

B. Facility Inventories

1. Animals

Table B-1

Animal	No. of Animals	Avg. Size	Animal Units (LMFA)	Animal Units (per 1,000 lbs)
Dairy Cattle	1400	1400	1400	1960
Total Animal Units			1400	1960

2. Buildings

Table B-2 Livestock Facility Capacity(s)

Facility	Facility Population	Total Square Feet	Storage Facility
Existing Freestall	400	46,953	Existing Earthen Storages
Existing Freestall	400	46,400	
Existing Freestall	600	55,680	

3. Seasonal High Water Table

- See Site Soils & Geologic Information Table (A-1)

4. Livestock Waste Production

Livestock Waste Storages

Table B-3

Storage	Animals	Waste Produced (Gallons Annually)	Capacity (Gallons)	Storage Days
Existing Earthen Storage	1400	16,418,739	21,753,352	484
Total	1400	16,418,739	21,753,352	484

Total Livestock Waste Production

See calculations on following page for manure production calculation details.

5. Rainfall Volumes & Evaporation from storage facilities

See following page for rainfall & evaporation calculations expected from lots & open storages.

Bosma Dairy Waste Volume Calculations

DAILY MANURE PRODUCTION	Average (1)	Maximum	Total Manure (2)
	Animal Weight (lbs)	Design Capacity # of Head	Production (cu.ft./day)
Dairy Cattle	1,400	1,400	3,500
			0
Totals		1,400.0	3,500.0

DAILY MISC. PRODUCTION	Sand Bedding Volume (3)	Milking Parlor (4)	Recycle Flush Water (4)
	Production (cu.ft./day)	Production (cu.ft./day)	Production (cu.ft./day)
Dairy Cattle	980	490.0	0.0
Totals	980	490.0	0.0

Concrete Pad Runoff Volume Calculations	
Surface Area @ Top ft ²	82,720.00
Annual Precipitation (in.) (5)	20.5
Annual Precipitation Volume (ft ³)	141,313
Surface Area @ Freeboard ft ²	0.00
Annual Evaporation (in.) (5)	0.00
Annual Evaporation Volume (ft ³)	0
Precip/Evap (ft ³)	141,313
Precip/Evap (gal)	1,057,094
25 Year/24 Hour Rain Event (in) (5)	5.6
25 Year/24 Hour Rain Event (ft ³)	38,603
25 Year/24 Hour Rain Event (gal.)	288,767

Earthen Storage Basin Volume Calculations	
Earthen Basin - Dimensions Vary - See Plot Plan	
Surface Area - @ top (ft ²)	250,000
Surface Area - @ freeboard (ft ²)	232,000
Volume (ft ³) - @ freeboard	2,908,000
Volume (gal.) - @ freeboard	21,753,352

Waste Storage Volume Calculations	
Earthen Basin - Dimensions Vary - See Plot Plan	
Annual Precipitation (in.) (5)	35.00
Annual Precipitation Volume (ft ³)	729,167
Annual Evaporation (in.) (5)	32.60
Annual Evaporation Volume (ft ³)	630,267
Precip/Evap (ft ³)	98,900
Precip/Evap (gal)	739,821
25 Year/24 Hour Rain Event (in) (5)	5.6
25 Year/24 Hour Rain Event (ft ³)	102,000
25 Year/24 Hour Rain Event (gal.)	763,011

Earthen Storage Basin - Annual Production Calculation			
Annual Volume Produced	Daily Volume (cu.ft.)	Period (days)	Total Volume (cu.ft.)
Manure Storage Volume	4,970.0	365	1,814,050
		Annual Precipitation vs. Evaporation (9)	380,816
		Annual Production Volume (cu.ft.)	2,194,866
		Annual Production Volume (gal.) (6)	16,418,739.0

Earthen Storage Basin			
Required Volume	Daily Volume (cu.ft.)	Period (days)	Total Volume (cu.ft.)
Manure Storage Volume	4,970.0	150	745,500
		Annual Precipitation vs. Evaporation	240,213
		25 Year/24 Hour Rain Event	140,603
		Required Volume (cu.ft.)	984,820
		Required Volume (gal.) (7)	7,366,969.3
		Actual Facility Storage Volume (gal.) (8)	21,753,352.2

DESIGN FACTORS	
Storage Length - Required (days)	150
Storage Length - "As Built" (days)	484

- 1 - Average Animal Weight obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18 Table 2-1
- 2 - Manure Storage Volume = # of head x ft³/day total manure production livestock Waste Facilities Handbook, Third Edition, MWPS-18 Table 2-1
- 3 - Bedding Volume = Average Total Animal Weight at any time divided by 1,000 x Bedding Value.
 - Sand Bedding Value of 0.5 cu.ft./day/1,000 lbs obtained from Dairy Free stall Housing and Equipment, 6th Edition, 1997 (MWPS-7), Tables 8-4 for Free stall bedding.
- 4 - Parlor & Flush Water Volume = Based on producer estimate; flush water will be recycled from proposed earthen storage basin.
- 5 - Precipitation and evaporation data obtained from ISWS Bulletin 70-1989; AWMFH 10C-27 and if applicable, runoff from earthen and surfaced feedlots from USDA SCS AWMFH Figures 10C-1 & 10-C2.
 - Annual Runoff from earthen feedlots = N/A of annual precipitation.
 - Annual Runoff from paved feedlots = 58.5% of annual precipitation.
- 6 - Annual Production Volume estimates animal waste and misc. facility production, all precipitation (including 25 year/24 hour rain event) & evaporation volumes over 365 days.
- 7 - Required Volume includes 25 year/24 hour rain event & precipitation/evaporation volumes.
- 8 - Actual Volume at Freeboard Elevations (two feet set aside for freeboard requirement).
- 9 - Annual Precipitation vs Evaporation includes annual precipitation for both the concrete pad and earthen storage as well as the 25 year/24 hour storm totals for both structures.