

B. Facility Inventories

1. Animals

Table B-1

Animal	No. of Animals	Avg. Size	Animal Units (LMFA)	Animal Units (Per 1000 lb)
Cows	250	1400	350	350
Dry Cows	12	1400	16.8	16.8
Heifers	30	850	30	25.5
Calves	99	325	39.6	32.2
		Total Animal Units	436.4	424.5

2. Buildings

***** See plot plan in section 6 of CNMP***

3. Seasonal High Water Table

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

4. Livestock Waste Production

Table B-3 Livestock Waste Storages

Liquid Storage	Animals	Waste Produced* (Gallons Annually)	Capacity (Gallons Annually)	Storage Days
Liquid Waste	Circular Tank	3,006,869	2,098,614	255
Liquid Waste	Earthen Basin**	1,419,300	472,370	121
Solid Storage	Animals	Waste Produced (Ft^3 Annually)	Capacity (Ft^3 Annually)	Storage Days
Solid Waste	Total Facility	58,281	31,456	197

* The annual liquid waste stream is represented by 3,064,418.8 gallons. The facility regularly transfers liquid from the earthen basin to the circular tank, thus the circular tank is available for all liquid waste streams.

** Only a portion of the facility annual waste stream is directed into the earthen basin. The listed quantity of 1,419,300 gallons is an estimate of the volume of the annual waste stream that enters the earthen basin. The earthen basin at this facility is a temporary storage structure since the facility regularly transfers liquid from the earthen basin to the circular tank.

See calculations on following page for manure production calculation details.

5. Rainfall Volumes & Evaporation from storage facilities

See the following pages for rainfall and evaporation calculations.

Car-Mer Farm

Waste Storage Volume Calculations

DAILY MANURE PRODUCTION	Average (1)	Maximum	Manure (2)	Total Manure
	Animal Weight	Design Capacity	Production	Volume
	(lbs)	# of Head	(cu.ft./day)	(cu.ft./day)
Cows	1,400	250	500	500
Dry Cows	1,400	12	16	16
Heifer	850	30	23	0
Calves	325	99	29	0
Totals		391.0	568.3	515.6

DAILY MISC. PRODUCTION	Sand Bedding (3)	Straw Bedding (3)	Parlor Water (4)	Wash Water (4)
	(cu.ft./day)	(cu.ft./day)	(cu.ft./day)	(cu.ft./day)
Cows	28.0	n/a	60.0	60.0
Dry Cows	3.0	n/a	n/a	n/a
Heifer	n/a	5.4	n/a	n/a
Calves	n/a	15.9	n/a	n/a
Totals	31.0	21.3	60	60

Circular Tanks Volume Calculations 189' x 12' deep		Earthen Basin Volume Calculations 146' x 88' x 10' deep	
Surface Area @ top (ft^2)	28,054	Surface Area @ top (ft^2)	12,848
Surface Area @ freeboard (ft^2)	28,054	Surface Area @ freeboard (ft^2)	11,040
Volume (ft^3) @ freeboard	280,544	Volume (ft^3) @ freeboard	63,147
Volume (gal.) @ freeboard	2,098,614	Volume (gal.) @ freeboard	472,370

Circular Tank Waste Storage Volume Calculations		Earthen Basin Waste Storage Volume Calculations	
Surface Area ft^2	28,054.4	Surface Area ft^2	12,848.0
Annual Precipitation (in.) (5)	35.00	Annual Precipitation (in.) (5)	35.00
Annual Precipitation Volume (ft^3)	81,825	Annual Precipitation Volume (ft^3)	37,473
Annual Evaporation (in.)	32.70	Annual Evaporation (in.)	32.70
Annual Evaporation Volume (ft^3)	76,448	Annual Evaporation Volume (ft^3)	30,084
Precip/Evap (ft^3)	5,377	Precip/Evap (ft^3)	7,389
Precip/Evap (gal)	40,223	Precip/Evap (gal)	55,276
25 Year/24 Hour Rain Event (in)	5.6	25 Year/24 Hour Rain Event (in)	5.6
25 Year/24 Hour Rain Event (ft^3)	13,092	25 Year/24 Hour Rain Event (ft^3)	5,996
25 Year/24 Hour Rain Event (gal.)	97,935	25 Year/24 Hour Rain Event (gal.)	44,851

Concrete Feedlot Runoff Volume Calculations		Earthen Feedlot Runoff Volume Calculations	
Surface Area ft^2 (6)	7,217.0	Surface Area ft^2 (6)	34,426.0
Annual Runoff Precipitation (in.) (5)	19.1	Annual Runoff Precipitation (in.) (5)	8.2
Annual Runoff Volume (ft^3)	11,493	Annual Runoff Volume (ft^3)	23,388
Annual Evaporation (in.)	0	Annual Evaporation (in.)	0
Annual Evaporation Volume (ft^3)	0	Annual Evaporation Volume (ft^3)	0
Precip/Evap (ft^3)	11,493	Precip/Evap (ft^3)	23,388
Precip/Evap (gal)	85,974	Precip/Evap (gal)	174,951
25 Year/24 Hour Rain Event (in)	5.6	25 Year/24 Hour Rain Event (in)	5.6
25 Year/24 Hour Rain Event (ft^3)	3,368	25 Year/24 Hour Rain Event (ft^3)	16,065
25 Year/24 Hour Rain Event (gal.)	25,194	25 Year/24 Hour Rain Event (gal.)	120,178

Silage Pad Runoff Calculations	
Surface Area ft^2	35,200.0
Annual Precipitation (in.) (5)	19.11
Annual Precipitation Volume (ft^3)	56,056
Annual Evaporation (in.)	0.00
Annual Evaporation Volume (ft^3)	0
Precip/Evap (ft^3)	56,056
Precip/Evap (gal)	419,327
25 Year/24 Hour Rain Event (in)	5.6
25 Year/24 Hour Rain Event (ft^3)	16,427
25 Year/24 Hour Rain Event (gal.)	122,880

Additional Storage Areas				
Storage Area	Storage Area Size	Bedpack/Solid Storage (ft^3)	Storage Area Size	Concrete Pit (liquid Storage)
Dairy Cows (Freestall)		n/a		
Dairy Cows (Freestall)		n/a		
Dry Cow (Manure Stack)	64x60x2	7,680.0		
Heifer (Manure Stack)	88x72.5x2	12,760.0		
Calf (Manure Stack)	56x42x2	4,704.0		
Calf (Manure Stack)	20.5x32x2	1,312.0		
Calf (Deep Pit)			72x32x6	13,824.0
Settling Basin	8x30x3			400.0
Totals (ft^3)		26,456.0		14,224

Design Factors	
Storage Length - Required (days)	150
Storage Length - Actual (days)	314

Facility Storage Volumes				
Required Volume				
	Daily Manure Volume	Daily Misc. Production Volume	Period	Total Volume
	(cu.ft.)	(cu.ft.)	(days)	(cu.ft.)
Manure Storage Volume	515.6	151.0	365	243,309
			Required Volume (cu.ft.)	401,960
			Required Annual Liquid Volume (gal.) (7)	3,006,869.3
			Actual Total Storage Volume (gal.) (8)	2,585,207.4

- 1 - Average Animal Weight obtained from producer information
- 2 - Manure Storage Volume = # of head x ft^3/day total manure production Livestock Waste Facilities Handbook, Third Edition, MWPS-18 Table 2-1
 - The manure production from the heifers and calves are collected in the solid manure stack and are not included in the liquid manure containment calculations.
- 3 - Bedding Volume = Based on producer estimate of bedding used vs. what is collected in freestall and hauled/spread directly on field.
 - The straw bedding production from the heifers and calves are collected in the solid manure stack and are not included in the liquid manure containment calculations.
- 4 - Parlor & Wash Volume = Based on producer estimate.
- 5 - Annual precipitation, evaporation and runoff obtained from NRCS Climate Data
- 6 - Surface area for feedlot runoff calculations includes areas information previously submitted - Concrete Lots = Dry Cow Lot & Heifer Lot = 7,217
- 7 - Required Volume includes 25 year/24 hour rain event & precipitation/evaporation volumes.
- 8 - Actual Total Storage Volume includes liquid storage volumes at freeboard (two feet set aside for freeboard requirement) & all solid storage volumes.
 - The additional storage areas consisting of solid storage or bedpack (heifers and calves) are handled as a solid and are not included in the liquid manure containment calculations.