation*

9/19/95

Chemical	Annual Consumption (lbs)	
	Current	Additional
Betz Slimicide (CE-77 PE)3	15	4.5
Sodium Hypochlorite <sup>2</sup>	50	11.5
Sodium Hydroxide <sup>2</sup>	30	6.9
Carbon Dioxide	12,000	0
Polyphosphate <sup>2</sup>	100	23
Cleaning Solvent <sup>1</sup>	150	0
Betz 25k series corrosion inhibitors <sup>3</sup>	90	27
Nitrogen	4,000 liters	4,000
Argon	367	0
Helium	6	0

<sup>1</sup> Cleaning solvents will be selected from the following list of RCRA approved liquids:

Ashland 140-Solvent-66  
Pensoly L10060  
Dodecane  
Spartan TH-0-33A  
1-Hexanol  
3-Methylcyclohexanol  
1-Octanol  
2-Butoxyethanol

<sup>2</sup> Chemical used for domestic water treatment.

<sup>3</sup> Chemicals used for cooling tower water treatment.

Increases are due to increases in domestic water and cooling water requirements.



## REGIONAL VAULT CASE

*APSF Annual Utilities Consumed During Normal Operation*

9/18/95

Utilities	Annual Average Consumed	
	Current	Additional
Electricity	12,000 MWh	3,600 MWh
Diesel Fuel	6,240 Gal.	0
Steam	30,000,000 lbs.	7,500,000 lbs.
Process Well Water (CT Make Up)	3,700,000 gal.	1,110,000 gal.
Domestic Water	1,702,500 gal.	390,000 gal.
Fire Water (1)	30,000 gal.	0
Coal	1,275 tons	319 tons

(1) Calculated on 1 system discharge



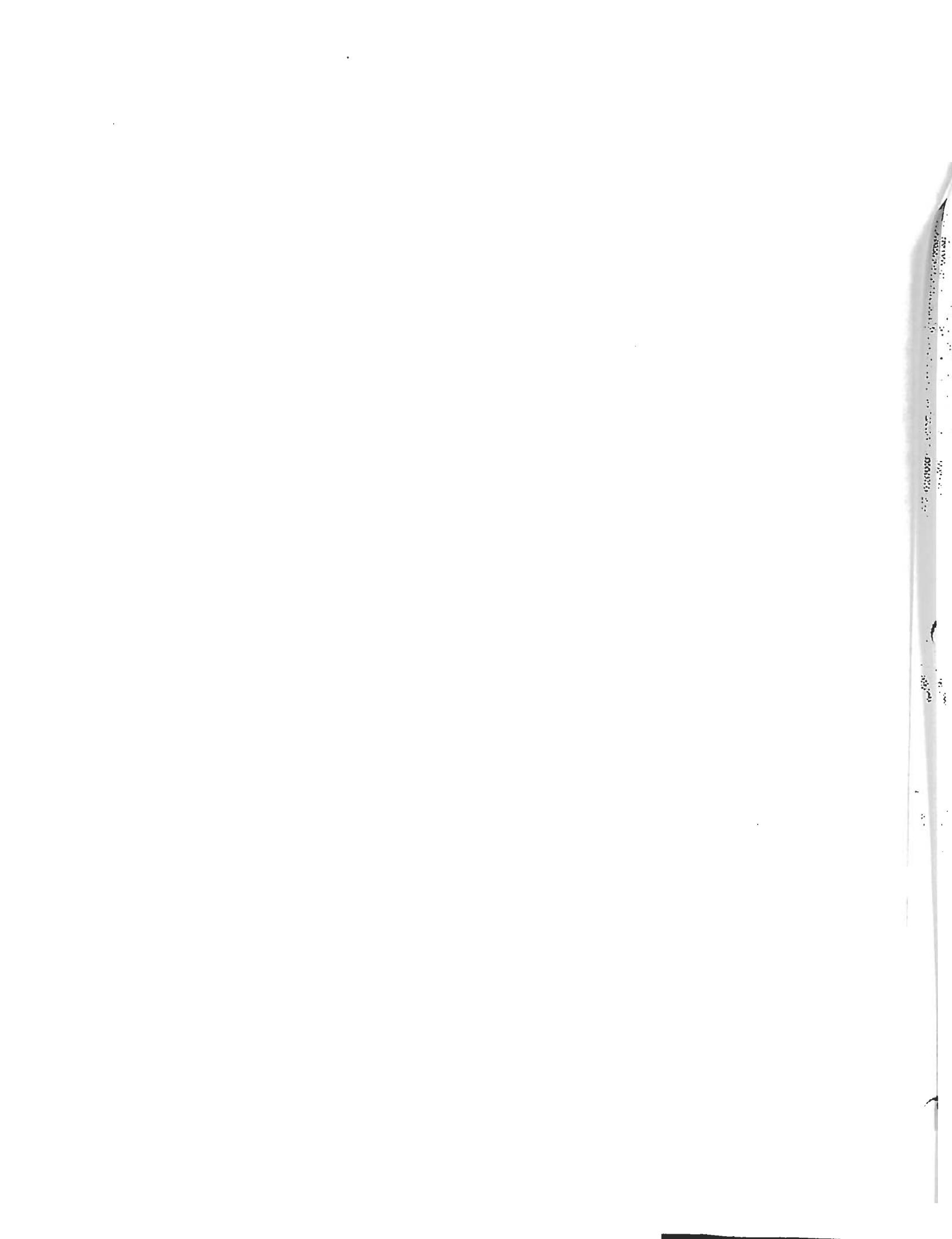
**REGIONAL V AULT CASE**  
**APSF Annual Waste Generation Estimates**

9/19/95

Area	Sanitary Waste		Hazardous/ Radioactive/ Mixed(e) Waste..		Hazardous Waste		Low Level Waste		TRU Waste	
	Solid Ft <sup>3</sup> /Yr	Liquid Gal/Yr.	Solid Ft <sup>3</sup> /Yr.	Liquid Gal/Yr.	Solid(i) Ft <sup>3</sup> /Yr.	Liquid Gal/Yr.	Solid Ft <sup>3</sup> /Yr.	Liquid Gal/Yr.	Ft <sup>3</sup> /Yr.	
Unhardened	16,000(f)	2,090,000	0	0	16	0	0	0	0	0
Hardened Support	6,278	0	0	0	12.6	25(g)	0	0	0	0
<del>SHIPPING/RECEIVING</del>	20	5,000	0	0	1	0	0	0	0	0
SPS/MC	15	0	0	0	1	0	0	0	0	0
SPU	829(b)	0	0	0	1.44	0	0	0	0	0
Rerepackaging	0	0	62	0	0	360(d)	0	40	542	
AM	19	0	0	0	1	0	0	0	0	0
Storage Vault	172	0	0	0	28.6(j)	0	0	0	0	0
HVAC Filters	800(h)	0	0	0	0	0	0	0	0	8(m)
Shops	5,000	0	0	0	5	25(g)	0	0	0	0
Administrative	11,500	0	0	0	0	0	0	0	0	0
Buildings(k)										
TOTAL (CURRENT)	39,717	1,702,500	62	47	50	367	40	550		
WITH ADDITIONAL	40,633	2,095,000	62	66.6	50	367	40	550		

Assume truckbay hose down every 2 weeks. Wash water to be collected and monitored before disposition.

- a) Assume 50% of solid sanitary waste is recyclable.
- b) Damaged Overpack Insulation is added to normal sanitary waste.
- c) HEPA Filters associated with repackaging are assumed to be LLW and replaced annually.
- d) All housekeeping waste from an RCA will be treated as LL Waste. The only RCA is repackaging.
- e) All hazardous waste from RCA will be classified as mixed waste which is primarily solids.
- f) Assume approximately 25 gal./yr. liquid hazardous waste from lube oils, hydraulic fluids, and cleaning solvents.
- g) Prefilters & HEPA filters not directly associated with repackaging are assumed as sanitary solid waste.
- h) Hazardous Waste - Include batteries, lead shielding, and fluorescent lights at normal life.
- i) The vault area includes additional allowance for AGV batteries and shielding.
- j) Other buildings outside of main structure.
- m) Exhaust HEPA's associated with repackaging are assumed to be TRU and replaced annually.



## REGIONAL VAULT CASE

### APSF Emissions

Facility emissions other than ventilation exhaust are shown below.

Ventilation air for unhardened areas which contain no SNM will be exhausted to the atmosphere without filtration since there is no risk of airborne radioactivity.

Ventilation air for the staging and storage building will be once through with two stages of DOP-testable HEPA filtration on the exhaust. This exhaust stream will not impact the environment.

CO<sub>2</sub> (dry ice) pellet blasting will be the predominant decontamination method used in the facility.

### APSF Annual Emissions During Operation

9/19/95

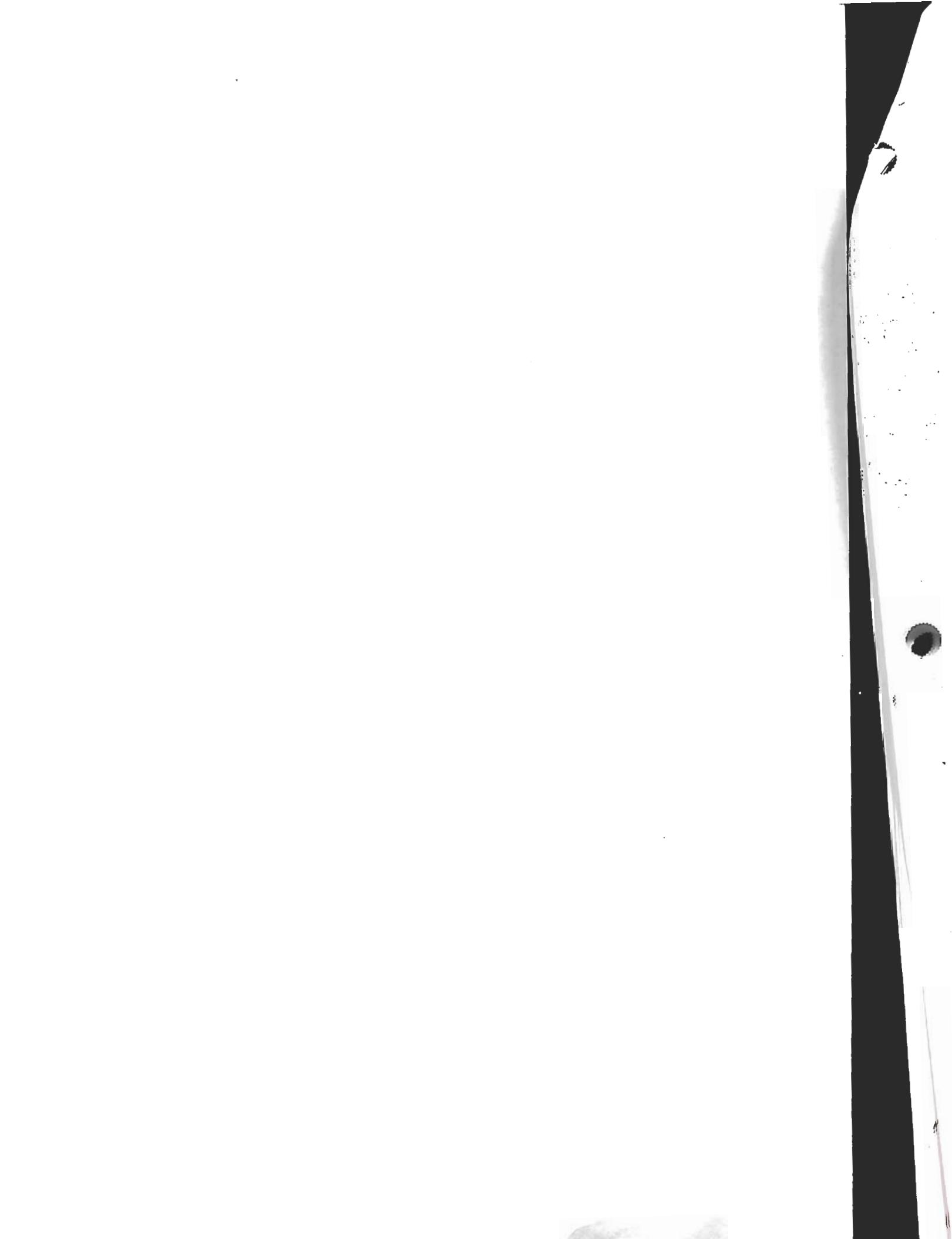
Description	Quantity (lbs.)	
	Current	Additional
HC (Volatile Organic Compounds)	218(1)	0
Carbon Monoxide	711(1)	0
TSP (Total Suspended Particulates)	234(1)	0
Oxides of Nitrogen	3270(1)	0
Sulfur Dioxide	218(1)	0
Carbon Dioxide	12,000(2)	0
Plutonium Oxide Particles	nil	nil
Coal		
TSP	2,000	500
Sulfur Dioxide	76,000	19,000
Oxides of Nitrogen	26,000	6,500
VOC	200	50
Carbon Monoxide	800	200

#### Notes:

(1) Combustion emissions from emergency diesel testing.

(2) Decontamination product of CO<sub>2</sub> Ice Crystal cleaning.

• Increases in coal emissions due to increase in steam requirements.



REGIONAL VAULT CASEAPSF Materials/Resources Consumed During Construction

9/19/95

Materials/Resources	Total Consumption	
	Current	Additional
Utilities		
Electricity	1.0 MWh	0.11 MWh
Water	5,280,000 Gal.	586,667 Gal.
Solids		
Concrete	7,400 Cu. Yd.	2,526 Cu. Yd.
Steel	630 Tons	215 Tons
Liquids		
Fuel	30,900 Gal.	3,433 Gal.
Gases		
Industrial Gases <sup>1</sup>	88,900 Cu. Ft.	30,347 Cu. Ft.

<sup>1</sup> Standard Cubic Feet measured at 14.7 psia and 60°F.

- Increases due to increased construction time interval, estimated to be approximately 4 months (11.11%), except for solids and industrial gases which increased due to facility square foot increase, estimated to be approximately 34%.



REGIONAL VAULT CASE

APSF Effluents

Cooling tower blowdown will be routed to the storm drain. Toxicity levels are below accepted EPA minimum values.

Steam condensate from heating will be routed to the storm drain after quenching.

Condensation from air conditioning will be recycled as cooling tower water make-up.

APSF Annual Effluent During Operations

9/19/95

Description	Quantity (gal.)	
	Current	Additional
CT Blowdown	1,000,000	300,000
Steam Condensate	530,000	132,500
Cooling Condensate (Recycle)	316,000	94,800

Increases are due to increased cooling and steam requirements.