WR-40

FEE
29449

ENVIRONMENTAL FIELD REPORT

Prepared by Robert E. Miller
SWRCB, Division of Water Rights (DWR)
Environmental Assessment Section (EAS)

REM 8-15-00

Application No.: 29449 **Applicant:** Doug, Heidi, Norman D., and Caroline Cole

Location: Siskiyou Co. at Marble Mountain Ranch, 7.5 miles north of the Siskiyou-Humboldt County border along State Highway 96 (Somes Bar USGS 7.5 Minute Quadrangle).

DWR Staff involved: Ross Swenerton, Robert E. Miller, and Yoko Mooring

Applicant / Agent present: Doug Cole (applicant), Owner of Marble Mountain Ranch

Others present:

National Marine Fisheries Service (NMFS): Margaret Tauzer, Chuck Glasgow, and Tim Broadman. – protest accepted.

California Department of Fish & Game (DFG): Jane Vorpagel and Dennis Maria. – protest accepted.

Karuk Tribe of California: Ron Reed and Todd Soto. – local party with an interest in salmonid issues.

Non agency: Konrad Fisher (protestant, environmental grounds), Dennis Hood (KDH Biological Resource Consultation, on behalf of the Fishers), Michael David Fellows (caretaker of Fisher Ranch), and Neil Tocher (downstream user of water diverted from Stanshaw Creek).

Date: 07/26/2000

PROJECT DESCRIPTION: Applicant seeks a right to directly divert 3 cubic feet per second (cfs) from Stanshaw Creek, tributary to Klamath River, thence Pacific Ocean, in Siskiyou County. Water is conveyed through 5,200 feet of earthen ditch and 455 feet of 16-inch diameter steel pipe (penstock). The penstock uses 200 feet of fall to turn a Pelton wheel turbine. The hydroelectric generator produces a maximum of 33.9 kilowatts of electricity at 80% turbine efficiency. After use (see note), the water is conveyed via ditch into Irving Creek, thence Klamath River. (Note: Some water is taken from the ditch before and after the hydroplant for use by the Cole's for domestic use and pasture irrigation, respectively. Irrigation and domestic use is not applied for by this application and may be covered by pre-1914 rights and a Small Domestic Use Permit. Neil Tocher takes water from the ditch before it enters Irving Creek for domestic use, pasture irrigation, power generation, and to maintain a recreational reservoir. Mr. Tocher's project will briefly be described in another report. Mr. Tocher does not have a valid riparian claim, nor has he applied for Appropriative or Small Domestic Use Permit.) The diversion ditch has been in place since the mid to late 1800's and the turbine and generator were installed circa 1940. Mr. Tocher's project is in place, but the exact date of each facet of his project is unknown at this time.

ENVIRONMENTAL SETTING:

Land use. The Place of Use (POU) is a hydroelectric generator (pelton wheel) producing 33.9 kilowatts of electricity **(photos 1, 3, 4)**. This power is used on the premises of Marble Mountain Ranch, supplying power to 11 cabins, 2 rental homes, a lodge, the Cole residence, and recreational vehicle hookups. A diesel powered Caterpillar Electric Generator (75 kW) supplies backup and supplemental power, but its high operational cost ($2,500-$3,000/month) make it inhibitive to operate on a full-time capacity **(photo 2)**.

Vegetation. The ranch is surrounded by North Coast Coniferous Forest. The riparian area surrounding both Stanshaw and Irving Creeks is lush and in good condition, supplying approximately 90% stream shading and large woody debris (LWD) to the channel **(photo 5, 6)**. LWD is ideal for creating pools and offering cover for rearing salmonids.

Wildlife and fisheries. Stanshaw Creek contains steelhead (*Oncorhynchus mykiss*) and coho salmon (*O. kisutch*). The steelhead in this area are in the Klamath Mountains Province Evolutionary Significant Unit (ESU) and are candidate species under the federal Endangered Species Act (ESA); they are a species of concern to the DFG. Coho (Southern Oregon/Northern California Coasts ESU) are federally threatened. During this trip, both species were positively identified below the Highway 96 culvert by electrofishing by Dennis Maria and Jane Vorpagel (1 coho at age 0+; 8 juvenile steelhead) and viewed through dive masks by Ron Reed and Todd Soto **(photos 7-11)**. I personally observed 3 coho (0+) and >3 juvenile steelhead while standing near the washout pool below the culvert. It is presumed that anadromous fishes are unable to negotiate through the culvert to get above Highway 96. Plans are underway by the Forest Service (USFS), DFG and the Department of Transportation (CalTrans) to correct this passage problem.

On July 7, 2000, Mr. Reed and Mr. Soto electrofished Stanshaw Creek from the mouth up to Hwy. 96. They sampled every pool that was at least 1 to 1.5 feet deep: 18 pools were sampled and coho were found in 16 of them. A total of 33 coho (age 0+) were observed.

Further upstream, just below the Point of Diversion (POD), Mr. Soto netted an age-0 *O. mykiss* **(photo 13)**. It is presumed that this was a resident rainbow trout as steelhead cannot negotiate above the Hwy. 96 culvert. A Pacific giant salamander (*Dicamptodon tenebrosus*) was observed in the diversion channel at the POD **(photo 12)**. Another *O. mykiss* (age 1+) was found dead near the diversion ditch about 200 yards before it enters the penstock leading to the generator **(photo 14)**. It was probably killed by a predator (it was not stranded, water temp. is not an issue [12.2 °C], and it appeared in good condition).

Hydrology and water quality. The Stanshaw and Irving drainages receive approximately 55 inches of precipitation per year (WRIMS GIS and Rantz Isohyetal). Most, if not all, of this is in the form of rainfall. Margaret Tauzer (NMFS) estimated Stanshaw flow by obtaining Ti Creek stream flow data (USGS gauge) and multiplying it by the ratio of watershed area of Stanshaw Creek (at the confluence with the Klamath River) divided by the watershed area of Ti Creek (at the gage). Ti Creek is approximately 3 miles north of Stanshaw Creek. For the period of record (10/1/1960 – 9/30/1964), Ms. Tauzer calculated the average unimpaired stream flow as 8.12 cfs at the mouth with a minimum and maximum of 1.02 cfs and 100.1 cfs, respectively **(figure 1)**. During the period of record, estimated unimpaired streamflow in Stanshaw Creek dips below 3 cfs, the amount applied for by this application, in late July and most of August, September, and October. Using the rational method and assuming an average rainfall of 55 inches, Ms. Tauzer calculated an average flow at the mouth of 7.33 cfs.

As mentioned earlier, there is a fish passage issue in Stanshaw Creek at the Hwy 96 crossing. The culverts are long (>50 yards) and on a steep slope (~5%) with a smooth concrete substrate that offers no resting areas for salmonids migrating upstream **(see photos 7, 8)**.

The POD is approximately three-quarters of a mile above highway 96 **(photos 15, 16)**. The diversion structure is maintained annually by replacing rocks in the stream channel. At the time of this trip, the "diversion rocks" were a migration barrier to fish moving both upstream and downstream as the only water entering Stanshaw was seeping under these "diversion rocks". The flow entering the diversion ditch appeared to be at least twice that of the flow remaining in Stanshaw. The applicant does have a 1600 Permit from DFG, but it is stated that the diversion should be constructed so as to allow for the passage of fish. The POD and a large portion of the ditch are on USFS property.

Moving down the diversion ditch, a relief line is situated to convey surplus water out of the ditch during high flows **(photos 17, 18, 19)**. Only a minimal amount of water was passing through this line during this visit. Water passing through the relief line flows back in to Stanshaw Creek.

Down-diversion of the relief line, a half-culvert is buried in the ditch **(photo 20)**. The applicant says he needs to keep the half-culvert full (the amount present during our review) to operate his hydropower generator effectively; less than that, and he is short on power, more than that, and most is passed through the relief line described above. This is a good place to measure / monitor flow in the ditch. The flow was estimated just upstream of this half-culvert by timing a float over a known distance and measuring the ditch cross section at this reach **(photo 21)**. Flow was about 1 foot per second and cross sectional area was about 2 feet (flow $\approx$ 2 cfs). The applicant claims, and it was evident, that a lot of water seeps out of the ditch between here and the POD.

Water is also gravel-filtered out of the ditch **(photo 22)** into a pipe that leads to water purification tanks to supply domestic uses **(photo 23)**. This water is not applied for in this application (Small Domestic or Pre-14?).

The ditch continues **(photo 24)** until it enters the trash rack **(photo 25)**, thence the holding tank to produce head, thence down the penstock to the hydroplant **(see photos 1,3,4)**. Water is then redirected into another ditch which flows into Irving Creek. Mr. Tocher takes water out of the ditch before it enters Irving Creek **(photo 26, 27)**.

Water temperature was measured in Stanshaw Creek below Hwy 96 (12.2 °C, 54 °F), Stanshaw Creek at the POD (12.0 °C, 53.6 °F), the diversion ditch before it enters the trash rack (12.2 °C, 54 °F), the diversion ditch just before entering Irving Creek (12.5 °C, 54.5 °F), and Irving Creek upstream of the diversion discharge (12.0 °C, 53.6 °F).

DISCUSSION:

After the field review, the participants discussed the project, its potential impacts to anadromous salmonids, further studies that are warranted or planned, project alternatives / mitigation strategies, and the next step in the permitting process. Below is a brief synopsis of our discussion.

All participants were in agreement, except Mr. Cole, that the project, in its current form, has potentially negative effects to anadromous salmonids. All of these effects are due to decreased flows in Stanshaw: less habitat may be available, potential increases in temperature, and potential passage problems exist at the mouth. Mr. Cole kept stressing that Stanshaw is not good habitat, and that improvements are being made to Irving Creek by supplementing the flow. NMFS, DFG, Dennis Reed, and Konrad Fisher maintained that habitat needs to be improved in Stanshaw Creek (i.e. benefits to Irving fishery/habitat does not outweigh nor equal detrimental effects to Stanshaw fishery/habitat). All protestants present want more water to be left in or redirected to Stanshaw

Flood ?

Hoopa?

Creek after the hydroplant. Dennis Reed asked if the USFS, NMFS, and/or DFG could do a habitat suitability study to quantify any beneficial effects Stanshaw may receive if it were to receive more water. He and Mr. Fisher plan to ask for funding from the DFG California Coastal Restoration Plan (CCRP) to do such a study. They had plans to ask for funding from the CCRP to study and improve the Highway 96 culverts, but that may be delayed. NMFS, DFG, Dennis Reed, and Konrad Fisher emphasized that the culverts at Hwy 96 ***will*** be fixed to allow for fish passage in the near future.

POTENTIAL PROJECT IMPROVEMENTS DISCUSSED

1. Improve the diversion structure at the POD on Stanshaw Creek.

This may be accomplished by placing a more permanent structure in the stream channel such as a screened pipe/siphon or a small check dam with a slot that allows for bypass and fish passage. This may be difficult since the channel frequently receives high streamflow and debris and the channel is very dynamic.

2. Improve the delivery system to hydroplant.

If this is accomplished, less water would need to be diverted out of Stanshaw Creek. Lining the ditch or installing a pipeline were possible methods mentioned.

3. Improve the efficiency of the hydroplant.

This is another method that would require less water to be diverted. We discussed increasing the drop of the penstock, installing a smoother penstock, and installing a newer, more efficient generator.

4. Redirect water back to Stanshaw after it has passed through the Pelton wheel.

Water would be discharged back in to Stanshaw via pipeline just upstream of Hwy. 96. Some water would have to be left in the current ditch that leads to Irving Creek so that Mr. Cole can irrigate (Pre-14 claim of 0.5 cfs). This would still leave the reach between Hwy 96 and the POD at the current flow regime, which may be a problem if passage improvements are made and anadromous fishes get above Hwy 96.

5. Alternative energy sources.

Solar, diesel generator, propane, and running power lines from the town of Somes Bar (7 miles south) are all potential alternative energy sources.

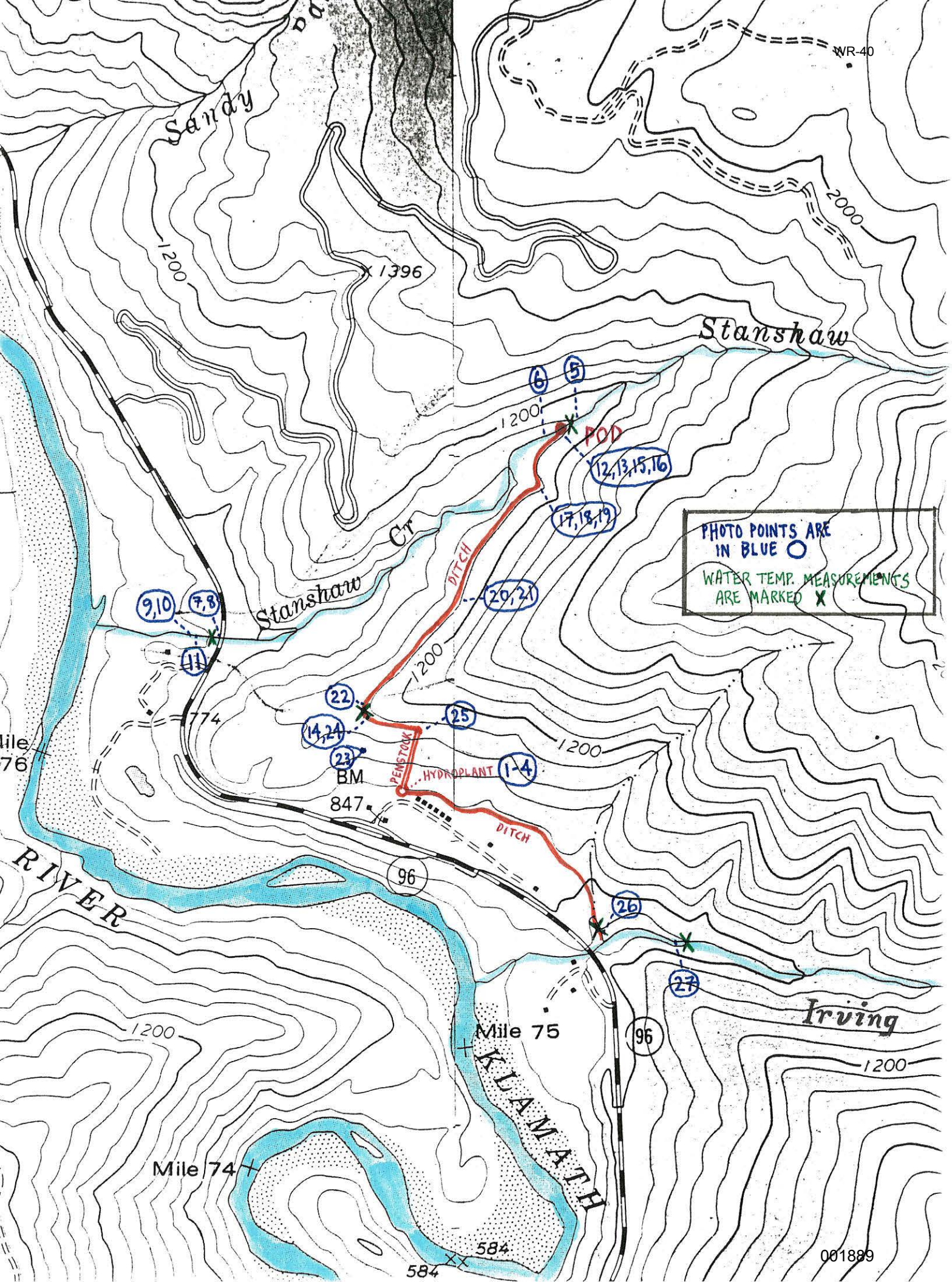
Mr. Cole stressed that all of these options are costly and that he could not afford them. The alternative that most appealed to him was #4, although he would still need to get some funding for that alternative. Other parties thought #4 may be a viable solution, but a consensus needs to be reached as to how much water needs to be redirected. The study proposed by Mr. Reed or studies done by NMFS, DFG, and/or USFS may answer this question. Also, Mr. Reed, Mr. Fisher, Mr. Cole, and Mr. Maria were going to determine if funding was available from the CCRP to develop any of these possible improvements. Mr. Swenerton asked NMFS and DFG to develop alternatives to submit to the SWRCB that may improve the fishery and that are feasible for Mr. Cole so that their protests can be dismissed.

OTHER ISSUES

Mr. Jon Grunbaum, a fisheries biologist for the USFS, was invited to attend but was unable to make it. The POD and most of the ditch are on USFS property. It is unknown at this time whether a USFS Use Permit is needed by the applicant or if the project has been "grandfathered". If

a Use Permit is required, the NMFS may have a nexus for getting more involved in the project because a federal agency (USFS) is supporting a project that may have a negative effect on a federally listed species (coho salmon). The USFS would be required to produce a Biological Assessment and then NMFS would issue a Biological Opinion. Chuck Glasgow (NMFS) is going to discuss this with Mr. Grunbaum or other USFS representatives.

ATTACHMENTS: PHOTOS, MAP, FIGURE


WR-40
Sandy
1200
1396
2000
Stanshaw
6
5
1200
POD
12,13,15,16
17,18,19
PHOTO POINTS ARE IN BLUE
WATER TEMP. MEASUREMENTS ARE MARKED X
Stanshaw Cr
DITCH
20,21
9,10
7,8
11
774
1200
22
14,24
25
23
BM
847
PENSTOCK
HYDROPLANT
1-4
DITCH
96
RIVER
26
27
Irving
Mile 75
KLAMATH
Mile 74
584
584
001889

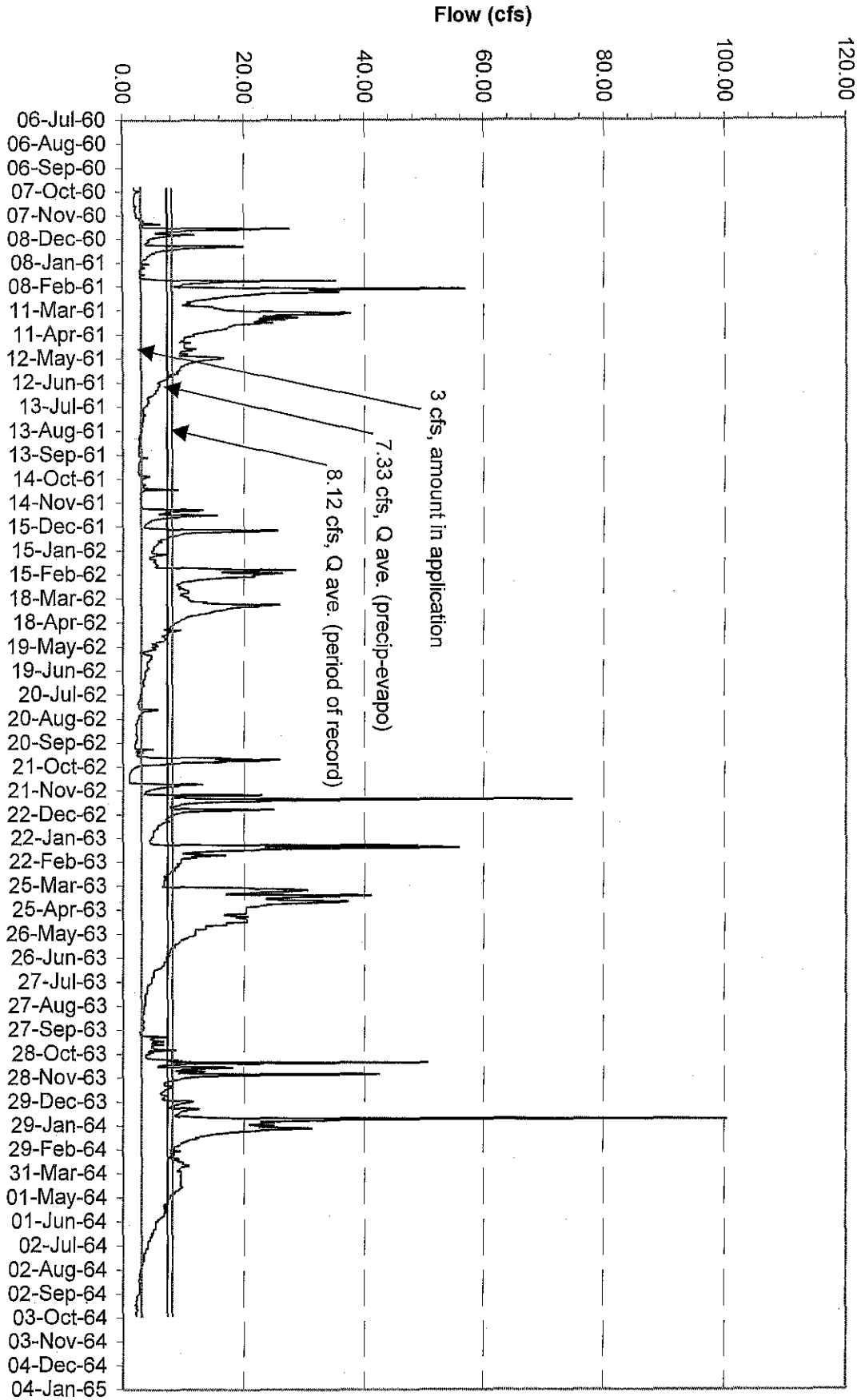


Figure 1. Stanshaw Creek Estimate of Daily Flows based on Ti Creek Gage

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 1. WWII era pelton wheel and hydroelectric generator.

Photo 2. Diesel powered Caterpillar generator

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photos 3 and 4. . Relief valve at hydrogeneration facility. When water is not running through the pelton wheel, water is released through this pipe (left).

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photos 5 and 6. Stanshaw Creek just above (left) and below the POD.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 7. Todd Soto looking for salmonids through dive mask in pool just below Hwy. 96. Three coho and a few steelhead were visually observed.

Photo 8. Jane Vorpagel (left) and Dennis Maria (pointing) electrofishing in the same pool. Only steelhead were captured via electrofishing in this pool.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 9. DFG electrofishing (Todd Soto assisting) a pool in Stanshaw Creek about 100 yards downstream of Highway 96.

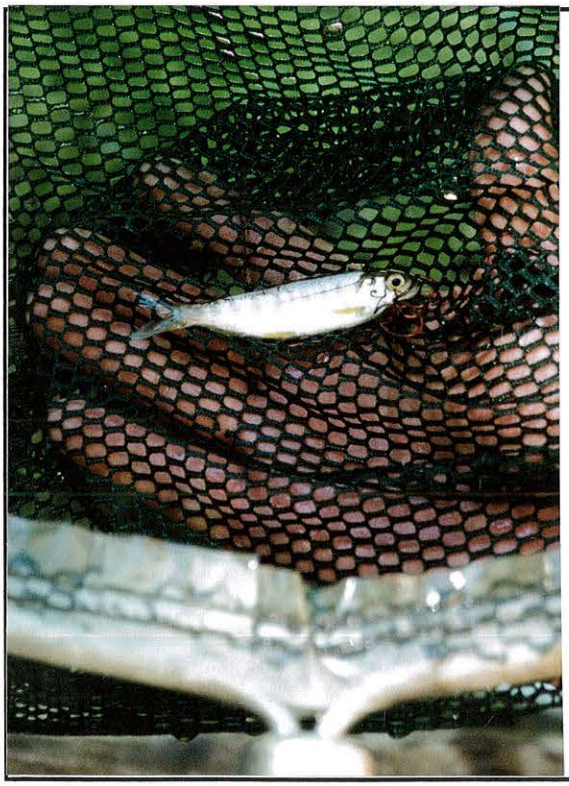


Photo 10 (left). An age 0+ coho salmon was electrofished out of the pool mentioned above.

Photo 11 (right). A one year-old *O. mykiss* (probably a steelhead) electrofished from a pool about 50 yards downstream of Highway 96.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 12. A Pacific giant salamander in the diversion ditch at the POD. It is facing to the right with its head submerged and its back half and tail visible.

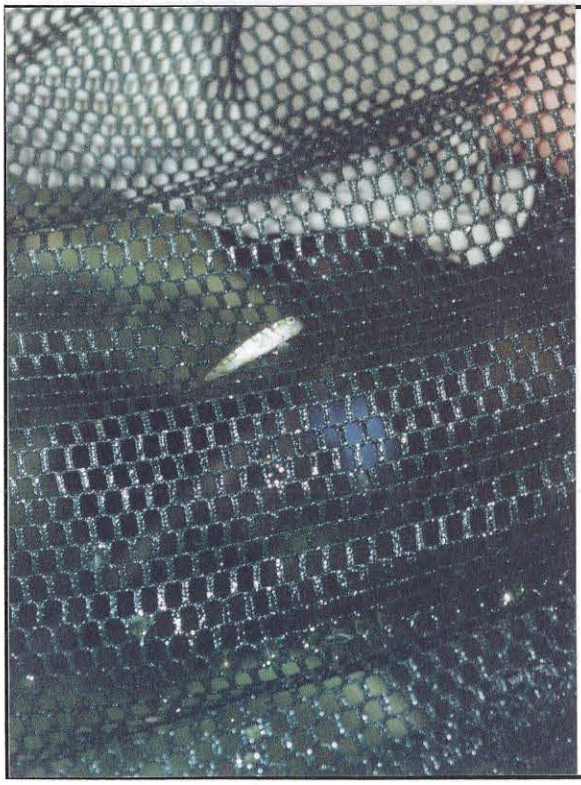


Photo 13 (left). An age-0 *O. mykiss* (probably a resident rainbow trout) netted from Stanshaw Creek immediately downstream of the POD.

Photo 14 (right). A 5-inch *O. mykiss* (probably a resident rainbow trout) found dead along the diversion ditch.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

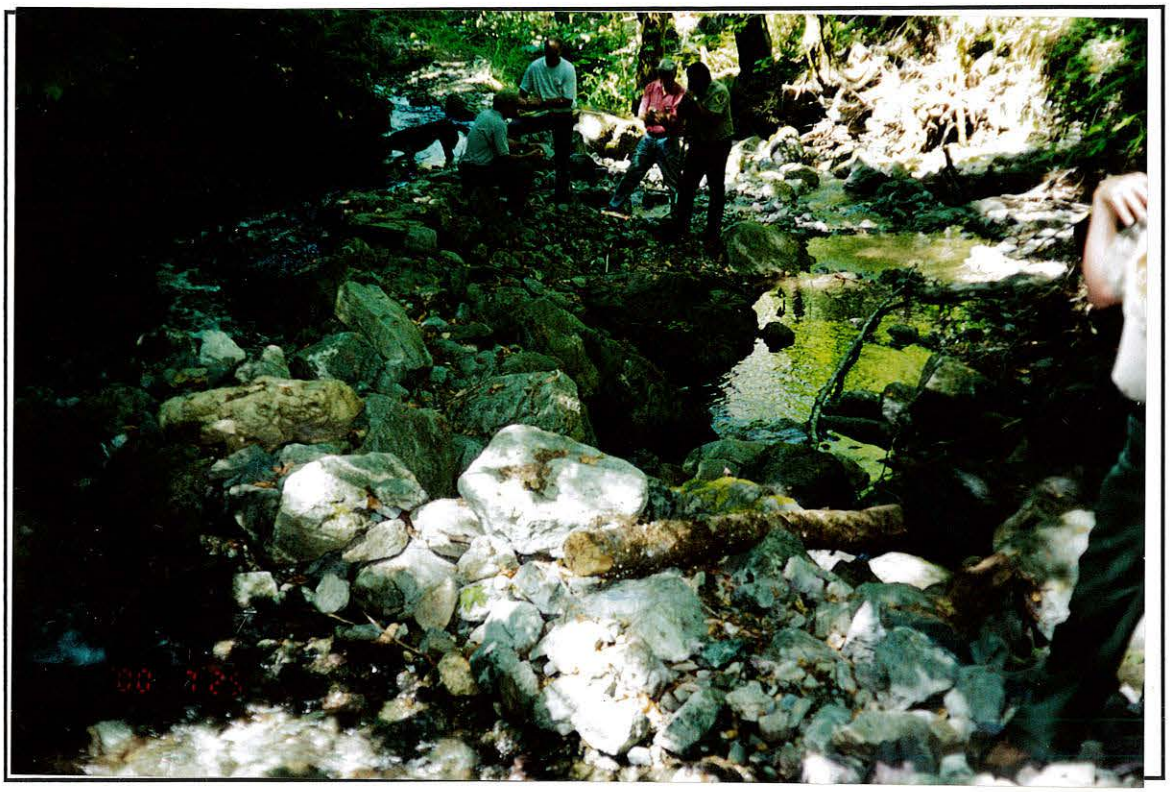


Photo 15. The POD looking downstream. The diversion ditch is on the left. Note the "diversion rocks" in foreground.

Photo 16. The diversion ditch (top) and water seeping through the "diversion rocks". The ditch and stream are flowing left to right.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 17. (left) Looking downstream at the relief structure.

Photos 18 and 19. The relief structure looking upstream (bottom left) and downstream at the relief outlet culvert.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 20. Half-culvert in ditch.

Photo 21. Location where rough stream-flow measurement was taken.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 22. Location of gravel filter in ditch which leads to water purification tanks.

Photo 23. Water purification tanks.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 25. Mr. Cole clearing the trash rack of leaf litter. Clearing is done daily and >5 times per day during the fall. Water then enters a holding tank, thence penstock.

Photo 24. Looking downstream at the ditch between the water filtration point and the trash rack / penstock. The dead trout in photo 14 was found near here.

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-2170
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.swrcb.ca.gov

A029449 – 7/26/2000

Photo 26. The diversion ditch after water has been withdrawn by Mr. Toucher and just before it enters Irving Creek.

Photo 27. Irving Creek, about 200 yards upstream of the ditch discharge.