Stream: Alpine Gulch

Executive Summary

Water Division: 4
Water District: 62
CDOW#: 37970
CWCB ID: 10/4/A-004

Segment: Headwaters to Confluence with Henson Creek

Upper Terminus: HEADWATERS IN THE VICINITY OF
(Latitude 37° 57' 17.53"N) (Longitude 107° 24' 17.78"W)

Lower Terminus: CONFLUENCE WITH HENSON CREEK
(Latitude 38° 1' 7.94"N) (Longitude 107° 21' 31.27"W)

Watershed: Upper Gunnison (HUC#: 14020002)
Counties: Hinsdale
Length: 5.69 miles
USGS Quad(s): Redcloud Peak, Lake San Cristobal, Lake City
Flow Recommendation: 5.0 cfs (April 15 to September 30)
1.0 cfs (October 1 to April 14)

Staff Analysis and Recommendation

Summary

The information contained in this report and the associated instream flow file folder forms the basis for staff's instream flow recommendation to be considered by the Board. It is staff's opinion that the information contained in this report is sufficient to support the findings required in Rule 5.40.

Colorado's Instream Flow Program was created in 1973 when the Colorado State Legislature recognized "the need to correlate the activities of mankind with some reasonable preservation of the natural environment" (see 37-92-102 (3) C.R.S.). The statute vests the CWCB with the exclusive authority to appropriate and acquire instream flow and natural lake level water rights. In order to encourage other entities to participate in Colorado's Instream Flow Program, the statute directs the CWCB to request instream flow recommendations from other state and federal agencies. The Bureau of Land Management (BLM) recommended this segment of Alpine Gulch to the CWCB for inclusion into the Instream Flow Program. Alpine Gulch is being considered for inclusion into the Instream Flow Program because it has a natural environment that can be preserved to a reasonable degree with an instream flow water right.

Alpine Gulch is approximately 5.7 miles long. Alpine Gulch originates on the northern flank of Redcloud Peak at an elevation of 12,750 feet and flows generally northeasterly through the Red Cloud Peak Wilderness Study Area as it drops to an elevation of 8,900 feet at its confluence with Henson Creek. Approximately 92 percent of the land on the 5.7 mile segment addressed by this report is publicly owned. Alpine Gulch is located within Hinsdale County and the total drainage area of the creek is approximately 12.9 square miles.

The subject of this report is a segment of Alpine Gulch beginning at the headwaters and extending downstream to the confluence with Henson Creek. The proposed segment is located approximately 2 miles west of Lake City. Staff has received one recommendation for this segment, from the BLM. The recommendation for this segment is discussed below.

Instream Flow Recommendation

The BLM recommended 5.0 cfs (April 15 to September 30), and 1.0 cfs (October 1 to April 14). These recommendations were based on their October 9, 2008, data collection efforts and staff's water availability analyses.

Land Status Review

Upper Terminus	Lower Terminus	Total Length (miles)	Land Ownership	
			% Private	% Public
Headwaters	Confluence with Henson Creek	5.69	7.7%	92.3%

100% of the public lands are owned by the BLM.

Biological Data

Alpine Gulch is a high gradient stream with step-pool geomorphology and large substrate size. The aquatic environment in Alpine Gulch is limited by heavy metals (aluminum) deposited into the creek from natural sources and from historic mining activity. However, the creek is capable of supporting brook trout and brown trout, as evidenced by BLM fishery surveys. It is unclear whether the fish are reproducing in Alpine Gulch, or whether the fish reproduce in Henson Creek and then utilize Alpine Gulch for cover and forage purposes. Mayfly have been consistently observed within the creek, and this is likely the trout food source.

Field Survey Data

BLM staff used the R2Cross methodology to quantify the amount of water required to preserve the natural environment to a reasonable degree. The R2Cross method requires that stream discharge and channel profile data be collected in a riffle stream habitat type. Riffles are most easily visualized, as the stream habitat types that would dry up first should streamflow cease. This type of hydraulic data collection consists of setting up a transect, surveying the stream channel geometry, and measuring the stream discharge.

Biological Flow Recommendation

The CWCB staff relied upon the biological expertise of the cooperating agencies to interpret output from the R2Cross data collected to develop the initial, biologic instream flow recommendation. This initial recommendation is designed to address the unique biologic requirements of each stream without regard to water availability. Three instream flow hydraulic parameters, average depth, percent wetted perimeter, and average velocity are used to develop biologic instream flow recommendations. The CDOW has determined that maintaining these three hydraulic parameters at adequate levels across riffle habitat types, aquatic habitat in pools and runs will also be maintained for most life stages of fish and aquatic invertebrates (Nehring 1979; Espegren 1996).

For this segment of stream, two data sets were collected with the results shown in Table 1 below. Table 1 shows who collected the data (Party), the date the data was collected (Date), the measured discharge at the time of the survey (Q), the accuracy range of the predicted flows based on Manning's Equation (240% and 40% of Q), the summer flow recommendation based on meeting 3 of 3 hydraulic criteria and the winter flow recommendation based upon 2 of 3 hydraulic criteria. It is believed that recommendations that fall outside of the accuracy range of the model, over 250% of the measured discharge or under 40% of the measured discharge may not give an accurate estimate of the necessary instream flow required.

Table 1: Data

Party	Date	Q	250%-40%	Summer (3/3)	Winter (2/3)
BLM	10/09/2009	2.38	6.0 – 1.0	4.98	1.10
BLM	10/09/2009	2.54	6.3 – 1.0	Out of Range	1.06

The summer flow recommendation, which meets 3 of 3 criteria and is within the accuracy range of the R2CROSS model, is 5.0 cfs. The winter flow recommendation, which meets 2 of 3 criteria and is within the accuracy range of the R2CROSS model is 1.0 cfs.

Hydrologic Data and Analysis

After receiving the cooperating agency's biologic recommendation, the CWCB staff conducted an evaluation of the stream hydrology to determine if water was physically available for an instream flow appropriation. This evaluation was done through a computation that is, in essence, a "water balance". In concept a "water balance" computation can be viewed as an accounting exercise. When done in its most rigorous form, the water balance parses precipitation into all the avenues water pursues after it is deposited as rain, snow, or ice. In other words, given a specified amount of water deposition (input), the balance tries to account for all water depletions (losses) until a selected end point is reached. Water losses include depletions due to evaporation and transpiration, deliveries into ground water storage, temporary surface storage, incorporations into plant and animal tissue and so forth. These losses are individually or collectively subtracted from the input to reveal the net amount of stream runoff as represented by the discharge measured by stream gages. Of course, the measured stream flow need not be the end point of interest; indeed, when looking at issues of water use to extinction stream flow measurements may only describe intermediate steps in the complex accounting process that is a water balance carried out to a net value of zero.

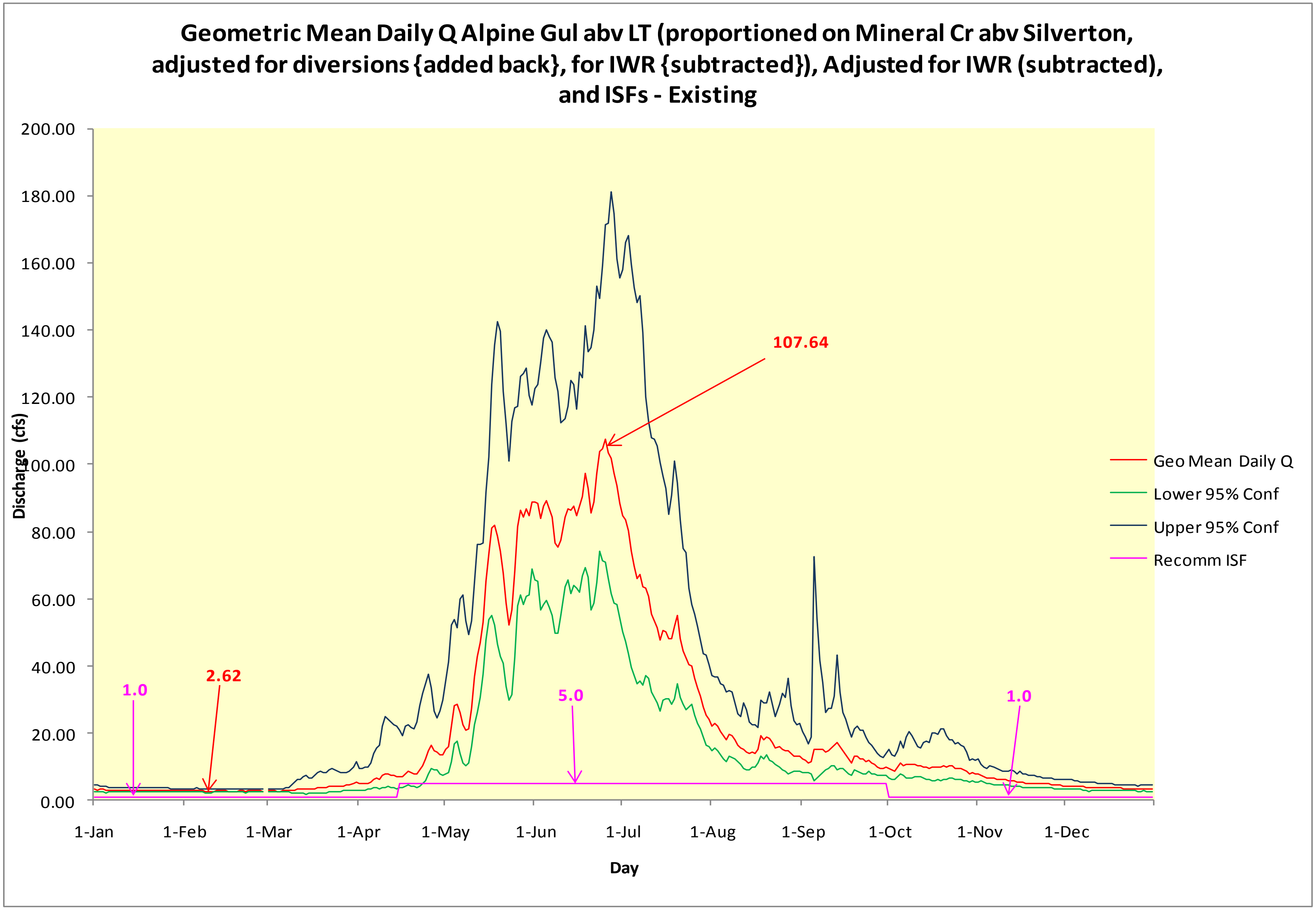
In its analysis, CWCB staff has attempted to use this idea of balancing inputs and losses to determine if water is available for the recommended Instream Flow Appropriation. Of course, this analysis must be a practical exercise rather than a lengthy, and costly, scientific investigation. As a result, staff has simplified the process by lumping together some variables and employing certain rational and scientifically supportable assumptions. The process may be described through the following description of the steps used to complete the evaluation for this particular stream.

The first step required in determining water availability is a determination of the hydrologic regime at the Lower Terminus (LT) of the recommended ISF reach. In the best case this means looking at the data from a gage at the LT. Further, this data, in the best case, has been collected for a long period of time (the longer the better) including wet and dry periods. In the case of **Alpine Gulch** no such gage is available at the LT. In fact, there is no gage on Alpine Gulch. It is thus necessary to describe the normal flow regime at Alpine Gulch above the LT through a "representative" gage station. The gage station selected for this purpose was MINERAL CREEK ABOVE SILVERTON, CO (USGS 09358900), a gage with a 7 year period of record (POR) collected between 1968 and 1975. The gage is at an elevation of 9,980 ft above mean sea level (amsl) and has a drainage area of 11 mi^2. The hydrograph (plot of discharge over time) produced from this gage includes the effects of two upstream transbasin diversions. These diversions were 100% consumptive to the basin because of their transbasin character. To make the measured data from Mineral Creek transferrable to Alpine Gulch above the LT, these diversions were added back to the measured Mineral Creek hydrograph. The resulting "adjusted" hydrograph could then be used on Alpine Gulch above the LT by multiplying the "adjusted" hydrograph by an area ratio; specifically, the area of Alpine Gulch above the LT (12.94 mi^2 above the LT) to Mineral Creek above Silverton, CO (11 mi^2 above the gage). Next, the resulting proportioned "adjusted" hydrograph would itself be "adjusted" (decreased) to reflect the existing depletions on Alpine Gulch above the LT resulting from upstream consumptive irrigation uses. The final hydrograph would thus represent a distribution of flow over time that has been reduced to reflect existing human uses. In the case of Alpine Gulch there are no existing diversions and thus no need to make adjustment for depletions.

{The Following discussion is based upon the US Geological Survey's *Techniques of Water-Resources Investigations* Series, *Book 4: Hydrologic Analysis and Interpretation, Chapter A3: Statistical Methods in Water Resources* (Chapter 3: Describing Uncertainty) by D.R. Helsel and R. M. Hirsch. This technical reference provides the scientific background and guidance important to the systematic interpretation of hydrologic data. The document is available online and is a valuable aid to understanding and interpreting the analyses described here.}

The next step in producing a representation of the discharge at Alpine Gulch is to compute the Geometric Mean of the area-prorated "adjusted" data values from the Mineral Creek above Silverton, CO hydrograph. This step is of value because of the inherent statistical weaknesses found in any collection of data intended to measure natural stream discharge. Without getting into the details of statistical theory, it is worth noting that a set of discharge measurements is inherently inaccurate, no matter how well collected, due to the difficulties attendant to data collection, especially hydrologic data. In this particular case, the short period of record lends even greater merit to the use of this statistical tool. To give deference to this fact and to increase the value of the hydrograph product of this analysis, the Geometric Means of the data were computed and plotted along with the 95% Confidence Intervals about the data. The resultant hydrograph, including recommended Instream Flow values, is displayed in Figure 1 with the data displayed in Table 2.

Figure 1



Geometric Mean Daily Q Alpine Gul abv LT (proportioned on Mineral Cr abv Silverton, adjusted for diversions {added back}, for IWR {subtracted}), Adjusted for IWR (subtracted), and ISFs - Existing
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Discharge (cfs)
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Day
107.64
2.62
1.0
5.0
1.0
Geo Mean Daily Q
Lower 95% Conf
Upper 95% Conf
Recomm ISF

Table 2. Geometric Mean Discharge and Recommended Instream Flows

Date	Proportioned Adjusted GM (abv gage) Adj (-) for Irr & OoB in Alpine Gul abv LT	Existing ISFs	Recommended ISF (cfs)
1-Jan	3.15		1.0
2-Jan	3.03		1.0
3-Jan	3.13		1.0
4-Jan	3.08		1.0
5-Jan	2.87		1.0
6-Jan	2.91		1.0
7-Jan	2.89		1.0
8-Jan	2.93		1.0
9-Jan	2.96		1.0
10-Jan	2.91		1.0
11-Jan	2.87		1.0
12-Jan	2.91		1.0
13-Jan	2.94		1.0
14-Jan	2.94		1.0
15-Jan	2.89		1.0
16-Jan	2.87		1.0
17-Jan	2.84		1.0
18-Jan	2.87		1.0
19-Jan	2.91		1.0
20-Jan	2.91		1.0
21-Jan	2.90		1.0
22-Jan	2.93		1.0
23-Jan	2.84		1.0
24-Jan	2.87		1.0
25-Jan	2.96		1.0
26-Jan	2.88		1.0
27-Jan	2.83		1.0
28-Jan	2.77		1.0
29-Jan	2.84		1.0
30-Jan	2.79		1.0
31-Jan	2.79		1.0
1-Feb	2.78		1.0
2-Feb	2.74		1.0
3-Feb	2.71		1.0
4-Feb	2.74		1.0
5-Feb	2.75		1.0
6-Feb	2.72		1.0
7-Feb	2.69		1.0
8-Feb	2.64		1.0
9-Feb	2.62		1.0
10-Feb	2.64		1.0

11-Feb	2.65	1.0
12-Feb	2.68	1.0
13-Feb	2.68	1.0
14-Feb	2.67	1.0
15-Feb	2.67	1.0
16-Feb	2.65	1.0
17-Feb	2.65	1.0
18-Feb	2.65	1.0
19-Feb	2.65	1.0
20-Feb	2.70	1.0
21-Feb	2.71	1.0
22-Feb	2.62	1.0
23-Feb	2.71	1.0
24-Feb	2.71	1.0
25-Feb	2.71	1.0
26-Feb	2.69	1.0
27-Feb	2.66	1.0
28-Feb	2.65	1.0
29-Feb		1.0
1-Mar	2.69	1.0
2-Mar	2.76	1.0
3-Mar	2.77	1.0
4-Mar	2.65	1.0
5-Mar	2.65	1.0
6-Mar	2.77	1.0
7-Mar	2.85	1.0
8-Mar	2.89	1.0
9-Mar	2.99	1.0
10-Mar	3.03	1.0
11-Mar	3.09	1.0
12-Mar	3.09	1.0
13-Mar	3.18	1.0
14-Mar	3.16	1.0
15-Mar	3.25	1.0
16-Mar	3.30	1.0
17-Mar	3.43	1.0
18-Mar	3.55	1.0
19-Mar	3.53	1.0
20-Mar	3.71	1.0
21-Mar	3.78	1.0
22-Mar	4.03	1.0
23-Mar	4.20	1.0
24-Mar	4.13	1.0
25-Mar	4.11	1.0
26-Mar	4.12	1.0
27-Mar	4.26	1.0
28-Mar	4.44	1.0
29-Mar	4.65	1.0
30-Mar	4.94	1.0
31-Mar	5.18	1.0

1-Apr	4.83	1.0
2-Apr	4.75	1.0
3-Apr	4.81	1.0
4-Apr	5.00	1.0
5-Apr	5.50	1.0
6-Apr	6.08	1.0
7-Apr	6.45	1.0
8-Apr	6.31	1.0
9-Apr	7.39	1.0
10-Apr	7.87	1.0
11-Apr	7.91	1.0
12-Apr	7.41	1.0
13-Apr	7.33	1.0
14-Apr	6.91	1.0
15-Apr	7.12	5.0
16-Apr	7.13	5.0
17-Apr	7.83	5.0
18-Apr	8.39	5.0
19-Apr	8.04	5.0
20-Apr	7.60	5.0
21-Apr	7.64	5.0
22-Apr	8.81	5.0
23-Apr	10.36	5.0
24-Apr	12.22	5.0
25-Apr	14.79	5.0
26-Apr	16.13	5.0
27-Apr	14.62	5.0
28-Apr	14.25	5.0
29-Apr	13.28	5.0
30-Apr	13.42	5.0
1-May	14.92	5.0
2-May	15.81	5.0
3-May	21.86	5.0
4-May	28.24	5.0
5-May	28.47	5.0
6-May	26.25	5.0
7-May	22.48	5.0
8-May	20.58	5.0
9-May	21.25	5.0
10-May	27.47	5.0
11-May	36.66	5.0
12-May	42.81	5.0
13-May	46.87	5.0
14-May	52.73	5.0
15-May	65.24	5.0
16-May	73.14	5.0
17-May	80.82	5.0
18-May	81.78	5.0
19-May	78.50	5.0
20-May	74.18	5.0

21-May	67.77	5.0
22-May	58.79	5.0
23-May	52.04	5.0
24-May	56.45	5.0
25-May	68.14	5.0
26-May	81.24	5.0
27-May	86.50	5.0
28-May	84.40	5.0
29-May	86.86	5.0
30-May	84.50	5.0
31-May	88.96	5.0
1-Jun	88.62	5.0
2-Jun	88.51	5.0
3-Jun	84.02	5.0
4-Jun	87.61	5.0
5-Jun	89.27	5.0
6-Jun	86.85	5.0
7-Jun	84.37	5.0
8-Jun	76.66	5.0
9-Jun	75.48	5.0
10-Jun	77.39	5.0
11-Jun	84.15	5.0
12-Jun	86.67	5.0
13-Jun	86.22	5.0
14-Jun	87.73	5.0
15-Jun	84.82	5.0
16-Jun	87.65	5.0
17-Jun	90.46	5.0
18-Jun	97.38	5.0
19-Jun	92.64	5.0
20-Jun	85.53	5.0
21-Jun	88.68	5.0
22-Jun	97.34	5.0
23-Jun	103.82	5.0
24-Jun	104.61	5.0
25-Jun	107.64	5.0
26-Jun	103.55	5.0
27-Jun	101.76	5.0
28-Jun	97.37	5.0
29-Jun	93.55	5.0
30-Jun	88.19	5.0
1-Jul	84.64	5.0
2-Jul	83.65	5.0
3-Jul	80.23	5.0
4-Jul	73.93	5.0
5-Jul	69.60	5.0
6-Jul	65.83	5.0
7-Jul	67.10	5.0
8-Jul	63.40	5.0
9-Jul	63.19	5.0

10-Jul	60.78	5.0
11-Jul	55.26	5.0
12-Jul	53.30	5.0
13-Jul	51.46	5.0
14-Jul	47.62	5.0
15-Jul	50.58	5.0
16-Jul	50.02	5.0
17-Jul	48.16	5.0
18-Jul	47.89	5.0
19-Jul	51.59	5.0
20-Jul	54.81	5.0
21-Jul	48.13	5.0
22-Jul	44.31	5.0
23-Jul	42.39	5.0
24-Jul	40.34	5.0
25-Jul	39.86	5.0
26-Jul	36.36	5.0
27-Jul	33.39	5.0
28-Jul	30.82	5.0
29-Jul	27.53	5.0
30-Jul	25.14	5.0
31-Jul	24.08	5.0
1-Aug	22.13	5.0
2-Aug	22.96	5.0
3-Aug	22.12	5.0
4-Aug	20.55	5.0
5-Aug	19.26	5.0
6-Aug	17.91	5.0
7-Aug	19.51	5.0
8-Aug	19.19	5.0
9-Aug	17.92	5.0
10-Aug	16.30	5.0
11-Aug	15.48	5.0
12-Aug	15.03	5.0
13-Aug	14.40	5.0
14-Aug	13.79	5.0
15-Aug	14.21	5.0
16-Aug	13.90	5.0
17-Aug	14.93	5.0
18-Aug	19.04	5.0
19-Aug	17.94	5.0
20-Aug	18.94	5.0
21-Aug	18.34	5.0
22-Aug	17.27	5.0
23-Aug	15.44	5.0
24-Aug	15.75	5.0
25-Aug	15.26	5.0
26-Aug	14.81	5.0
27-Aug	14.84	5.0
28-Aug	13.91	5.0

29-Aug	13.16	5.0
30-Aug	12.99	5.0
31-Aug	13.14	5.0
1-Sep	12.26	5.0
2-Sep	11.96	5.0
3-Sep	11.13	5.0
4-Sep	11.50	5.0
5-Sep	15.16	5.0
6-Sep	15.16	5.0
7-Sep	15.07	5.0
8-Sep	14.98	5.0
9-Sep	14.07	5.0
10-Sep	14.84	5.0
11-Sep	15.46	5.0
12-Sep	16.24	5.0
13-Sep	16.95	5.0
14-Sep	15.92	5.0
15-Sep	14.63	5.0
16-Sep	13.49	5.0
17-Sep	12.03	5.0
18-Sep	11.13	5.0
19-Sep	12.98	5.0
20-Sep	12.89	5.0
21-Sep	12.28	5.0
22-Sep	12.07	5.0
23-Sep	11.56	5.0
24-Sep	11.74	5.0
25-Sep	10.97	5.0
26-Sep	10.47	5.0
27-Sep	9.89	5.0
28-Sep	9.43	5.0
29-Sep	9.29	5.0
30-Sep	9.85	5.0
1-Oct	9.42	1.0
2-Oct	8.81	1.0
3-Oct	8.60	1.0
4-Oct	9.76	1.0
5-Oct	11.08	1.0
6-Oct	10.11	1.0
7-Oct	10.49	1.0
8-Oct	10.75	1.0
9-Oct	10.51	1.0
10-Oct	10.45	1.0
11-Oct	10.19	1.0
12-Oct	10.02	1.0
13-Oct	9.98	1.0
14-Oct	9.78	1.0
15-Oct	9.41	1.0
16-Oct	9.77	1.0
17-Oct	9.66	1.0

18-Oct	9.91	1.0
19-Oct	9.91	1.0
20-Oct	10.25	1.0
21-Oct	9.77	1.0
22-Oct	10.09	1.0
23-Oct	10.01	1.0
24-Oct	9.41	1.0
25-Oct	9.44	1.0
26-Oct	9.42	1.0
27-Oct	8.99	1.0
28-Oct	8.52	1.0
29-Oct	7.72	1.0
30-Oct	8.00	1.0
31-Oct	7.79	1.0
1-Nov	7.80	1.0
2-Nov	7.46	1.0
3-Nov	7.02	1.0
4-Nov	6.69	1.0
5-Nov	6.64	1.0
6-Nov	6.33	1.0
7-Nov	6.24	1.0
8-Nov	6.23	1.0
9-Nov	6.09	1.0
10-Nov	5.96	1.0
11-Nov	5.86	1.0
12-Nov	5.81	1.0
13-Nov	5.72	1.0
14-Nov	5.47	1.0
15-Nov	5.48	1.0
16-Nov	5.27	1.0
17-Nov	5.05	1.0
18-Nov	5.01	1.0
19-Nov	4.85	1.0
20-Nov	4.98	1.0
21-Nov	4.92	1.0
22-Nov	4.84	1.0
23-Nov	4.85	1.0
24-Nov	4.85	1.0
25-Nov	4.72	1.0
26-Nov	4.57	1.0
27-Nov	4.33	1.0
28-Nov	4.42	1.0
29-Nov	4.39	1.0
30-Nov	4.22	1.0
1-Dec	4.14	1.0
2-Dec	4.16	1.0
3-Dec	4.27	1.0
4-Dec	4.18	1.0
5-Dec	4.20	1.0
6-Dec	4.02	1.0

7-Dec	3.89	1.0
8-Dec	3.75	1.0
9-Dec	3.55	1.0
10-Dec	3.60	1.0
11-Dec	3.60	1.0
12-Dec	3.54	1.0
13-Dec	3.58	1.0
14-Dec	3.56	1.0
15-Dec	3.62	1.0
16-Dec	3.62	1.0
17-Dec	3.57	1.0
18-Dec	3.52	1.0
19-Dec	3.49	1.0
20-Dec	3.48	1.0
21-Dec	3.43	1.0
22-Dec	3.38	1.0
23-Dec	3.36	1.0
24-Dec	3.33	1.0
25-Dec	3.30	1.0
26-Dec	3.14	1.0
27-Dec	3.31	1.0
28-Dec	3.40	1.0
29-Dec	3.29	1.0
30-Dec	3.21	1.0
31-Dec	3.17	1.0

Existing Water Right Information

Staff has analyzed the water rights tabulation and contacted the Division Engineer Office (DEO) to identify any potential water availability problems. There are no decreed surface diversions within this reach of stream. Staff has determined that water is available for appropriation on Alpine Gulch, between the headwaters and the confluence with Henson Creek, to preserve the natural environment to a reasonable degree without limiting or foreclosing the exercise of valid existing water rights.

CWCB Staff's Instream Flow Recommendation

Staff recommends the Board form its intent to appropriate on the following stream reach:

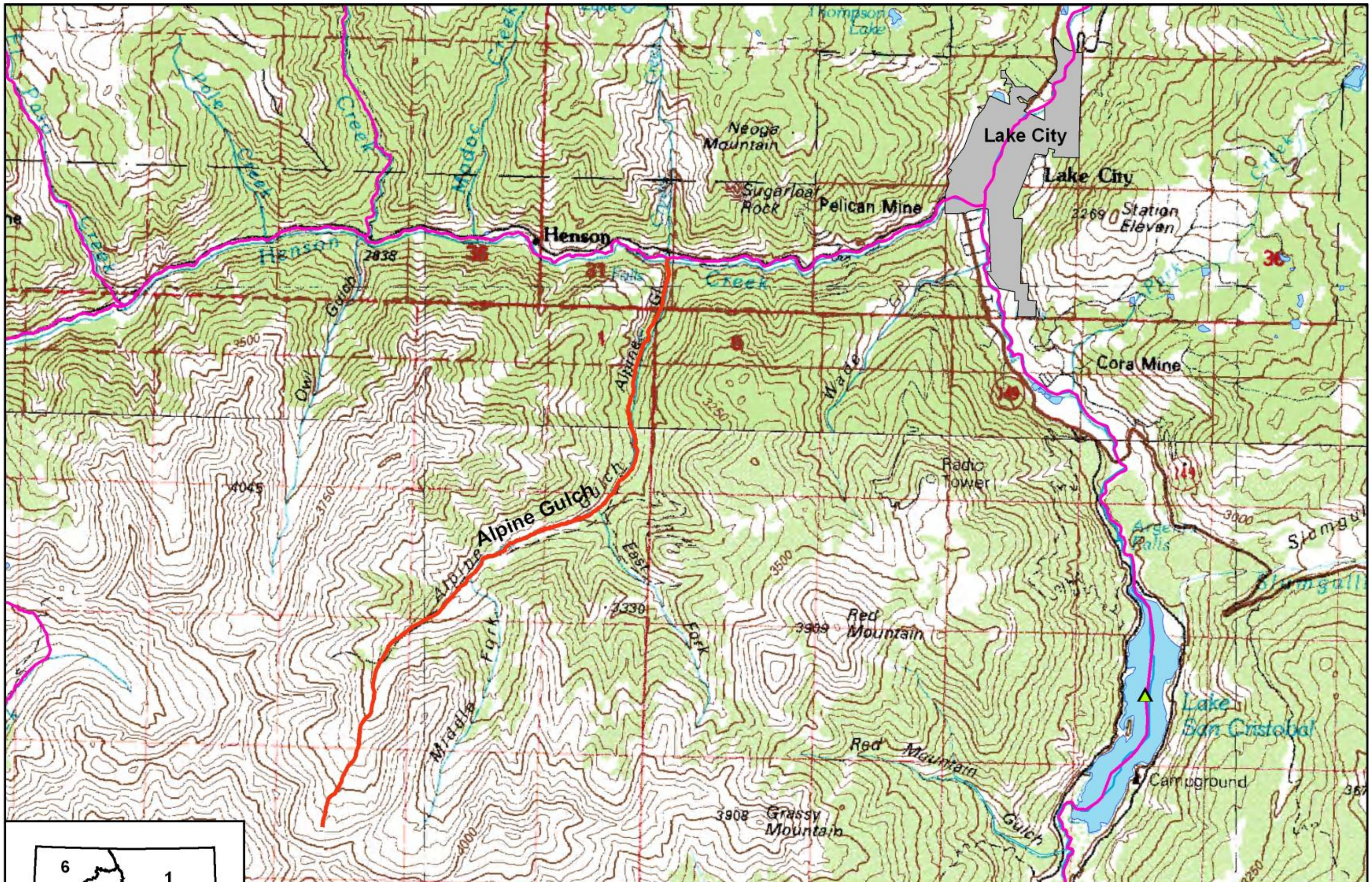
Segment: Headwaters to Confluence with Henson Creek

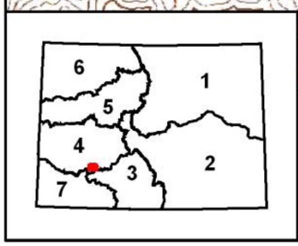
Upper Terminus: HEADWATERS IN THE VICINITY OF
(Latitude 37° 57' 17.53"N) (Longitude 107° 24' 17.78"W)
UTM North: 4203536.05 UTM East: 288708.32
NE SW S27 T43N R5W NMPM
2220' East of the West Section Line; 2340' North of the South Section Line

Lower Terminus: CONFLUENCE WITH HENSON CREEK
(Latitude 38° 1' 7.94"N) (Longitude 107° 21' 31.27"W)
UTM North: 4210534.64 UTM East: 292952.44
NE SE S31 T44N R4W NMPM
240' West of the East Section Line; 2055' North of the South Section Line

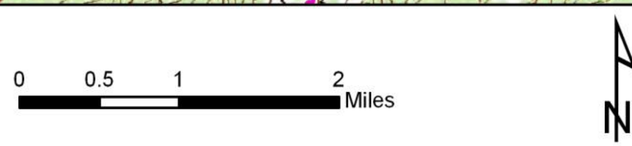
Watershed: Upper Gunnison (HUC#: 14020002)
Counties: Hinsdale
Length: 5.69 miles
USGS Quad(s): Redcloud Peak, Lake San Cristobal, Lake City
Flow Recommendation: 5.0 cfs (April 15 to September 30)
1.0 cfs (October 1 to April 14)

Vicinity Map

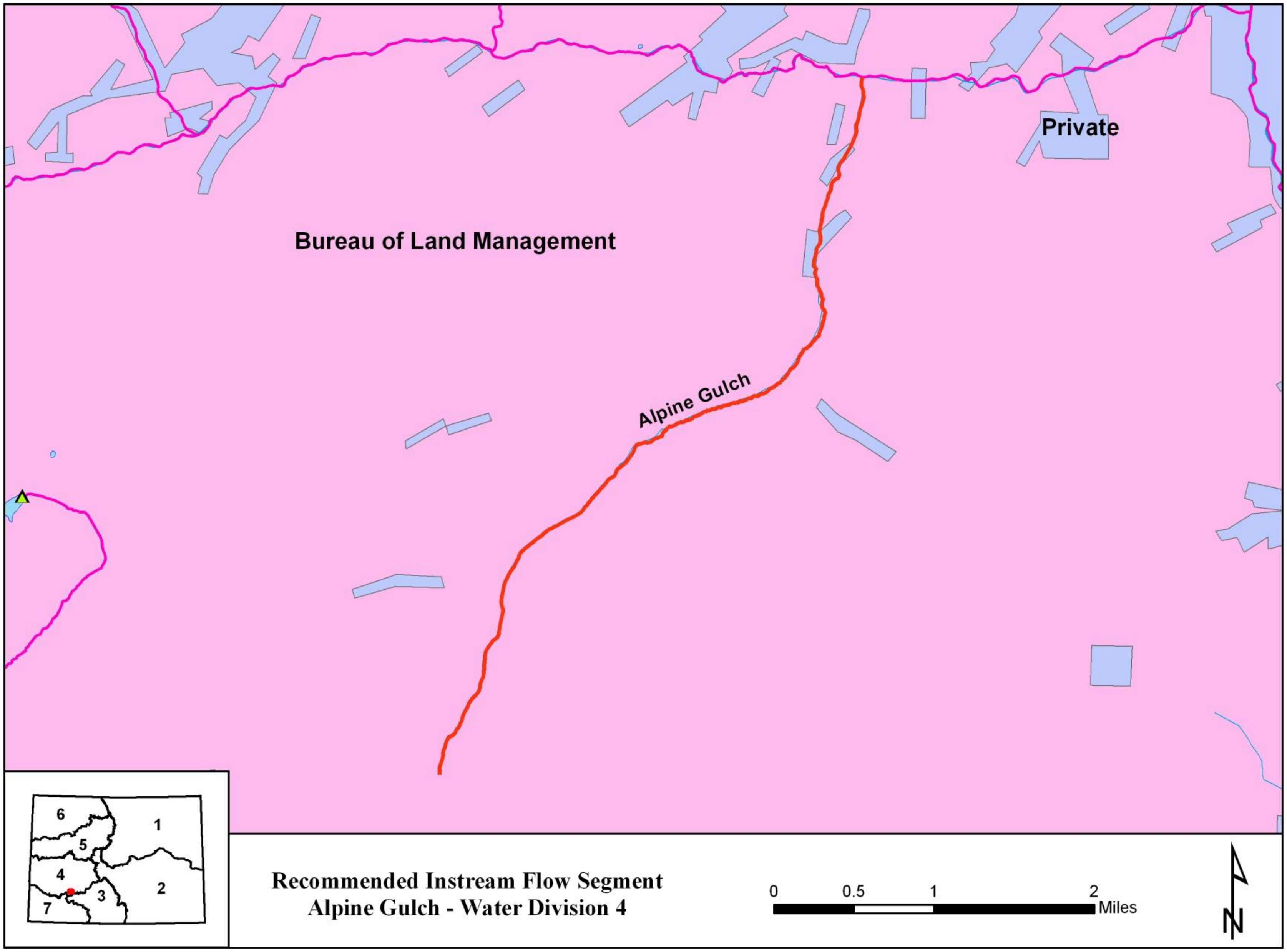




Recommended Instream Flow Segment
Alpine Gulch - Water Division 4



Land Use Map



Private
Bureau of Land Management
Alpine Gulch
6
1
5
4
2
3
7
Recommended Instream Flow Segment
Alpine Gulch - Water Division 4
0
0.5
1
2
Miles
N

Topographic & Water Rights Map