

Review comments of Hoopa Valley Tribal Fisheries Department
on
*Compilation of Information to Inform USFWS Principals on Technical Aspects of the Klamath
Basin Restoration Agreement Relating to Fish and Fish Habitat Conditions*
(USFWS Arcata Fisheries Program April 2008)

April 30, 2008

Introduction.

We have reviewed the subject document (Compilation), which reflects on likely outcomes of implementing the proposed Klamath Basin Restoration Agreement (Agreement). We appreciate the considerable effort that went into developing the Compilation, and find it helpful in advancing an understanding of US Fish and Wildlife Service (USFWS) support for the Agreement.

As context for our review, the Tribe holds as its goal the restoration of flourishing Klamath River fish populations, not incremental improvements over *status quo*. The 2006 and 2008 closures of ocean salmon fishing off California calls out for decisive action toward this goal. A water priority allocation to fishery flows based on specific fish restoration goals would be protective of the Tribe's fishery. Water surplus to the fishery needs could be managed to the benefit of irrigated agriculture. This is the opposite of what the Agreement offers, which is a priority to irrigators with surplus available for protection of Tribal reserved rights.

The Agreement provides no quantitative restoration goals, and fails to guarantee flows even during droughts. In this regard the Agreement represents a step backward from existing requirements. The risk is placed squarely on the River and its fish. We agree with the following statement by Dr. Trush, an independent reviewer of the Agreement (*Part II Commentary on the Klamath Agreement*, January 15, 2008 <Draft 11>): "Quantitative goals for fish and the river ecosystem, conspicuously missing from the Settlement Agreement, are necessary to establish how much improvement (benefit) is required for restoration."

We do not argue the benefits anticipated from removal of the PacifiCorp dam complex; removal of these dams stands in our opinion as the most beneficial restoration action available. However, while the Agreement states a goal of "eventual removal" of dams, PacifiCorp has not embraced that goal. Negotiations continue over studies necessary before any removal decisions could be made. No Agreement in Principle on near-term science needs has yet been reached. The FERC FEIS considers only removal of Iron Gate dam and Copco I, not the remaining dams. The mandatory federal conditions prescribed under the Federal Power Act require volitional upstream and downstream fish passage around the dams, not dam removal. Thus no dam removal is reasonably certain to occur under the Agreement as it presently exists. At best, removal may take many years to accomplish once partial or complete removal has been approved and funded. Ultimately, dam removal (whatever that includes) might come too late to counterbalance negative near-term or intermediate-term impacts on short life-cycle fish species from the Agreement's too-liberal allocation of water to irrigated agriculture.

The upper Basin storage expansion and the reduced demand for out-of-stream diversion envisioned in the Agreement and Compilation are both completely dependent on federal funding, which has not been authorized. Not only is funding not guaranteed, it has already failed to materialize on the schedule provided in the Agreement. (Agreement App. B-1) At best, the \$100 million On-Project plan to reduce agricultural diversions would be implemented by the end of 2017. As the Court of Appeals recently said of the Klamath, “all the water in the world in 2010 and 2011 will not protect the Coho [if there are] none [left] to protect.” Flow requirements for various post-dam conditions have not been quantified, but can be expected to vary from flow needs as identified in previous studies. The Compilation’s discussion of post-dam removal fisheries conditions thus overlooks widely varying configurations and conditions which will result from the timing and the scope of work to remove dams blocking the Klamath and to construct ladders and screens for the remaining parts of the Project.

It is our perspective that instream flow recommendations must be based comprehensively on specific goals and criteria. In the case of the Trinity River Flow Evaluation (USFWS and Hoopa Valley Tribe, 1999) flow recommendations were based on an in-depth knowledge of the River’s alluvial morphology as well as the relation of geofluvial and biologic processes to daily, annual and long-term hydrology. By identifying specific targets and identifying threshold flows to support these, the TRFE justified annual water volumes needed to restore fisheries.

The study completed by Hardy and Addley in 2006 (*Evaluation of instream flow needs in the lower Klamath River, Phase II Final Report*) stands as the best available science for identifying restoration flows below the present location of Iron Gate Dam. The recommendations of this study are of particular importance relative to flow needs prior to dam removal. The authors were assisted in developing lower Klamath flow recommendations by many scientists now supporting the Restoration Plan. Today’s lack of support for the Phase II recommendations during the pre-dam-removal interim reflects a change in political landscape, not a change in science.

Overall assessment.

The Compilation presents a rosy picture of a possible outcome of the Agreement if full funding is promptly provided and missing agreements on dam removal and drought planning are swiftly reached on terms highly advantageous to the fishery. Analysis and conclusions in the Compilation are founded in large part on Klamath River flows presented in Appendix E-5 of the Agreement. However, In the language of the Agreement, the flows presented in Appendix E-5 (WRIMS R32 Refuge during 1961-2000) “does not...define any legal or regulatory obligation or minimum lake or flow requirements.”

We base our conclusions on evidence including historical hydrographs from the pre-dam period, the trajectory of anadromous fish populations over recent decades, and on the fact that no enforceable flow assurances are provided through the Agreement. In the professional opinion of Hoopa Valley Tribal Fisheries, flows likely to result from the Agreement appear substantially inadequate to support restoration of Klamath River fish populations; to the contrary they likely pose a near-term threat to the Tribe’s fishery by decreasing late summer flows below levels now required (Table 1). In addition, we are aware that Art Bagget of the State Water Resource

Control Board has expressed Agreement flows may not be sufficient to meet State water quality standards, potentially thwarting California Board approval.

The impact of decreased late summer flows are of greatest concern prior to dam removal. PacifiCorp dams will remain in place until at least the end of 2017 – a period of nine years. Given the many permitting, financing and construction complexities, we believe these dams could stand for another twenty years or more. Meanwhile, adult fall Chinook entering the Klamath in late summer of drier years are likely to face temperature/flow roadblocks in areas downstream of the Trinity River confluence. Based on WRIMS model output, 22.5% of years (9 in 40) present severe risk when average releases from Iron Gate Reservoir fall below 800cfs during August/September (Table 1). Forced to pause for extended periods while awaiting improved conditions, thousands of adult salmon will be forced into the few thermal refugia available to them. Under these conditions there is significant risk of a repeat of the 2002 fish kill.

Table 1 - WRIMS R-32 Refuge Klamath Flows Output – Summer/Fall Period Critical Low Flows

Legend - cell colors violations of existing ESA July-October minimum flow standard (red), or 2002 Fish Kill (black) flow criteria. Year appearing in green (1984) is without violation; years in gold fall below ESA criteria in October only, and are otherwise without violations.

Year	Oct	Nov	Dec	Jan	Feb	Mar 1-15	Mar 16-31	Apr 1-15	Apr 16-30	May 1-15	Jun 1-15	Jun 16-30	Jul 1-15	Jul 16-31	Aug	Sep
1961	1144	1300	1300	1802	1626	2637	2989	2374	2120	1758	1482	1552	980	962	953	1191
1962	1269	1193	1297	1877	1651	2482	2500	2203	3097	2222	1703	1425	841	795	813	986
1963	1186	1300	3133	2259	2774	2282	2635	4170	3792	2640	2126	1872	1118	1137	950	1163
1964	1210	1289	1300	1987	2016	2403	2387	1816	3015	2214	1752	1823	1114	1083	930	1049
1965	1065	1163	7538	7894	7172	4139	4486	3437	3239	2642	2052	1938	1203	1188	1060	1197
1966	1185	1300	1300	2215	2402	2635	2687	2274	2718	2242	1599	1473	900	920	817	1067
1967	1035	1142	1300	2053	2387	2954	3426	3569	3240	3792	2431	2400	1451	1336	900	951
1968	1062	1025	1056	1091	1376	2693	3066	2142	1698	1249	1074	986	717	732	884	1069
1969	1077	1090	1090	1212	2407	3167	3491	6114	5785	2993	2394	2258	1420	1306	863	953
1970	1102	1108	1166	5905	4607	3826	4100	2388	1763	2074	1624	1511	929	905	777	993
1971	1042	1146	1815	4323	3639	5349	5710	6775	6440	4869	2734	2750	1880	1857	1308	1354
1972	1288	1300	2035	2869	5203	10383	10636	4305	3958	2778	2067	1759	1162	1158	1188	1199
1973	1159	1269	1456	2751	2440	2562	2616	2248	2226	1716	1253	1090	717	719	694	940
1974	1123	1300	3233	6057	3548	5499	5860	7062	6702	3060	2446	2101	1526	1624	1331	1298
1975	1290	1243	1300	2075	2864	5007	5405	4777	4454	3636	2589	2448	1706	1738	1251	1307
1976	1300	1300	2226	2409	2589	3023	3058	2863	2254	2134	1610	1507	937	959	1112	1269
1977	1300	1252	1249	1289	1000	1317	1315	1332	1250	1044	1100	1104	815	794	699	941
1978	975	1108	1742	4059	3114	3778	4074	3985	3651	2709	1943	1678	1027	1019	818	1119
1979	954	1074	1041	1064	1039	2256	2127	1999	1996	1752	1444	1247	814	792	778	980
1980	1058	1168	1228	2517	3488	2820	3120	2351	2187	2012	1631	1528	945	922	775	979
1981	996	950	1050	1040	1040	1649	1649	1713	1693	1304	1187	1113	807	795	771	836
1982	919	1075	3486	2611	7807	5539	5894	6186	5827	2880	2206	1981	1437	1529	1184	1197
1983	1196	1265	1793	2847	5756	7180	7500	5894	5639	3974	2760	2760	1880	1880	1479	1442
1984	1300	1449	6130	3345	3748	6037	6412	5586	5220	3443	2747	2648	1686	1613	1353	1467
1985	1300	3375	2879	2393	2563	2874	2894	4108	4524	2596	1749	1588	915	849	824	1228
1986	1146	1247	1300	2178	7130	6595	6866	3253	2975	2588	2054	1804	1161	1127	833	1151
1987	1137	1221	1300	2033	1122	2784	3082	2111	2040	1787	1295	1219	878	990	909	1110
1988	1065	996	1062	1131	1537	2026	2350	1632	1632	1439	1301	1377	988	937	835	952
1989	933	1015	1115	1078	1052	4476	6651	5193	4907	2807	1820	1387	1255	1127	859	1086
1990	1145	1150	1111	1054	1015	1542	2811	1807	1552	1673	1437	1430	961	963	955	1107
1991	1052	994	923	951	950	1240	1275	1393	1433	1178	1106	1095	844	846	841	894
1992	816	828	861	850	809	1012	1003	1045	1006	793			484	496	414	478
1993	521	634	770	841	877	2432	5758	5504	5188	2920	2478	2341	1362	1169	1089	1033
1994	1076	981	974	954	928	1228	1133	1165	1107	908	882	838	599	542	453	537
1995	549	674	755	993	1013	3081	4742	3767	3444	2792	2414	2237	1367	1299	823	902
1996	940	882	1026	2908	8966	4507	4846	3846	3566	3009	2366	2136	1347	1287	930	1069
1997	1161	1247	3244	9043	4744	3371	3342	2695	2773	2434	1972	1983	1187	1187	1031	1239
1998	1255	1300	1286	3028	3938	4752	5148	4821	4474	5458	2647	2656	1835	1835	1258	1259
1999	1249	1166	2797	3081	3803	6139	6449	6142	5758	3184	2645	2500	1631	1581	1345	1384
2000	1300	1300	1272	2606	3713	3248	3535	3579	3318	2575	1868	1674	988	978	780	1165

Against the backdrop of ongoing climate warming and increasing demands on groundwater, flows predicted by WRIMS for late summer periods may be inflated. As impacts of climate warming are likely to include a general shift in runoff from spring snowmelt-driven to winter rainfall-driven events, we are skeptical that predictions for either period will prove accurate over the 50-year life of the Agreement. The Compilation (pp. 35-37), notes climate change predictions point toward reduced spring and fall flows coupled with increased demand for agricultural diversions. In the face of this, the clear priority given by the Agreement to a fixed volume of out-of-stream diversion places fish resources at unacceptable risk.

Real Time Flow management

We are impressed that a Real Time Management scheme, as contemplated in Section V (*Implementing the Water Allocation Using Real Time Management*) holds promise. Importantly, the scheme is not provided in the Agreement (Compilation p. 84). This approach holds advantages over the present approach, but can only succeed in providing for restoration needs if fisheries flow volumes are sufficient to meet specific physical and biological objectives.

Specific Concerns regarding the Compilation

SIAM not a reliable tool

The SIAM model was intended to be groomed through several iterations prior to use in evaluating flow alternatives. The Hoopa Fisheries Department requested refinements to model inputs but these are not incorporated. The Compilation notes that the fish production model within SIAM has not been calibrated. (Compilation p.63). The USFWS has used it in its raw form to support their findings.

Absence of Plans Promised in Settlement Framework

Plans critical to restoration of fish and required under terms of the Settlement Agreement Framework have not been established. These include the Drought Plan and Restoration Plan. Both are considered to be essential to justify a fixed allocation to Klamath Project irrigators at the 330/340 to 385kaf level. In specific, extreme low flow conditions predicted via WRIMS modeling must be addressed through actions required as part of a Drought Plan. However, the Compilation fails to recognize limitations placed on the Drought Plan by the Agreement. Section 18.2.2.A.i.1 defines “extreme drought” as encompassing only 1992 and 1994 in the 40-year period of record. Other extremely dry years in the period are not “extreme drought.” Yet only in “extreme drought” is a reduction in the out-of-stream diversion amounts permitted by Section 18.2.2.B.v of the Agreement. Thus in many very dry years, the Agreement Drought Plan will not assure reduction in agricultural diversions.

Inadequacy of Springtime flows

Salmon fry emerging from spawning grounds in the Klamath mainstem, Shasta and Scott Rivers require an abundance of habitat during spring months. An abundance of habitat for this critical lifestage is pivotal to harnessing reproductive potential of salmon in wetter years. We observe that salmon populations are able to withstand sustained harvest

pressure only where conditions afford excellent habitat on a regular basis. We agree with independent analysis completed by Dr. William Trush (*Commentary on the Klamath River Settlement Agreement* November 9, 2007), establishing a criterion of 60% or more for “good” conditions (continuous high abundance of fry/juvenile habitat throughout spring months). This criterion produces a reasonable match with historic pre-dam hydrology which developed the Klamath’s robust salmon populations (Figure 1). WRIMS modeling predicts the Agreement will fail to meet the criterion, with approximately 40% of years providing “good” conditions. Without the resiliency afforded fish populations during years of bounty and abundance, they will proceed on a downward trajectory.

Additional Water Supply Questionable

Independent review of the WRIMS model was provided by Greg Kamman of Balance Hydrologics (*Independent Model Review for Klamath Settlement Negotiations, Klamath Independent Review Project Draft Report* November 2, 2007). He posed serious questions as to the accuracy of WRIMS assumptions regarding increased inflows to Upper Klamath Lake, and regarding potential changes to groundwater hydrology. Substantial inaccuracies in either set of assumptions would have serious implications for river flows.

Klamath River at Keno, OR
Annual Daily Average Hydrographs (WY1945 to WY1956)
USGS Gaging Station # 11-509500
Drainage area: 3,920 sq. mi.

