

Method of Determination: Site visit, GPS, and aerial photography

D. FLOW CALCULATIONS

During the field exam there was just a trickle (less than 1 gpm) flowing in the spring box. However, it was clear that higher flows had occurred in the past. A flow measurement was not taken because it did not appear that the measurement would reflect maximum, or even typical, flow. Flow rate can be estimated via a theoretical calculation...

Hazen-Williams Formula

$$V = 1.318 \times C_h \times R^{0.63} \times S^{0.54}$$

V = Velocity (ft/s)

C_h = Hazen-Williams Friction Coefficient = 130 (for old plastic pipe)

R = Hydraulic Radius = Cross Sectional Area / Wetted Perimeter = D/4 (for round pipes)

for 2" dia pipe D = 2" = 0.1667 ft

$$R = 0.1667/4 = 0.04167$$

S = h/L = Slope of Energy Grade Line = 0.167 (field observation of about 50 feet of fall which looks about right according to USGS quadrangle map. Approximately 300 feet of distance between spring and trough according to ARCMAP measurement)

$$V = 1.318 \times 130 \times (0.04167)^{0.63} \times (0.167)^{0.54}$$

$$V = 8.8 \text{ ft / sec}$$

$$Q = VA \text{ where } A = \pi r^2 = \pi (1/12)^2 = 0.00694 \text{ ft}^2 \text{ for 2 inch diameter pipe}$$

$$Q = (8.8 \text{ ft/sec})(0.00694 \text{ ft}^2) = 0.06 \text{ cfs}$$

Calculated rate exceeds permitted amount of 0.02 cfs, therefore use permitted rate of 0.02 cfs

E. VOLUME CALCULATIONS

Not required for 42-111 type domestic uses per new Beneficial Use Examination Rules implemented 3/29/2012. Stockwater use can be considered a "part a" domestic use (up to 13,000 gpd). Consider wildlife use as an incidental type of use contributing no additional water to the appropriation above and beyond what is allowed for stockwater use as described on the permit.

F. NARRATIVE/REMARKS/COMMENTS

Application for Permit 45-14315 was filed on September 2, 2010 by the Bureau of Land Management for the diversion of 0.02 cfs from a spring (tributary to Cold Creek) for stockwater and wildlife use. The permit was issued on October 13, 2010 for the diversion of 0.02 cfs from a spring (tributary to Cold Spring Creek). Proof of beneficial use was filed on August 4, 2011. On August 8, 2014, I conducted the licensing field exam for permit/right 45-14315.

The system consists of a developed spring with a pipeline to a stock trough. A cmp spring box serves as a distribution point for the collected spring water (see inspection photo). A four inch diameter pipe enters this distribution point and appears to be the buried collection pipe into the spring. A two inch diameter pipe, with a control valve, runs from the spring box to the trough. An overflow pipe runs from the spring box and discharges a few feet downhill in the channel below the spring. Note that water diverted from the spring can flow to the trough via a controlled pipe (flow can be adjusted via the valve) and excess water in the spring box flows back to the channel directly below the spring. Water flow from the spring can

be measured in the spring box via a bucket and stopwatch if needed. Note that this infrastructure appears to comply with the condition on the permit (enclosed system, a way to return unused water to the source, and a way to measure the diversion rate). During the exam there was a small amount of water flowing into the spring box with no overflow from the spring box or the stock trough. It was clear that higher flows had occurred in the past, but it did not appear that there was any evidence of overflow at the trough. A flow measurement was not taken because it did not appear that the measurement would reflect maximum, or even typical, flow. A theoretical calculation indicated that 0.06 cfs could be conveyed to the trough. Note that the maximum permitted rate is only 0.02 cfs (9 gpm), so 0.02 cfs will be recommended for licensing. Also note that a volume estimate is not required for 42-111 type domestic uses per the new Beneficial Use Examination Rules implemented 3/29/2012. Stockwater use can be considered a "part a" domestic use (up to 13,000 gpd) and the wildlife use is considered an incidental type of use contributing no additional water to the appropriation above and beyond what is allowed for stockwater use as described on the permit. Several cattle and deer were noted in the area around the trough documenting potential stockwater and wildlife use.

An overlap review indicates that decreed federal reserved water right 45-12798 appears to describe the same spring. Note that this decree lists the spring source as "Cold Spring" tributary to Cold Creek. Permit 45-14315 lists the spring source as a "spring" tributary to Cold Spring Creek. The USGS quadrangle does not name the spring, or even show a spring, at this particular location. A BLM monument at the spring box was stamped "Cold Spr". The USGS quadrangle shows an unnamed stream directly below the spring, with the first named stream below being "Cold Creek". It is recommended that when the 45-14315 license is issued, that the source should be described as "Cold Spring" tributary to "Cold Creek". Note that this will keep the source and tributary consistent with the decreed federal reserved water right 45-12798.

Note that permit 45-14315 was flagged and includes a condition indicating that the right is for the diversion of Trust Water. However, the right is for a surface water source that would eventually be tributary to the Snake River above Milner Dam (source would flow into the unnamed stream, then Cold Creek, then Goose Creek, which would flow into the Snake River above Milner Dam). Surface water sources tributary to the Snake River above Milner Dam are not Trust Water by definition. Therefore, it is recommended that the Trust Water flag and any Trust Water conditions be removed when license 45-14315 is issued.

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

G. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
STOCKWATER	01/01 to 12/31	0.020 CFS	N/A
WILDLIFE	01/01 to 12/31	0.020 CFS	N/A
<u>Totals:</u>		0.020 CFS	N/A

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

H. AUTHENTICATION

Field Examiner's Name [Signature] Date 8/15/2014

Reviewer [Signature] Date 8/26/2014

45-14315 Point of Diversion Photos

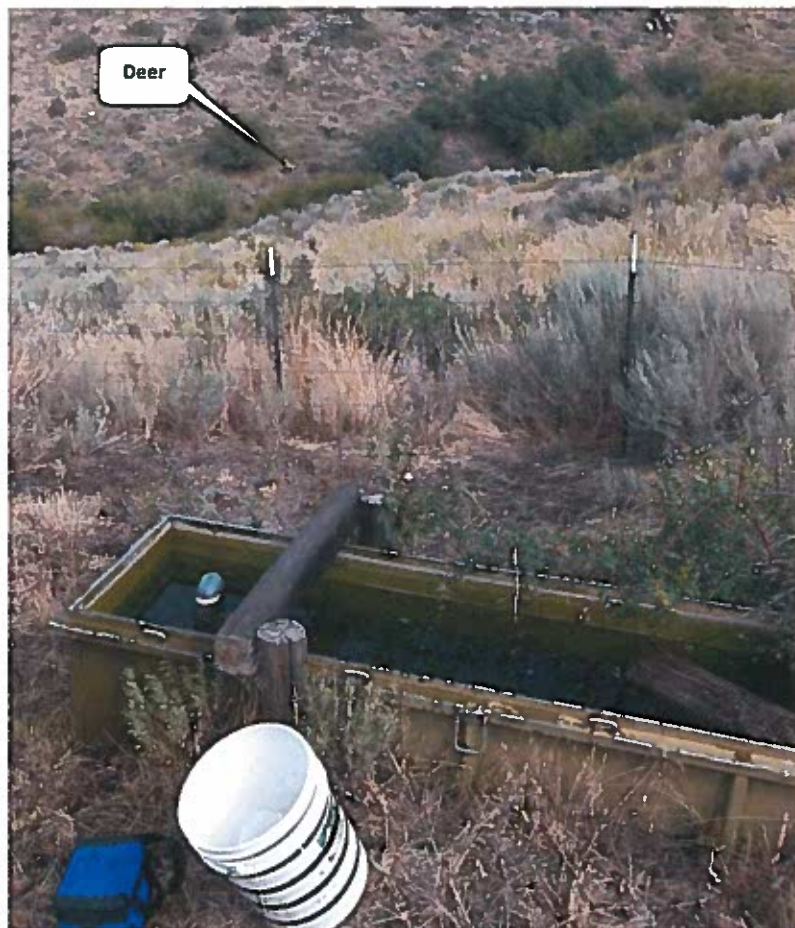


ABOVE: View inside cmp spring box showing diversion works. Note only a small amount of water was flowing into the spring box, but it was evident that higher flows had occurred in the past. Also note that diversion pipe to the trough is valved so water flow to the trough can be controlled. The overflow pipe from the spring pipe discharges a few feet below the spring box into the channel directly below the spring.

BELOW: View of BLM monument (shown in view above) at the cmp spring box. Note that the monument indicates that the site is known as "Cold Spring".



45-14315 Place of Use Photos



ABOVE: View of trough that serves at the place of use for right 45-14315. The approximate location of the spring (point of diversion) is indicated. The fence should be located along the quarter-quarter line between the NENW and the SENW of Section 23 (T15S, R22E). Note that the spring (POD) is located north of the fence line (NENW) and the trough is located south of the fence line (SENW).

LEFT: View of trough from different angle than view above. Note a deer (indicated) visible in the background of the view. Several deer and cattle were observed in the area around the place of use documenting potential stock water and wildlife use.

45-14315 Point of Diversion and Place of Use Map

ESRI Imagery

