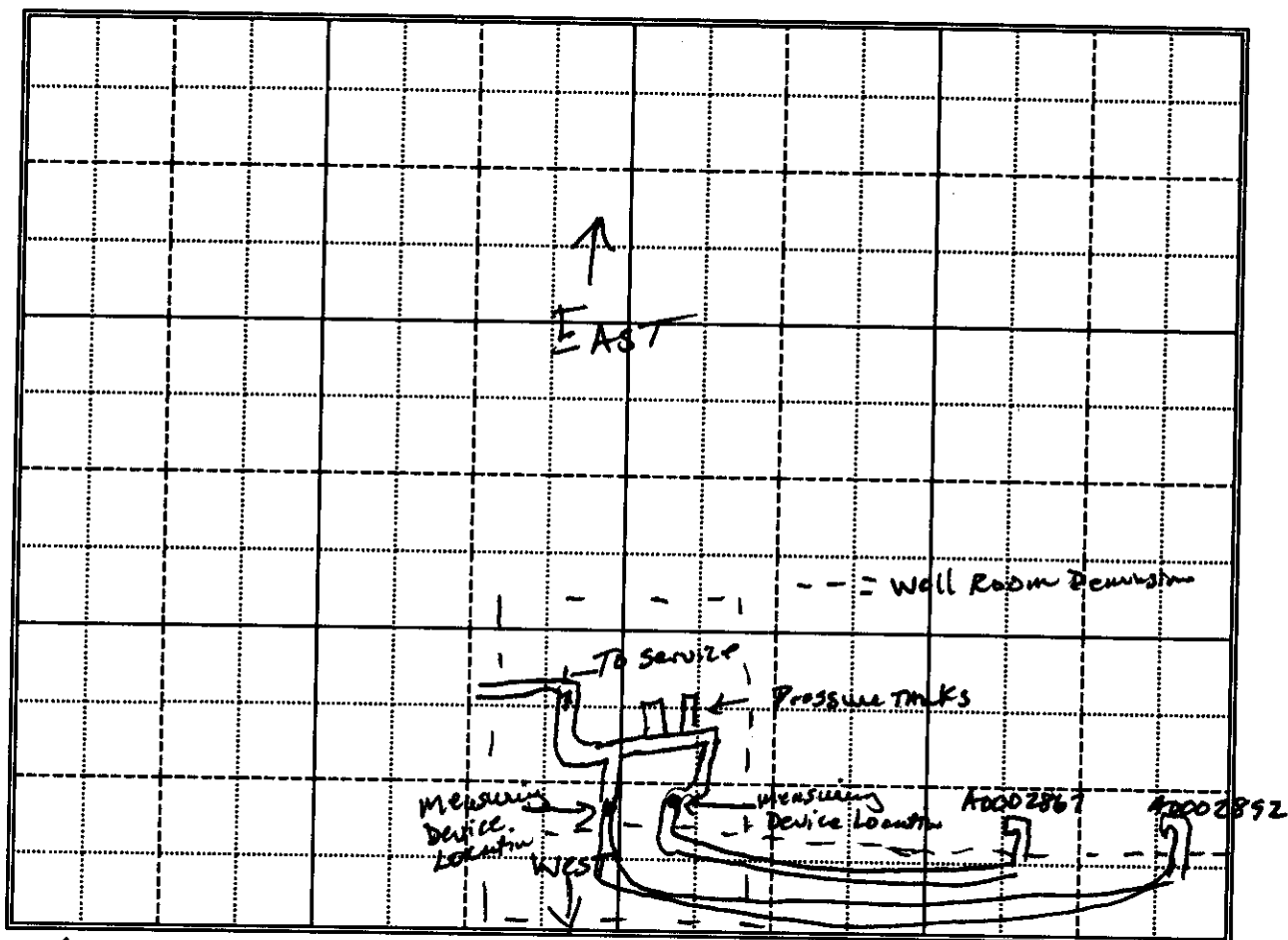


[illegible]

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe I.d. as applicable.



Scale: 1" = 10'

☒ Copy of USGS Quadrangle Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

☒ Aerial Photo Attached (required for irrigation of 10+ acres)

☐ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
A0002867		7.5		Barkley	
A0002892		7.5		Barkley	

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Porta flow / Fuji	Sonic	Portaflow	S1011	TK008373		5/2002

2. Measurements: one measurement was made on each of the wells.
Both are identical in lift, make, & Horse power.

E. NARRATIVE/REMARKS/COMMENTS

Initial calculations of Annual Volume were done with numbers gathered in 2003. Numbers that were on the facility at the time Proof was filed is included and recommendation are based off an affidavit signed and included in packet of information. Rate of flow will remain the same due to flow measurement data collected on 2-18-03 by C. Knutson. Included are some calculations done by Brockway engineering that can be supported by the affidavit submitted by Tony Davis.

Have conditions of permit approval been met? ☒ yes ☐ no

☒ Additional Computation Sheets Attached

Measured Method:

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I,R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{L,R} \text{ and } V_{D,R} =$$

2. Volume Calculations for Other Uses:

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
<u>Commercial/spickwater</u>	<u>1/1</u>	<u>12/31</u>	<u>. 33</u>	<u>78 Aft/Ann.</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Totals:			<u>. 33</u>	<u>78 Aft/ann</u>

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name Corbin R. Knowles Date 3/5/03

Reviewer _____ Date _____

SEAL



Measurement Data
Collected 2-18-03
by C. Kuwahara

Dew

LD07
No. 07
LOG NAME: DEWITTSOUTH
START : 02-18 15:45
END : 02-18 15:55
INTERVAL: 00:01:00

02-18 15:45:00
+2.990E+0 ft/s
+7.117E+1 gal/m
+TOTAL 0000000 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:46:00
+2.975E+0 ft/s
+7.081E+1 gal/m
+TOTAL 0000069 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:47:00
+3.033E+0 ft/s
+7.220E+1 gal/m
+TOTAL 0000140 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:48:00
+3.080E+0 ft/s
+7.330E+1 gal/m
+TOTAL 0000214 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:49:00
+3.117E+0 ft/s
+7.419E+1 gal/m
+TOTAL 0000287 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:50:00
+3.084E+0 ft/s
+7.339E+1 gal/m
+TOTAL 0000360 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:51:00
+3.095E+0 ft/s
+7.366E+1 gal/m
+TOTAL 0000433 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:52:00
+3.095E+0 ft/s
+7.366E+1 gal/m
+TOTAL 0000507 gal
-TOTAL 0000000 gal
NORMAL

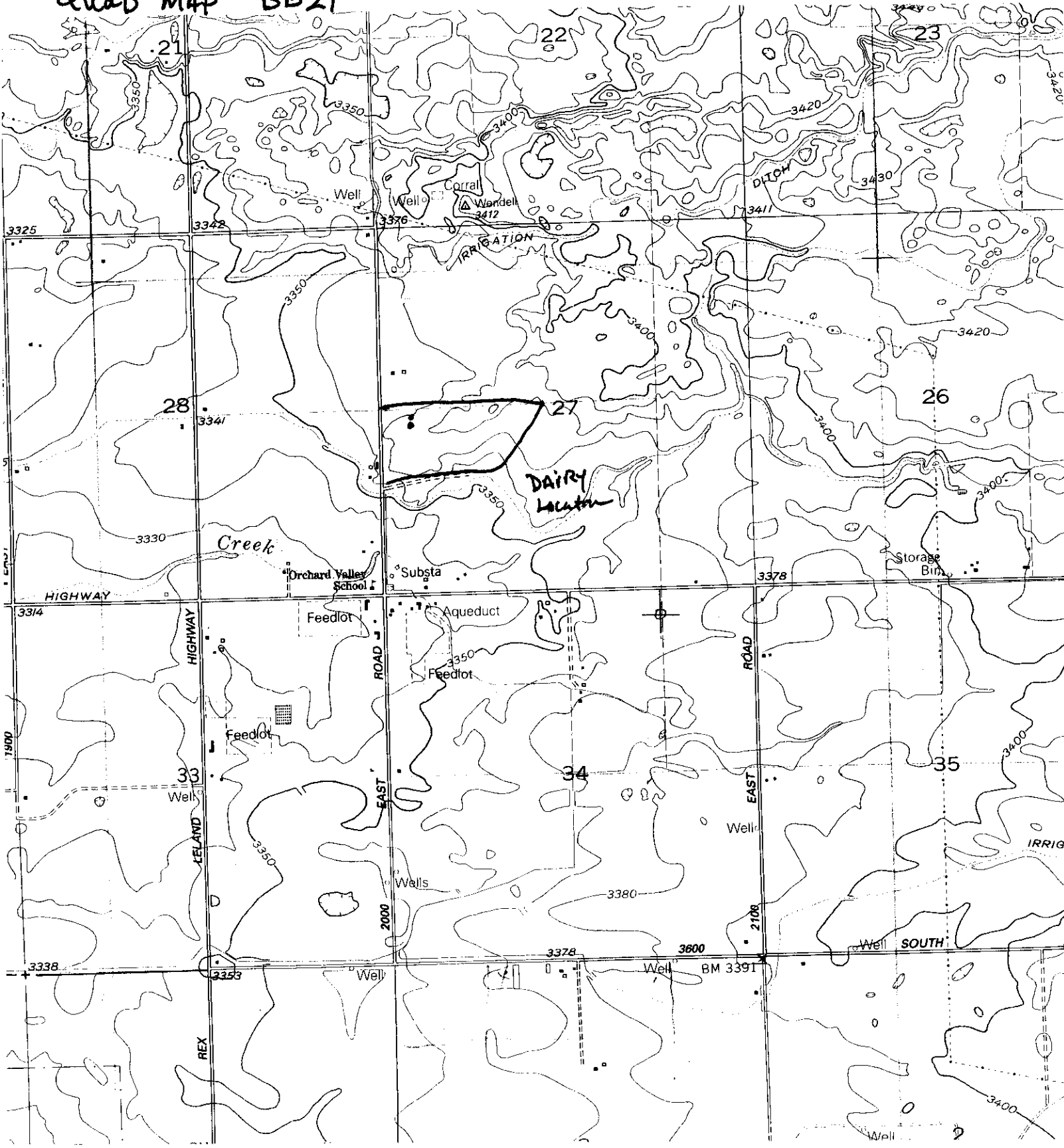
Dew

02-18 15:53:00
+3.082E+0 ft/s
+7.337E+1 gal/m
+TOTAL 0000581 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:54:00
+3.042E+0 ft/s
+7.240E+1 gal/m
+TOTAL 0000654 gal
-TOTAL 0000000 gal
NORMAL

02-18 15:55:00
+3.026E+0 ft/s
+7.203E+1 gal/m
+TOTAL 0000727 gal
-TOTAL 0000000 gal
NORMAL

Quad Map BB21



TOTAL HEAD / FT

MODEL: 75K6

IMPELLER NO:

SIZE: 6"

CURVE NO: ST1202

RPM: 3450

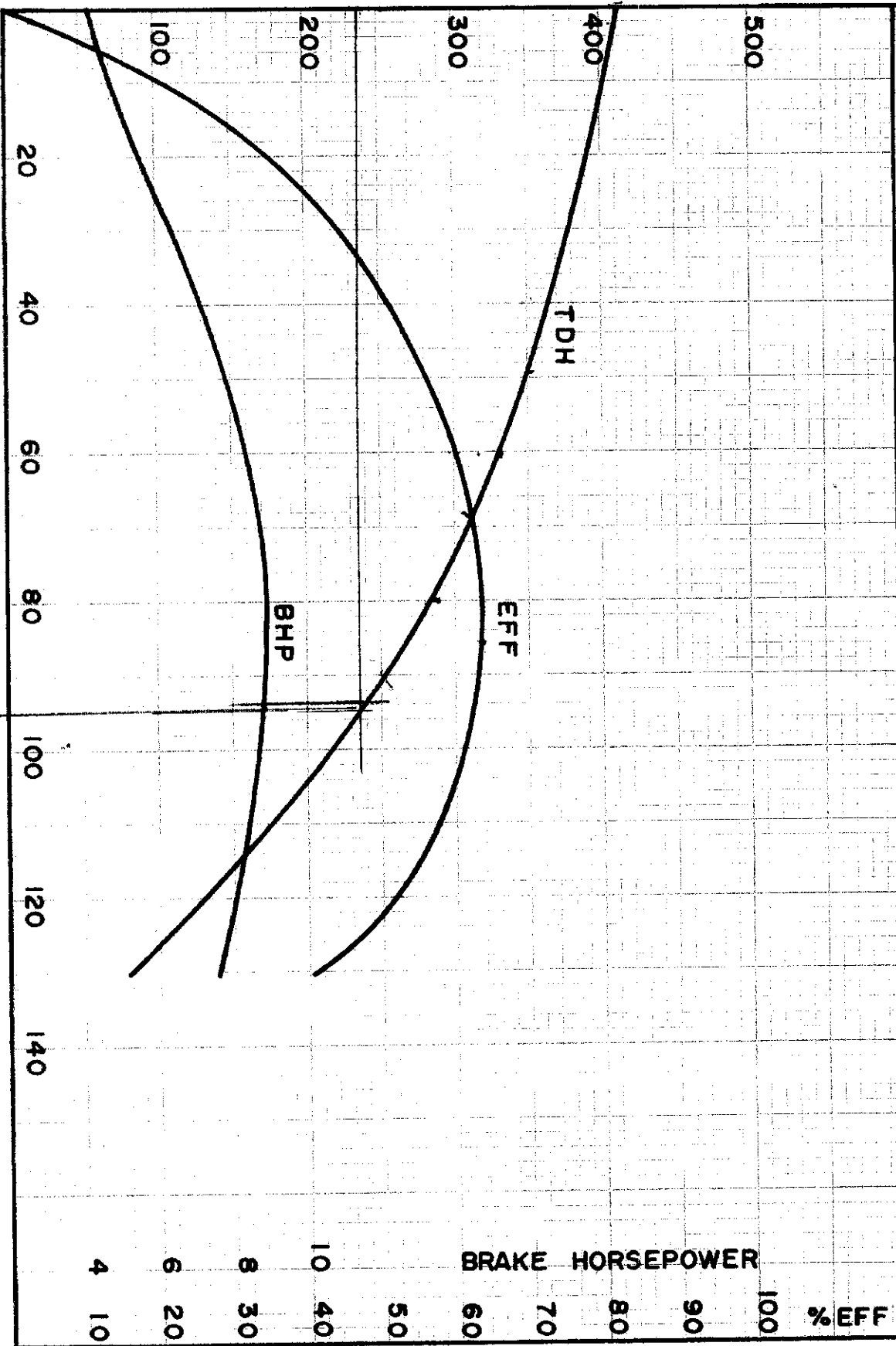
HP: 7 1/2

MAY 20, 1970



STAR-RITE INDUSTRIES, INC.

Water Equipment Division
283 SOUTH WRIGHT STREET / DELAVAN, WISCONSIN 53115 / U.S.A.

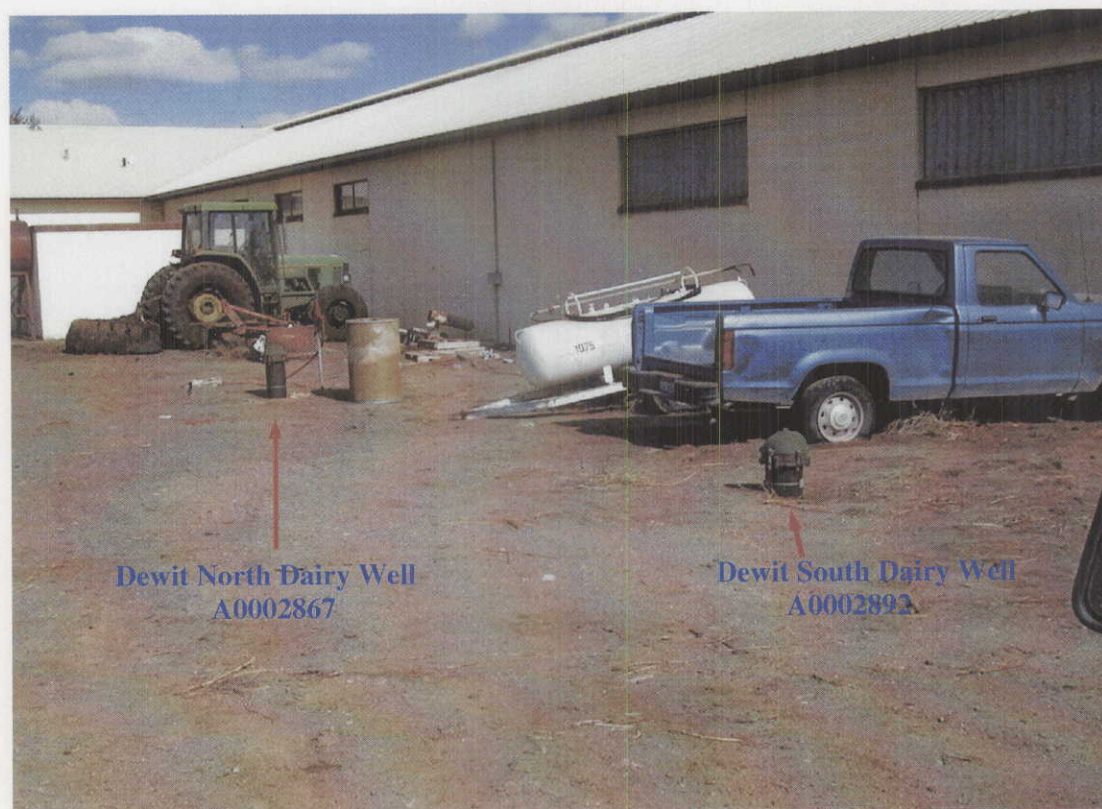


238' TDH

CAPACITY 93 G.P.M. U.S. G.P.M.

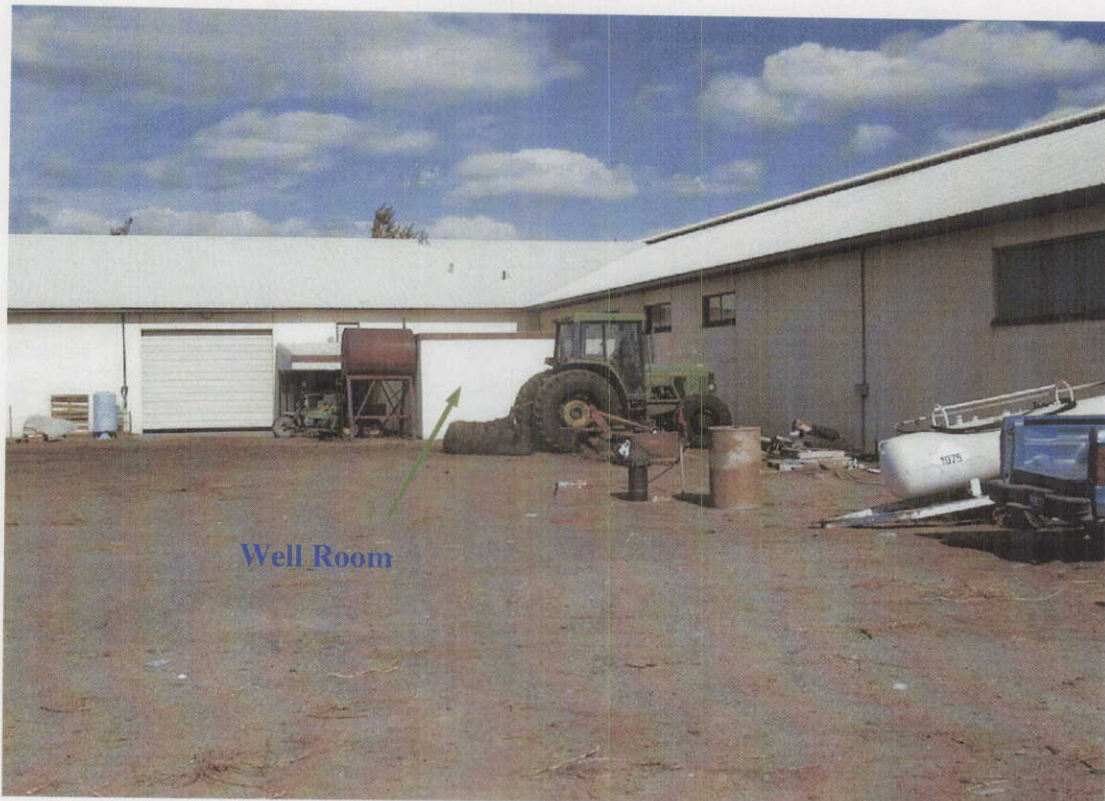


Well Room



Dewit North Dairy Well
A0002867

Dewit South Dairy Well
A0002892



Well Room



Dewit North Dairy Well
A0002867

Dewit South Dairy Well
A0002892

Volume Calc. according to #'s given by owners

Worksheet 1. Calculating Daily Herd Requirements for Fresh Water

Drinking Water Estimates (see Table 1 & 2)

	Number	Estimated Use (gallons per day)	
		Individual	Total
		per day	
Milking Cows	<u>1190</u>	<u>29.42</u>	<u>35,000</u>
Dry Cows	<u>400</u>	<u>13.71</u>	<u>5484</u>
Heifers			
16-24 mo	<u>150</u>	<u>11.9</u>	<u>1,785</u>
13-15 mo	<u>150</u>	<u>8.67</u>	<u>1300</u>
9-12 mo	<u> </u>	<u> </u>	<u> </u>
5-8 mo	<u> </u>	<u> </u>	<u> </u>
3-4 mo	<u> </u>	<u> </u>	<u> </u>
0-2 mo	<u> </u>	<u> </u>	<u> </u>

Total herd drinking water used

A. 43,575.5

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

(Line 1 x line 2 x line 3)

B. N/A

Milk house and Parlor Estimate (see Table 4)

	Water per operation	Gallons per day
Bulk tank	<u>2 tanks x 160 gal x 1 daily =</u>	<u>320</u>
Pipeline	<u>40 stalls x 4 gal per stall / 3 washes</u>	<u>480</u>
Backflush	<u>595 x 3</u>	<u>1785</u>
Cleanup	<u>650 x 3</u>	<u>1950</u>
(Parlor, milk house and holding pen)		
Cow prep	<u>3 gal per cow x 1190 x 3 milkings</u>	<u>10,710</u>
Plate cooler	<u> </u>	<u> </u>
(ignore if water recycled)		
Total milk house and parlor water used		C. <u>15,295</u>

TOTAL FRESH WATER ESTIMATE (A + B + C)

58,825 daily use x 365 =

21,470,943 = 65.89 AF/ANN

57.2 on spreadsheet

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 mo	42	38	1050
13-15 mo	13	12	800
9-12 mo	19	17	600
5-8 mo	19	17	400
3-4 mo	9	8	250
0-2 mo	9	8	150
Total Replacements	111		

Table 2. Water Intake for Dairy Cattle

Weight (lb)	Milk (lb)	100 days 40° & below 27°	Temperature (F) 60° 100 days 27°	80° 165 days 45°
(Lactating cows)				
-----gallons/day-----				
1400	20 ²	12.0	14.5	17.9
60 ²	60 ²	22.0	26.1	24.7
80 ²	80 ²	27.0	31.9	38.7
100 ²	100 ²	32.0	37.7	45.7
Handwritten notes: 40° 25 gal/day x .275% = 6.875 gal 60° 28 gal/day x .275% = 7.7 gal 80° 33 gal/day x .45% = 14.85 gal 29.42 gal Average daily use				
(Dry cows)				
1400 ¹	-	9.7 x .275 = 2.76 gal	12.0	12.4 x .275 = 3.41
1600 ¹	-	10.4	12.8	16.2
133 cows @ 1400	133 cows @ 1600			16.75 x .45 = 7.54
Handwritten notes: 1500 lb 10.05 x .275 = 2.76 gal 1400 lb 9.7 x .275 = 2.66 gal 1600 lb 10.4 x .275 = 2.84 gal 13.71 gal average daily use for 1500 lb animal				
(Heifers)				
1200 ¹	-	8.7 x .275 = 2.4	10.8 x .275 = 2.97	14.5 x .45 = 6.53
800	-	6.3 x .275 = 1.73	7.9 x .275 = 2.17	10.6 x .45 = 4.77
400	-	3.7	4.6	6.1
200	-	2.0	2.5	3.3

¹Maintenance and pregnancy.

²Maintenance and milk production.

Handwritten calculations at the bottom of the page:

1500 lb 10.05 x .275 = 2.76 gal 12.4 x .275 = 3.41 16.75 x .45 = 7.54 = 13.71 gal

1400 lb 9.7 x .275 = 2.66 gal 12.0 x .275 = 3.3 gal 16.2 x .45 = 7.3 gal = 13.25 gal

1600 lb 10.4 x .275 = 2.84 gal 12.8 x .275 = 3.52 gal 17.3 x .45 = 7.78 gal = 14.16 gal

13.71 average daily use

Table 3. Nozzle discharge - Gallons per minute

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

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
2 tanks 1 - 5066 gal tank 1 - 5096.4 gal tank Daily wash on both	
Silo tank - N/A	126 gallons/wash
Pipeline	
<16 parlor stalls 40 total stalls	60 gallons/wash
16> parlor stalls 4 gal/wash / 3 wash daily	140 gallons/wash
Backflush	.5 gal/cow/milking
Parlor/milk house/holding pen cleanup	400 - 900 gallons/wash
650 gal / 3 times daily	
Cow prep	
automatic	1-4 gal/wash/day
manual ✓	.25 - 5 gal/wash/day
Plate cooler (ignore if water is recycled) recycled	8 gal/cow/day