

## Calculating Daily Fresh Water Needs for a Dairy Operation

Drinking Water Estimates <small>(see <a href="#">Table 1</a> &amp; <a href="#">Table 2</a>)</small>	Number	Estimated Use <small>(gallons/individual per day)</small>	Total Use <small>(gallons per day)</small>
Milking Cows			
Dry Cows			
Heifers			
16-24 months			
13-15 months			
9-12 months			
5-8 months			
3-4 months			
0-2 months			
<b>Total herd drinking water used</b>			

### Wash Pen Estimate

(see [Table 3](#))

- 1 - Sprinkler discharge per nozzle
- 2 - Number of nozzles
- 3 - Minutes per day used

**Total wash pen water used** **B:**   
line 1 x line 2 x line 3

Milk house & Parlor Estimate <small>(see <a href="#">Table 4</a>)</small>	Water per operation	Gallons per day
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- Bulk tank
- Pipeline
- Backflush
- Cleanup  
(Parlor, milk house and holding pen)
- Cow prep
- Plate cooler  
(ignore if water recycled)

**Total milk house and parlor water used** **C:**

**Total Fresh Water Estimate (A + B + C)** **D:**

## Table 1. Herd Makeup

Category	Number	% of Herd	Average Weight (lbs.)
Milking Cows	83	83	1400
Dry Cows	17	17	1550
Total Mature Cows	100		
Heifers			
16-24 months	42	38	1050
13-15 months	13	12	800
9-12 months	19	17	600
5-8 months	19	17	400
3-4 months	9	8	250
0-2 months	9	8	150
Total Replacements	111		

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**Table 2. Water Intake for Dairy Cattle -- Gallons per Day**

Weight (lb)	Milk (lb)	40° & below	60°	80°
(Lactating cows)				
1400	20 <sup>2</sup>	12.0	14.5	17.9
	60 <sup>2</sup>	22.0	26.1	24.7
	80 <sup>2</sup>	27.0	31.9	38.7
	100 <sup>2</sup>	32.0	37.7	45.7
(Dry cows)				
1400 <sup>1</sup>		9.7	12.0	16.2
1600 <sup>1</sup>		10.4	12.8	17.3
(Heifers)				
1200 <sup>1</sup>		8.7	10.8	14.5
800		6.3	7.9	10.6
400		3.7	4.6	6.1
200		2.0	2.5	3.3

<sup>1</sup>Maintenance and pregnancy.

<sup>2</sup>Maintenance and milk production.

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**Table 3. Nozzle discharge -- Gallons per Minute**

	<b>1/8" diameter</b>	<b>9/64" diameter</b>	<b>5/32" diameter</b>	<b>11/64" diameter</b>	<b>3/16" diameter</b>
<b>40 psi</b>	2.96	3.74	4.61	5.54	6.64
<b>45 psi</b>	3.13	3.99	4.91	5.91	7.03
<b>50 psi</b>	3.30	4.18	5.15	6.19	7.41
<b>55 psi</b>	3.46	4.37	5.39	6.48	7.77

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## Table 4. Standard Volumes of Milk house and Parlor Waste

Washing operation	Water volume
Bulk Tank	
- 450-2000 gallon	46 gallons/wash
- 3000-4000 gallon	78 gallons/wash
- 5000 + gallon	116 gallons/wash
- Silo tank	126 gallons/wash
Pipeline	
- Less than 16 parlor stalls	60 gallons/wash
- More than 16 parlor stalls	140 gallons/wash
Backflush	0.5 gal/cow/milking
Parlor/milk house/holding pen cleanup	400 - 900 gallons/wash
Cow prep	
- automatic	1-4 gal/wash/day
- manual	.25 - 5 gal/wash/day
Plate cooler (ignore if water is recycled)	8 gal/cow/day

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