Johnson 1995e

STREAM: Pine Creek

DRAINAGE: west Fork Jarbidge River

WATER CODE: 1292

GAWS COMPUTER NO.: 170501,05,155,035,055

SURVEY DATE: August 11,12,17,18 and 19, 1992

REPORT DATE: April 13, 1995

WRITTEN BY: Gary Lee Johnson

SURVEY METHODOLOGY: The united states Forest Service Region 4, Level **III** Fisheries Habitat Survey Method (March, 1989) was utilized at seven Sample Sites (55'S) spread somewhat equidistant along the length of stream. Each 55 was preplotted on the united States Geological Survey, 7½ minute topographic map of the area.

The first 100 feet at each 55 was sampled for fish using a one pass effort with a Dirigo backpack electroshocker. A ¼-inch mesh block net was placed at the downstream end of each fish population sample area. Captured trout were measured (fork length), weighed and returned to the stream following electrofishing. Young-of-year trout and nongame fish captures were only measured. Fish seen but missed were recorded and used in calculating density estimates.

Aquatic macroinvertebrate type and relative abundance was assessed following random substrate inspection at each 55. The first of five habitat transects began 100 feet upstream of the map location. Habitat transects were 50 feet apart. Stream discharge at each 55 was calculated by using timed float velocity measurements and water width and depth measurements over a uniform length of stream. Both *air* and water temperatures were recorded at each 55 with the use of a hand held thermometer. Basic water quality parameters were measured using a HACH KIT.

LAND STATUS AND ACCESS: The entire Pine Creek drainage is public land administered by the Jarbidge District of the Humboldt National Forest. The trail access up Pine Creek heads at Pine Creek Campground located about 3.0 miles south of Jarbidge.

WATERSHED DESCRIPTION: Pine Creek is a northerly flowing stream within a 5.6 mi^2 volcanic geologic basin (Million-scale Geologic Map of Nevada - 1977). Drainage elevation ranges from 9426 feet to 6709 feet. Upland vegetation consisted of *fir,* mountain shrubs and mahogany, aspen, grass, and some forbs. Juniper and limber pine were present at opposite ends of the drainage, respectively.

The valley floor width ranged from just 3.0 m at 55-7 to 62 m at 55-6 and averaged about 30 m. The valley sideslope gradients were moderately to steeply inclined.

WATER STATUS: Pine Creek is a second order tributary to the west Fork Jarbidge River. 5treamflow commenced above 55-7 and hence, above 8200 feet. A 0.1 mi. downstream of SS-7, a first order side tributary contributed about a third of the flow found at SS-7. Pine Creek discharge ranged from 0.14 cfs at S5-7 to 1.66 cfs at SS-2. The mean of measured discharges was 0.81 cfs. First order tributary flows were evident at many locations within the drainage. Drought conditions prevailed in 1992 with predicted stream flow forecasts well below normal. Streamflows were described as low except, at SS-2 were a moderate flow stage existed that was caused by a weekend rain. Exposed substrate encompassed an average of 14.4% of the water width under transects. Pools and riffles comprised 39.4% and 46.2% of the stream width beneath transects. Mean water width and depth were 7.7 m and 0.16 m, respectively. Mean maximum recorded depth across transects was 0.20 m.

5tream temperatures ranged from 46°F at 5S-7 to 66°F at 55-2. Water clarity was clear except at 5S-2 where cloudy water was evident due to a recent rain shower. Water chemistry analyses indicated relatively sterile water for good fish growth (see below) .

D.O.	10 ppm
CO'	5 ppm
pH	7
Alkalinity	34 ppm
Hardness	68 ppm

STREAM HABITAT CONDITION INDEX (HCI): The overall, stream HCI was 63.6 or "fair". The HCI at both S5-5 and SS-6 rated "poor"; S5-4 and 5S-7 rated "fair" and SS-l through 55-3 rated "good". Common to both the "poor" rated 5S's was a flood ravaged appearance, in that there was little bank vegetation along the rock strewn channel. 5plit water flows within the channel and a paucity of pools were also evident. 5treambank soil and vegetative stability ratings were only rated "fair" and the lowest bank stabilities noted along Pine Creek.

STREAM CHANNEL TYPE AND STABILITY: Above the headwater forks, Pine had a steep gradient that averaged 15.5% (from map measurement. This reach of Pine Creek was most like a Rosgen's A-3 type channel as was S5-6 and 5S-5 although, the mean measured gradient was only 4.1%. The remainder of lower Pine Creek was most like a B-1 channel although, on site gradient measurements averaged 5.4% verses a map measured gradient of 3.7%. The break off between an A and B type channels is 4.0% with B types being 4.0% to 2.5% gradient.

stream channel stability (SC5) ranged from a "fair" score of 109 (S5-6) to a 'good" score of 61 (55-7). The overall Pine Creek SC5 score averaged 85 or "fair". The fact that the landform slopes above the upperbanks were moderately to steeply inclined, caused the SC5 rated item entitled landform slope to be rated "poor" at five S5's and "fair" at two SS's. The other SCS indicator that rated mostly "poor" was streambottom brightness. Five S8's had

predominantly scoured substrate surfaces and two 8S's rated "fair" by showing about a 50-50 mixture of scoured and stained surfaces. Substrate composition across transects was comprised of gravel (49%); rubble (26%); boulder (18%); sand/silt (6%) and bedrock (1%). Substrate consolidation ranged from a moderately tight assortment to mostly a loose assortment. Streambottom embededness was "light" indicating only minor amount of sedimentation.

RIPARIAN DESCRIPTION: Alder, forbs and grass comprised the majority of riparian cover at 8S-5 and downstream. Willow and or a Populus spp. were also usually present. Fir trees were present at low to moderate densities within the streamside zone at the upper three sites. A common forb at the upper two SS's was Veratrum californicum. Riparian condition ratings all rated "good" except, at 88-7 where conditions rated "excellent". Riparian area width averaged 72 feet and at all except 88-6 the riparian width covered the valley bottom width. At 88-6 only about 15% of the valley bottom was covered with riparian vegetation. Mean stream canopy density was 39%.

HABITAT VULNERBILITY: The Index of Habitat VUlnerbility (HVI) to management activities was "high" at 88-1, "low" at 88-2 and 88-6, and "moderate" the remaining four 88's. 8treambank sensitivity ratings as determined from the combined 8C8 scores for upperbank vegetative bank protection and lowerbank rock content averaged a score of 10.4 (8-13). All 88's had "good" to "excellent" lowerbank rock content. Upperbank vegetative protection was only "fair" to "good". A score of >13 indicates that one season of moderate livestock grazing can result in damaged streambanks. The entire Pine Creek drainage is closed to livestock grazing. No ungulate streambank damage was noted along Pine creek. There was some soil slumping noted on an adjacent hillside above 88-6 that could eventually sluff into the stream.

FISH POPULATION: Elecrofishing efficiency was deemed poor at the lower three 88's due to the numbers of fish seen but missed. 8hocking efficiency was judged good at 88-4 when the shocker batteries were strongest. Three species of fish were collected in Pine Creek: native rainbow/redband trout oncorynchus mykiss ssp.; bull trout 8alvelinus confluentesi and sculpin Cottus sp.. The rainbow/redband trout was found inhabiting the lower 3.2 miles of stream below 88-5. Of the estimated 1284 rainbow/redband trout (RBT) in the stream only 8.75% of the population were >6 inches (fork length). The average size of 14 RBT was 64 mm. Of those RBT that were measured, about 79% were young-of-year fish.

A single 167 mm bull trout was seen and then captured with a dip net in a fairly shallow glide located about 0.1 mile below fishless 8S-5. A total of 16 other trout were seen in a 0.5 mile of stream below where the bull trout was captured and above 88-4. One or more of these fish may have been bull trout.

8culpin were only found at 88-1. Five captured sculpin were

all believed to be 1 year olds and had a mean length of 79.2 rom. There were five young-of-year sculpin that were seen but not netted. An estimated 264 sculpin occupied the lowest 0.5 mile of stream.

FISH BARRIERS: About a 4 foot high headcut located below 8-5 and the bull trout that was captured, might serve as a low water upstream barrier to trout movement. A 30 foot bedrock waterfall barrier existed below 88-7.

AQUATIC MACROINVERTEBRATES: From two to four species of mayfly nymphs were found at every 88 at densities ranging from occasional to abundant. One to two species of caddisfly pupa/nymphs were rarely or occasionally noted at all but 88-5. Planaria were found occasionally at 88-4 and on upstream. A stonefly nymph was occasionally seen at the lower two 88's and rarely seen at 88-4. The only other aquatic invertebrates noted were a water strider and a fly larvae at 88-2. Overall densities of macroinvertebrates did not seem all that great considering the rocky nature of the stream and only minor amounts of sedimentation.

BEAVER STATUS: No indications of beaver past or present use of Pine Creek was noted. The paucity of a willow and aspen forage base would limit the suitability of the stream for beaver occupancy.

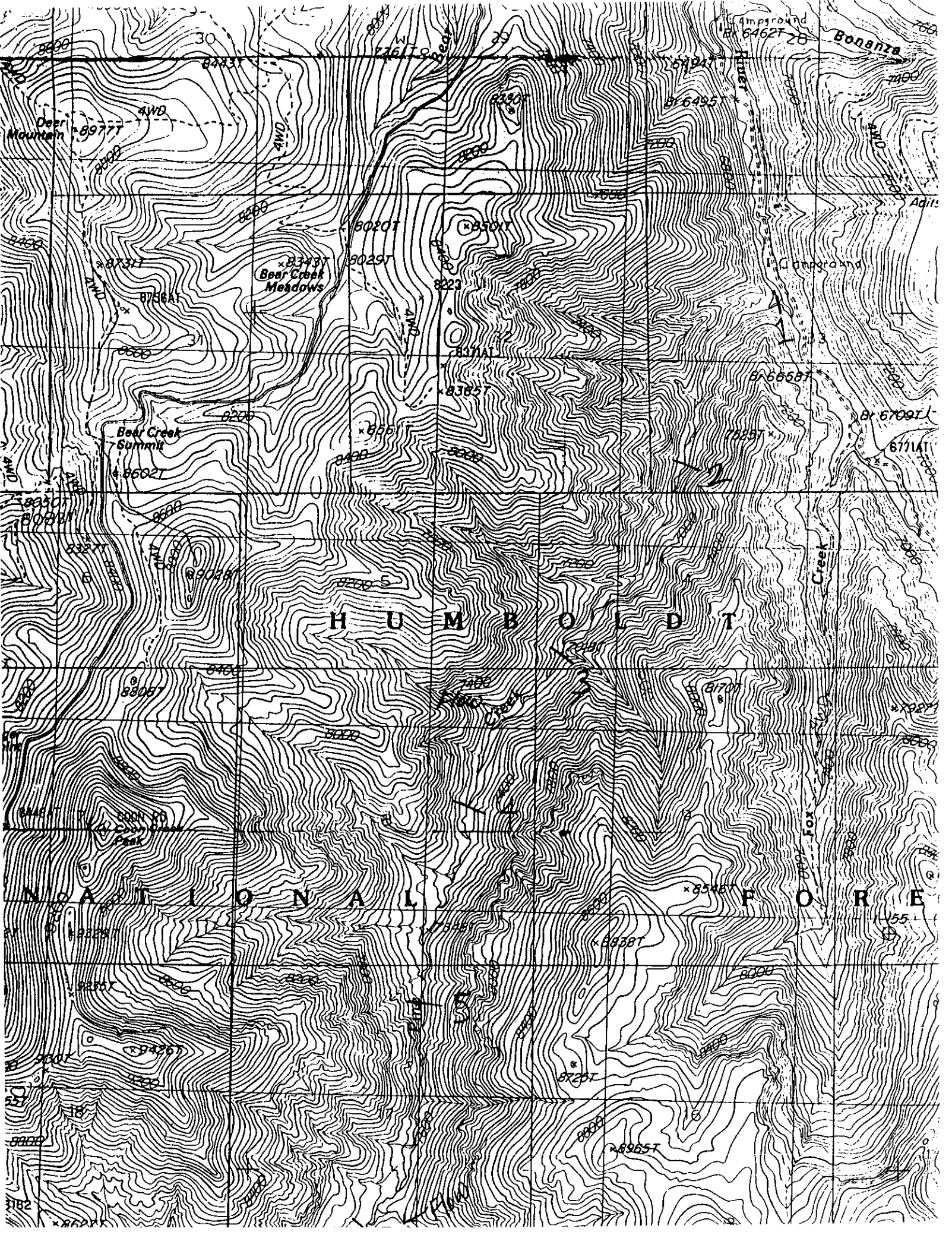
CONCLUSIONS

STREAM'S IMPORTANCE: Pine Creek is major water contributor to West Fork Jarbidge River and it provides suitable habitat for native fishes of the drainage. The fact that a bull trout was collected indicates the possible existence of focal bull trout habitat of which there is only a limited distribution of in Nevada.

ISSUES AND CONCERNS:

(1) The moderate to steep valley sideslopes and areas of soil slumping only reinforces the need to exclude livestock use due to the fragile nature of the drainage.
(2) The absence of any past survey data for Pine Creek negates the possibility of concluding any changes in bull trout distribution or densities.

RECOMMENDATION: Bull trout population status in Pine Creek should be reassessed to further document the importance of the stream to the population.


Deer Mountain
Bear Creek Meadows
Bear Creek Summit
Campground
Bonanza
Creek
Fox
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