Which Criteria?
Draft Scientific Basis Supplement for Proposed Tuolumne River Voluntary Agreement

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Summary

- The Draft Supplement contains the scientific basis for good decisions about future management of the lower Tuolumne River.
- The need is to separate that basis from some inappropriate criteria that are proposed under the Tuolumne River Voluntary Agreement (TVA) and that are also presented in the Draft Supplement.

Lower Tuolumne River: River Miles and Key Features

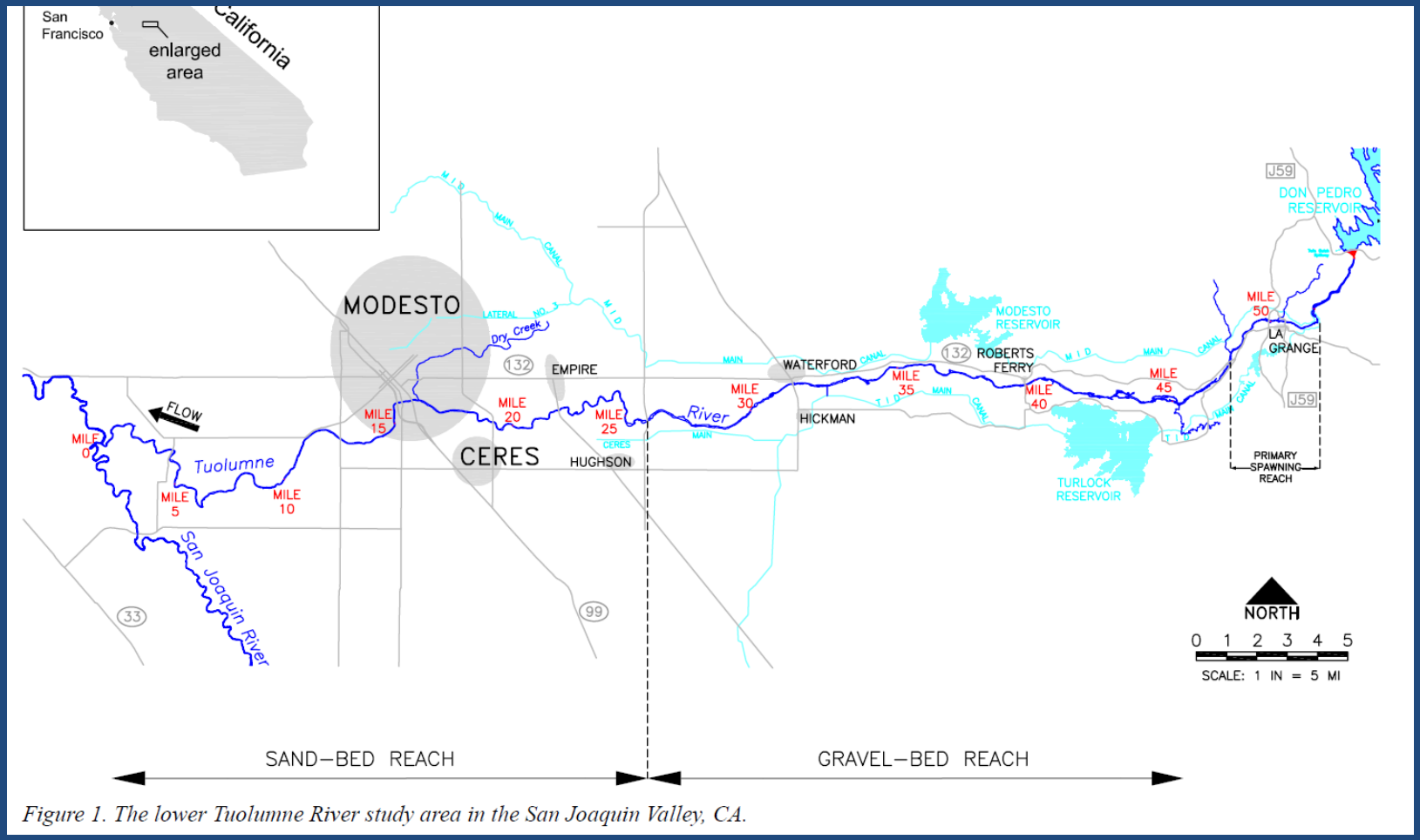


Figure 1. The lower Tuolumne River study area in the San Joaquin Valley, CA.

Source: McBain & Trush (2004) Coarse Sediment Management Plan for the Lower Tuolumne River, p. 2. (See also App. D for detailed channel mapping, pdf p. 237 ff.)

Draft Supplement **to 2016 San Joaquin Scientific Basis Report**

- "… Poff et al. (1997) describes the flow regime as the "master variable" that limits the distribution and abundance of riverine species and regulates the ecological integrity of rivers"

- "…many other factors that contribute to impairments … do not obviate the need for improved SJR inflow conditions to the Delta."

- 2016 San Joaquin Scientific Basis Report, pp. 3-40, 3-57

Site-Specific Studies Show Benefits of Tuolumne Flow

Table 2-3. Survival Indices through the Lower Tuolumne River between Waterford and Grayson.

Year	Total Survival Index	Fry Survival Index	Peak Fry Daily Avg. Flow at MOD	Smolt Survival Index	Peak Smolt Daily Avg. Flow at MOD
2007	–	–	957	2.9	1,020
2008	6.2	6.5	1,690	6.4	1,320
2009	7.9	0.3	1,300	14.2	1,020
2010	3.0	0.8	767	3.4	3,300
2011	24.9	23.1	7,490	31.2	8,180
2012	3.8	0.2	599	9.7	1,950
2013	1.7	0.03	510	4.0	1,140
2014	– [a]	– [a]	279	– [a]	1,100
2016	– [a]	– [a]	2,200	6.3	2,170
2017	94.8	95.8	15,500	60.6	10,400

Source: Reproduced from 2017 Annual Report TID and MID 2018.

[a] Survival index not calculated due to incomplete sampling at Grayson.

Draft Supplement, p. 2-17

Site-Specific Studies Show Benefits of Tuolumne Flow

Table 2-4. Summary of Detections for Acoustic-Tagged Fall-Run Chinook Salmon at Grayson, River Flow at La Grange, and Water Temperature at Roberts Ferry Bridge.

	Release Group		
	1	2	3
Release Dates	May 9–10	May 16–17	May 21–22
Target flow at La Grange	2,100	280	415
Water Temperature at Roberts Ferry (C)	12.6 (range 11.0–14.3)	16.3 (range 14.6–18.7)	16.7 (range 13.8–17.1)
Total # Released	75	74	73
Detected at Grayson	37	1	0

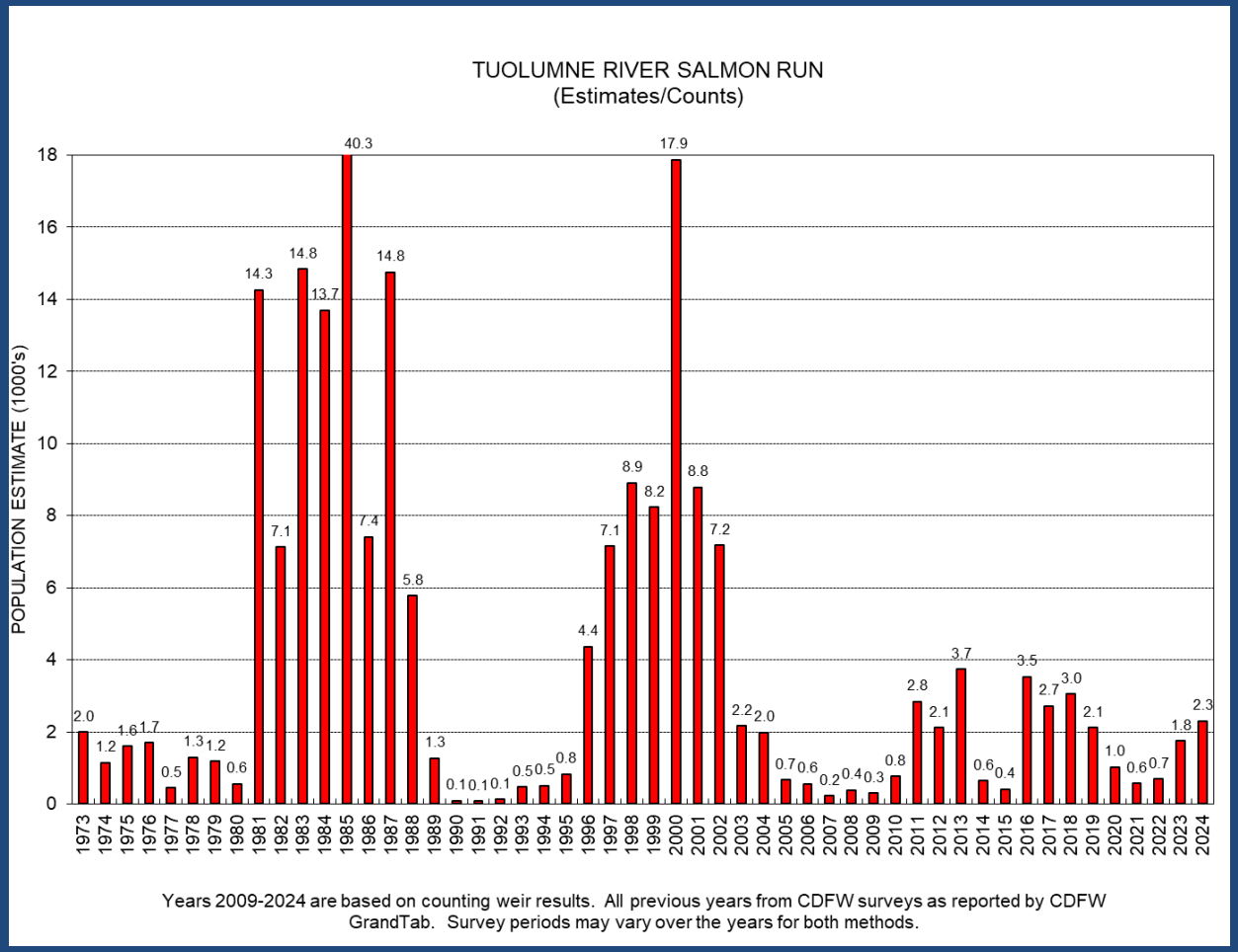
Source: Data obtained from FISHBIO 2013a.

Draft Supplement, p. 2-18

VAs Send Salmon Doubling Goal out the Window

Doubling goal pushed out to 2050; limited to "share" over time of VA.
***See* Draft Supplement, p. 9-1, citing TVA MOU 2022.**

Tuolumne River Escapement: Not a Pretty Picture, Not Improving



Source: 2024 Districts' Annual Report to FERC, FERC eLibrary no. 20250331-5273, pdf p. 27. More efficient monitoring began in 2009.

Tuolumne Fall-Run Salmon Population Dominated by Hatchery Strays

Table 2-5. Estimated Percentage of Tuolumne River Adult Salmon Returns from Hatchery Origin 2010–2019.

Year	Estimated % of Hatchery Origin
2010	49%
2011	73%
2012	36%
2013	28%
2014	65%
2015	65%
2016	88%
2017	87%
2018	57%
2019	17%

- Table from Draft Supplement, p. 2-18

Non-density-dependent stock-recruitment model obvious best fit with low stock.

S/R mostly affirms current inadequate production to sustain Tuolumne population.

TVA “Floodplain” Proposal

- 2750 cfs for 20 days (includes baseflow value); less in Dry and CD years
- Create 77 new acres of combined “in-channel” juvenile rearing habitat and floodplain “habitat improvements” (Draft Supplement, p. 3-6)
- Invents new quasi-scientific term: “Meaningful Floodplain Event” (MFE)
- Box-checking exercise to create minimally credible measure with lowest water cost

Engineered Habitat is Not What's Missing

- "Far fewer fish are being supported in the Tuolumne River than suggested by the acres of available existing suitable habitat."

- Draft Supplement, p. 7-42

Habitat Supply without Use Does Not Increase Populations

Photo credit: SF Gate

Flow Creates Survival Benefit: 50+ River Miles of Coldwater Habitat

March 27, 2019: 6000 cfs at La Grange

Dig a Hole and Fill it

- “Long scour pools and in-channel mining pits known as “Special Run Pools” cumulatively comprise nearly five miles of river channel in the dominant spawning reaches upstream of Roberts Ferry Bridge. These sections of channel trap all sediment routed to them, provide little or no high quality salmonid habitat, and provide suitable habitat for non-native piscivores that prey on juvenile salmonids.”

- These pools will capture TVA gravel additions
- Pools as vectors for bass not addressed

Source of quote : McBain and Trush 2004, *op. cit.*, p. xiv

Off-Channel Pits Not Addressed

Figure 4. The Tuolumne River (in the foreground of photo) in the Gravel Mining Reach showing commercial aggregate mining operations near Waterford, which create huge floodplain pits adjacent to the low-water channel.

- Some gravel pits connect with river at high flow, entraining juvenile salmon and allowing more bass and panfish to enter the river
- TVA has no plan to address

Figure Source: Coarse Sediment Management Plan for the Lower Tuolumne River (McBain & Trush 2004 *op. cit.*,, p. 6)

“Gravel Cleaning” Plan Is Goofy

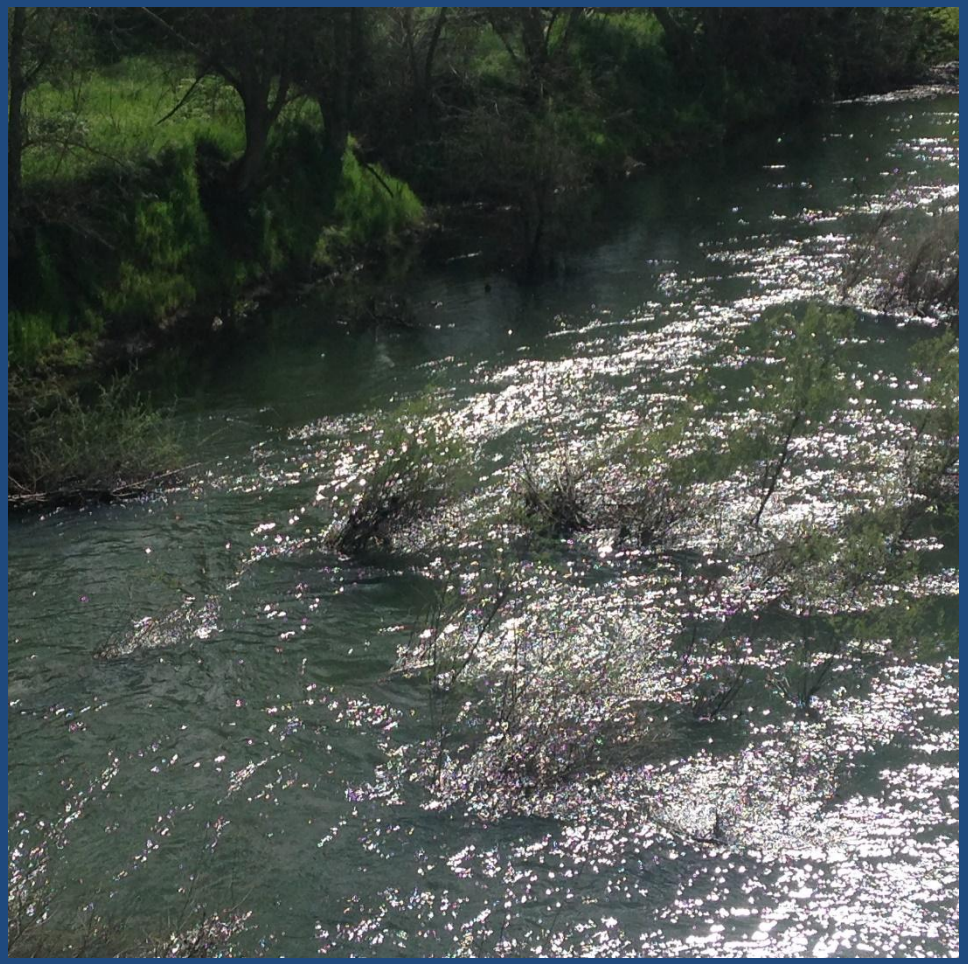
- Stems from study by Stillwater Sciences, consultants to the Districts, 2004
- “The primary question that we sought to address in our literature review is how the fine sediment currently stored in the spawning gravels of the lower Tuolumne River can be removed most economically …”
- Cited in Draft Supplement as McBain & Trush 2004; it’s a separate appendix that lacks the credibility of the main document
- Effectively, a giant waterblaster on a backhoe

Source of quote: McBain and Trush 2004 *op. cit.*, App. F, pdf p. 264

Concluding Summary

- Draft Supplement provides clear criteria to reject TVA effort to substitute non-flow measures for percent of unimpaired flow
- Criteria borrowed from TVA don't hold up
- Modeling to support Draft Supplement shows % of unimpaired greatly outperforms TVA
- TVA "non-flow" measures in their own right are flawed and quantitatively inadequate to achieve their purported goals

Thank you!



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