

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 72-7424
Exam Date: 7/18/2019

1. Current Owner:

MICHAEL BARRETT
PO BOX 1104
CHALLIS ID 83226

2. Accompanied by: Michael Barrett, Permit Holder; Corey Skinner, IDWR; and Craig Winstead, associate of Mr. Barrett
Phone No: Cell: 702-575-5739; home: 208-879-4257
Address: same as above
Relationship to permit Holder: Permit Holder

3. **SOURCE:**
ADAIR CREEK

Tributary
YANKEE FORK

Method of Determination: Site visit, ArcMap aerial imagery and DRG layer

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None
2. Other water rights with the same point-of-diversion: None

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

ADAIR CREEK SE¼ SW¼, Sec. 15, Twp 12N, Rge 15E, B.M. CUSTER County

Method of Determination: GPS coordinates of POD, Google Earth aerial imagery, ArcMap aerial imagery, site visit.

PLACE OF USE: INDUSTRIAL

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
12N	15E	15	X		X	X													

PLACE OF USE: DOMESTIC

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
12N	15E	15	X		X	X													

Method of Determination: Consultation with permit holder, ArcMap aerial imagery, site visit.

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.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
NA					

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
NA						

2. Measurements: No measurement made. Diversion system has just been rebuilt after being damaged by an avalanche.

E. FLOW CALCULATIONS

☒ Additional Computation Sheets Attached

Measured Method: See Attachment A – Mannings Theoretical Flow Calculation.

F. VOLUME CALCULATIONS

- Volume Calculations for irrigation: NA
- Volume Calculations for Other Uses: See Attachment B, Volume Calculations

G. NARRATIVE/REMARKS/COMMENTS

The field exam for permit 72-7424 was completed on July 18, 2019 with permit holder Mike Barrett, his associate Craig Winstead, and IDWR Southern Region Manager Corey Skinner in attendance. Water was originally diverted out of Adair Creek into a 6" steel pipe which runs underground for approximately one mile to the mining area. This past winter, an avalanche destroyed the POD, so Mr. Barrett is in the process of rebuilding the diversion system. Water has been used in several different areas of the original permitted POU, as Mr. Barrett has 2 cabins (one is somewhat mobile, and can be moved from place to place) and a fifth-wheel trailer for the domestic portion of the permit. His processing mill (industrial portion of the permit) is also portable and can be moved to many portions of the POU.

Because the system is being rebuilt, no measurement could be made, but knowledge of the length of the pipe, the diameter of the pipe, and the elevation difference from the POD to the POU allows for a Mannings flow rate calculation (see Attachment A). That theoretical calculation yielded a flow rate of 1.09 cfs, which is sufficient to cover the permitted rate of 1.00 cfs. The recommended flow rate for the Domestic portion is 0.04 cfs, while 1.00 cfs is recommended for the Industrial component.

Volume calculations for the permit (see Attachment B) were based on Mr. Barrett's estimates of the periods of use (months/year, days/month, hours/day) and the amount used for each purpose. The domestic volume is recommended at 0.6 AF each, for two cabins and a fifth-wheel trailer, for a total domestic volume of 1.8 AF. The volume for industrial use (ore processing) is recommended at 21.6 AF, so the total volume recommendation is 23.4 AF.

The field exam revealed that the POD was incorrectly described on the permit as being located in the NESW of Section 15, T12N, R15E, so an amendment will be sought, as the actual location is in the SESW of Section 15.

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

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
INDUSTRIAL	1/01 to 12/31	1.00 CFS	21.6 AF
DOMESTIC	1/01 to 12/31	0.04 CFS	1.8 AF

Totals: **1.00 CFS** **23.4 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 ☒ None

I. AUTHENTICATION

Field Examiner's Name Jim Bitzenburg Date 8-16-19
 Jim Bitzenburg - Senior Water Resource Agent, Southern Region

Reviewer _____ Date _____



Rebuilt POD with avalanche debris in background.

Some of the domestic use for permit 72-7424.



72-7424 Michael Barrett



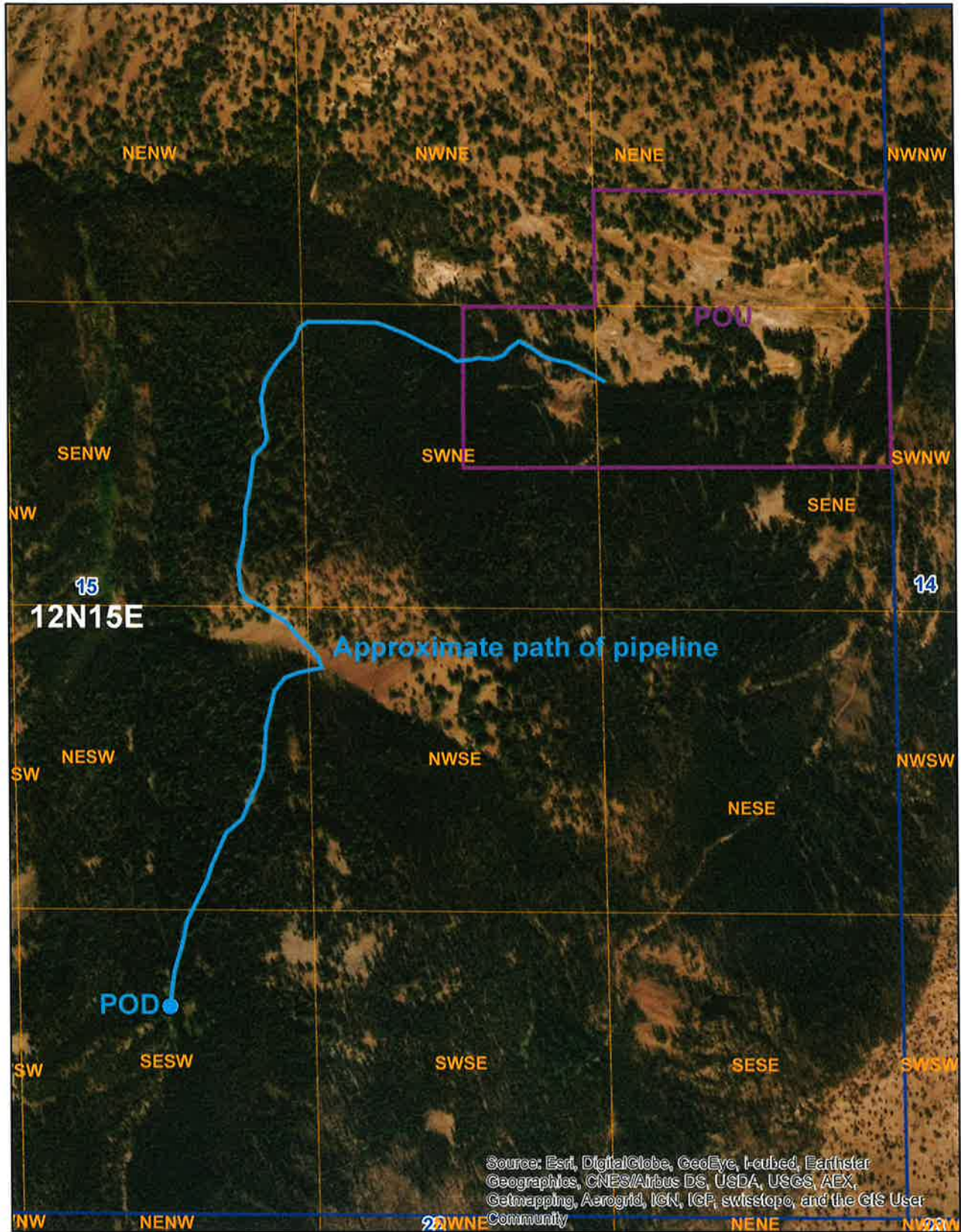
Portable ore mill- a portion of the industrial use for the permit.

More domestic use under permit 72-7424.



72-7424 Michael Barrett

72-7424 System Diagram - POD and POU Map



Legend

- Township/Range
- Sections
- QQ

72-7424 Michael Barrett

0 0.05 0.1 0.2 Miles



Manning flow calculation for theoretical flow of pipe

Set units:

Pipe diameter, d_0	0.5	ft
Manning roughness, n ?	0.012	
Pressure slope (possibly ? equal to pipe slope), S_0	0.031847	rise/run
Percent of (or ratio to) full depth (100% or 1 if flowing full)	1	fraction

Results

Flow, Q	1.0847	cfs
Velocity, v	5.5244	ft/sec
Velocity head, h_v	0.4743	ft
Flow area	0.1964	ft ²
Wetted perimeter	1.5708	ft
Hydraulic radius	0.1250	ft
Top width, T	0.0000	ft
Froude number, F	0.00	
Shear stress (tractive force), τ	0.2486	psf

$$\text{Slope} = 160' / 5024'$$

rise = 160' from POD to POU (elevation drop)
 run = 5024' distance from POD to POU.

Manning's Roughness Coefficient (n)

Manning's Roughness Coefficient is a measurement of the average roughness of the wetted perimeter of a pipe or conveyance. This allows the Manning formula to correct for the effect of this roughness slowing down the water as it moves through the pipe or conveyance.

Typical values are given below;

ChannelManning's n Values

	<u>Min</u>	<u>Normal</u>	<u>Max</u>
Concrete or asbestos-cement pipe	0.011	0.013	0.015
Smooth walled helical spiral rib pipe	0.012		0.013
Corrugated metal subdrain	0.017	0.019	0.021
Plastic pipe (Smooth)	0.011		0.015
Plastic pipe (Corrugated)		0.024	
Metal pipe or pipe arch with helically wound corrugations		0.024	
Wrought iron	0.012	0.014	0.015
Cast iron	0.010	0.013	0.014
Steel pipe, welded	0.010	0.012	0.014
Brick	0.012	0.015	0.017

Barrett 72-7424 Adair Creek

Volume

Domestic

0.6 AF each, for two cabins and a 5th wheel trailer..... 1.8 AF

Total Domestic Volume **1.8 AF**

Industrial

Industrial use for mining varies throughout the year, but the rate of use averages 20 gpm. Use runs 24 hours a day, seven days a week from April 1 through November 30 (244 days). Volume calculation: 20 gpm x 60 min/hour x 24 hours/day x 244 days = 7027200 gallons divided by 325850 gallons/acre-foot = ... 21.6 AF

Total Industrial volume..... **21.6 AF**

Total Overall Volume..... **23.4 AF**