

FEB 18 2009

DEPT. OF WATER RESOURCES
SOUTHERN REGION

Dairy Water Use Requirements

Date

2/2/2009

Owner/Operator Info

Name: Larry Bos Address: 213 W 400 S Telephone: 539-3415
 County: Jerome City: Jerome State: Idaho Zip Code: 83338

Facility Info

Name: Vanbeek Dairy # 2 Address: 375 S 200 W Telephone: 539-3415
 County: Jerome City: Jerome State: Idaho Zip Code: 83338

Dairy Stock Water Requirements

Animal Type	# of Animals	Animal Weight (lbs)	Animal Units	Drinking Requirement (gal/hd/day)	Drinking Requirement (gal/day)	Total Drinking (acft/yr)	Reference (see full citation below)
Lactating cow 14	2,100	1,400	2,940.0	40.0	84,000	94.09	Override
none	0	0	0.0	0.0	0	0.00	N/A
Dry Cow 14	700	1,400	980.0	14.0	9,800	10.98	Water Intake and Quality, Adams & Sharpe
none	0	0	0.0	0.0	0	0.00	N/A
Heifer 10	0	1,000	0.0	0.0	0	0.00	N/A
Heifer 7.5	50	1,200	60.0	12.0	600	0.67	Water Intake and Quality, Adams & Sharpe
none	0	0	0.0	0.0	0	0.00	N/A
none	0	0	0.0	0.0	0	0.00	N/A
none	0	0	0.0	0.0	0	0.00	N/A
Totals	2,850		3,980.0		94,400	105.74	

Stock water requirement in acre ft/ year

105.7

Stock water pumping diversion in cfs

0.15



Wash Water Sizing

	Barn 1	Barn 2	Barn 3	Barn 1 Breakdown below
# Cows milked	2,210	0	0	
Stantions/side	31	0	0	
Strings/milking	71	0	0	
Milkings per Day	2	2	2 milkings/day	
Cow Prep.	884	0	0 gal/day	2 milkings/day 0.2 gal/cow/milking
Bulk Tank	1,200	0	0 gal/day	
Pipelines	420	0	0 gal/day	3 cycles/wash 70 gallons/cycle
Claw Back flush	6,630	0	0 gal/day	0.5 gal/cycle 3 cycles/wash
Parlor Hand Washdown	2,970	0	0 gal/day	45 gal/min 33 min/milking
Deck Sprays	5,525	0	0 gal/day	155 gal/min 15 runtime sec 143 cycles/day
Deck Flush	0	0	0 gal/day	0 gal/min 0.5 min/cycle 10 cycles/day
Holding Pen Flush	0	0	0 gal/day	0 gal/min 1.5 min/cycle 6 cycles/day
Holding Pen Hand Washdown	2,040	0	0 gal/day	30 gal/min 34 min/milking
Sprinkler Pen Water Use	0	0	0 gal/day	0 heads 5 gpm/head 10 min/pen 100 % use
Milk Room Cleaning	75	0	0 gal/day	
Water Trough Cleaning	1701	0	0 gal/day	23 # of troughs 1500 gal/trough 1.5 #/month
Miscellaneous	200	0	0 gal/day	0
	21,645	0	0	Total Parlor gal/day

Yearly Parlor Wash Volume

7,900,560 Gallons/year

Yearly Parlor Wash Volume

24.25 Acre Ft/year

Commercial Diversion Rate

0.033 CFS

Notes

0

Recyclable Water Use

	Barn 1	Barn 2	Barn 3	
Milking Parlor Throughput	310	0	0 Cows/hr	
Time Milking Per Day	14.3	0.0	0 hours/day	
Plate Cooler Water Use	-	-	- Gal/day	
Water Cooled Compressor	-	-	- Gal/day	
Water Cooled Vacuum Pump	-	-	- Gal/day	
	-	-	-	Total Cooling Parlor Volume/day in gallons

Water Use Evaluation

Clean Water Use	0 Gal/day
Cow Drinking water use	94400 Gal/day
Commercial Parlor Use	21645 Gal/day
Net Excess Cooling Water	0 Gal/day

Yearly Parlor Cooling Volume (amount exceeding that recycled)

0.0 Acre Ft/year



Total Facility Water Use Requirements

Stock water Requirement
Commercial Parlor Use
Additional Cooling Use

105.7 Acre Ft/yr
24.2 Acre Ft/yr
0.0 Acre Ft/yr

Gallons per day per animal unit
29.3 gal/au/day

Total Water Use Estimate
Total Diversion Rate

130.0 Acre Ft/yr
0.18 Cubic Feet/Second (CFS)

80.6 GPM

(this diversion rate is the minimum rate required to pump the
above water use estimate 24/7/365)

	Diversion rate	Volume	
	cfs	gal/day	acre/ft/year
Existing Water Rights			
36-8398			121.0
Water available under pending transfer			30.0
		total	151.0

References:

Cattle drinking requirements were calculated using published information from industry accepted sources or from table data. Typically the highest use estimate is reported with the corresponding source of information. In some cases the designer will override the source values. In those cases an overridden value may include an explanation for the override.

The following sources were evaluated for the milking and dry cow herds.

Fresh Water Needs for Dairy Farms, Dean Faulk U of I Extension Specialist

Water Intake and Quality for Dairy Cattle, Richard S. Adams & William E. Sharpe, Department of Dairy and Animal Science, Pennsylvania State University

Modified Kertz Equation, A.F. Kertz, Ralston Purina Company

Water Partitioning and Intake Prediction in Dry and Lactating Holstein Cows, J. B. Holter & W.E. Urban Jr., Journal of Dairy Science 1992

The following sources were evaluated for animals other than milking and dry cows.

Fresh Water Needs for Dairy Farms, Dean Faulk U of I Extension Specialist

Water Intake and Quality for Dairy Cattle, Richard S. Adams & William E. Sharpe, Department of Dairy and Animal Science, Pennsylvania State University

Water Requirements of Livestock, Daniel Ward & Kevin McKague, Ministry of Agriculture Food & Rural Affairs, May 2007