

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 45-14201

Exam Date: 5/1/2017

1. Current Owner:
NEIL & CATHERINE ADAMS REVOCABLE TRUST 332 E 1100 S BURLEY ID 83318 (208)678-2059
2. Accompanied by: Completed in-house; Spoke with Catherine Adams over phone
Phone No: (208)678-2059
Address: 332 E 1100 S
Relationship to Permit Holder: Trustee

3. SOURCE:
SPRING

TRIBUTARY:
SINKS

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 45-10569 (Domestic ground water right)
2. Other water rights with the same point-of-diversion: 45-14247 (Stockwater)

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

SPRING SW¼NE¼SE¼ Sec. 13, Twp 12S, Rge 23E, B.M. CASSIA County

Method of Determination: GPS'd by IDWR (Jeff Cooper) on 4/23/2009.

2.

PLACE OF USE: DOMESTIC

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
12S	23E	14																X	

Method of Determination: On site visit by Jeff Cooper and Corey Skinner on 4/23/2009.

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 (see Field Visit Memos attached).

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
N/A					

*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
N/A						

2. Measurements: No measurement required per IDAPA 37.03.02 Beneficial Use Examination Rules as the permitted flow rate of 0.02 cfs falls below the 0.24 cfs or greater flow rate amount requiring measurement.

E. FLOW

Additional Computation Sheets Attached

CALCULATIONS

Measured Method: Hazen Williams Full Pipe Flow Calculation:

$$Q = 0.432 C_1 D^{2.63} S^{0.54}$$

Where:

 C_1 = roughness coefficient

D = Diameter in feet

S = Slope

$$S = 260' \text{ elevation drop} / 5,532' \text{ distance} = 0.047$$

 C_1 = 140 (coefficient for polyethylene)

D = 0.125 (1.5" polyethylene pipe)

$$Q = 0.049 \text{ cfs}$$

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: None - ½ acre of irrigation allowed under a domestic filing.
2. Volume Calculations for Other Uses: Domestic water use is exempt from the volume reporting requirement per IDAPA 37.03.02 Beneficial Use Examination Rules.

G. NARRATIVE/REMARKS/COMMENTS

On 4/23/2009 Corey Skinner and Jeff Cooper (both IDWR employees) visited the site of the spring used as the point of diversion (POD) along with Neil and Calvin Adams. What they found was disturbed earth at a developed site with only vent pipes exposed above the buried diverting works at the POD. They also saw a line of disturbed earth and vent pipes indicating where the buried pipeline ran from the spring to the applicant's house. This POD is also serves as one of nine PODs for ^{application} water right 45-14247, a 0.02 cfs stockwater ^{application} permit. However, this spring is the sole source of water for this right and each system has a separate waterline from the spring. I have included the field visit memos for both 45-14201 and 45-14247 with this narrative. The memo for 45-14247 indicates this right has a separate line from the spring and both memos have a picture of the POD site.

On 4/28/2017, I spoke with Catherine Adams via telephone to verify the pipe size used, hoping to utilize the Hazen Williams Full Pipe Flow Calculation to verify if the system could potentially deliver the permitted flow rate. She indicated that 1.5" HDPE had been installed from the spring to the house. Using that information I was able to calculate a potential flow rate of 0.049 cfs, indicating the system potentially can deliver the permitted rate of 0.02 cfs.

* This license will carry forward all conditions from the permit. Since there is a domestic ground water right that can potentially

* minus water district 140 and measuring device conditions. Order establishing WD 140 excluded 42-111 uses. P.S.

PS
5/26/17

be used with this right at the place of use, both rights when combined have been limited to 13,000 gallons per day and the irrigation of ½ acre of irrigation.

Recommend licensing 0.02 cfs for domestic purposes.

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	0.02 CFS	N/A
<u>Totals:</u>		0.020 CFS	

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

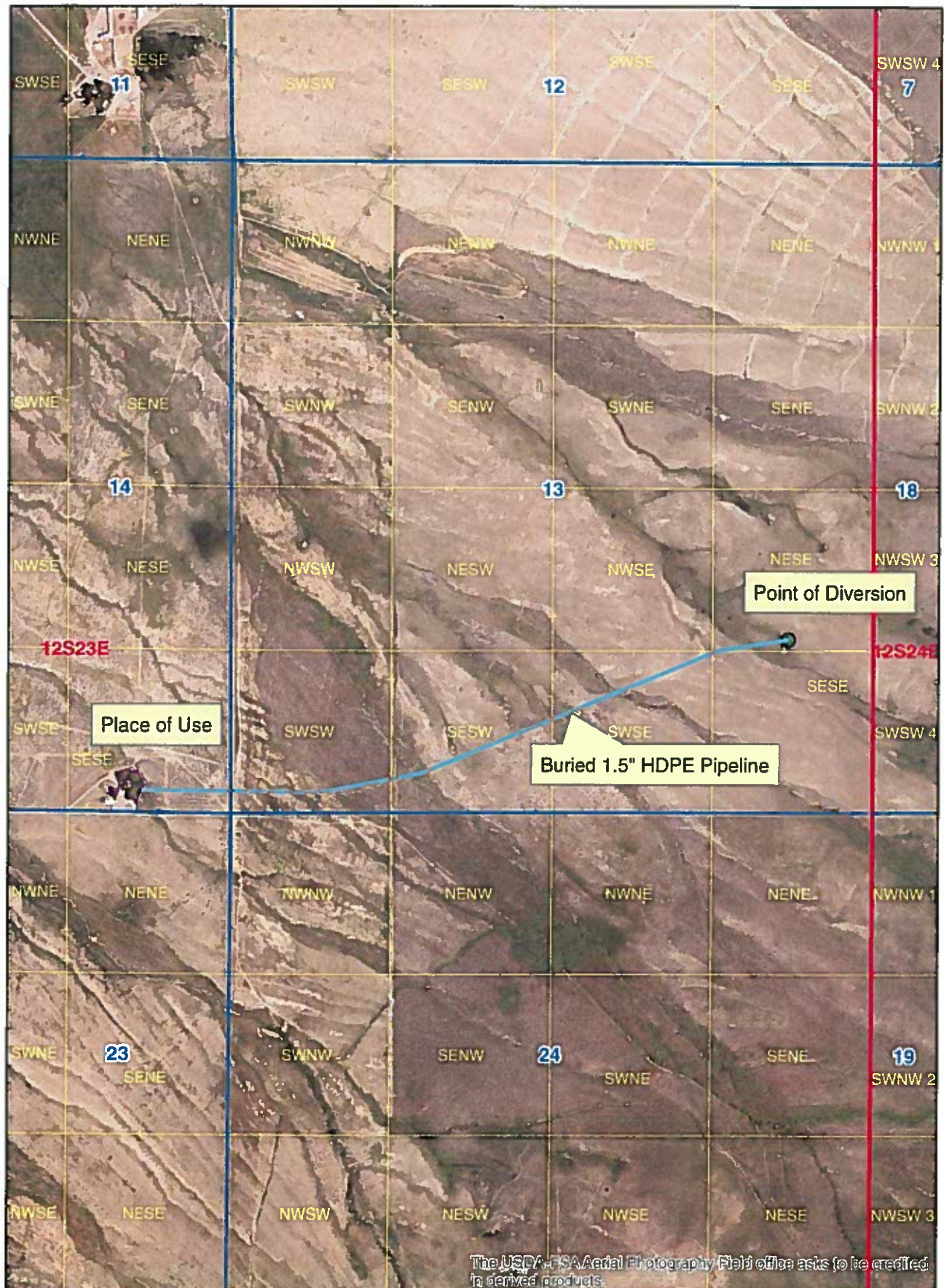
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☒ None

I. AUTHENTICATION

Field Examiner's Name Bill Mink Date 5-1-2017

Reviewer Chy Shin Date 5/26/17

System Diagram



Hazen-Williams Friction Loss Equation	Hazen-Williams friction loss calculator for water flow in pipes														
Solve for: Discharge and Velocity Select units: Use feet and seconds units © 2014 LMNO Engineering, Research, and Software, Ltd. http://www.LMNOeng.com	Click to Calculate <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Discharge, Q (ft³/s):</td> <td style="width: 50%; text-align: right;">0.048908448</td> </tr> <tr> <td>Velocity, V (ft/s):</td> <td style="text-align: right;">3.9854189</td> </tr> <tr> <td>Pipe Diameter, D (ft):</td> <td style="text-align: right;">0.125</td> </tr> <tr> <td>Pipe Length, L (ft):</td> <td style="text-align: right;">5538</td> </tr> <tr> <td>Hazen-Williams C:</td> <td style="text-align: right;">140</td> </tr> <tr> <td>Head Loss, h_f (ft):</td> <td style="text-align: right;">260</td> </tr> <tr> <td>Energy Slope, S (ft/ft):</td> <td style="text-align: right;">0.046948357</td> </tr> </table> Units: ft=foot, m=meter, s=second. Hazen-Williams Equation: $V = k C (D/4)^{0.63} S^{0.54}$ where $S = h_f / L$ and $Q = V \pi D^2 / 4$ k is a unit conversion factor: k=1.318 for English units (feet and seconds). k=0.85 for SI units (meters and seconds) C=Hazen-Williams Coefficient. D=Pipe inside diameter. Hazen-Williams Coefficient (C) varies from approximately C=60 for 40-year old cast iron pipe to C=150 for new plastic pipe. The higher the C, the smoother the pipe. Table of Hazen-Williams Coefficients. The Hazen-Williams method is valid for water flowing at ordinary temperatures of 40 to 75 °F (4 to 25 °C) through pressurized pipes. The Hazen-Williams equation is typically used to analyze city water supply systems. For other liquids or gases, the Darcy-Weisbach method should be used. Major loss (h_f) is the energy (or head) loss (expressed in length units - think of it as energy per unit weight of fluid) due to friction between the moving fluid and the pipe wall. It is also known as friction loss. The Darcy-Weisbach method is generally considered more accurate than the Hazen-Williams method. However, the Hazen-Williams method is very popular, especially among civil engineers, since its friction coefficient (C) is not a function of velocity or pipe diameter. Hazen-Williams is simpler than Darcy-Weisbach for calculations where you are solving for flowrate (discharge), velocity, or diameter. More Discussion and References. © 1998-2014 LMNO Engineering, Research, and Software, Ltd. All rights reserved. LMNO Engineering, Research, and Software, Ltd. 7860 Angel Ridge Rd. Athens, Ohio 45701 USA Phone: (740) 592-1890 LMNO@LMNOeng.com http://www.LMNOeng.com	Discharge, Q (ft ³ /s):	0.048908448	Velocity, V (ft/s):	3.9854189	Pipe Diameter, D (ft):	0.125	Pipe Length, L (ft):	5538	Hazen-Williams C:	140	Head Loss, h _f (ft):	260	Energy Slope, S (ft/ft):	0.046948357
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To: [LMNO Engineering home page \(more calculations\)](#)

Related calculations:

[Design of Circular Water Pipes Calculator \(Hazen-Williams\)](#)

[Circular Water Pipes with Pump Curve Calculator \(Hazen-Williams\)](#)

[Table of Hazen-Williams Coefficients \(C\)](#)

[Unit Conversions](#)

Other information:

[Register](#)

[Discussion and References for Closed Conduit Flow](#)

MEMORANDUM

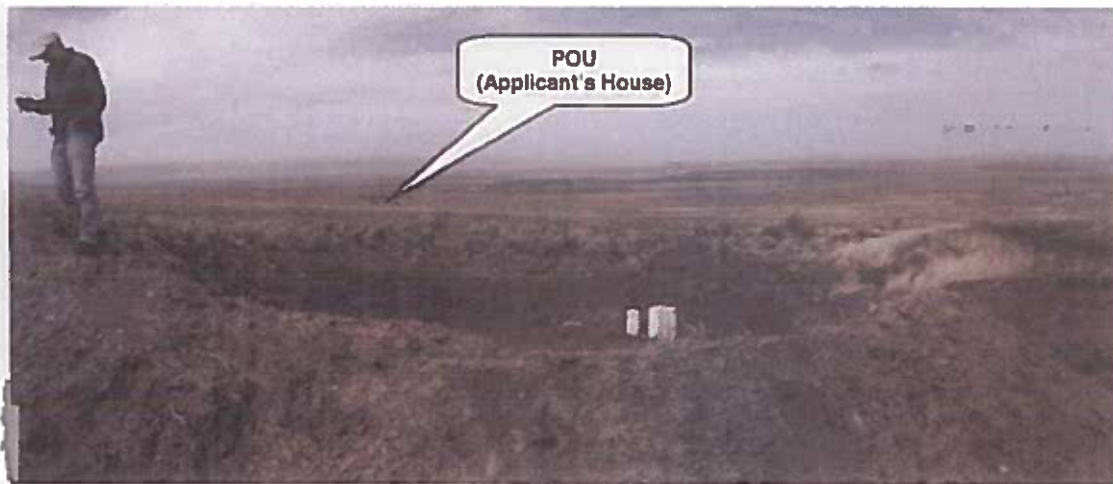
TO: Application for Permit 45-14201 File

FROM: Corey Skinner

DATE: April 27, 2009

SUBJECT: Field Visit

On April 23rd, Jeff Cooper and I visited the site of the point of diversion (spring) described on Application for Permit 45-14201. Jeff and I were accompanied by Neil Adams (applicant), Calvin Adams (Neil's son), and Jed Wayment (neighbor). Jeff and I visited the site of the spring and verified the location and the source of water. Note that the diversion works were buried under recently disturbed earth. We also observed a line of recently disturbed earth that would be consistent with a buried pipeline from the point of diversion to the place of use (applicant's property). We also observed exposed vent pipes along the buried pipeline. It appeared that the diversion works and conveyance system were already in place. The following photo documents our observations...



View of spring area (disturbed earth) that serves as the source and point of diversion for Application for Permit 45-14201 with the place of use location (applicant's house) visible in the background of the view.

MEMORANDUM

TO: Application for Permit 45-14247 File

FROM: Corey Skinner

DATE: July 30, 2009

SUBJECT: Field Visit

On April 23rd, Jeff Cooper and I visited the site of the points of diversion (springs) described on Application for Permit 45-14247. Jeff and I were accompanied by Calvin Adams (applicant), Neil Adams (Calvin's father), and Jed Wayment (neighbor). Jeff and I visited the sites of the springs and verified their locations via GPS and the source of water. It appeared that the springs had already been developed due to the recently disturbed earth and that the diversion works and conveyance system were already in place. The following photos document our observations....



View of the spring area (disturbed area) located within the SWNESE of Section 13, Township 12 South, Range 23 East, Cassia County. This particular spring feeds a buried pipeline that feeds a buried tank with an overflow that feeds into the system that is fed by the eight other springs shown on the following pages. This particular spring serves as the single source and diversion for application for permit 45-14201 (on its own separate line to the 45-14201 POU), but is part of the nine interconnected springs listed on application for permit 45-14247.

RIGHT: View of the spring area (disturbed area) located within the SWNESE of Section 13, Township 12 South, Range 23 East, Cassia County.



LEFT: View of the spring area (disturbed area) located within the SENWSE of Section 13, Township 12 South, Range 23 East, Cassia County.

RIGHT: View of the spring area (disturbed area) located within the NWNESE of Section 13, Township 12 South, Range 23 East, Cassia County.



LEFT: View of the spring area (disturbed area) located within the NENESE of Section 13, Township 12 South, Range 23 East, Cassia County.

RIGHT: View of the spring area (disturbed area) located within the NENWSW (Government Lot # 3) of Section 18, Township 12 South, Range 24 East, Cassia County.

BELOW: View of the spring area (disturbed area) located within the NWSWSE of Section 13, Township 12 South, Range 23 East, Cassia County.





ABOVE: View of the spring area (disturbed area) located within the NESESW of Section 13, Township 12 South, Range 23 East, Cassia County.

BELOW: View of the spring area (disturbed area) located within the SWSESW of Section 13, Township 12 South, Range 23 East, Cassia County.

