

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 72-7423

Exam Date: 7/18/2019

1. Current Owner:

R M BARRETT
PO BOX 347
CHALLIS ID 83226

2. Accompanied by: Michael Barrett, Son of Permit Holder; Corey Skinner, IDWR; and Craig Winstead, associate of Mr. Barrett

Phone No: Cell: 702-575-5739; home: 208-879-4257

Address: PO Box 1104, Challis, ID 83226

Relationship to permit Holder: son of permit holder

- 3. SOURCE:**

SWIFT GULCH CREEK

Tributary

YANKEE FORK

Method of Determination: ArcMap DRG layer, site visit

B. OVERLAP REVIEW

1. Other water rights with the same place of use:

Water Right No.	Source	Purpose of Use	Basis
72-4017	Spring	Domestic	Decree
72-7044	Yankee Fork	Mining	Decree

Comments: Mining right and domestic right appurtenant to the same property; domestic right appears to be decreed in wrong QQ.

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

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

SWIFT GULCH CREEK NE¼ SW¼, Sec. 3, Twp 12N, Rge 15E, B.M. CUSTER County

Method of Determination: GPS reading, Google Earth, ArcMap, and site visit.

PLACE OF USE: INDUSTRIAL

[illegible]

PLACE OF USE: DOMESTIC

[illegible]

PLACE OF USE: FIRE PROTECTION

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	10						X											

Method of Determination: ArcMap aerial imagery and site visit.

3.

X Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

X Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

X Aerial Photo Attached (required for irrigation of 10+ acres).

X 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

2. Measurements: No measurement was made as system has changed since development period. Pipe from that time period was still at the site, so a theoretical measurement was made using an online Mannings Calculator. Slope was estimated on-site and the type of pipe was evident from the old pipe remaining at the site.

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method: An online Mannings flow rate calculator was used. See Attachment B, Mannings Information Sheet

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$$

2. Volume Calculations for Other Uses: See *Attachment A, Volume Calculations***G. NARRATIVE/REMARKS/COMMENTS**

The field exam for permit 72-7423 was completed on July 18, 2019 with Mike Barrett (deceased permit holder's son), his associate Craig Winstead, and IDWR Southern Region Manager Corey Skinner in attendance. The permit, with a priority date from 30 years ago, was originally diverted from Swift Gulch Creek into a 6" steel pipe which flowed into a wooden structure, then into a ditch that eventually ran to the place of use. The point of diversion was recently rebuilt, and water will be piped the entire distance in a 4" pipe.

No measurement could be made, but the length, the approximate slope, and the type of pipe originally used (a section of the pipe was still at the POD) allowed for a Mannings flow calculation of theoretical flow for the permit of 1.67 cfs, which is sufficient to cover the permitted 1.00 cfs. Recommended flow rate are: Fire Protection, 1.00 cfs; Industrial, 0.11 cfs; and Domestic, 0.11 cfs.

The domestic portion of the permit was used in two homes on the property, with limited irrigation around the homes and other structures, but much less than one-half acre of irrigation. Industrial use is primarily in the ore processing facility, but some industrial use is in the shower house where workers bathe after their work shifts.

Volume calculations (see Attachment A, Volume Calculations) were based on Mr. Barrett's estimates of the periods of use (months/year, days/month, hours/day). The volume calculated and recommended for Domestic use is 2.7 AF, while the calculated and recommended volume for Industrial use is 53.2 AF, for a total volume of 55.9 AF.

The field exam revealed that the POD was described on the permit incorrectly as being located in the SESW of Section 3, T12N, R15E, when it is actually located in the NESW of Section 3, so an amendment of permit will be mailed to the permit holder.

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	0.11 CFS	53.2 AF
DOMESTIC	1/01 to 12/31	0.11 CFS	2.7 AF
FIRE PROTECTION	1/01 to 12/31	1.00 CFS	

Totals:**1.00 CFS****55.9 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 8-15-19
Jim Bitzenburg - Senior Water Resource Agent, Southern Region

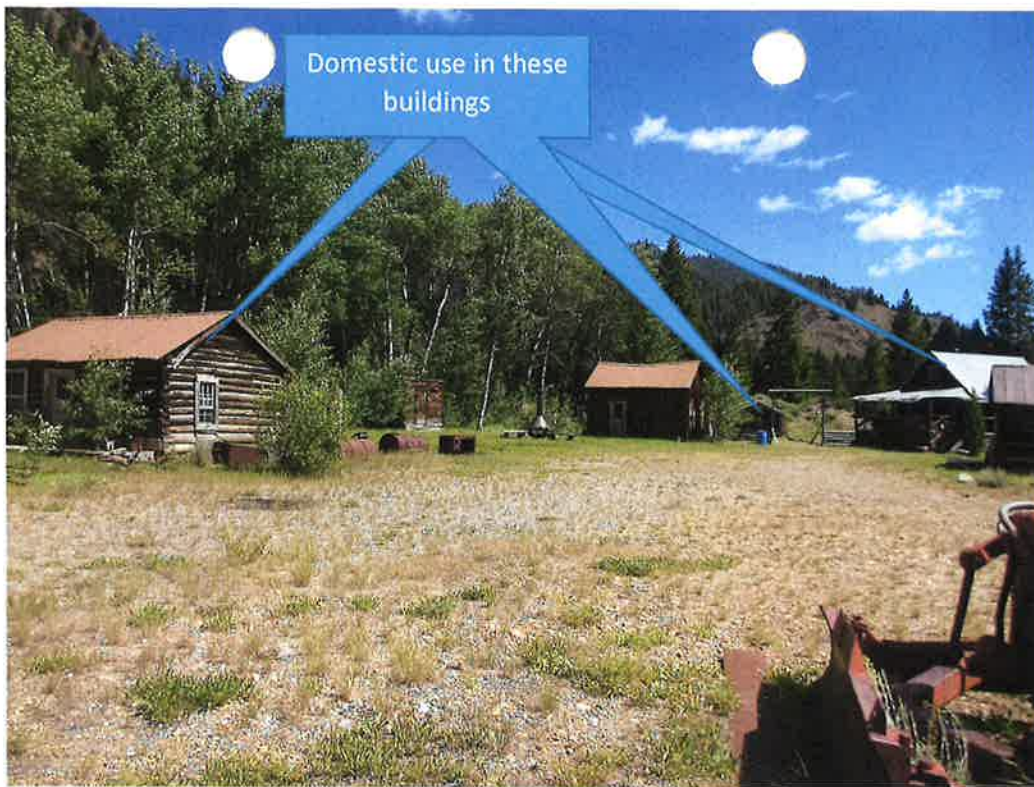
Reviewer _____ Date _____



Remnants from the original POD.

The POD as it exists today.





The lawn and structures at the Barrett facility.

Lawn irrigation on the Barrett property.



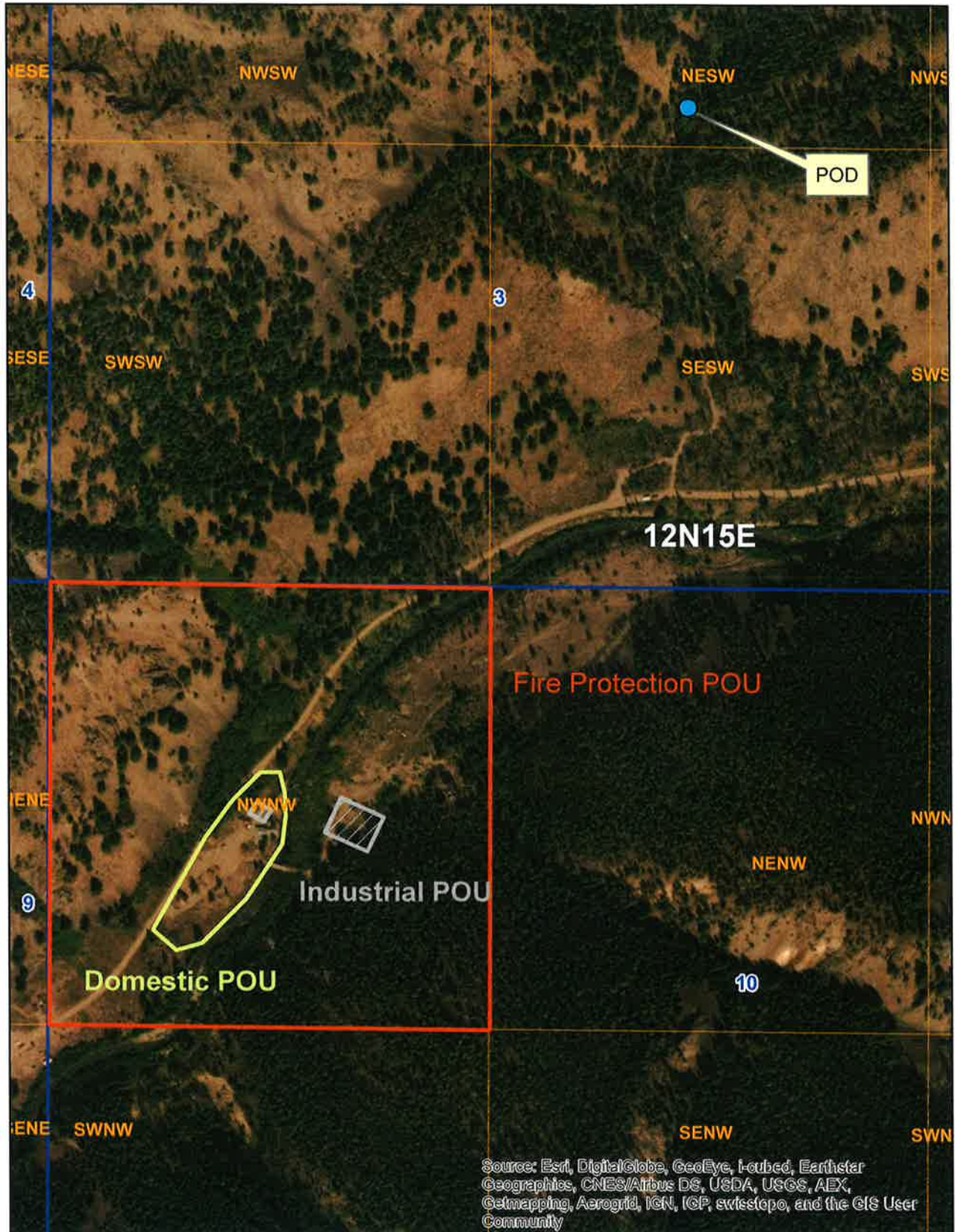


Remnants of the ore processing facility which collapsed from winter snow accumulation.

The ore processing facility with a mixer used in the processing in back.



72-7423 System Diagram - POU and POD Map



Legend

- Township/Range
- Sections
- QQ

72-7423 R.M. Barrett

0 0.05 0.1 0.2 Miles



72-7423 Barrett - Swift Gulch Creek

Volume

Domestic

0.6 AF each for two houses.....	1.2 AF
½ acre of irrigation @ 3.0 AF/acre (IDWR standard for the area).....	1.5 AF
Total	2.7 AF

Industrial

Industrial use for mining is 49.37 gpm. Use runs 24 hours a day, seven days a week from April 1 through November 30 (244 days). Volume calculation: $49.37 \text{ gpm} \times 60 \text{ min/hour} \times 24 \text{ hours/day} \times 244 \text{ days} = 17346643.2 \text{ gallons}$ divided by 325850 gallons/acre-foot = ...53.2 AF

Total Industrial volume..... 53.2 AF

Total Volume..... 55.9 AF

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;

Channel	Manning's n Values		
	Min	Normal	Max
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

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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	0.075	rise/run
Percent of (or ratio to) full depth (100% or 1 if flowing full)	1	fraction

Results

Flow, Q	1.6646	cfs
Velocity, v	8.4778	ft/sec
Velocity head, h_v	1.1170	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	0.5854	psf