Mr. Aaron Baker
Mr. Rick Cooper - Humboldt Sanctuary Farm
10 November 2020 APN 221-071-020, APPS 12990

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RE: Humboldt Sanctuary February Site Visit Assessment and Findings

On Friday, February 14, 2020, a site visit was conducted with Aaron Baker and Rick Cooper to assess stream classification, off-channel reservoir status, and bullfrog eradication progress. Specific tasks and resolution of these tasks are addressed below.

Table 1 summarizes California's description of the four classes of watercourses (I, II, III, and IV) on the basis of the watercourse's use (Harris and Kocher 2007). This stream classification remains in current use for watershed assessment and riverine research, and will be used to assess the stream classification in this assessment.

Table 1. Watercourse Class Description (Harris and Kocher 2007)

Stream Class	Description
I	Perennial streams that contain fish or are domestic water supplies
II	Perennial streams that do not contain fish but do contain other aquatic life or are within 1,000 feet (305 m) of a Class I stream.
III	Watercourses that do not support aquatic life but have the potential to deliver sediment to a Class I or II stream.
IV	Human-made streams for domestic, agricultural, or hydroelectric supply or for other beneficial use.

I. Background on Right Bank Tributary #10 to Salmon Creek from DFW Stream Inventory Survey

The California Department of Fish and Wildlife conducted a stream inventory survey (e.g., habitat typing) from October 3-29, 2007 on Salmon Creek, a tributary to the South Fork Eel River. The stream report refers to the watercourse running through the Humboldt Sanctuary property as Tributary #10. Tributary #10 is located 6.26 miles (33,066 feet) upstream of the confluence of Salmon Creek and the South Fork Eel River and 1.02 miles (5,398 feet) below the 20-foot-tall bedrock sheet waterfall signifying the end of anadromy. Tributary #10 flows into Salmon Creek where the channel is defined as a B2 channel type and located in Reach 4 (Uppermost Reach), which is dominated by boulders (52%), large cobble (19%), and small cobble (14%). B2 channels are moderately entrenched riffle dominated channels with infrequently spaced pools, stable banks, with low width/depth ratios on a moderate gradient and boulder-dominant substrates.

The DFW habitat crew estimated the flow (likely by visual inspection only) from Tributary #10 into Salmon Creek at 1 CFS on or about October 29, 2007. No survey was located for Tributary #10 so it is suspected that it was not surveyed, but the field crew observed salmonids at the confluence with Salmon Creek.

II. Analysis of Right Bank Tributary #10 to Salmon Creek from DFW Stream Inventory Survey

Based upon the stream inventory survey findings, Reach 4 is located in the headwater portion of Salmon Creek being composed of infrequent pools and riffles dominated by boulder substrate. Tributary #10 is also headwater tributary to Salmon Creek. Headwater reaches are known to provide poor to no salmonid habitat depending upon gradient. Although salmonids were observed at the confluences of Tributary #10 and Salmon Creek, Tributary #10 is very near the upper limit of anadromy, and within a few hundred feet appears to quickly exceeds 20% gradient, eliminating salmonid passage.

Although the survey does not identify the species of salmonids, based upon the 10% gradient estimated by the field crew in numerous locations on Salmon Creek, it is highly likely the salmonids observed were juvenile rainbow trout and/or steelhead.

III. Summary of Right Bank Tributary #10 to Salmon Creek from DFW Stream Inventory Survey and Site Visits in 2019 and 2020.

At the confluence with Salmon Creek, the Tributary #10 is a Class I. Typically, tributaries deemed valuable fish habitat by DFW field crews are surveyed along with the main stream being surveyed. This tributary was likely not surveyed due to the rapid increase in stream channel gradient making me suspect that the gradient increases rapidly, thus the field crew deemed the habitat low value to fish thus did not conduct a stream habitat inventory.

In April of 2016, two Pacific Watershed Associates geologists, Mr. Tom Leroy (Certified Civil Engineer #2539) and Mr. Joel Flynn, performed a "reconnaissance level investigation" of the property as part of their work on the Water Resource Protection Plan (WRPP). In section 4.3 of the WRPP, entitled Standard Condition #3. Riparian and Wetland Protection and Management, Mr. Leroy incorrectly concluded that Cultivation area 2 was adjacent to a Class II stream, thus required a setback of 100 feet. Further, Mr. Leroy listed that the corrective or remedial action needing required procurement of a waiver from the NCRWQCB to allow for a reduced setback or removal of the portion of the garden that falls within the 100-foot required setback.

During my own reconnaissance level site visit to the property in February 2020, I disagreed with Mr. Leroy's conclusion, though given the reconnaissance level investigation, I can understand how the incorrect stream classification was reached. I returned to the property in September 2020 because CDFW typically conducts stream surveys during late summer/early fall to investigate the Class I, II, and III transition points and determine the end of salmonid anadromy of the Right Bank Tributary #10 (to Salmon Creek).

The Right Bank Tributary #10 survey began at the confluence with Salmon Creek (Photo 1). Young-of-the- year and 1+ juvenile steelhead were observed in shallow pools and one pool ~1.5 feet in depth in the first 0.19 mile (1,003 feet) (Photo 2). No fish or aquatic vertebrate species were observed for the remainder of the survey. The habitat is mostly large boulders with very shallow riffles, which consistently gain in elevation for the remainder of the survey (Photo 3). An over six feet tall set of boulders blocks the channel at 0.32 mile (1,690 feet) (Photos 4 and 5) which marks the transition from a Class I to a Class II stream, and the end of salmonid anadromy. We piled up rocks and pulled ourselves through the right bank root wad to continue the survey another 0.47 mile (2500 feet) looking for fish until a large, impassable debris jam caused by a landslide was encountered and intermittent, subsurface flow (Photo 6). I returned to the stream channel when the stream was on Humboldt Sanctuary Farm's

property and continue to survey for fish and/or aquatic vertebrates. None were observed. No insects were observed. Nearing the headwater of this tributary, the flow became intermittently subsurface several times, and 100% subsurface 25 feet below the bridge (Photo 7). Approximately, 20 feet above the bridge, the channel divides into left and right channels. The left channel is near Cultivation Area 2. The left channel was completely dry and devoid of biological life. Right Bank Tributary #10 transitions from a Class II stream to a Class III stream about 50 feet above the bridge (Photo 8).

In summary, Right Bank Tributary #10 to Salmon Creek is a Class III stream near Cultivation Area 2 with a required setback of 50 feet. In October 2020, I emailed Mr. Leroy to inquire about the method he used to determine that the watercourse was a Class II near Cultivation Area 2. He responded, "Any stream classification I assigned was based on personal judgement, since you are significantly more qualified than me to make that determination feel free to make any appropriate changes to the WRPP." Since Cultivation Area 2 is near a Class III stream and more than 50 feet from the watercourse, no corrective or remedial actions are required.

IV. Off-Channel Reservoir

There is one reservoir located at approximately 40.2202, -123.9139. This area, and actually all of the surrounding parcels have been heavily disturbed from legacy tractor logging activities at least 50 years ago.

The reservoir is located on a very large legacy timber landing constructed during the tractor-logging era in the 1950s. There is evidence of dozens of legacy roads and skid trails throughout the parcel and surrounding parcels, which converge on this large flat area where the reservoir now occupies. The weight of the timber and soft, flattened dirt filled area became a low depression over time, which became a large seasonal pond which was enlarged to form a reservoir. The reservoir is filled by precipitation and sheet flow. The reservoir does not have the potential to deliver sediment to a Class I or II stream because it is not attached to a stream and is 100% off-channel.

On the north side, east corner of the off-channel reservoir, there is evidence that the reservoir over flowed last winter during a short, but unusual highly intense rain event. The overflow incised an area of unvegetated land and then within a hundred feet or so became subsurface. There is no evidence that the overflow transported sediment to any watercourse, or of any connection to a watercourse, because the flow became subsurface.

On the south side of the reservoir, there is past evidence of very small (< 18 inches in width), very low velocity flow demarcation (e.g., large puddle with one end moving with a decline in gradient) across a low gradient area. During the 14 Feb 2020 site visit, surface flow was absent. It is unknown whether the flow source came from the reservoir or precipitation derived puddling of water near the base of a large bay laurel tree. This should not be classified as a watercourse. This puddle does not flow into another watercourse.

In summary, the reservoir is not connected to a watercourse, thus is off-channel.

IV. Bullfrog Eradication Update

During the February site visit the off-stream reservoir was visually and auditory surveys for bullfrogs. No bullfrogs were observed or heard during this survey. It is advised that ongoing bullfrog monitoring occur on a weekly basis. If bullfrogs are present, they should be removed immediately. An annual late fall

draining of the reservoir is recommended to ensure the removal of adults, juveniles, and tadpole bullfrogs.

Respectfully submitted,

Dr. Cynthia Le Doux-Bloom
Senior Environmental Scientist, CDFW and CDWR (retired)
Certified Fisheries Professional, American Fisheries Society

Literature Cited

Bilesner, A.K. and E. G. Robinson. 2007. Detecting the Upstream Extent of Fish in the Redwood Region of Northern California. USDA Forest Service Gen. Tech. Rep. PSW-GTR-194.

Harris, R.R.; Kocher, S.D. 2007. Riparian Vegetation. Forest Stewardship Series 10. Davis, CA, University of California Agriculture and Natural Resources. UCANR Publication 8240, 7. 2007.

Referenced Photos 1-8

Photo 1: Confluence with Salmon Creek (Class I)

Photo 2: Juvenile steelhead present (Class I)

Photo 3: No aquatic vertebrates observed

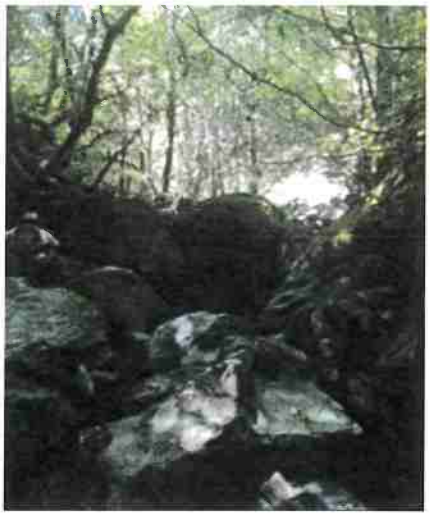

Photo 4: End of salmonid anadromy (Class I to Class II)

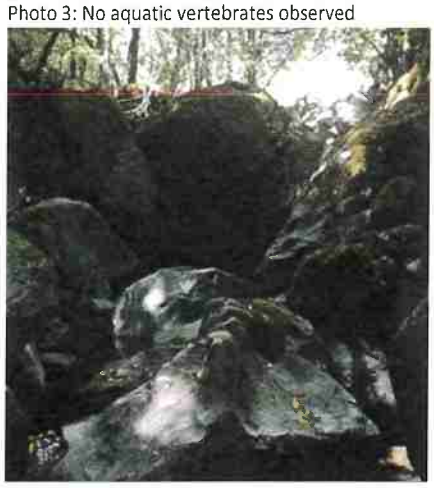

Photo 5: End of salmonid anadromy (Class I to Class II)

Photo 6: Subsurface flow (Class II)

Photo 7. Bridge near Class II to Class III transition

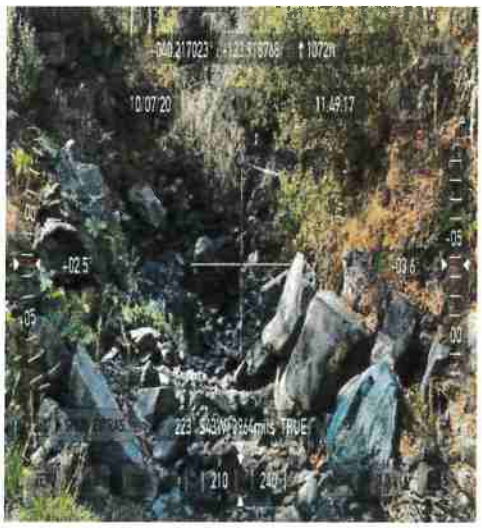

Photo 8. Class III transition left channel.