

## ***B. Facility Inventories***

### **1. Animals**

**Table B-1**

<b>Animal</b>	<b>No. of Animals</b>	<b>Avg. Size</b>	<b>Animal Units (LMFA)</b>	<b>Animal Units (per 1,000 lbs)</b>
Finisher Cattle (West Barn)	425	800	425	340
Finisher Cattle (South Barn)	75	800	75	60
Feedlot Beef (East Lots)	800	950	800	760
Feedlot Beef (confinement Barn)	400	1000	400	400
<b>Total Animal Units</b>			<b>1,700</b>	<b>1,560</b>

### **2. Buildings**

**Table B-2 Livestock Facility Capacity(s)**

<b>Facility</b>	<b>Facility Population</b>	<b>Total Square Feet</b>	<b>Storage Facility</b>
West Barn	425	21,600	Bed Pack
South Barn	75	5,445	Bed Pack
East Lots	800	40,570	Existing Slurry Store
Confinement Building	400	8,820	Under Building Pit

### **3. Seasonal High Water Table**

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

#### 4. Livestock Waste Production

**Table B-3a Solid Livestock Waste Storages**

<b>Storage</b>	<b>Animals</b>	<b>Waste Produced (ft<sup>3</sup>/day)</b>	<b>Capacity (ft<sup>3</sup>)</b>	<b>Storage Days</b>
West Barn Bed Pack	425	356.15	64,800	182
South Barn Bed Pack	75	62.85	16,335	260
<b>Total Solid Storage</b>	<b>500</b>	<b>419</b>	<b>81,135</b>	<b>194</b>

**Table B-3b Liquid Livestock Waste Storages**

<b>Storage</b>	<b>Animals</b>	<b>Waste Produced (annual gallons)</b>	<b>Capacity (gallons)</b>	<b>Storage Days</b>
Slurry Store	800	2,693,027	1,257,950	170
Confinement Barn	400	1,037,548	598,365	210
<b>Total Solid Storage</b>	<b>1200</b>	<b>3,730,575</b>	<b>1,856,315</b>	<b>182</b>

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.

**Dare Farms - South Pack Barn**  
Waste Storage Volume Calculations

DAILY MANURE PRODUCTION	Average (1)	Maximum	Total Manure (2)	
	Animal Weight	Design Capacity	Volume	
	(lbs)	(# of Head)	(cu.ft./day)	
Beef Cattle	800	75	0.0	56.9
	0	0	0.0	0.0
<b>Totals (Year Round Animals)</b>		<b>75.0</b>	<b>0.0</b>	<b>56.9</b>

DAILY MISC. PRODUCTION	Bedding (3)	Parlor/Milking Center Water (4)
	(cu.ft./day)	(cu.ft./day)
Beef Cattle	12.0	0.0
	0.0	0.0
<b>Totals</b>	<b>12.0</b>	<b>0.0</b>

Additional Storage Area				
Storage Area	Storage Area Size	Bedpack/Solid Storage (ft³)	Storage Area Size	Concrete Pit (liquid Storage)
Pack Barn	55' x 99' x 3'	16,335.0		
<b>Totals (ft³)</b>		<b>16,335.0</b>		<b>0.0</b>

Feedlots Runoff Volume Calculations (6)	
Including exposed feedlot (existing)	
Surface Area ft² (6)	0.00
Annual Precipitation (in.) (5)	21.9
Annual Precipitation Volume (ft³)	0
Annual Evaporation (in.)	0.0
Annual Evaporation Volume (ft³)	0
Precip/Evap (ft³)	0
Precip/Evap (gal)	0
25 Year/24 Hour Rain Event (in)	5.3
25 Year/24 Hour Rain Event (ft³)	0
25 Year/24 Hour Rain Event (gal.)	0

Design Factors - Total Manure	
Storage Length - Required (days)	150
Storage Length - Actual (days)	260

Total Solid Manure Storage				
Required Volume				
	Daily Manure Volume	Daily Misc. Volume	Period	Total Volume
	(cu.ft.)	(cu.ft.)	(days)	(cu.ft.)
Manure Storage Volume (425 cows)	56.85	6.00	180	11,313
			Annual Precipitation vs. Evaporation	0
			25 Year/24 Hour Rain Event	0
			Required Volume (cu.ft.)	11,313.0
			Required Volume (tons) (7)	353.0
			Annual Volume (cu.ft.)	22,940.3
			Annual Volume (tons)	715.7

- 1 - Average Animal Weight obtained from producer estimate.  
2 - Manure Production obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18; Table 2-1  
3 - Bedding Volume = Based on producer estimate of bedding used.  
4 - Parlor/Milking Center Water Volume = Based on producer estimate  
5 - Precipitation and evaporation obtained from NRCS  
6 - Surface area for feedlot runoff calculations includes all exposed areas.  
7 - Required Volume includes 25 year/24 hour rain event & precipitation/evaporation volumes.

**Dare Farms - East Lots**  
Waste Storage Volume Calculations

DAILY MANURE PRODUCTION	Average (1)	Maximum	Total Manure (2)	
	Animal Weight	Design Capacity	Volume	
	(lbs)	(# of Head)	(cu.ft./day)	
Beef Cattle	950	800	0.0	721.6
	0	0	0.0	0.0
<b>Totals (Year Round Animals)</b>		<b>800.0</b>	<b>0.0</b>	<b>721.6</b>

DAILY MISC. PRODUCTION	Bedding (3)	Parlor/Milking Center Water (4)
	(cu.ft./day)	(cu.ft./day)
Beef Cattle	0.0	0.0
	0.0	0.0
<b>Totals</b>	<b>0.0</b>	<b>0.0</b>

Additional Storage Area				
Storage Area	Storage Area Size	Bedpack/Solid Storage (ft³)	Storage Area Size	Concrete Pit (liquid Storage)
<b>Totals (ft³)</b>		<b>0.0</b>		<b>0.0</b>

Feedlots Runoff Volume Calculations (6)	
Including exposed feedlot (existing)	
Surface Area (ft²) (6)	40,570.00
Annual Precipitation (in.) (5)	21.9
Annual Precipitation Volume (ft³)	74,040
Annual Evaporation (in.)	0.0
Annual Evaporation Volume (ft³)	0
Precip/Evap (ft³)	74,040
Precip/Evap (gal)	553,858
25 Year/24 Hour Rain Event (in)	5.3
25 Year/24 Hour Rain Event (ft³)	17,968
25 Year/24 Hour Rain Event (gal.)	134,545

Slurry Store Volume Calculations	
101' Diameter x 23.4' Deep	
Surface Area (ft²) (6)	8,011.6
Annual Precipitation (in.) (5)	38.3
Annual Precipitation Volume (ft³)	24,235
Annual Evaporation (in.)	34.7
Annual Evaporation Volume (ft³)	23,187
Precip/Evap (ft³)	1,068
Precip/Evap (gal)	7,991
25 Year/24 Hour Rain Event (in)	5.3
25 Year/24 Hour Rain Event (ft³)	3,552
25 Year/24 Hour Rain Event (gal.)	26,569

Slurry Store Volume Calculations	
101' Diameter x 23.4' Deep	
Surface Area - @ top (ft²)	8,012
Surface Area - @ freeboard (ft²)	8,012
Volume (ft³) - @ freeboard	188,163
Volume (gal) - @ freeboard	1,257,950

Design Factors - Total Manure	
Storage Length - Actual (days)	170

Total Manure Storage - Existing Slurry Store				
Required Volume				
	Daily Manure Volume	Daily Misc. Volume	Period	Total Volume
	(cu.ft.)	(cu.ft.)	(days)	(cu.ft.)
Manure Storage Volume (800 cows)	721.60	0.00	150	106,240
			Annual Precipitation vs. Evaporation	75,108
			25 Year/24 Hour Rain Event	21,538
			Required Volume (cu.ft.)	<b>160,644.3</b>
			Required Volume (gal.) (7)	1,201,703.2
			Actual Storage Volume (gal.) (8)	1,257,950.3
			Annual Volume (gals)	2,693,026.7

- 1 - Average Animal Weight obtained from producer estimate.
- 2 - Manure Production obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18; Table 2-1
- 3 - Bedding Volume = Based on producer estimate of bedding used.
- 4 - Parlor/Milking Center Water Volume = Based on producer estimate
- 5 - Precipitation and evaporation obtained from NRCS
- 6 - Surface area for feedlot runoff calculations includes all exposed areas.
- 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).

**Dare Farms - West Barn**  
Waste Storage Volume Calculations

DAILY MANURE PRODUCTION	Average (1)	Maximum		Total Manure (2)
	Animal Weight	Design Capacity		Volume
	(lbs)	(# of Head)		(cu.ft./day)
Beef Cattle	800	425	0.0	322.2
	0	0	0.0	0.0
<b>Totals (Year Round Animals)</b>		<b>425.0</b>	<b>0.0</b>	<b>322.2</b>

DAILY MISC. PRODUCTION	Bedding (3)	Parlor/Milking Center Water (4)
	(cu.ft./day)	(cu.ft./day)
Beef Cattle	68.0	0.0
	0.0	0.0
<b>Totals</b>	<b>68.0</b>	<b>0.0</b>

Additional Storage Area				
Storage Area	Storage Area Size	Bedpack/Solid Storage (ft³)	Storage Area Size	Concrete Pit (liquid Storage)
Roofed Lot	108' x 200' x 3.0'	64,800.0		
<b>Totals (ft³)</b>		<b>64,800.0</b>		<b>0.0</b>

Feedlots Runoff Volume Calculations (6)	
Including exposed feedlot (existing)	
Surface Area (ft²) (6)	0.00
Annual Precipitation (in.) (5)	21.9
Annual Precipitation Volume (ft³)	0
Annual Evaporation (in.)	0.0
Annual Evaporation Volume (ft³)	0
Precip/Evap (ft³)	0
Precip/Evap (gal)	0
25 Year/24 Hour Rain Event (in.)	5.3
25 Year/24 Hour Rain Event (ft³)	0
25 Year/24 Hour Rain Event (gal.)	0

Design Factors - Total Manure	
Storage Length - Actual (days)	182

Total Solid Manure Storage				
Required Volume				
	Daily Manure Volume	Daily Misc. Volume	Period	Total Volume
	(cu.ft.)	(cu.ft.)	(days)	(cu.ft.)
Manure Storage Volume (425 cows)	322.15	34.00	180	64,107
			Annual Precipitation vs. Evaporation	0
			25 Year/24 Hour Rain Event	0
			Required Volume (cu.ft.)	64,107.0
			Required Volume (gal.) (7)	479,553.7
			Annual Volume (cu.ft.)	129,994.8
			Annual Volume (tons)	4,055.8

- 1 - Average Animal Weight obtained from producer estimate.  
2 - Manure Production obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18, Table 2-1  
3 - Bedding Volume = Based on producer estimate of bedding used.  
4 - Parlor/Milking Center Water Volume = Based on producer estimate  
5 - Precipitation and evaporation obtained from NRCS  
6 - Surface area for feedlot runoff calculations includes all exposed areas.  
7 - Required Volume includes 25 year/24 hour rain event & precipitation/evaporation volumes.

Dare Farms Pit Dimensions (197'6" x 46' x 10' Deep)

	Length (ft)	Width (ft)	Height (ft)	Number of Components	Volume (ft <sup>3</sup> )
Pit Volume	195.833	44.333	9.45833	1	82,115.9
Pump Out Volume	0	0	0	0	0.0
Column Volume		1.16667	8.125	24	208.4
Beam Volume	15	0.91667	1.333	36	659.8
Interior Wall Volume	44.333	1	9.45833	3	1,257.9

Total Volume (ft <sup>3</sup> )	79,989.8
Total Volume (gal)	598,365

# Dare Farms Confinement

## Annual Volume Calculations

DAILY MANURE PRODUCTION	Average (1)	Maximum	Total Manure (2)
	Animal Weight	Design Capacity	Volume
	(lbs)	# of Head	(cu.ft./day)
Beef Cattle	1,000	400	380.0
0	0	0	0.0
Totals (Year Round Animals)		400.0	380.0

DAILY MISC. PRODUCTION	Wash Down Water (3)
	(cu.ft./day)
Beef Cattle	0.0
0	0.0
Totals	0.0

Annual Total Manure Production					
	Daily Total Manure Production	Daily Misc. Production	Period	Total Manure Generated	Total Manure Generated
	(cu.ft.)	(cu.ft.)	(days)	(cu.ft.)	(gallons)
Total Manure Production	380.0	0.0	365	138,700.0	1,037,548

- 1 - Average Animal Weight obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18; Table 2-1  
2 - Total Manure Production obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18; Table 2-1  
3 - Wash Down Volume = Based on producer estimate of water used.  
4 - Parlor/Milking Center Water Volume = Based on producer estimate

### Waste Storage Volume Calculations

DAILY MANURE PRODUCTION	Average (1)	Maximum	Total Manure (2)
	Animal Weight	Design Capacity	Volume
	(lbs)	# of Head	(cu. ft./day)
Beef Cattle	1,000	400	380.0
	0	0	0.0
Totals (Year Round Animals)		400.0	380.0

DAILY MISC. PRODUCTION		Wash Down Water (4)
		(cu. ft./day)
Beef Cattle		0.0
	0	0.0
Totals		0.0

Design Factors - Total Manure	
Storage Length - Required (days)	150
Storage Length - Actual (days)	210

Total Manure Storage - Existing Pits				
Required Volume				
	Daily Manure Volume (3)	Daily Misc. Volume	Period	Total Volume
	(cu.ft.)	(cu.ft.)	(days)	(cu.ft.)
Total Manure Volume	389.00	0.00	150	57,000
			Required Volume (cu.ft.)	57,000.0
			Required Volume (gal.) (7)	426,389.6
			Actual Volume (gal.) (8)	598,365.3

- 1 - Average Animal Weight obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18; Table 2-1
- 2 - Manure Production obtained from Livestock Waste Facilities Handbook, Third Edition, MWPS-18; Table 2-1
- 3 - Bedding Volume = Based on producer estimate of bedding used.
- 4 - Parlor/Milking Center Water Volume = Based on producer estimate
- 5 - Precipitation and evaporation obtained from NRCS
- 6 - Surface area for feedlot runoff calculations includes all exposed areas.
- 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 - Daily Liquid Volume Produced accounts for absorption of liquid into bedding



## **Animal Unit Calculations**

**Dare Farms**

**Per 1,000 lb Animal Unit**

<b>Type of animal</b>	<b>Building</b>	<b>Weight</b>	<b># of Animals</b>	<b>LMFA AU</b>	<b>Total LMFA AU</b>	<b>Total 1000# AU</b>
Feedlot Beef	West Barn	800	425	1.0	425	340
Feedlot Beef	South Barn	800	75	1.0	75	60
Feedlot Beef	Feedlot	950	800	1.0	800	760
Feedlot Beef	Confinement	1000	400	1.0	400	400
			1700		1700	1560