

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-32701

Exam Date: 6/29/2015

1. Current Owner: PEBBLECREEK HOMEOWNERS ASSN INC
PO BOX 1246
MERIDIAN ID 83680
2. Accompanied by: Shawn Brownlee
Phone No: 208-860-8371
Address: 2364 South Titanium Place, Meridian ID 83642
Relationship to Permit Holder: Engineer for Hartland Homes LLC (original owner)

3. SOURCE TRIBUTARY
GROUND WATER BOISE RIVER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: United Water and Boise Valley Irrigation Company
2. Other water rights with the same point of diversion: none

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER NW1/4SW1/4 Sec. 13, Twp 04N, Rge 01E, B.M. ADA County

Method of Determination: GPS and visual inspection

2.

PLACE OF USE: IRRIGATION

Twp Rge Sec	NE				NW				SW				SE				Totals
04N 01E 13	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	1.0

Total Acres: 1

PLACE OF USE: DOMESTIC

Twp Rge Sec	NE				NW				SW				SE				Totals
04N 01E 13	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	X

Method of Determination: GIS and visual inspection

3. YES Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
YES Aerial Photo Attached (required for irrigation of 10+ acres).
YES 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
Wet well pump	Franklin	7.5	Model # 2366018120	Franklin	4"

**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
NONE						

2. Measurements: We couldn't measure the water at the time of the exam because there was not a sufficient enough length of pipe and the system was not able to operate at full capacity because the development was not fully developed

E. FLOW CALCULATIONS

X Additional Computation Sheet Attached

Measured Method:

Permit allows 0.24 cfs

Theoretical = 0.38 cfs

Pump curve = 0.27cfs

1 acre of common area + 64 lots x .1 acre / lot/ 2 = 4.2 acres of approximate irrigation

(lot sizes range from .1 to .2 acres. The homes take up at least half of the lot so we are only allowing half the lot size to be irrigated with determining the diversion rate allowed.)

4.2 acres x 0.03 cfs/acre = 0.13 cfs

I recommend a diversion rate of 0.13 cfs. The original rate of .02 CFS per acre has been increased to .03 cfs per acre as the number of irrigated acres has gone from 12 acres to below 5 acres. The higher rate is also needed for everyone to irrigate their properties at the same time. The irrigation use would be limited to 0.03 cfs and the domestic use would be limited to 0.10 cfs for a total of 0.13 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.0 \text{ Acre} \times 4.5 \text{ AF} = 4.5 \text{ AF}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.03 \times 260 \times 1.9835 = 15.5 \text{ AF}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 4.5 \text{ AF}$$

2. Volume Calculations for Other Uses: Domestic (Domestic use is for yard irrigation only)

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 3.2 \text{ Acres} \times 4.5 \text{ AF} = 14.4 \text{ AF}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.10 \times 260 \times 1.9835 = 51.6 \text{ AF}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 14.4 \text{ AF}$$

Please See Attached Spreadsheet.

Maximum Capacity of System = 0.13 cfs X 1.9835 X 260 days = 67 AF

I recommend a diversion volume of 4.5 AF for the irrigation use and 14.4 AF for the domestic external use only.

G. NARRATIVE/REMARKS/COMMENTS

The irrigation system for permit 63-32701 was designed to take canal water and put it into an infiltration gallery and pump it from a wet well that is tied to the infiltration gallery. Canal water enters from the south side of the property when it is flowing through a pipe and into a vault area. In the vault area, the water then goes over a cipoletti weir and then into a subsection of the vault. When the subsection of this vault reaches a certain height, it then passes through a screen, and then into a wet well. The pump house sits over top of the wet well. The wet well is part of an infiltration gallery. When the water reaches a certain level in the wet well, it flows into the perforated pipe and into the infiltration gallery. In theory, excessive water being delivered into the wet well will be dispersed into the buried infiltration gallery. When water is not being delivered by the canal company, the infiltration gallery "releases" water into the wet well allowing for irrigation pumping to occur, even when canal water is not being delivered. Surface water is to be used first and any possible ground water that infiltrates into the gallery is only to be used when the surface water is not reasonably sufficient.

Water is pumped by the use of a 7.5 HP 460V 3PH variable speed pump. The system had flush valve for the intake into the wet well, a filter, a pressure tank, and a 4" discharge. At the time of our exam, no water was being diverted in to the wet well from the canal company however the system was operating and pumping some water into the community. There was not a sufficient enough length of pipe in the pump house for us to take a measurement.

Water is then pumped from the pump house to a mainline system that was looped around the community. Each lot in the community, developed or vacant, was stubbed out with a valve and poly mainline for each lot. The community had a central common area that has been irrigated along with a small sedimentation area in the northwest corner and a narrow strip along the entire north side of the property.

After the field exam, we discussed our field exam notes with the water rights team regarding the fact that the property had not yet been fully developed. When proof of beneficial use was submitted, water was not being applied to all the lots (there were lots that had not yet been developed). At the time of the field exam we were told that at the time proof was submitted that all lots had been "stubbed out" with a valve and 1" poly line and were ready to be put to use. It was concluded that the common areas that were being irrigated at the time proof was submitted would be licensed for irrigation (1.0 acre) and the remainder of the community with stub outs would be licensed for domestic external use only.

Overlap:

63-147D Boise Valley Irrigation Ditch Co. delivers surface water into the vault and is a direct overlap. United Water's portfolio of water rights supply the in-house use. Water rights in the general area but not a direct overlap are 63-10599 Clark and Veda Anderson – ground water – POD across the street; 63-120G Farmers Union Ditch Co. LTD; 63-16768 City of Boise – ground water; Permit 63-32243 Pinebrooke Place Homeowners Assn - west of development; 63—33506 Independent School District of Boise City - south of property; 63-4346 Elizabeth Henry Trust - domestic and irrigation - S.W. of property; and 63-4347 Elizabeth Henry Trust - domestic and irrigation - S.W. of property.

Conditions

I carried condition 1 (004) over to licensing. Condition 2 (01M) was removed as the amount of land being irrigated is now less than 5 acres. Conditions 3 (065) was carried over to licensing with new wording as the condition has been updated. Condition 4 (104) was changed to condition 105 as condition 104 is no longer valid and 105 is now used in replacement of 104. Condition 5 (x60) was split into two conditions, one showing the lots for irrigation use and one showing the lots for domestic use. Condition 6 was carried over to licensing. Condition 7 (121) was changed to condition 103 per standards. I added conditions 070 and 240 to cover the irrigation use for the domestic portion of this water right.

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

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
IRRIGATION	03/01 to 11/15	0.030 CFS	4.50 AF
DOMESTIC	03/01 to 11/15	0.100 CFS	14.40 AF
<u>Totals:</u>		0.130 CFS	18.90 AF

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 (Changing Use see narrative above)

I. AUTHENTICATION Steven Visosky Water Resource Agent

Field Examiner's Name

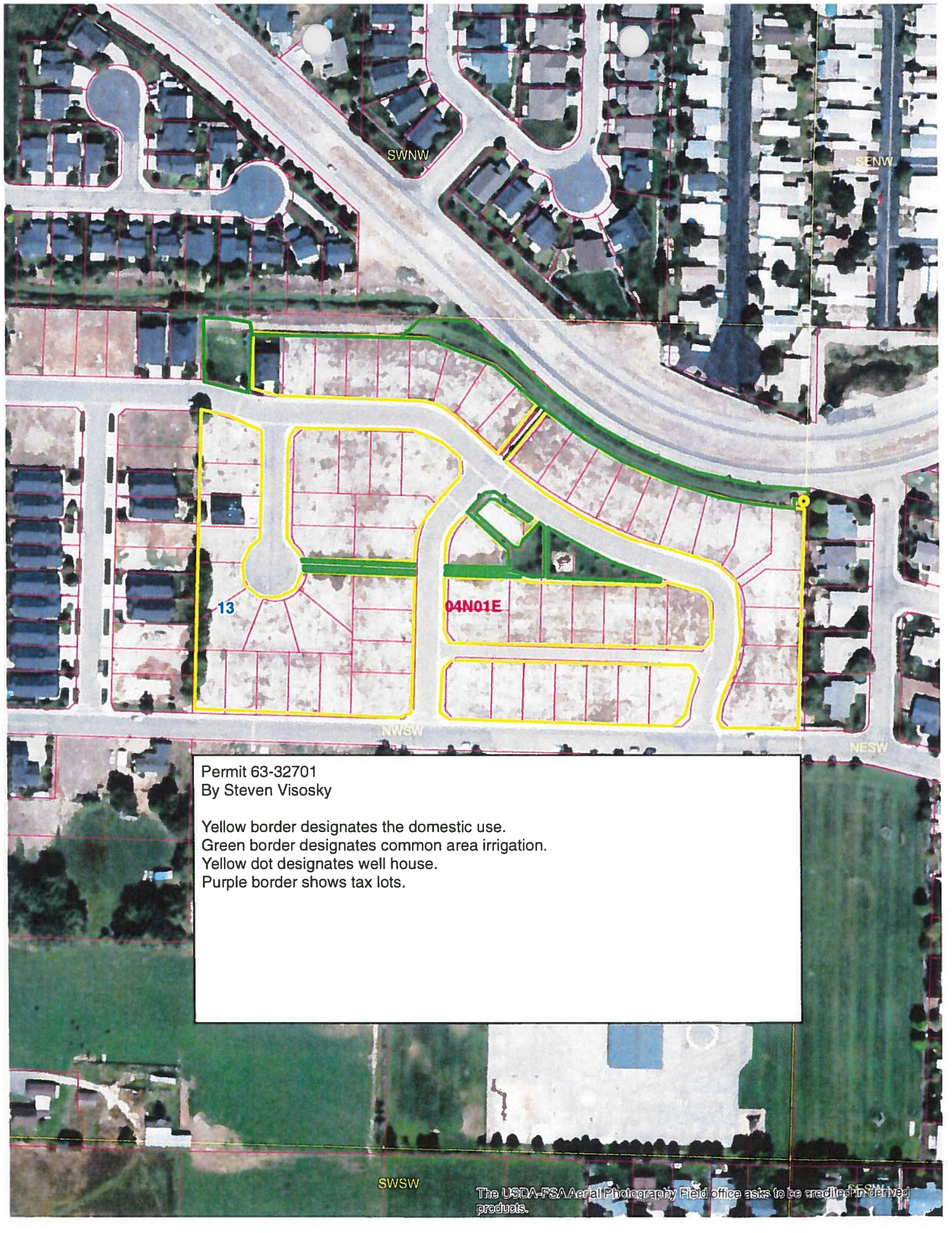


Date

7/14/2015

Reviewer

Date



Permit 63-32701
By Steven Visosky

Yellow border designates the domestic use.
Green border designates common area irrigation.
Yellow dot designates well house.
Purple border shows tax lots.

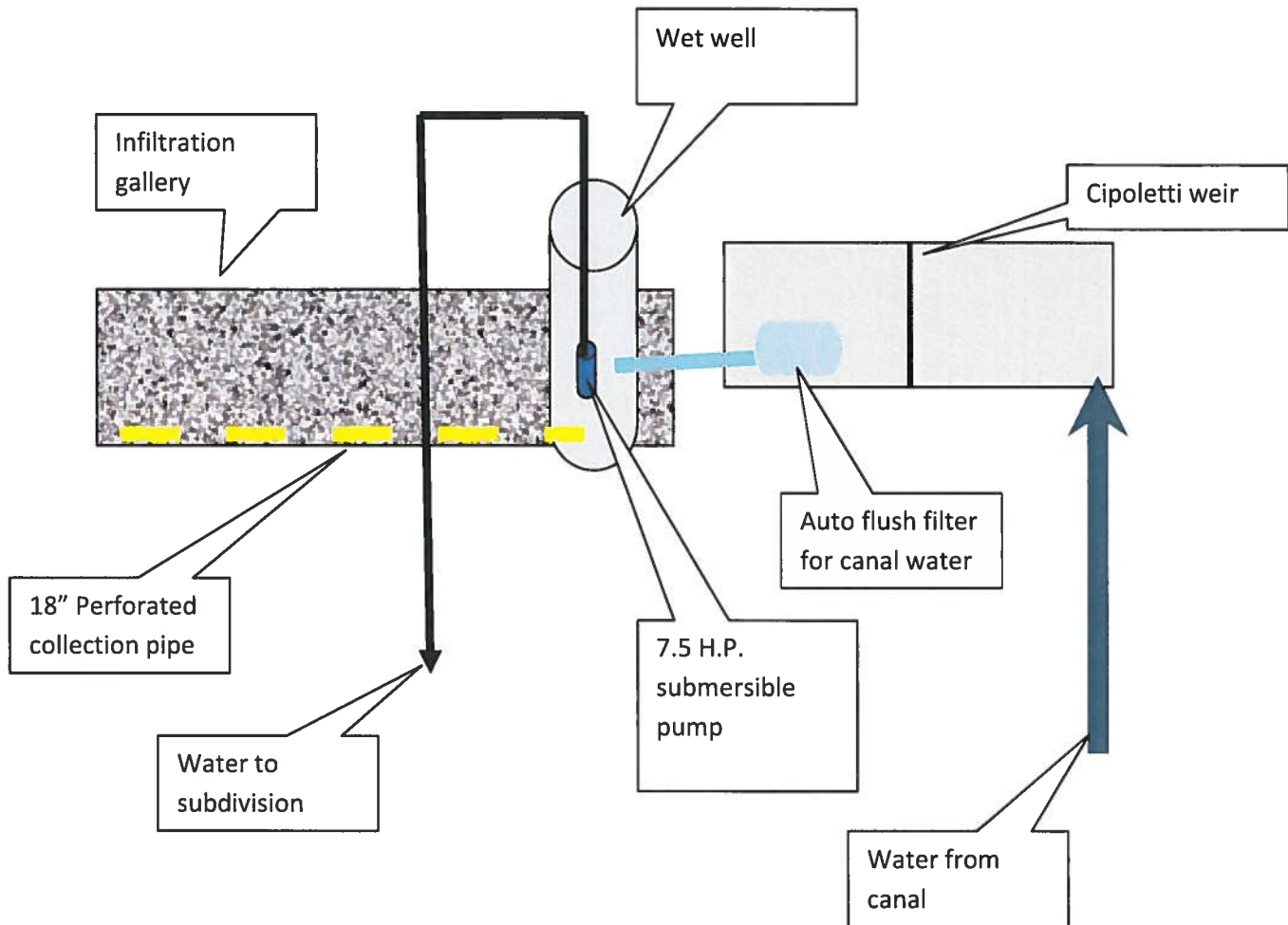


Permit 63-32701
By Steven Visosky

Red dotted line is the irrigation system mainline
Yellow dot is the pumphouse
Green dotted line designates taxlots

Water is pumped from the pump house to a mainline system that is looped around the community. Each lot in the community, developed or vacant, was stubbed out with a valve and poly mainline for each lot.

Permit 63-32701
System Diagram by Steven Visosky



The irrigation system for permit 63-32701 was designed to take canal water and put it into an infiltration gallery and pump it from a wet well that is tied to the infiltration gallery. Canal water enters from the south side of the property when it is flowing through a pipe and into a vault area. In the vault area, the water then goes over a cipoletti weir and then into a subsection of the vault. When the subsection of this vault reaches a certain height, it then passes through a screen, and then into a wet well. The pumphouse sits over top of the wet well. The wet well is part of an infiltration gallery. When the water reaches a certain level in the wet well, it flows into the perforated pipe and into the infiltration gallery. In theory, excessive water being delivered into the wet well will be dispersed into the buried infiltration gallery. When water is not being delivered by the canal company, the infiltration gallery "releases" water into the wet well allowing for irrigation pumping to occur even when canal water is not being delivered. Surface water is to be used first and any possible ground water that infiltrates into the gallery is only to be used when the surface water is not reasonably sufficient.

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Water is then pumped from the pumphouse to a mainline system that was looped around the community. Each lot in the community, developed or empty, was stubbed out with a valve and poly mainline for each lot. The community had a central common area that has been irrigated along with a small sedimentation area in the northwest corner and a narrow strip along the entire north side of the property.

THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

Water Right No.: 63-32701
 Reviewer: Steven Visosky
 Date of Review: June 29 2015

P/D No.:	Senerio 1	Senerio 2	Senerio 3	
PUMP HORSEPOWER	7.5	7.5	7.5	
BOOSTER HORSEPOWER	0	0	0	
PUMPING LEVEL	10	10	10	
DISCHARGE PRESSURE	40	50	60	
RATE OF FLOW (cfs)	0.45	0.37	0.31	AVE
(gpm)	202.5	165.2	139.5	0.38
				169.09

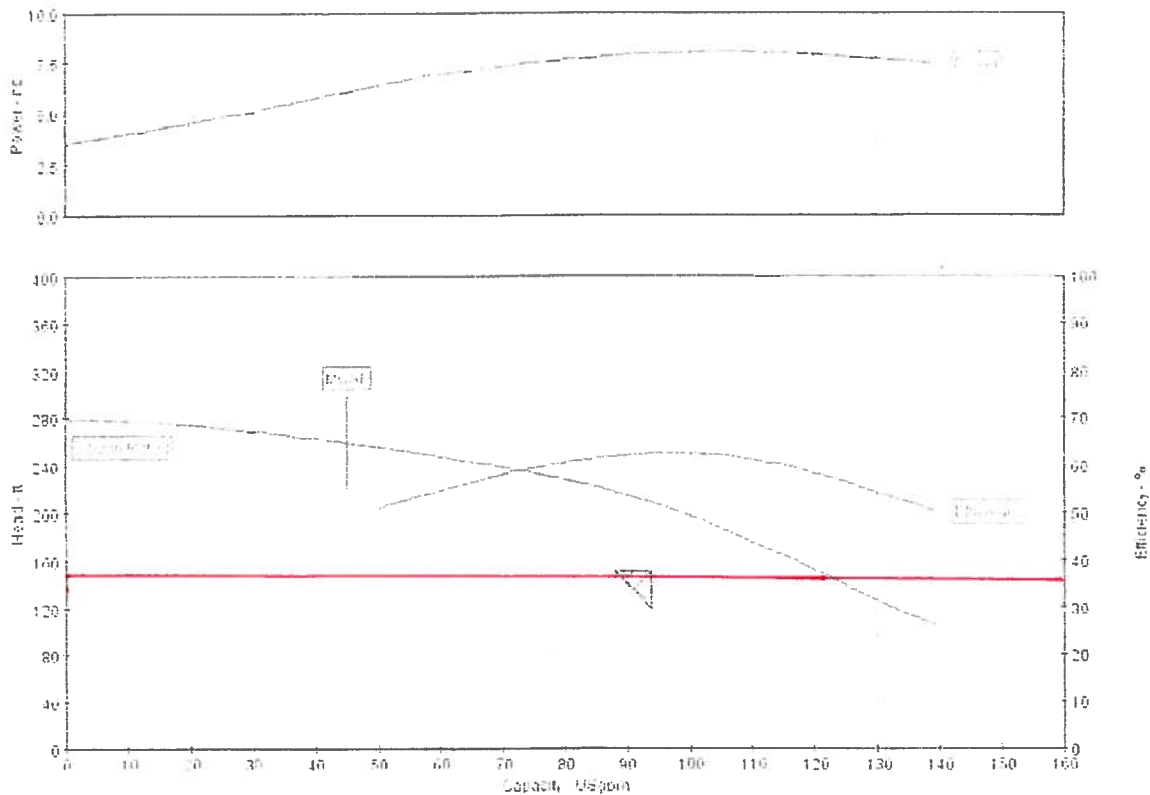
The above calculates the formula =
$$Q = \frac{8.8 * (\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Assumptions: %70 efficiency.
 No Friction

Examiners Notes: Data collected on 6/29/15 during field exam.
 Well discharges into a pressure tank. To determine the well capacity before pressure tank assumed discharge pressure senerio's of 40, 50, 60. Since the above theoretical contains several assumptions, I think it is reasonable to support the .038 cfs capacity recommended by the field examiner.

Pump Performance Datasheet

Customer		Quote number	:
Customer reference		Pump size	: 6T7.5-90
Item number		Stages	: 6
Service		Based on curve number	: 6T7.5-90(6@3.94x3.71)
Quantity of pumps	: 1	Date last saved	: 18 Sep 2007 2:44 PM
Flow, rated	: 94.00 USgpm	Liquid type	: -Water
Head, rated (requested)	: 150.0 ft	Additional liquid description	
Head, rated (actual)	: 207.8 ft	Solids diameter, max	: 0.00 in
Suction pressure, rated / max	: 0.00 / 0.00 psi g	Temperature, max	: 68.00 deg F
NPSH available, rated	: Ample	Fluid density, rated / max	: 0.998 / 0.998 SG
Frequency	: 60 Hz	Viscosity, rated	: 1.00 cP
Pump speed, rated	: 3,450 rpm		
Impeller diameter, rated	: 3.83 in	Material requested	: Auto
Impeller diameter, maximum	: 3.83 in	Material selected	: Not specified
Impeller diameter, minimum	: 3.83 in		
Efficiency	: 62.31 %	Maximum working pressure	: 120.4 psi g
NPSH required / margin required	: N/A / 0.00	Maximum allowable working pressure	: 125.0 psi g
Specific speed / Suction specific speed	: N/A / 0 US units	Maximum allowable suction pressure	: N/A
MCS#	: 45.00 USgpm	Hydrostatic test pressure	: N/A
Head, maximum, rated diameter	: 278.1 ft		
Head rise to shutoff	: N/A %	Driver sizing specification	: Rated power
Flow, best eff. point (BEP)	: 97.23 USgpm	Margin over specification	: 0.00 %
Flow ratio (rated / BEP)	: 96.68 %	Service factor	: 1.15 (used)
Diameter ratio (rated / max)	: 100.00 %	Power, hydraulic	: 4.92 hp
Head ratio (rated dia / max dia)	: 72.19 %	Power, rated	: 7.90 hp
Viscous coefficients (CO / CH / CE)	: 1.00 / 1.00 / 1.00	Power, maximum, rated diameter	: 7.98 hp
Selection status	: Acceptable	Minimum recommended motor rating	: 7.50 hp / 5.59 kW (Fixed)



PROPOSAL

BURGESS PUMP CO.
P.O. BOX 778
MIDDLETON, IDAHO 83644

PHONE: 585-6202
FAX: 585-3572

SUBMITTED TO: KNIFE RIVER

DATE 19SEP07

STREET

JOB NAME: PEBBLECREEK

CITY, STATE, AND ZIP:

ENGINEER:

LOCATION

PHONE: JEFF KORSEN---362-6152

FAX: 362-6199

IRRIGATION PUMP SYSTEM 460 3PH

- 1.....6T7.5-90 PUMP/MOTOR 460V 3PH 94GPM@150TDH
- 2.....PUMP STARTED AND RAN WITH ABB VFD
- 3.....TAF750E AMIAD FILTER
- 4.....WX202 PRESSURE TANK
- 5.....SOLOINOID VALVE ON CW LINE
- 6.....2" PSV
- 7.....5" MANIFOLD
- 8.....4" DISCHARGE
- 9.....5' VAULT COVER AND PUMP SUPPORT WITH HATCH
- 10...LOW PROFILE REFLEX COATED ENCLOSURE
- 11...ELECTRICAL
- 12...CONNECTION TO MAIN LINE
- 13...MAIN LINE ISOLATION VALVE
- 14...ALL MISC. PARTS AND LABOR TO COMPLETE

ELECTRICAL PERMITS: YES

BID AMOUNT: 25,185.00

PLUMBING PERMITS: N/A

Twenty Five Thousand One Hundred Eighty Five Dollars-----no/100

MEMO:

conduit to meter base by others

AUTHORIZED SIGNATURE

ACCEPTED BY:

BID SUBJECT TO CHANGE IN: 90 days

PHOTOGRAPH AND DATE OF PHOTOS – Steven Sosky 6/29/15
(Please note the date on the photo is incorrect, photo was taken on 6/29/15)

FILE NUMBER 63-32701



Grate covering intake from canal, weir, and pipe (with auto flush) going into the wet well.



Intake pipe with auto flush going into wet well

PHOTOGRAPHER AND DATE OF PHOTOS – Steven Visosky 6/29/15
(Please note the date on the photo is incorrect, photo was taken on 6/29/15)

FILE NUMBER 63-32701



Pumphouse



Pump station

PHOTOGRAPHER AND DATE OF PHOTOS – Steven Visosky 6/29/15
(Please note the date on the photo is incorrect, photo was taken on 6/29/15)

FILE NUMBER 63-32701



Pump station



Pressure gauge reading 60 PSI

PHOTOGRAPHER AND DATE OF PHOTOS – Steven Visosky 6/29/15
(Please note the date on the photo is incorrect, photo was taken on 6/29/15)

FILE NUMBER 63-32701



Empty lots looking west
through the community



Stub-out to each of the lots
with valve and poly line

PHOTOGRAPHER AND DATE OF PHOTOS – Steven Visosky 6/29/15
(Please note the date on the photo is incorrect, photo was taken on 6/29/15)

FILE NUMBER 63-32701



Playground common area in
the middle of the community



Looking northwest from
inside the community

PHOTOGRAPHER AND DATE OF PHOTOS – Steven Visosky 6/29/15
(Please note the date on the photo is incorrect, photo was taken on 6/29/15)

FILE NUMBER 63-32701



Siltation area. This common area lot is the northwest corner of the subdivision



Common area outside the fence on the north side of the property