

RECEIVED

APR 27 2005

RECEIVED

APR 25 2005

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

Department of Water Resources

Department of Water Resources
Southern Region

A. GENERAL INFORMATION

Permit No.: 47-8278

1. Owner: Greg and Darla Vierstra

Phone No.: 208-733-4047

Current Address: 3624 N 3200 East, Kimberly, ID 83341

2. Accompanied by: Greg Vierstra

Exam Date: 03-28-2005

Address: see above

Phone No.: see above

Relationship to Permit Holder: Owner

3. Source: Groundwater tributary to _____

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 47-12905, 47-12904, & 47-8353

2. Other water rights with the same point of diversion: 47-12904 & 47-8353

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

Ident No	Gov't Lot	¼	¼	¼	Sec.	Twp.	Rge.	County	Method of Determination / Remarks
		SE	SW	SE	14	10S	16E	TWIN FALLS	
		SE	SW	SE	14	10S	16E	TWIN FALLS	

2. Place(s) of Use:

Indicate Method of Determination: Aerial Photo

TWP	RNG	SEC	NE				NW				SW				SE				TOTALS
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
10S	16E	14															S,C		

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

See Attached Figures

- ☒ 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
Barn-Primary Well	Franklin	5	03K18 08-0515	Sta-rite	L7054-04 1E01M
Barn-Backup Well		1.5	M4FG3S-20 1B88B	Sta-rite	L2084FS-26 1G87E

D. FLOW MEASUREMENTS

1. Theoretical flow calculation – see attached

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calibration

2. Measurements: two interconnected wells with a combined total of 6.5 hp, (primary well = 5 hp, backup well = 1.5 hp),
system runs at 50 psi, static water level was measured at approximately 31' 3" below ground surface, and the pumping
level is approximately 32' below ground surface.

E. NARRATIVE / REMARKS / COMMENTS

One of the conditions of approval was to provide a flow measurement port or other device to provide for installation of measuring equipment and the determination of the rate of diversion. This condition has not been met thus a theoretical flow calculation was completed to estimate flow. However, the owner has said that it is their intent to install a flow meter device to satisfy this requirement.

Another condition of approval was to comply with the drilling permit requirements of Section 42-235 of the Idaho Code. However, according to Section 42-235 of the Idaho code both points of diversion do not require these permits since they are both preexisting wells that were drilled before 1987.

Have conditions of permit approval been met? ☐ Yes ☒ No

F. FLOW CALCULATIONS

☒ Additional Computation Sheets Attached

Measured Method: Theoretical flow calculation – see attached

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \underline{\hspace{2cm}}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = \underline{\hspace{2cm}}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \underline{\hspace{2cm}}$$

2. Volume Calculations for Other Uses:

53.5 afa - according to the attached "Livestock Confinement Operations" Worksheet 53.5 afa would be required for the amount of cows that the owner said they had at the time of the Proof of Beneficial Use

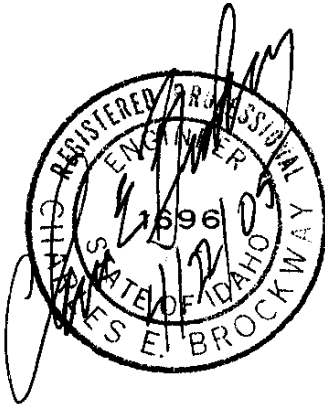
H. RECOMMENDATIONS**1. Recommended Amounts**

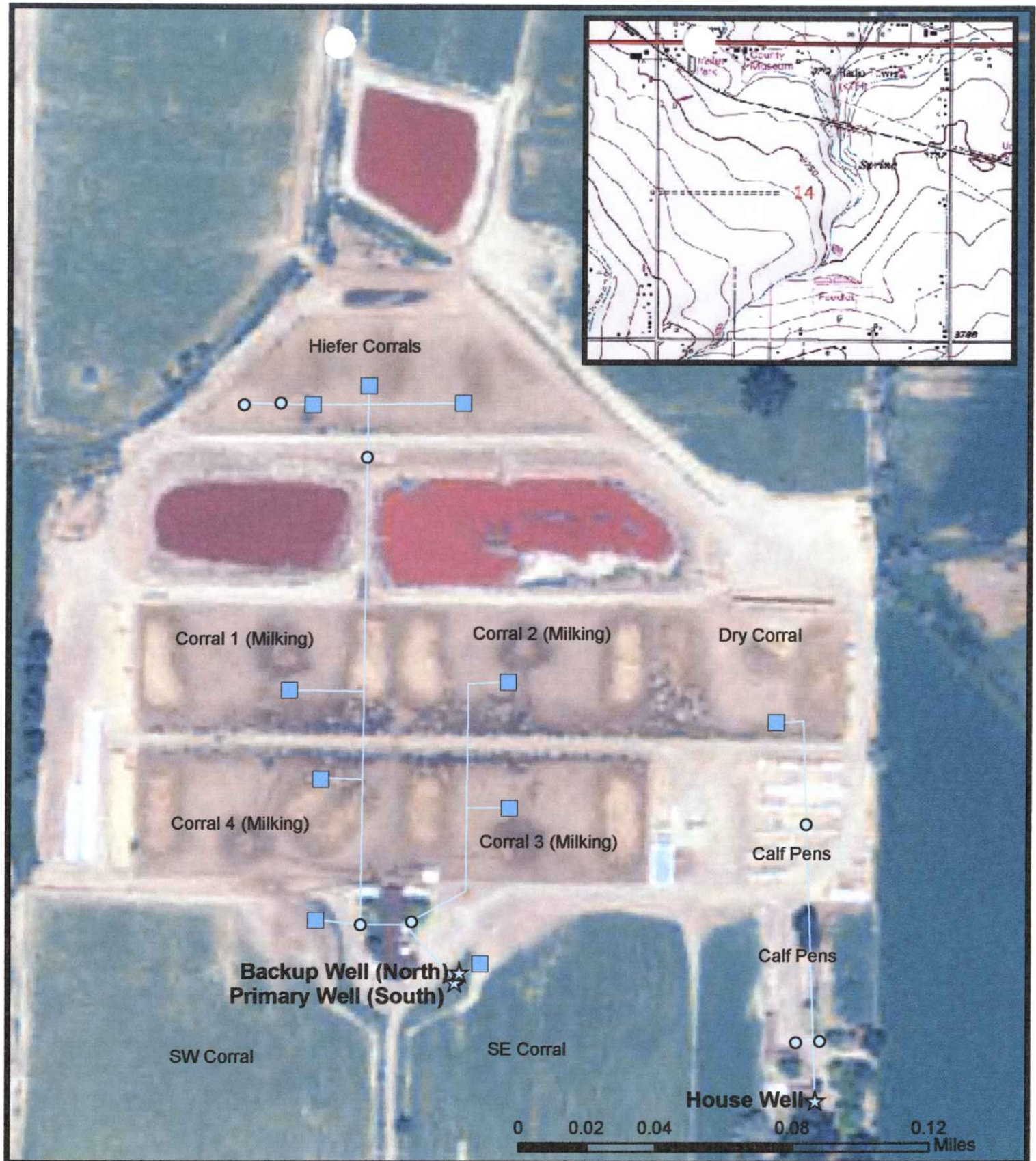
Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
<u>Stockwater</u>	<u>01/01</u>	<u>12/31</u>	<u>0.23</u>	<u>53.5</u>
<u>Comercial</u>	<u>01/01</u>	<u>12/31</u>	<u>0.23</u>	<u>53.5</u>
TOTALS:			<u>0.23</u>	<u>53.5</u>

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: Brockway Engineering - Charles E. BrockwayDate: 04-22-2005

Reviewer: _____

Date: _____

SEAL



Classic Dairy: Greg and Darla Vierstra

Township 10S, Range 16E, Section 14, SW 1/4, SE 1/4

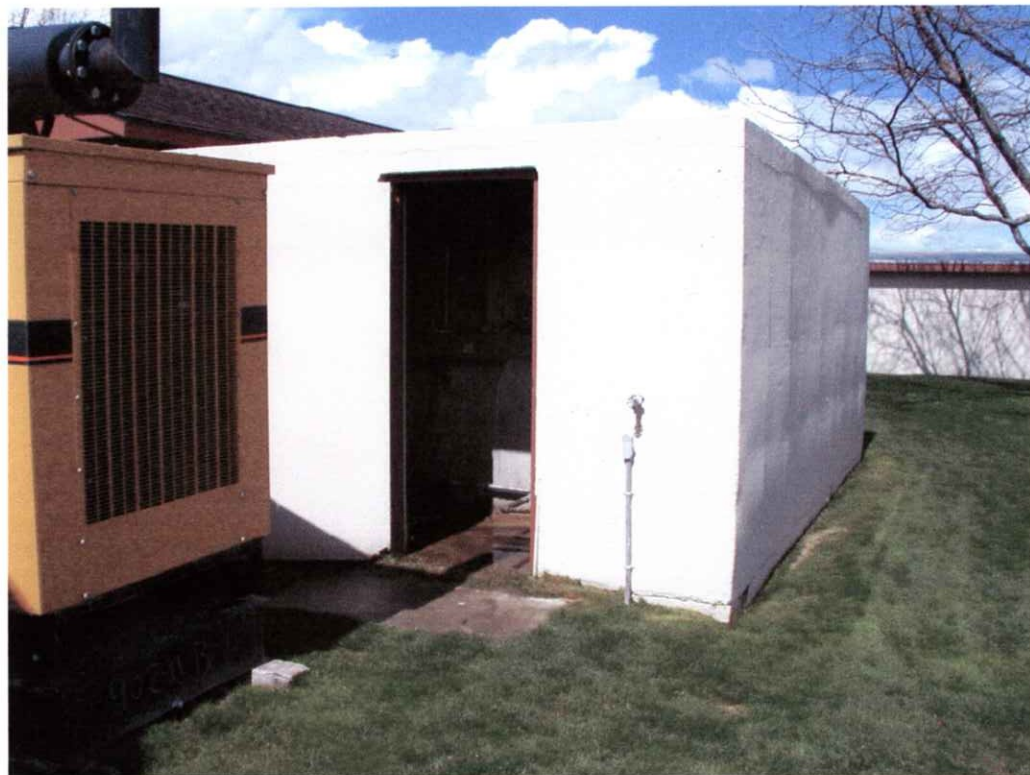
Brockway Engineering, PLLC
DTN - 04-11-05

- Troughs
 - ★ Wells-POD
 - Hydrants
 - Water Delivery
- 2004 NAIP Aerial Photo

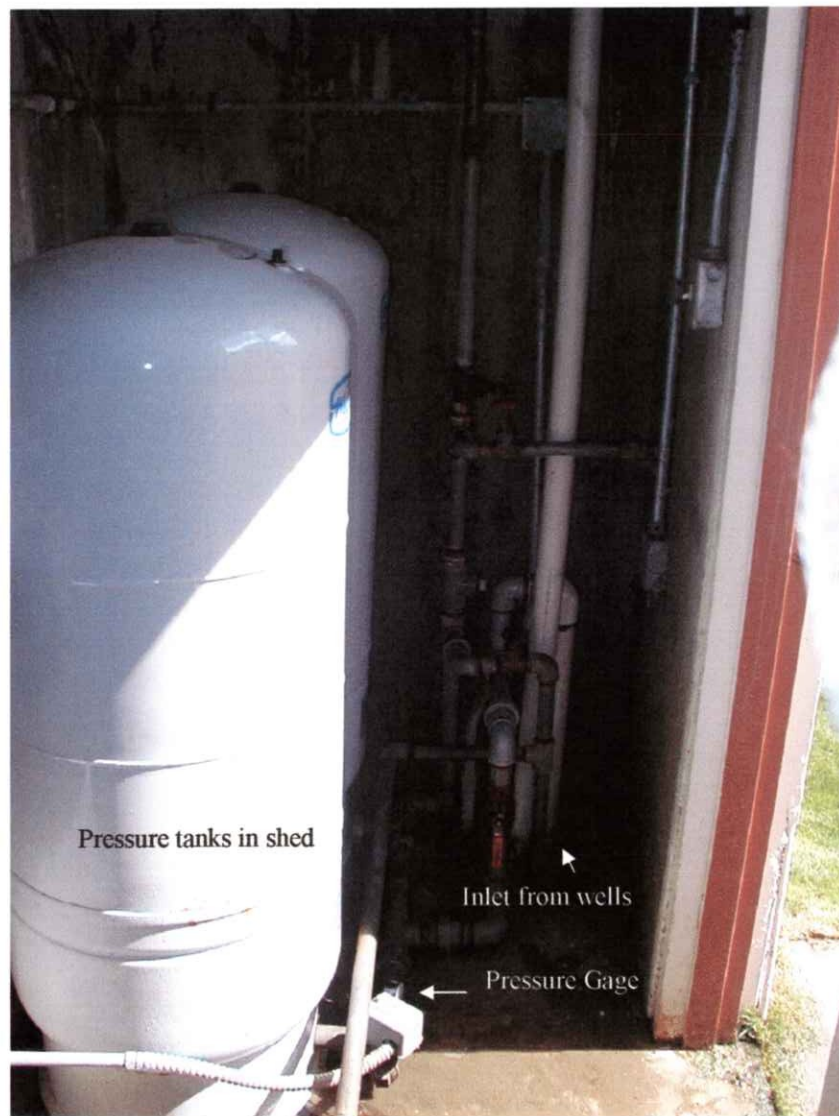




Picture #1: Two interconnected POD's — the wells are next to the Barn on the South side of the property and service the barn and corrals



Picture #2: Shed — the shed is attached to the Barn and houses the pressure tanks that is connected to the water distribution system and wells - there is no access to allow the measurement of flow



Picture #3: Pressure Tanks and Inlet from wells inside shed— the pressure gage is difficult to read and there is no access to measure flow



Picture #4: Rectangular Trough with float — servicing one of the Heifer Corrals



Picture #5: Circular Trough with float — servicing one of the Milking Corrals

Classic Dairy - Greg and Darla Vierstra

Estimate of Flow

Brockway Engineering, PLLC

	Main Line	Main Pump	Backup Pump	Lateral
Diam. (in)	3	2	1.5	1.5
Length (ft)	100	84	63	15
~Q (gpm)	107	80	27	27
V (ft^2/sec)	4.86	8.17	4.90	4.90
Vh (ft)	0.37	1.04	0.37	0.37
pump level (ft)		32	32	
Hp		5	1.5	
Head loss (ft)	2.051	7.314	2.633	0.627

TDH @ Pump (ft)	157.75	153.03
-----------------	--------	--------

Q (gpm)	78	26	according to pump curves
Total Q (gpm)	104		

Q (cfs)	0.174	0.058
Total Q (cfs)	0.232	

Pressure	50	psi
Ph	115.35	ft
Friction Co.	0.014	

Floyd Lilly Company
WORK ORDER

Praying well

№ 37395

Phone 420-3128 Grey

Bill to Classic Dairy

Address _____

Place _____

Direction From _____

Remarks 5 hp pump + Barn well
not working

Date 4/30/04

Delivery Wanted _____

Type of Pump _____

Depth of Well 112

Depth to Water 32

Length of Pipe in Well 84'

Size of Pipe 2" gal

Motor Size 5hp Tank Size 2.55 and 76

Pump Sr. No. A7054-04 1E01M

Motor Ser. No. 031518 08-0515

Doesn't Want
5 year Warranty

1	L 7054-04	5kg liquid and
---	-----------	----------------

1 Ship of Franklin mdr

1. best afschrik zalige best

1 2nd #80E back water

1	246	gal. mixed
---	-----	------------

42'	2" T & C gal pipe
-----	-------------------

1	2" pitless leather
---	--------------------

NO WARRANTY

Labor

250 m

Barn - main pump.

4" submersible pumps

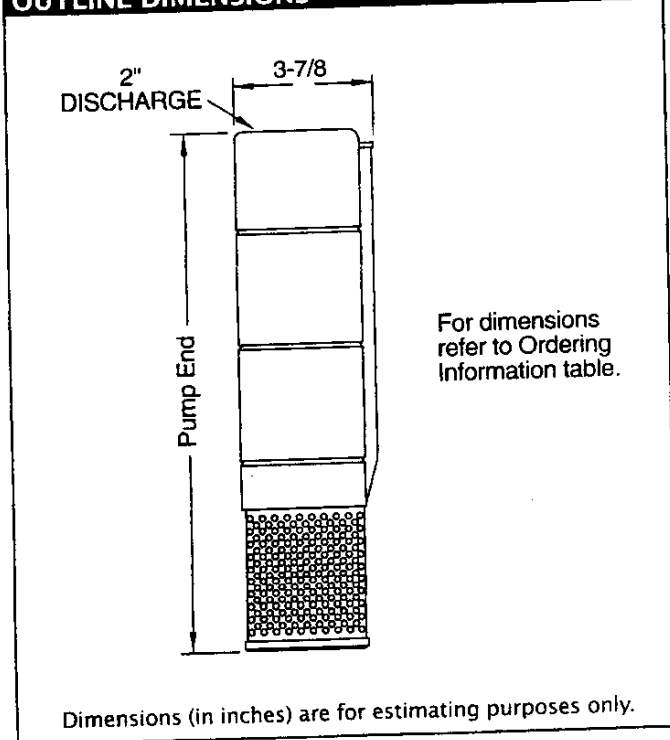
ORDERING INFORMATION

Motor Type	HP	Stgs.	PH	Volt	Pump End			Motor		Control Box	
					Catalog Number	Length Inches*	Weight Pounds*	Catalog Number	Weight Pounds*	Catalog Number	Weight Pounds*
2 Wire	1-1/2	4	1	230	L70F4	20-25/32	26	P218-1327C	39		
	1-1/2	4	1	230	L70F4	20-25/32	26	P218-1076C	31	P217-813	6
3 Wire	1-1/2	4	3	230	L70F4	20-25/32	26	P218-1330C	33	1095-K41	6
	1-1/2	4	3	230	L70F4	20-25/32	26	P218-1279C	33	1096-K33	6
	1-1/2	4	3	460	L70F4	20-25/32	26	P218-1328C	43	P217-814	8
	2	5	1	230	L70G4	24-1/16	31	P218-1331C	47	1095-K43	6
	2	5	3	230	L70G4	24-1/16	31	P218-1274C	47	1096-K33	6
	2	5	3	460	L70G4	24-1/16	31	P218-1450C	53	P217-815	9
	3	7	1	230	L70H4	30-5/8	39	P218-1441C	53	1095-K52	6
	3	7	3	230	L70H4	30-5/8	39	P218-1452C	53	1096-K37	6
	3	7	3	460	L70H4	30-5/8	39	P218-1329C	67	P217-910	10
	5	12	1	230	L70J4	47-1/32	60	P218-1333C	67	1095-K61	6
	5	12	3	230	L70J4	47-1/32	60	P218-1278C	67	1096-K49	6
	5	12	3	460	L70J4	47-1/32	60	P218-937C	69	1095-K67	6
	7-1/2	17	3	230	L70K4	63-7/16	81	P218-1321C	69	1096-K55	6
	7-1/2	17	3	460	L70K4	63-7/16	81	P218-982C	80	1096-K58	6
	10	23	3	460	L70L4	83-1/8	106				

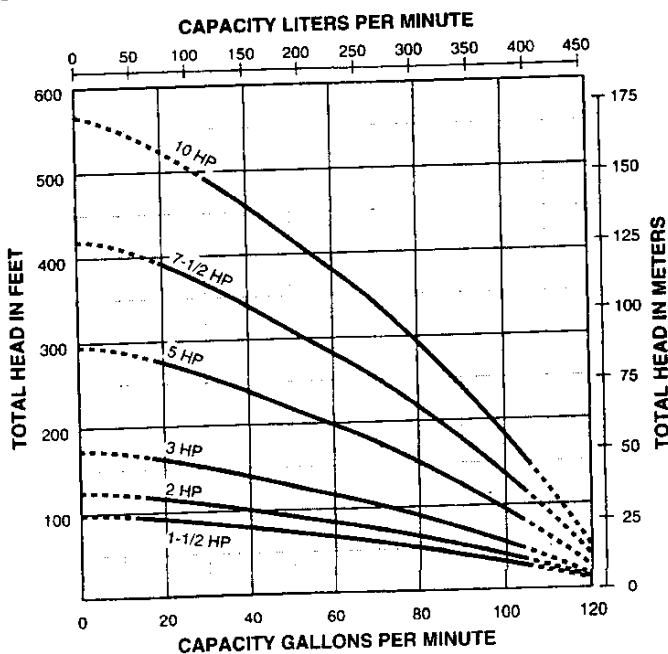
*Length and Weight are approximate.

NOTE: Pump end and motor purchased separately.

OUTLINE DIMENSIONS



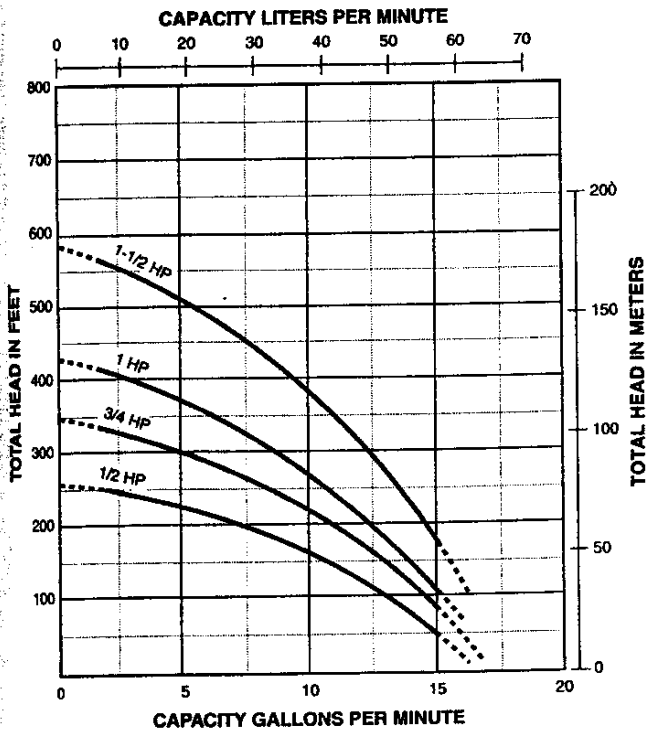
PUMP PERFORMANCE - 70 GPM



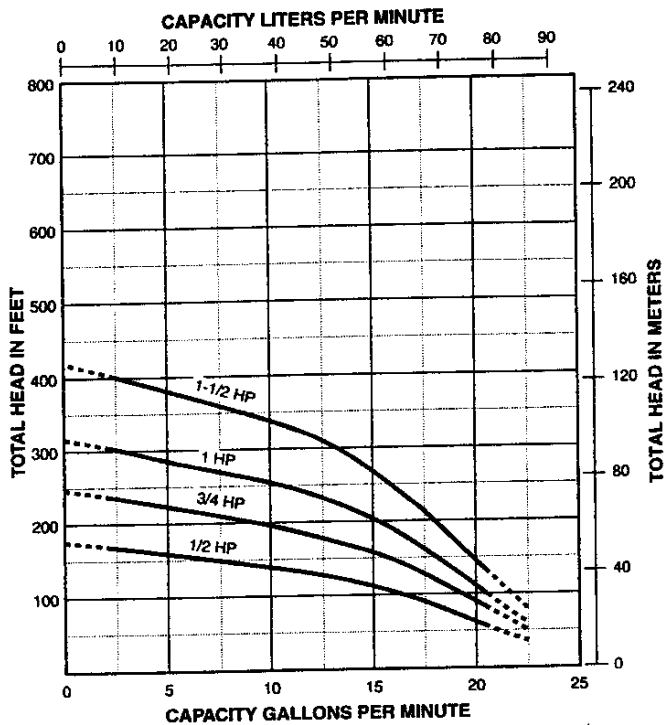
Tested and rated in accordance with Water Systems Council Standards.

NOTE: Pumps installed with a PRO-Source™ tank require a 100 PSI relief valve. Pumps installed with a conventional tank require a 75 PSI relief valve. Relief valve must be capable of relieving entire flow of pump at relief pressure.

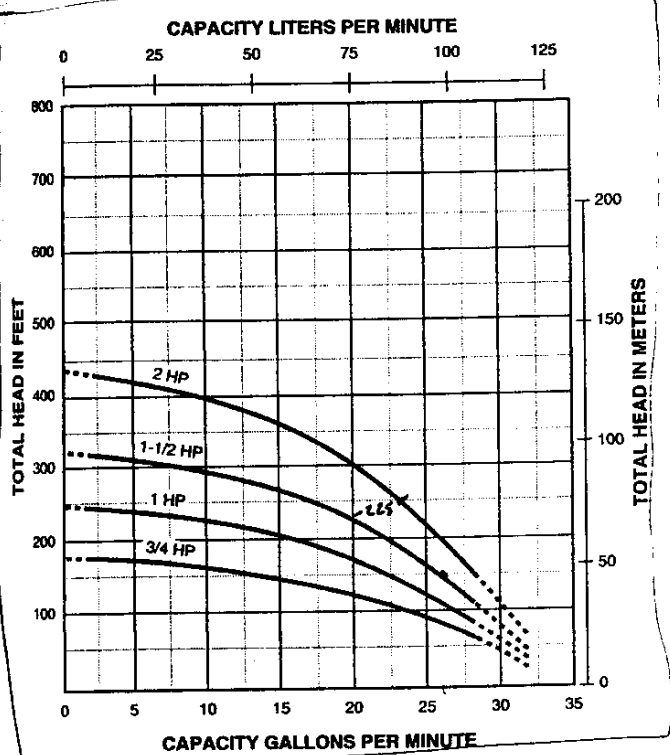
PUMP PERFORMANCE - 10 GPM



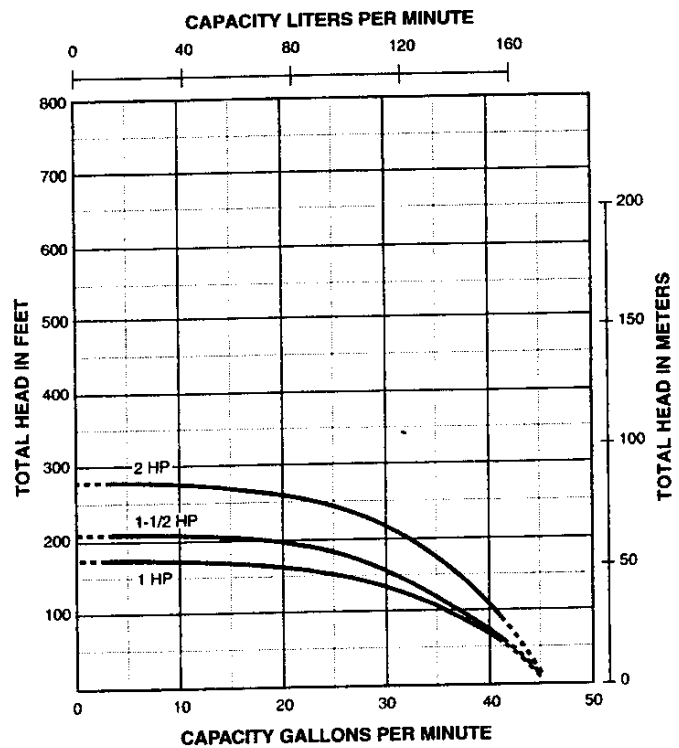
PUMP PERFORMANCE - 15 GPM



PUMP PERFORMANCE - 20 GPM



PUMP PERFORMANCE - 30 GPM



1 1/2 HP
20 GPM

2 HP 1 1/2 HP 9 GPM?

Livestock Confinement Operations

Water Requirements and Consumptive Use Worksheet

Copyright 1998 by Brockway Engineering, PLLC

The information, data, or computational procedures herein may not be duplicated without the express written consent of Brockway Engineering.

COMPLETE BLUE HIGHLIGHTED SECTIONS ONLY

Prepared for: Greg and Norma Vierstra Dairy
2574E 3800N

Revision: 9801
Run Date: 4/15/2005

Remarks: Three (3) wells (Dairy well, secondary well, and house well) serving the dairy at time of
Proof of Beneficial use (1993)

Herd Information - User Input

Number of milking cows	900	Breed:	Large
Number of dry cows	250		
Number of other adult dry animals	25		
Calves at age:		Heifers at age:	
1 month	50	5 months	150
2 months	50	15 - 18 months	100
3 months	50	18 - 24 months	150
4 months	50		400
	200		

ANIMAL INFORMATION

Use defaults or enter values if known

Average body weight	1400 lbs	Nearest weather station	Twin Falls
Milk fat percentage	3.5 %	Number of milkings/day	2
Average days dry	60		
Annual milk yield per animal	25000 lbs/year	Check: Total herd size based on days dry	1521
Percent dry matter in ration	90 %	HERD SIZE NOT CONSISTENT WITH DAYS DRY	

Lagoon Information - User Input

ESTIMATE FROM NUTRIENT MANAGEMENT PLAN

Lagoon Number	Top width	Top length	SS (h:v)	Max depth	Average depth factor	% days with water	Top Area	Bottom Area	Average Area
1	400	525	2	8	0.5	100	210000	195456	202728
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
TOTAL ACRES							4.82	4.49	4.65

Facility Information - User Input

	Holding Pen 1	Holding Pen 2	Holding pen exists but sprinklers not used
Holding pen active	0	0	(0 = not used or nonexistent)
Number of sprinklers in pen	140	0	
Average line pressure	40	60	psi
Sprinkler nozzle size - primary	5/32	5/32	inches
Sprinkler nozzle size - secondary	3/32	0	(enter 0 for single-nozzle sprinklers)
Daily operation time of sprinklers	24	0	minutes
Percent of days per year cows are washed	100	0	%
Number of free stalls	0		
Length of each free stall	1000		feet
Width of each free stall	50		feet
Is the feeding area flushed to lagoon?	No		
Is this housing area flushed to lagoon?	No		
	Barn	Feeding	Housing
Flushing recycle rate	0	0	0

CLEANING / FLUSHING VOLUMES

Use defaults or enter manufacturer volumes

Cleaning parlor floor	3000 gal	Cleaning pipeline	400 gal
Cleaning milkroom	200 gal	Cleaning equipment	200 gal
Cleaning bulk tank	200 gal		
Additional flush of holding pen (opt.)	0 gal		

Land Application Information - User Input

Type of system	Hand Lines
Predominant cropping	Pasture
Percent of waste water which goes to meet crop irrigation requirement	90 %

Stockwater Component

Drinking Water Calculation for Lactating Cows

4% fat-corrected milk yield	23125 lbs/year
Daily average FCM yield	75.82 lbs/day
Daily average milk yield	81.97 lbs/day
Estimated DMI	51.55 lbs/day

METHOD 1: Kertz

Estimated total water intake (TWI)	307.6 lbs/day or 36.9 gal/day
As-fed feed daily intake	57.3 as-fed lb/day
Water content of feed	5.73 lb/day in feed
Drinking water intake	301.9 lb/day or 36.2 gal/day
Drinking water requirement for lactating cows	32577 gal/day 36.5 ac-ft/year

METHOD 2: Holter and Urban

Regression equation with DMI, milk production, and dry matter %

Drinking water intake	108.3 liters/day 28.6 gal/day
	25739 gal/day 28.8 ac-ft/year

Maximum drinking water requirement 36.5 ac-ft/year

Drinking Water Calculation for Dry Cows

Estimated DMI	26.6 lbs/day
Average drinking water intake	13 gal/day

Average drinking water requirement 3250 gal/day
3.6 ac-ft/year

Drinking Water Calculation for Replacement Herd (Calves and Heifers)

Age	GPD	Ac-Ft/year
1 mo	83	0.09
2 mo	98	0.11
3 mo	123	0.14
4 mo	163	0.18
5 mo	630	0.71
15-18 mo	650	0.73
18-24 mo	1268	1.42
Drinking water requirement for replacement herd	3013 gpd	3.37 ac-ft/year

TOTAL STOCKWATER COMPONENT 43.5 AC-FT/YEAR

Commercial Component

Milking Parlor Water Usage Calculation

Volume needed *per milking* in each parlor for:

Cleaning parlor floor	3000 gal	Cleaning pipeline	400 gal
Cleaning milkroom	200 gal	Cleaning equipment	200 gal
Cleaning bulk tank	200 gal	Cleaning cows	450 gal

Total milking parlor volume	8900 gal/day
Second milking parlor volume	0 gal/day
Recycled water	0 gal/day
	9.97 ac-ft/year

Holding Pen Water Usage Calculation

	Pen 1	Pen 2
Output of primary nozzle	4.49	5.5 gpm
Output of secondary nozzle	1.61	0 gpm
Holding pen flushing volume	0	0 gal
Additional flush volume	0	0 gal
Sprinkler volume	0	0 gal/day
Total holding pen volume	0	0 gal/day
Recycled water	0	0 gal/day

0.00 ac-ft/year

Other Flushing Water Calculation

Daily volume needed for:

Feeding area flushing	0 gal/day
Housing area flushing	0 gal/day
Total other flushing volume	0 gal/day
Recycled water	0
	0.00 ac-ft/year

TOTAL COMMERCIAL COMPONENT 10.0 AC-FT/YEAR

Consumptive Use Calculation

A. Lagoon Evaporation

Annual reference ET (Allen & Brockway , 1983)	4.34 feet	
Annual open water coeff (Kohler Nordenson Fox)	0.90	
Annual open water (lagoon) evaporation	3.91 feet	
Manual override: Input annual lagoon evap	feet	
Total lagoon water surface area at full	210000 sq. ft.	
Total lagoon bottom area	195456 sq. ft.	
Average surface area when water is present	202728 sq. ft. =	4.65 ac
Total lagoon evaporation	18.19 ac-ft/year	

B. Animal usage: milk, metabolism, and excretion loss

	Milking	Dry
Waste excretion volume per cow	1.3	1.3 ft ³ /day/1000lb
Water content	87.5	88.4 %
Total water volume in excrement	10721	3009 gal/day
Percent of excrement flushed to lagoons	15 % (based on areas which are flushed)	
Consumptive use (evap.) of water in excrement	85 %	
Consumptive use (evap.) volume	11670 gal/day	
Excrement c.u. attributable to drinking water	11453 gal/day	
Total milk production - assume 100% leaves site	73770 lbs/day or	8845 gal/day
Water content of milk	7695 gal/day	
Water content attributable to drinking water	7552 gal/day	
Water use for animal metabolism	15020 gal/day	
Metabolism water attributable to drinking water	14741 gal/day	
Consumptive use - replacement herd (100%)	3013 gal/day	
Total animal consumptive use from drinking water	36758 gal/day or	41.2 ac-ft/year
Percent of drinking water intake	102.6 %	

C. Parlor/holding pen cleanup

Average sprinkler washing system evap loss	2 %	
Free stall total area	0 sq. ft. =	0.00 acres
Length of time free stall concrete is wet	1 hr/day	
Average evaporation from wet concrete	0.15 in./day	
Sprinkler system loss volume	0.00 ac-ft/year	
Free stall evaporation volume	0.00 ac-ft/year	
Total cleanup loss	0.00 ac-ft/year	

D. Land application site

Crop evapotranspiration	3.13 ac-ft/ac/year	
Irrigation diversion volume	4.48 ac-ft/ac/year	
System efficiency	70 %	
Waste water volume to lagoons	12.3 ac-ft/year	
Waste water volume available for land application	0.0 ac-ft/year	ALL WATER EVAPORATED
Total crop consumptive use of waste water	0.0 ac-ft/year	

Summary

Drinking Water

Milking herd	36.5
Non-milking herd (dry cows)	3.6
Replacement herd (calves and heifers)	3.4

Total drinking water volume	43.5 ac-ft/year
-----------------------------	-----------------

Commercial

Milking parlor	9.97
Holding pen and cleanup	0.0
Other flushing water	0.00

Total commercial volume	10.0 ac-ft/year
-------------------------	-----------------

TOTAL DIVERSION VOLUME REQUIREMENT	53.5 AC-FT/YR
------------------------------------	---------------

Consumptive Use

Lagoon evaporation	18.19
Animal milk, excretion, & metabolism	41.2
Parlor and holding pen cleanup	0.00
Crop consumptive use on land application	0.0

Total consumptive use	59.4 ac-ft/year
-----------------------	-----------------

Percent of diversion volume consumed	111.0 %
--------------------------------------	---------

Annual crop consumptive use - IDWR allowable	3.0 afa
--	---------

Equivalent irrigated acres	19.8 acres
----------------------------	------------

Diversion volume to acres conversion factor	2.70 ac-ft/ac
---	---------------