

Method of Determination:

3. ☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- ☒ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- ☒ Aerial Photo Attached (required for irrigation of 10+ acres).
- ☒ Photo of Diversion and System Attached

4.

<u>Well or Diversion</u> <u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge</u> <u>Size</u>
--	-------------------	-----------	-------------------------	------------------	--

Gravity

D. FLOW MEASUREMENTS

1.

<u>Measurement</u> <u>Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
--	-------------	-------------	------------------	-------------------	-------------	--------------------

2. Measurements: The 4 inch line max volume ~~5.7~~ ^{0.57} cfs or 255 gpm. 1330 ft of head

1) Irrigation : 15 watering location with 5\8 inch hose and flow of 9 gpm per location = 135 gpm total

2) Cooling; ¼ inch line to a swamp cooler use 90 days per year 4 gpm x 90 days= 1.8 af per year

3) Fire Protection: 2 inch fire ports with fire hose.

4) Domestic: Rv type home/ old bus/ semi trailer 0.04cfs

E. FLOW CALCULATIONS

Measured Method:

____Additional Computation Sheets Attached

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 7 \times 3 \text{ AF} = 21 \text{ AF}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.30 \times 246 \times 1.9835 = 146.38 \text{ AF}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 21 \text{ AF}$$

2. Volume Calculations for Other Uses:

Domestic use in home=0.6AF**Cooling: ¼ inch line to a swamp cooler use 90 days per year 4 gpm x 90 days= 1.8 af per year**

G. NARRATIVE/REMARKS/COMMENTS: This system is developed to run power and irrigation at the same time or separate. The main line is 4 inch dia and 1330 length with a head of 184 feet and the capacity of 0.57 cfs. Irrigation is for trees that are planted for logging.

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>
DOMESTIC	01/01 to 12/31	0.040 CFS	0.60 AF
COOLING	01/01 to 12/31	0.010 CFS	1.80 AF
IRRIGATION	03/15 to 11/15	0.140 CFS	21.00 AF
FIRE PROTECTION	01/01 to 12/31	0.200 CFS	
<u>Totals:</u>		0.400 CFS	23.40 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

I. AUTHENTICATION

Field Examiner's Name *Eric J. [Signature]* Date 5-7-2013

Reviewer *Keith E. [Signature]* Date 6/12/2013

Manning's Equation Calculator for Flow Rate in a Circular Conduit Flowing Full

READ ME

S = 0.0926 ft/ft
n = 0.009 manning's coefficient
d = 4.0 pipe diameter (inches)
D = 0.33 pipe diameter (feet)
r = 0.17 pipe radius (feet)
A = 0.09 area (ft²)
WP = 1.05 wetted perimeter (ft)
R = 0.08 hydraulic radius (ft)
Q = 0.83 flow rate (CFS)

Channel Slope

Slope Options
☐ Manual Entry ☒ Slope Calculator

Slope Calculator

Rise = 10 feet
Run = 108 feet
Slope, S = 0.0926 ft/ft

Pipe Material, (n): plastic (pvc, abs)

Pipe Diameter (inches) 4.0 inches

Manning's Equation (1), is an empirical formula that solves for velocity (v) in a open channel under uniform flow. The continuity equation (2) when combined with equation (1) allows for the computation of the flow rate (Q) in an open channel under uniform flow.

In equations (1) and (3), n refers to Manning's Coefficient of Roughness and can be found in tabulated form for many open channel types. R is the hydraulic radius of the open channel and is equal to the area of the open channel divided by the wetted perimeter, R = A/P. S is the slope of the energy grade line which is often assumed to be equal to the slope of the channel .

Because Manning's Equation is empirical the units are not arbitrary. To obtain a velocity in ft/s and a flow rate in ft³/s, area must be reported in ft², hydraulic radius must be reported in ft, and S must be reported in ft/ft. Manning's Coefficient of Roughness is a unitless

$$(1) \ v = 1.49 \left(\frac{1}{n} \right) \left(R^{\frac{2}{3}} \right) \sqrt{S}$$

$$(2) \ Q = vA$$

$$(3) \ Q = 1.49 \left(\frac{1}{n} \right) (A) \left(R^{\frac{2}{3}} \right) \sqrt{S}$$



Domestic ↑

95 - 9006



Fire Line ↑



Fire ↑



Cooling ↑ 1/4" Line



Pressure Line 2" - 20FT

95-9006



Power 1





Flow Measurement & Irrigation

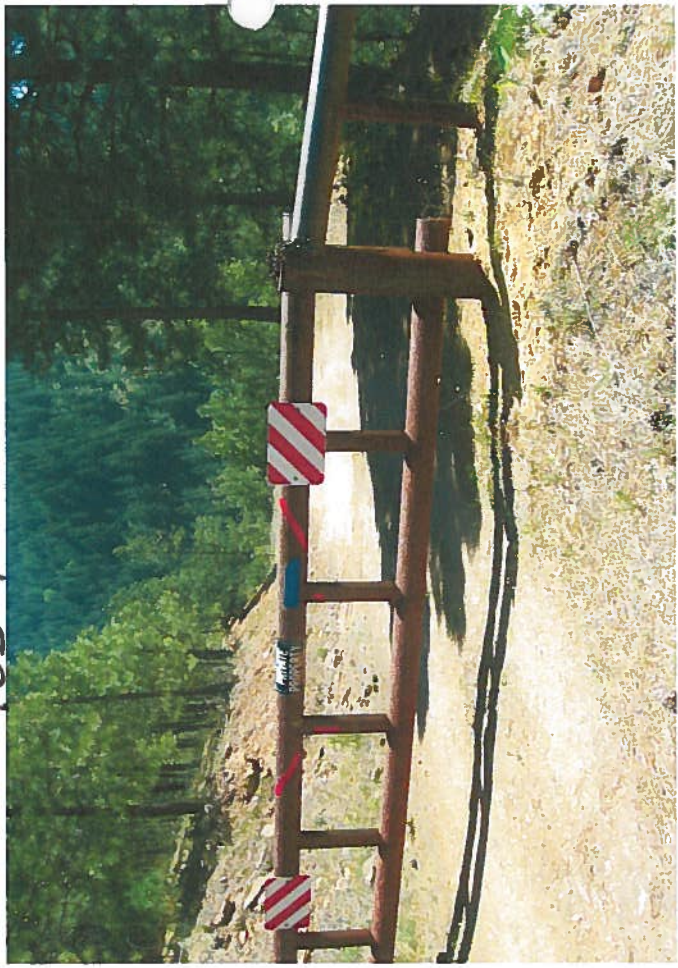


Power



POD

95-9006





Domestic Water Lines

95-9006





Ignition

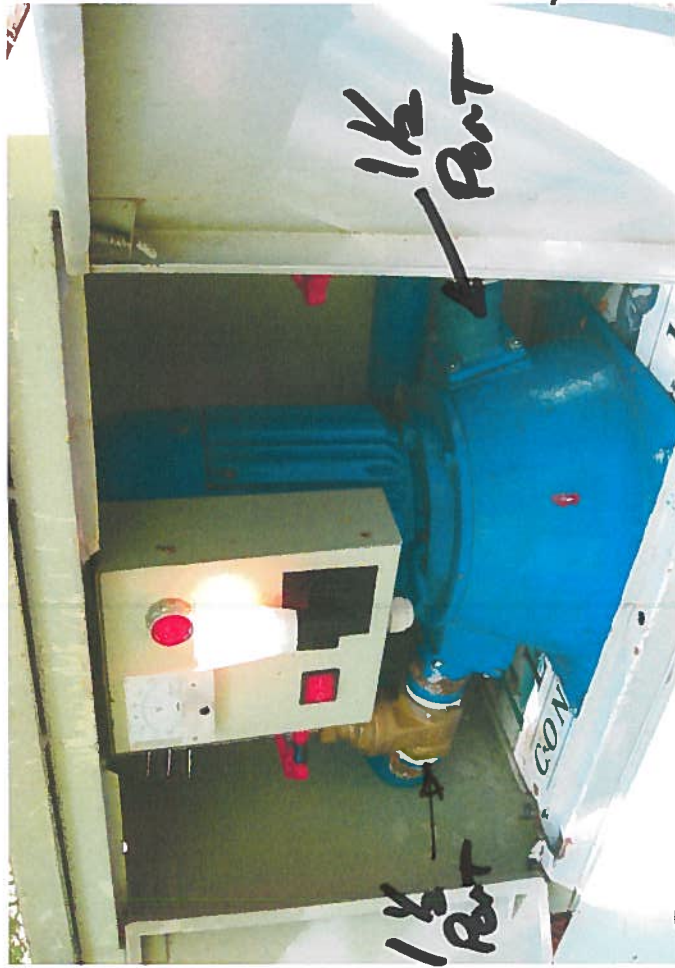
95-9006



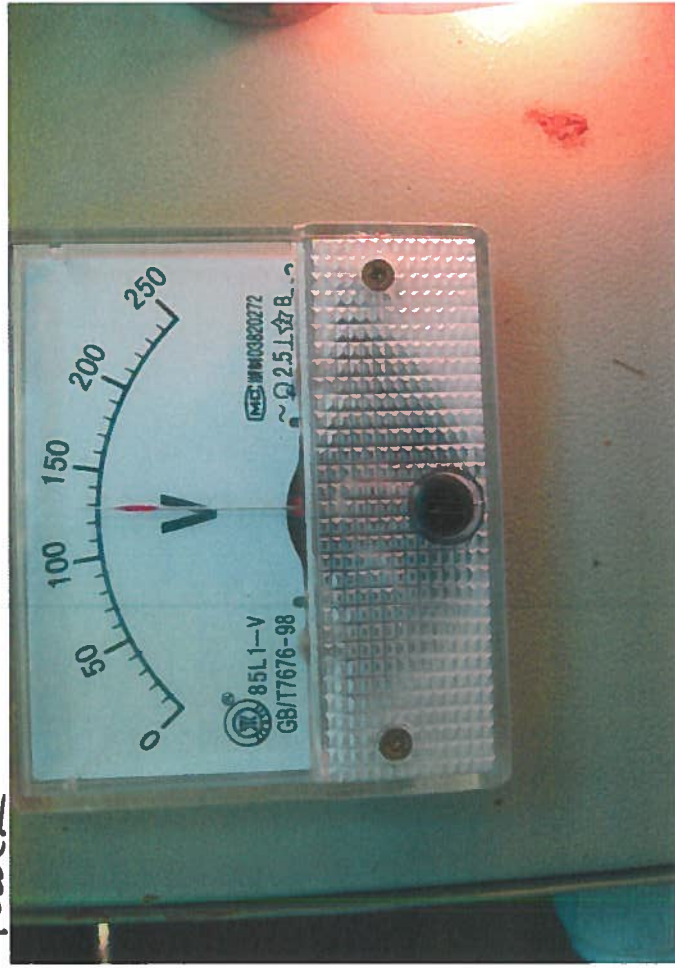


60 PSI

95 - 9006



Power



Volts = 130



Air Vent

WR# 95-9006



48" Culvert

Point of Diversion



95- 9006



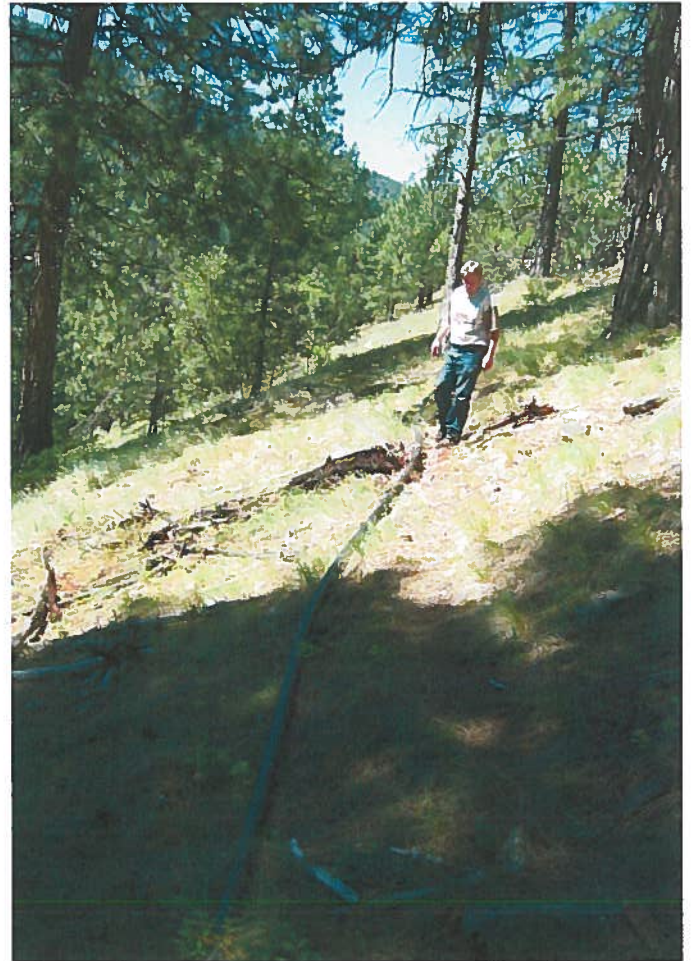


95 - 9006





95-9006





IRRIGATION



IRRIGATION

95-9006



IRRIGATION



TREE



Fire



IRIGATION "2" 2" Line Black Pipe



FIRE PORT / IRRIGATION PORT.



IRRIGATION PORT

95-9006