

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 98-7876

Exam Date: 8/27/2015

1. Current Owner: ERIC E MADSON
PO BOX 1539
BONNERS FERRY ID 83805
(208)267-7467

2. Accompanied by: Eric Madson

3. SOURCE

COW CREEK
UNNAMED STREAM

TRIBUTARY

KOOTENAI RIVER
COW CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 98-117A, 98-117B, 98-7402
2. Other water rights with the same point of diversion: None

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

UNNAMED STREAM SE1/4SE1/4 Sec. 13, Twp 61N, Rge 01E, B.M. BOUNDARY County
UNNAMED STREAM NW1/4SE1/4 Sec. 13, Twp 61N, Rge 01E, B.M. BOUNDARY County
COW CREEK SW1/4NE1/4 Sec. 13, Twp 61N, Rge 01E, B.M. BOUNDARY County
UNNAMED STREAM SW1/4SE1/4 Sec. 13, Twp 61N, Rge 01E, B.M. BOUNDARY County

Method of Determination: GPS and maps. Dam location at 48° 38.451, 116° 16.371

2.

PLACE OF USE: IRRIGATION

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
61N	01E	13		5.0	17.0										21.0	31.0	4.6		78.6

Total Acres: 78.6

PLACE OF USE: IRRIGATION STORAGE

Twp Rge Sec	NE				NW				SW				SE				Totals
61N 01E 13	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
			X														

PLACE OF USE: IRRIGATION FROM STORAGE

Twp Rge Sec	NE				NW				SW				SE				Totals
61N 01E 13	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
		5.0	17.0										21.0	31.0	4.6		78.6

Total Acres: 78.6

DIVERSION TO STORAGE same as IRRIGATION FROM STORAGE

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>
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N/A

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

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>
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N/A

2. Measurements:

E. FLOW CALCULATIONS

____ Additional Computation Sheets Attached

Measured Method: UNABLE TO PERFORM FLOW MEASUREMENT BECAUSE SUMMER FLOW THROUGH PIPE WAS AT DIMINISHED RATE AND WOULD GIVE APPLICANT FULL AMOUNT THAT WOULD FLOW THROUGH PIPE DURING HIGH WATER TIMES. MANNINGS EQUATION ATTACHED AND SHOWS FLOW THROUGH PIPE CAN REACH 0.57 CFS WHEN PIPE IS FULL.

F. VOLUME CALCULATIONS**1. Volume Calculations for Irrigation:**

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 78.6 \times 3.0 \text{ AF} = 235.8 \text{ AF}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.45 \times 214 \times 1.9835 = 191.0 \text{ AF}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 191.0 \text{ AF}$$

2. Volume Calculations for Other Uses: SEE ATTACHED POND ANALYSIS SHEET**G. NARRATIVE/REMARKS/COMMENTS**

UNABLE TO PERFORM FLOW MEASUREMENT BECAUSE PODS WERE NOT PRODUCING MAX FLOW DURING SUMMER FIELD EXAM. MANNINGS EQUATION SHOWS FLOW THROUGH PIPE CAN REACH 0.57 CFS. IRRIGATION WILL BE REDUCED TO 78.6 ACRES BECAUSE OF ACTUAL IRRIGATED LAND IN ONE Q. POND ANALYSIS SHEET WILL BE ATTACHED TO SHOW CALCULATIONS FOR IRRIGATION FROM STORAGE.

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>
DIVERSION TO STORAGE	01/01 to 12/31	0.200 CFS	
IRRIGATION	04/01 to 10/31	0.450 CFS	235.80 AF
IRRIGATION STORAGE	01/01 to 12/31		249.60 AF
IRRIGATION FROM STORAGE	04/01 to 10/31		235.80 AF
<u>Totals:</u>		0.570 CFS	249.60 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 Adam Franklin Date 11-27-15

Reviewer Barth L. Franklin Date 11/27/15

READ ME

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

S = 0.0833 ft/ft
 n = 0.013 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 = 0.57 flow rate (CFS)

Channel Slope

Slope Options

☐ Manual Entry ☒ Slope Calculator

Slope Calculator

Rise = 100 feet
 Run = 1200 feet
 Slope, S = 0.0833 ft/ft

Pipe Material, (n):

welded steel pipe

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), η 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 constant.

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

$$(2) \quad Q = vA$$

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

Work Sheet For Application

1.) Diversion To Storage = 0.20 cfs

2.) Irrigation Storage

a) Pond size 600x50x10.6'	= 7.3 AF
b) Evaporation per year	= 6.5 AF
c) Acres Irrigated From	
79x 3 AF/Ac	~~= 237 AF~~
Total	= 250.8 AF

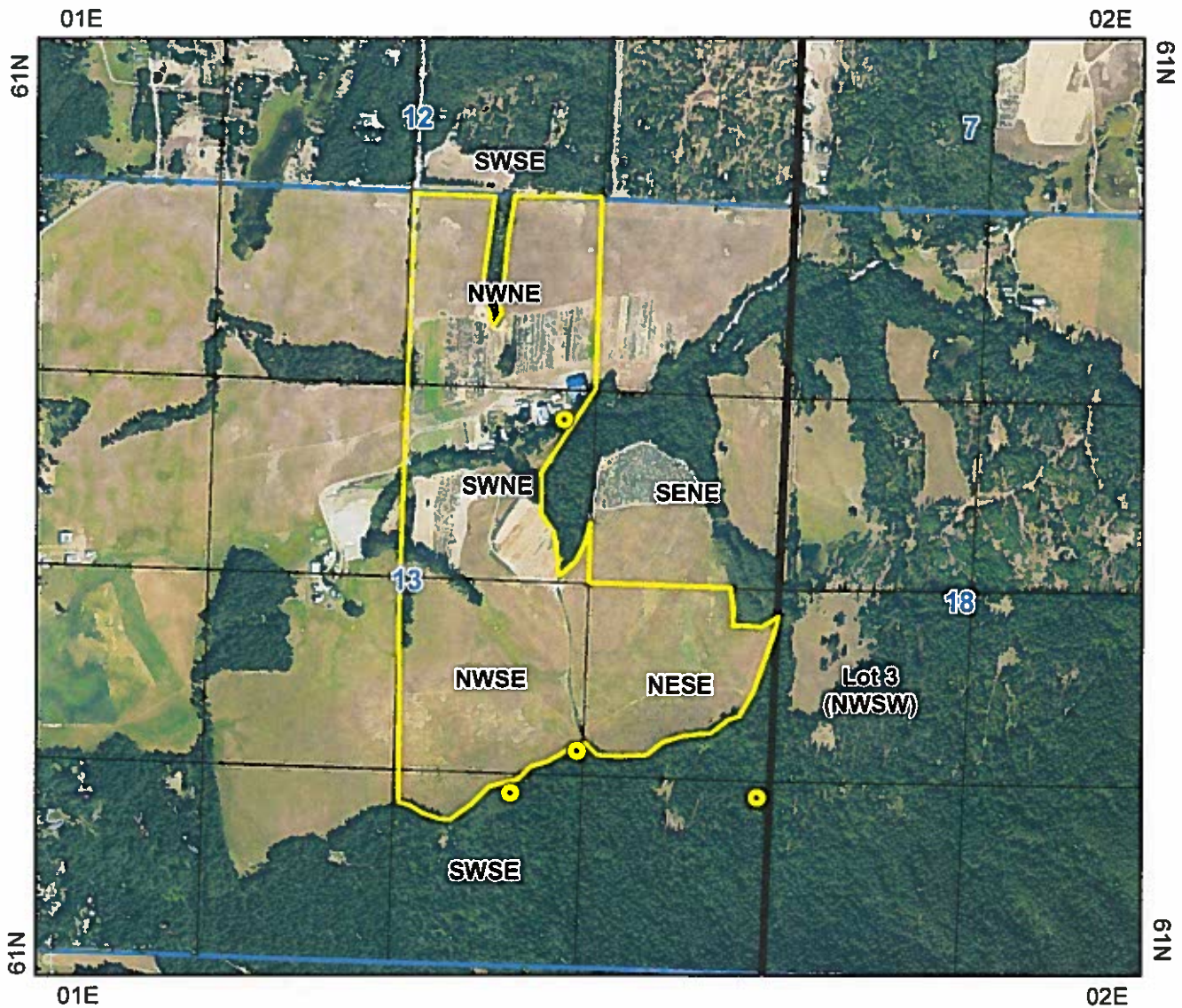
3.) Irrigation From Storage = 237 AF
79 Ac x 3 AF/Ac

4.) Irrigation (Diversion) = 0.45 cfs

Special Condition 2

This right when combined with Rights 98-117A and 98-117B cannot irrigate more than 79 Acres.

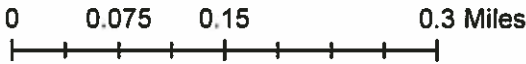
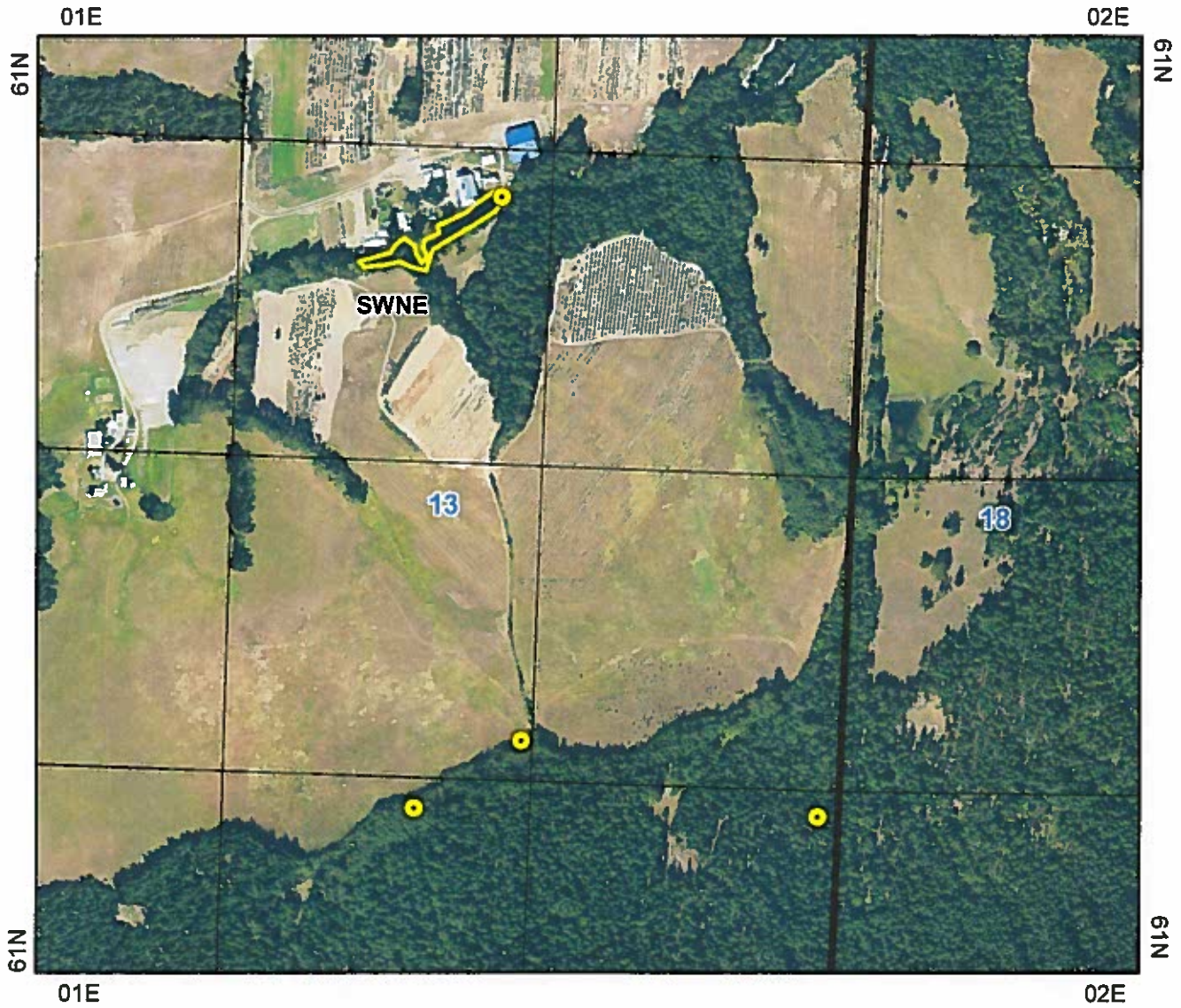
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Water Right License
98-7876



-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections



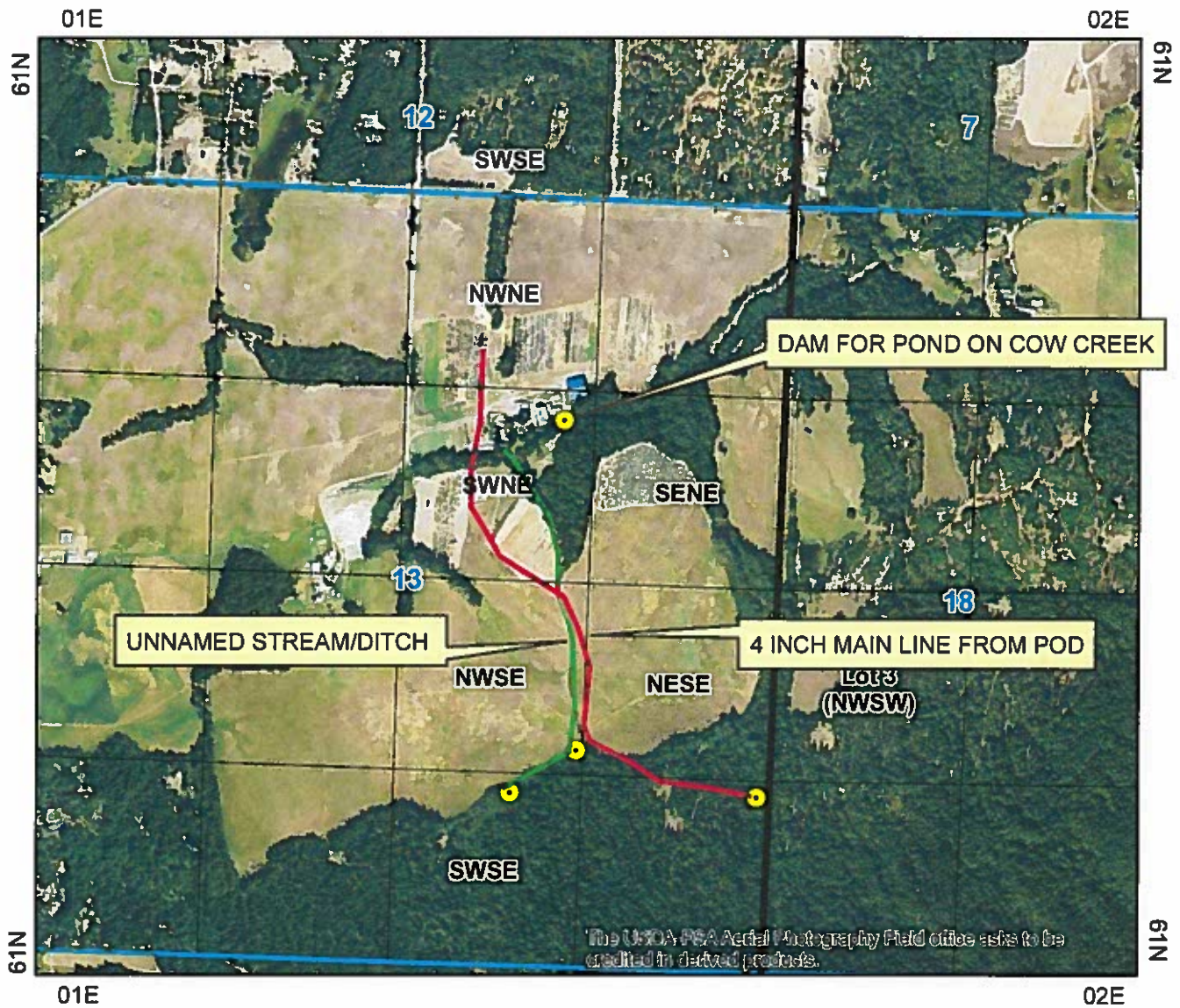
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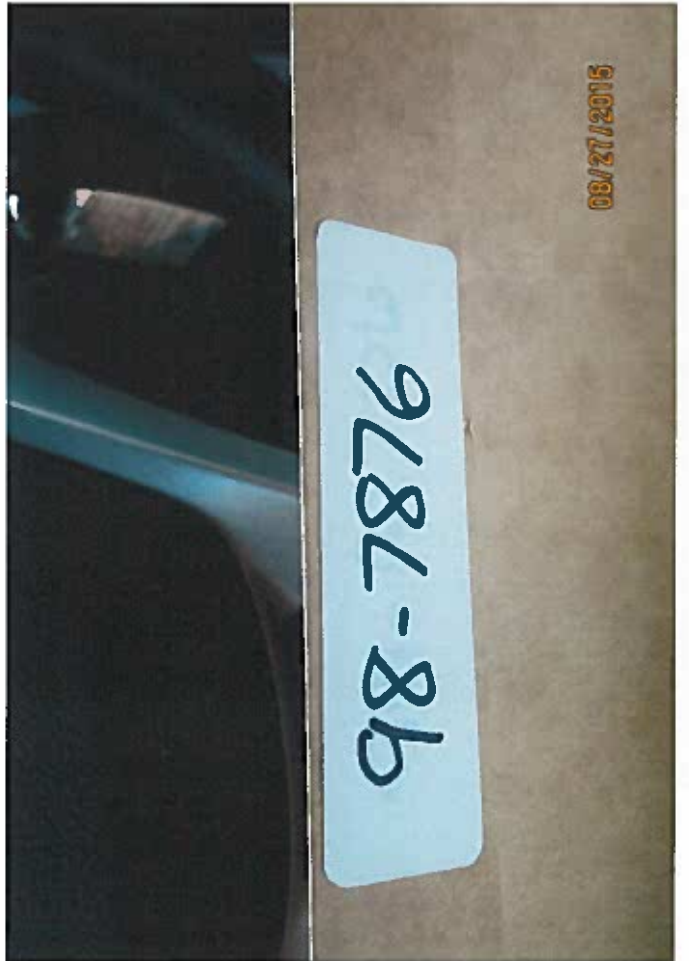
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State of Idaho
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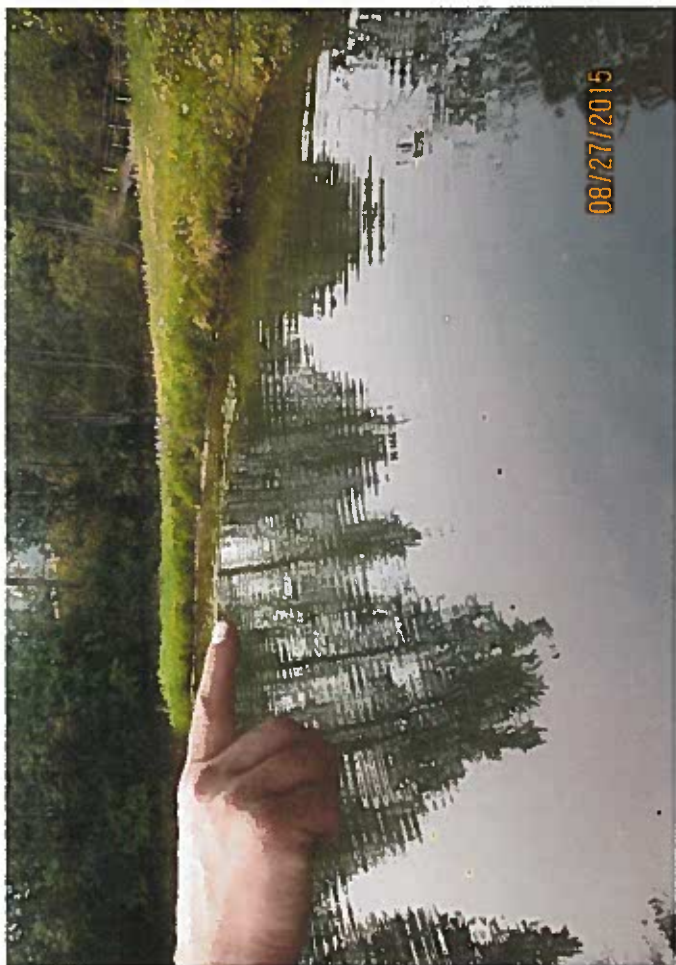
-  Point of Diversion
-  Townships
-  PLS Sections



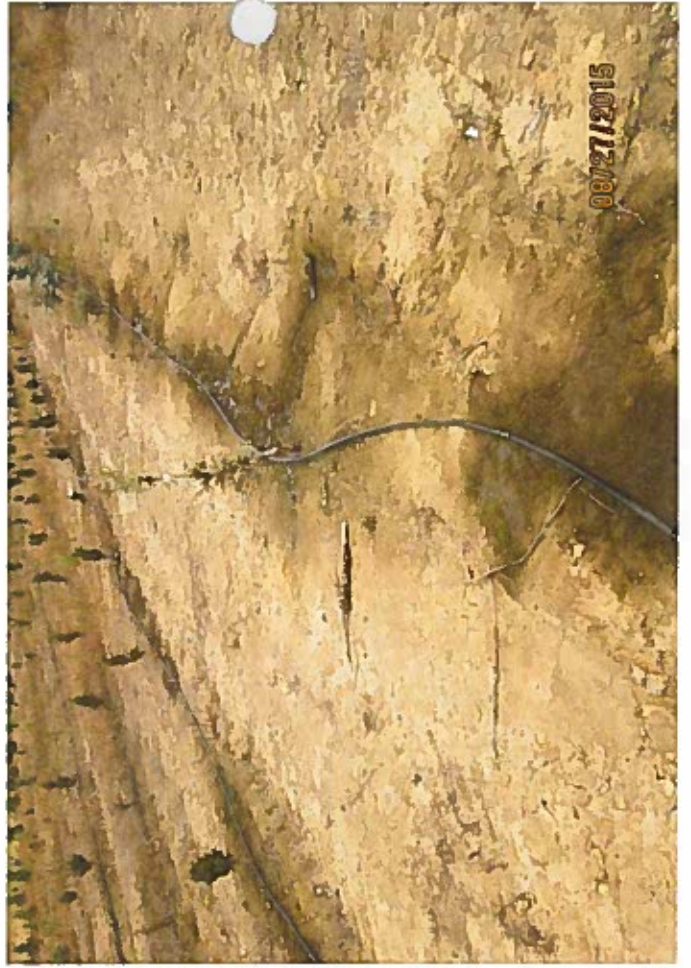
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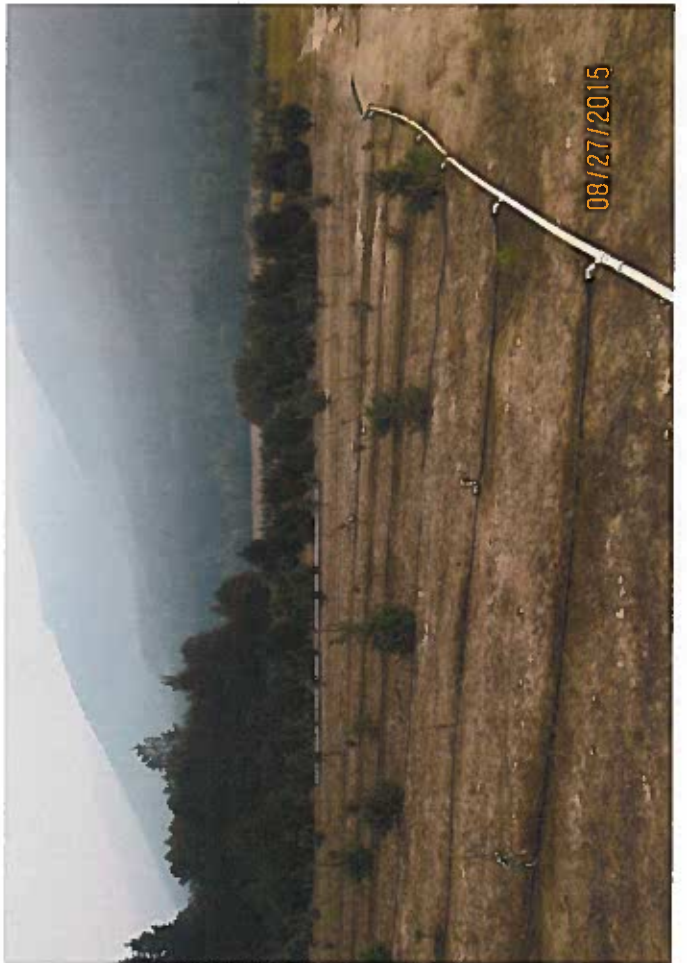
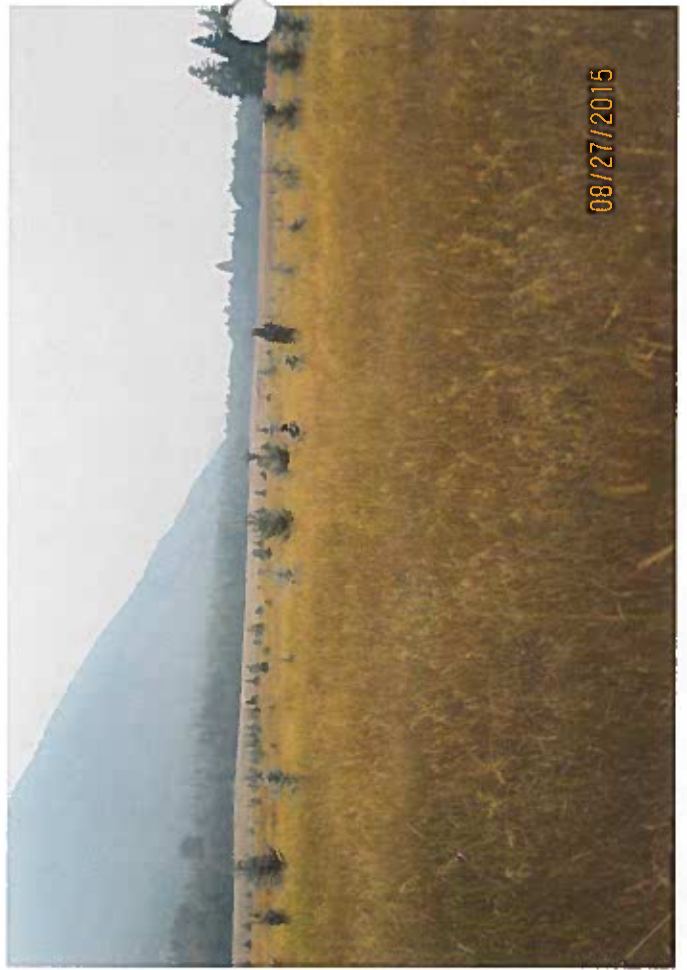
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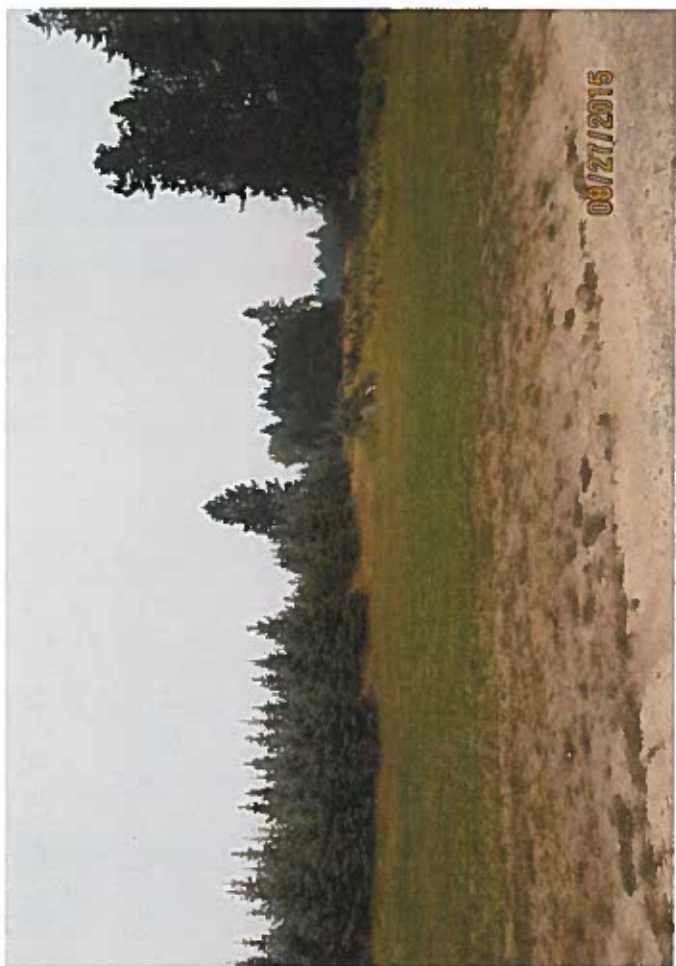
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