California Sportfishing Protection Alliance

"An Advocate for Fisheries, Habitat and Water Quality"

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November 7, 2025

Joaquín Esquivel, Chair
Members of the Board
State Water Resources Control Board
1001 I Street
Sacramento, CA 95214
LSJR-SD-Comments@waterboards.ca.gov
Submitted via email

Re: Comments on the Draft Scientific Basis Report Supplement for the Tuolumne River Voluntary Agreement Proposal

Dear Chair Esquivel and Members of the Board:

The California Sportfishing Protection Alliance respectfully comments in general support of the Draft Scientific Basis Report Supplement for the Tuolumne River Voluntary Agreement Proposal (hereinafter, "Draft Supplement"), informed by associated Water Supply Effects (WSE) modeling. Staff from the State Water Resources Control Board (State Water Board or Board) released the Draft Supplement on September 19, 2025.

CSPA has been actively engaged in regulatory processes on the Tuolumne River for over 30 years. CSPA was party to the proceeding of the Federal Energy Regulatory Commission (FERC) that produced the 1995 New Don Pedro Settlement Agreement. CSPA was a signatory to that unfortunately inadequate settlement. In 2009, CSPA engaged, through Friends of the River, in the extraordinary administrative hearing before FERC regarding potential interim flow increases to revive a fall-run Chinook salmon run that had dwindled to a few hundred adult fish per year. In 2011, CSPA was present at the beginning of the FERC relicensing of the Don Pedro Project. In 2011-2013 CSPA was part of the successful advocacy before FERC in the proceeding in which FERC determined that the La Grange Hydroelectric Project adjacent to La Grange Dam was jurisdictional to FERC and instituted a licensing proceeding. From 2011 through 2020, CSPA, alongside the Tuolumne River Trust, was the co-lead non-governmental organization (NGO) in the Don Pedro relicensing and La Grange licensing proceedings. From 2012-2018, CSPA was an active and prolific participant in the "Phase 1" update of the Bay-Delta Plan for the Lower San Joaquin River flow objectives. From 2020 through 2003, CSPA stood side by side with the State Water Board in defense of the Board's Clean Water Act § 401 Authority regarding the Don Pedro and La Grange projects. Since at least 2017, CSPA has been part of protracted advocacy before the San Francisco Public Utilities Commission (SFPUC) in

favor of improved outcomes in the FERC licensing proceedings and in the Phase 1 process. In many of the proceedings described here, CSPA openly and steadfastly stood up to political meddling by elected officials of both major political parties.

The history of efforts to improve conditions for salmon in the lower Tuolumne River is a history of delay. The "non-flow actions" promised by Turlock Irrigation District (TID) and Modesto Irrigation District (MID; collectively, Districts) and by the City and County of San Francisco (CCSF) in the 1995 Settlement of a FERC proceeding largely never materialized due to lack of funding. During Phase 1 of the update of the Bay-Delta Plan, the Districts, CCSF, and others in the San Joaquin Tributaries Authority argued for prolonged delays while they vainly sought to negotiate voluntary agreements with stakeholders. Since 2018, the Districts and CCSF have sought to delay implementation of the 2018 update. In 2020, the Districts staged a collateral attack on the update in challenging the State Water Board's Water Quality Certification authority under the Clean Water Act before FERC and in the US Court of Appeas for the DC Circuit, an effort that the State Water Board, CSPA, and other NGO stakeholders opposed in court. In 2025, the Districts started another second round of CEQA after circulating a deficient draft Mitigated Negative Declaration that tiered off FERC's NEPA document.

I. The Draft Supplement Provides a Solid Basis for Evaluating the Lower Tuolumne River.

The Draft Supplement does a very good job overall of presenting the criteria and site-specific data and analyses that are appropriate for evaluating the effects of management actions on the lower Tuolumne River. These criteria and analyses show that flow objectives for the Tuolumne River based on a percent of the February-June unimpaired flow vastly outperform the proposed Tuolumne River Voluntary Agreement (TVA). We highlight many of these criteria and analyses below.

The Draft Supplement also presents some analysis that too generously accepts the criteria for evaluation proposed as supporting the benefits of the TVA proposed by the TVA's proponents. Some of these inappropriate criteria stem from issues specific to the Tuolumne River; other criteria are inappropriate for more general reasons. We describe some of these cases below.

II. The Draft Supplement Supplements the Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives (June 2016 Update), which Affirmed that Flow is the "Master Variable" of Riverine Ecological Function.

The Draft Supplement supplements the June 2016 update of the *Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives* (2016 Scientific Basis Report). The 2016 Scientific Basis Report was reproduced as Appendix C to the July 2018 *Final Substitute Environmental Document in Support of Potential Changes to*

the Water Quality Control Plan for the San Francisco Bay-Sacramento San Joaquin Delta Estuary San Joaquin River Flows and Southern Delta Water Quality (San Joaquin SED).[1]

The 2016 Scientific Basis Report at page sets the appropriate context for the Draft Supplement. At the center of the 2016 Report is the centrality of flow:

> Major researchers involved in developing ecologically protective flow prescriptions concur that mimicking the unimpaired hydrographic conditions of a river is essential to protecting populations of native aquatic species and promoting natural ecological functions (Sparks 1995; Walker et al. 1995; Richter et al. 1996; Poff et al. 1997; Tharme and King 1998; Bunn and Arthington 2002; Richter et al. 2003; Tharme 2003; Poff et al. 2006; Poff et al. 2007; Brown and Bauer 2009). Poff et al. (1997) describes the flow regime as the "master variable" that limits the distribution and abundance of riverine species (Resh et al. 1988; Power et al. 1995) and regulates the ecological integrity of rivers.[2]
>
> While there are many other factors that contribute to impairments of fish and wildlife beneficial uses in the SJR basin, flows remain a critical component in the protection of these beneficial uses. These other factors do not obviate the need for improved SJR inflow conditions to the Delta to protect fish and wildlife beneficial uses. In fact, many of the other habitat factors that affect community structure (e.g., temperature, water chemistry, physical habitat complexity), are to some extent determined by flow (Moyle et al. 2011).[3]

The Draft Supplement includes many criteria that are appropriate for evaluating actions to substantially improve conditions of the lower Tuolumne River and its salmon and steelhead populations. These criteria, highlighted below, demonstrate that the percent of unimpaired flow approach to developing flow objectives for the lower Tuolumne River is clearly superior to the proposed Tuolumne River Voluntary Agreement.

To the degree that the Draft Supplement endeavors to describe the purported benefits of reducing flow from the unimpaired flow approach to the update of the Bay-Delta Plan, the Draft Supplement forgets the first principles of the Report that it purports to supplement. In this regard, the Draft Supplement, like the Voluntary Agreements as a whole, contradicts, rather than augments, the legal and biological requirements of the update of the Bay-Delta Plan.

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[1] The 2016 Scientific Basis Report is available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2018_sed/docs/appx_c.pdf. The entire San Joaquin SED is available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2018_sed/.

[2] 2016 Scientific Basis Report, p. 3-40.

[3] *Id*., p. 3-57.

III. The Draft Supplement Demonstrates the Site-Specific Centrality of Flow in the Lower Tuolumne River.

The Draft Supplement finds that additional floodplain rearing habitat is needed in the lower Tuolumne River: "The need for more floodplain rearing habitat is supported by the stock-recruitment analysis (Chapter 2, Section 2.8, Limiting Factors Analysis). … The analysis found evidence that estimated annual floodplain quantity in the Tuolumne River is an important factor in explaining juvenile productivity variability.[4]

However, the Draft Supplement then artificially separates flow from "annual floodplain quantity," stating: "Flow and water temperature were both found to have stronger relationships with juvenile productivity than floodplain."[5] Lack of flow is the principal cause of lack of annual floodplain quantity. This was the finding of the various studies by Carl Mesick cited in the Draft Supplement. While various projects have created or may in the future create additional potential floodplain habitat in the lower Tuolumne River, floodplain habitat without water on it is (at best) terrestrial habitat.

Thus, the newly coined metric of "Meaningful Floodplain Event" finds that an increase in floodplain habitat of 10% is considered "significant."[6] This metric is inappropriate. It suggests that a short-term (20-day) inundation of a small amount of floodplain is "meaningful." The fact is that flow can create far more floodplain habitat than the TVA's small (and not specific) increase in engineered floodplain habitat plus the proposed 20-day floodplain pulse will create.[7]

Table 2-3 demonstrates the critical importance of flow in the early season outmigration success of juvenile salmon from the Tuolumne River, for both fry and smolt life stages. Juvenile outmigration success from Waterford to Grayson is dramatically improved in wet water years 2011 and 2017 compared to the other, drier water years reported.[8]

[4] *Id*. p. 7-41.
[5] *Id*.
[6] *Id*. p. 7-27.
[7] *See id.,* Table 7-6, p. 7-34.
[8] *Id*., p. 2-17.

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.

Appendix A to these comments reproduces the hydrographs from January through June, 2007-2017, for the lower Tuolumne River at the California Data Exchange Center's (CDEC) La Grange gage.[9] These hydrographs show that the January through March flows for these years, other than flood control release years 2011 and 2017, were baseflows, about 300 cfs or less. Fry survival was almost zero in most of those years. Fry survival in flood control release years 2011 and 2017 was substantially higher, over 90% in 2017. April through May of 2010, 2011, and 2017 featured flood control releases; 2011 and 2017 featured high success in smolt outmigration. The remaining years, each of which featured a small engineered April-May pulse (see Appendix A), showed very poor success in smolt outmigration.

About 1500 Spring-run Chinook salmon appeared in the lower Tuolumne River near La Grange Dam in early May, 2025. The Draft Supplement does not consider spring-run Chinook salmon; the final Supplement must correct this oversight. This evaluation should consider that spring-run Chinook generally outmigrate from natal rivers earlier in the year than fall-run Chinook. Many juvenile spring-run Chinook salmon outmigrants are likely to be at the parr or smolt life stage by the January through March period. This increases the importance of higher flows during the first three months of the year. The TVA does not propose any flow pulse until late March. The percent of unimpaired approach restores some of the natural variability to lower river flows, increasing flows in the lower river during each storm and runoff event, a clear benefit for outmigrating juvenile spring-run Chinook salmon.

Similar to Table 2-3, Table 2-4 (below) demonstrates in one snapshot the success of juvenile outmigration from Waterford to Grayson at 2000 cfs (about 50%) compared to virtually no success at 280 cfs or 415 cfs.[10] As described in the Draft Supplement based on this data, predation rates on juvenile salmon greatly diminish with flows increased to 2000 cfs. Similarly,

[9] CDEC data from the Modesto gage is incomplete for the 2007-2017 time period.
[10] *Id.*, p. 2-18.

the Draft Supplement cites an earlier study in which even greater flows strongly correlated with low predation rates.[11]

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.

IV. The Draft Supplement's Analysis of Predation Is Largely Correct.

Section 2.3 of the Draft Supplement addresses predation on juvenile salmon by piscivorous fish species. The analysis notes the FERC staff discounted the methodology employed by consultants for the Districts in a predation study for the relicensing, in particular the extrapolation of removing predatory fish to survival of juvenile salmon.[12]

What the Draft Supplement calls "in-channel aggregate extraction pits,"[13] commonly known on the Tuolumne River as "special run pools," house a gauntlet of predatory bass along the lower Tuolumne River. McBain & Trush's *Coarse Sediment Management Plan for the Lower Tuolumne River* (2004), cited frequently in the Draft Supplement, sums up the role of these vectors for bass by saying:

> 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.[14]

Section 2.4 of the Draft Supplement also contains multiple discussions of the interaction between predation and temperature, both in that predatory fish become more active and that salmonids become more sluggish and subject to predation as water temperature increases.

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[11] *Id.*, p. 2-17.
[12] *Id.*, p. 2-5.
[13] *Id.*
[14] McBain & Trush, *Coarse Sediment Management Plan for the Lower Tuolumne River* (2004), p. xiv. There are 13 miles of the lower Tuolumne River upstream of Roberts Ferry Bridge. The special run pools thus occupy about 38% of the upper reach of the lower Tuolumne River.

Chapter 6 of the Draft Supplement notes that FERC discounted the fish population models devised by the Districts in relicensing, in part because those models gave an excessive role to predation and "may overestimate the influence of predation controls."[15] The Draft Supplement did well in avoiding the minefield of the Districts' fish population models.

The literature review in Section 6.3 generally calls into question the value of the Districts' proposed predator control program. Section 6.4 appropriately concludes: "there is a lack of evidence in the literature for predator removal as a successful management strategy for recovery of target species."[16] Also, most importantly, "Predator control is not likely to be effective on a broad scale without considering the habitat conditions that make non-native predators successful."[17]

The Draft Supplement identifies in Table 7-1 "in-channel gravel extraction and gold dredger mining" as causes of habitat conditions that favor piscivorous fish.[18] Infill of the special run pools should be a priority. As long ago as the 1995 Settlement, these pools were called out as important vectors for mortality of juvenile salmon.[19] The TVA's "non-flow" measures do not include infill of these salmon traps.

Similarly, there should be a priority on the gravel pits to the side of the normal channel. These pits become connected to the river at high flows, luring juvenile salmon in and introducing bass and other centrarchids into the river.[20] The TVA would not address these vectors that have been known and analyzed for over twenty years.

V. Some of the Criteria Borrowed from Supporters of the TVA Are Inappropriate.

A. The Draft Supplement Places Inadequate Emphasis on the TVAs' Failure to Adopt the Salmon Doubling Goal and to the Deflection of the Salmon Doubling Goal to Habitat Metrics.

The 2016 Scientific Basis Report explicitly adopted the salmon doubling goal developed by the US Fish and Wildlife Service (USFWS), stating:

> Specifically, flow conditions shall be maintained, together with other reasonably controllable measures in the SJR watershed, sufficient to support a doubling of natural production of Chinook salmon from the average production of 1967–1991, consistent with the provisions of State and federal law.[21]

In contrast, the Draft Supplement accepts the general Voluntary Agreement's "viability" goal in supplanting the salmon doubling goal, proposing to "provide the participating parties'

[15] Draft Supplement, p. 6-3.
[16] *Id.*, p. 6-4.
[17] *Id.*
[18] *Id.*, p. 7-3
[19] *See* 1995 New Don Pedro Settlement, p. 7. *See also* discussion of delay, *supra*.
[20] McBain & Trush, op. cit., p. 6.
[21] *Id.*, p. 3-56.

share, during implementation of the TVA, to contribute to achieving the existing Narrative Salmon Protection Objective (doubled salmon population relative to the reference population of 1967 to 1991) by 2050 (TVA MOU 2022)."[22]

In addition, the Draft Supplement creates a series of alternative metrics that purport to measure the "habitat" ***(not flow***) needed to support a doubled Tuolumne River fall-run Chinook salmon population of 17,800 adult spawners.[23] Section 7.3.2 of Chapter 7 of the Draft Supplement is devoted to this exercise. It goes through each physical habitat parameter and purports to show that the TVA will create habitat sufficient to serve 17,800 spawners. It checks off spawning habitat, in-channel rearing habitat, and floodplain rearing habitat.[24] Section 7.4 concludes that the TVA will not provide 100% of the spawning habitat that would be needed if 17,800 salmon were spawning in the river, "but the modeled combined in-channel and floodplain rearing habitat are expected to support 100% of the doubling goal population (Table 7-8)."[25]

The problem, as the Draft Supplement very appropriately acknowledges, is this: ***"Far fewer fish are being supported in the Tuolumne River than suggested by the acres of available existing suitable habitat."***[26] Creating rearing and spawning habitat today sufficient to support the doubling goal target is like saying that one is helping solve a housing crisis by building homes that no one will live in. Moreover, building "habitat" does not mean that salmon will find it or use it, especially with the historically depressed numbers of salmon in the Tuolumne River.

B. Weighted Usable Area Is an Inappropriate Scientific Basis for Setting Flows for Anadromous Fish in the Lower Tuolumne River.

The data-driven studies of outmigration success cited *supra* should carry much more weight than the weighted usable area (WUA) calculations for juvenile rearing habitat provided by consultants to the Districts.[27] In-channel rearing habitat that has the requisite depth and velocity does not keep the juvenile salmon that are utilizing that habitat from getting eaten.

The misuse of weighted usable area is particularly notable for the month of June, when the TVA proposes to supplant a flow objective based on a percent of unimpaired flow with FERC's proposed flows that were based on WUA for juvenile *O. mykiss*. Setting flows based on depth and velocity for juveniles is a snapshot of what it wrong with the TVA.

The Federal Energy Regulatory Commission's (FERC) Final Environmental Impact Statement (FEIS) for the relicensing of the Don Pedro Project and the original licensing of the La Grange Project describes the basis for June minimum flows in the lower Tuolumne River as WUA generated from physical habitat (PHABSIM) modeling for *O. mykiss* (rainbow trout or

[22] Draft Supplement, p. 9-1
[23] *Id*., p. ES-2.
[24] *Id*., pp. 7-27 to 7-39.
[25] *Id*. p. 7-40.
[26] *Id*. p. 7-42. Emphasis added.
[27] Hume and Baker (2024), cited in *id.*, p. 7-18.

steelhead) performed in the licensing.[28] The FEIS states: "In the lower Tuolumne River, *O. mykiss* are predominately found upstream of RM 43, with peak fry densities occurring into June. Flow management for the benefit of *O. mykiss* in June consists of striking a balance between providing hydraulic habitat suitability and temperature suitability for fry and adult life stages."[29]

Reviewing the Districts' Amended Final License Application, there is no clear basis for the assertion that "peak fry densities occur into June."[30] The FEIS's use of the Districts' fry density claim provided no independent citation. Thus, it is not clear that the proposal is based on a life stage that is actually dominant in June. A review of the Districts' annual reports (Appendix 4 of each report) shows diverse numbers of *O. mykiss* detected in snorkel surveys, with very low sample sizes.[31]

The rationale for the State Water Board's (now set aside) January 15, 2021 water quality certification (WQC) for the Don Pedro and La Grange licensings contested the basis of FERC's rationale that used WUA to set flows in waters that hold anadromous fish. The Certification stated: "However, spawner and juvenile data show that higher juvenile survival occurs during times of higher flows rather than under model estimates of increased physical rearing habitat."[32] The Certification cited to a 2019 study by the Independent Science Advisory Panel that made such findings for Chinook salmon.[33] Considering the Districts' own arguments on the importance of predation in limiting the populations of salmonids in the lower Tuolumne River, it is reasonable to assume that the reduction of flows to achieve low velocities would also expose *O. mykiss* fry, juveniles and resident adults to greater levels of predation mortality as well. Low velocities are more conducive to predatory bass, both because of increased chance of encounter with *O. mykiss* and because higher water temperatures increase activity for warm-water species such as bass and cold-water species such as *O. mykiss*.

Assuming for the sake of argument the validity of habitat simulation modeling, the Districts' September 2017 "Evaluation of Effective Usable Habitat Area for Over-Summering *O. mykiss*" shows that habitat for *O. mykiss* fry only increases at flows less than 200 cfs in thermal conditions that are less than optimal.[34] Once one assumes that conditions will improve at optimal or closer to optimal thermal conditions, the importance of velocity diminishes relative to water temperature, and thermal (and thus overall) conditions for both the fry and larger juvenile

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[28] *See* FERC, Final Environmental Impact Statement for Hydropower Licenses, Don Pedro Hydroelectric Project, Project No. 2299-082—California, La Grange Hydroelectric Project, Project No. 14581-002—California (July 2020), FERC eLibrary no. 20200707-3000, pp. 3-150 and 3-151.
[29] *Id.*, p. 3-150.
[30] *See* Districts, Amended Final License Application, Exhibit E., pp. 3-140 to 3-157.
[31] *See, e.g.*, Districts, 2017 Lower Tuolumne Annual Report, FERC eLibrary no. 20180329-5354.
[32] January 15, 2021 WQC, p. 24. Available at: https://www.waterboards.ca.gov/docs/dplg_fwqc_complete_20210105.pdf. "Set aside" May 2024.
[33] *See* Independent Science Advisory Panel, Developing Goals for the Bay-Delta Plan: Concepts and Ideas from an Independent Science Advisory Panel. Available at: https://deltacouncil.ca.gov/pdf/science-program/biological-goals/2019-09-18-April-2019-biological-goals-final-report.pdf.
[34] Turlock Irrigation District & Modesto Irrigation District, Lower Tuolumne River Instream Flow Study—Evaluation of Effective Usable Habitat Area for over-summering *O. mykiss*, September 2017, submitted as part of the Districts' Amended Final License Application for the Don Pedro Project, (Oct. 11, 2017), FERC eLibrary no. 20171011-5063, pp. D-1, D-2, D-9 and D-10.

life stages of *O. mykiss* are shown to improve in June at levels of 300 or even 400 cfs. They improve even more when a percent of unimpaired flow requirement is maintained through June.

C. The TVA's Proposed Gravel Augmentation Program Insufficiently Accounts for the Capture of Gravel in Special Run Pools.

Table 7-1 appropriately identifies (by a different name) the special run pools whose capture of sediment causes "reduced ability of river to route coarse sediment through reaches, decreasing spawning and rearing habitat."[35]

However, Section 7.2.1.1 discusses more generally the benefits of gravel augmentation, providing examples of the short-term benefits of gravel augmentation in several different rivers, including the Tuolumne.[36]

The benefits of gravel augmentation in the lower Tuolumne River are likely diminished by the capture of sediment in special run pools. Until those holes are filled in and thus allow sediment transport through them, they are gravel sinks that require the constant replenishment of gravel in the reaches of river between the pools. These pools, as cited above, comprise 38% of the upper 13 river miles of the Tuolumne River.[37]

D. The Draft Supplement's Treatment of "Gravel Cleaning" Is Excessively Kind.

The Draft Supplement acknowledges the TVA's proposal for "gravel cleaning." This concept stems from a 2001 study that Stillwater Sciences conducted for the Districts that stated its purpose in this way: "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 …"[38] Thus conceived, the answer that the study arrived at was a "gravel-cleaning machine," effectively a large-scale pressure washer mounted on a backhoe that would "mobilize fines followed by vacuum removal of suspended sediments."[39]

The flatline hydrograph that characterizes the historical and, with slight modification, the TVA-proposed flow release schedule for the lower Tuolumne River contains too few events and too little frequency of events (*i.e.*, flood releases) that mobilize sediments, even including fine sediments. This creates embeddedness of the river bed. In addition, Don Pedro Reservoir captures sediment from the upper watershed, eliminating most of the potential sediment supply for the lower river. The volume and variability of flows created by percent of unimpaired flow requirement will more frequently mobilize fine sediments.

The "gravel-cleaning" scheme of the TVA is at best an unproven and potentially destructive activity. It is at root a scheme to avoid using the water needed to restore some

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[35] Draft Supplement, Table 7-1, p. 7-3.
[36] *Id,* p. 7-6.
[37] McBain and Trush (2004), *op. cit.*, p. xiv.
[38] The Stillwater Study appears as Appendix F of McBain and Trush (2004), *op. cit.,* pdf p. 264.
[39] *Id.*, pdf p. 272.

semblance of natural geomorphic processes. The Draft Supplement includes caveats about the potential downsides of gravel cleaning. The Board should take a stronger stance and simply disallow the approach.

VI. Conclusion

The Draft Supplement does a thorough job of synthesizing and analyzing the scientific data and studies available regarding the lower Tuolumne River. The scientific analysis clearly shows the overarching primacy of the benefits of flow to Tuolumne River fisheries, including the flow-dependent factor of floodplain habitat and the largely flow-dependent factor of water temperature. The Draft Supplement thus clearly demonstrates the superiority of the percent of unimpaired flow regime over the TVA proposal.

Thank you for the opportunity to comment on the Draft Supplement.

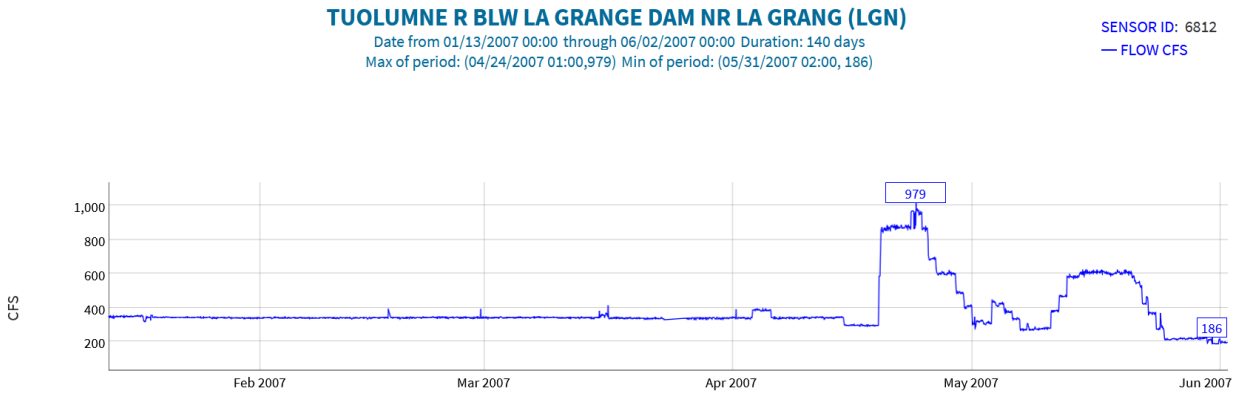
Respectfully submitted,

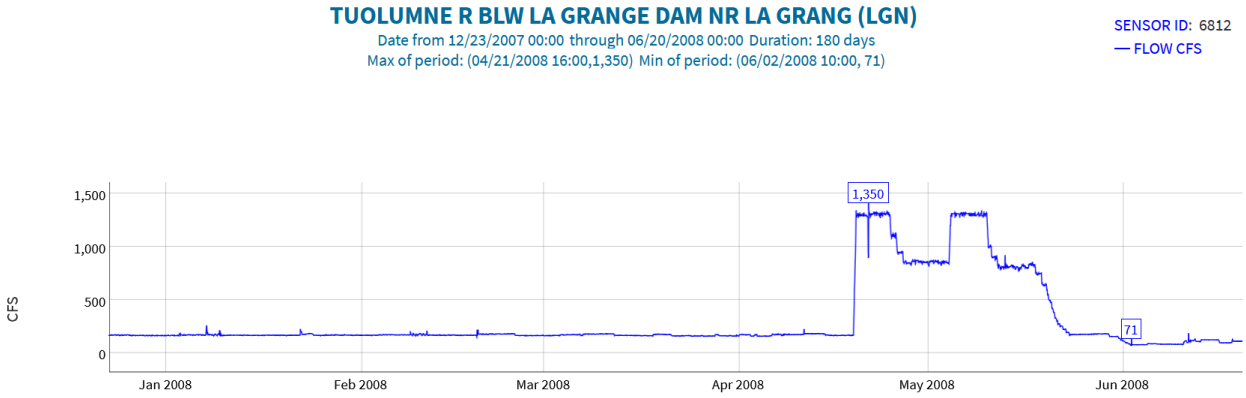
Chris Shutes
Executive Director
California Sportfishing Protection Alliance

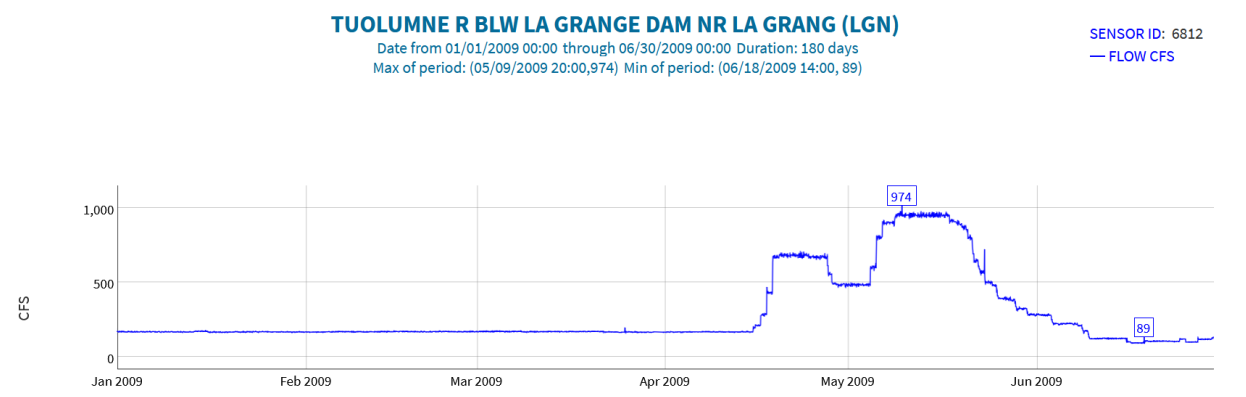
Appendix A

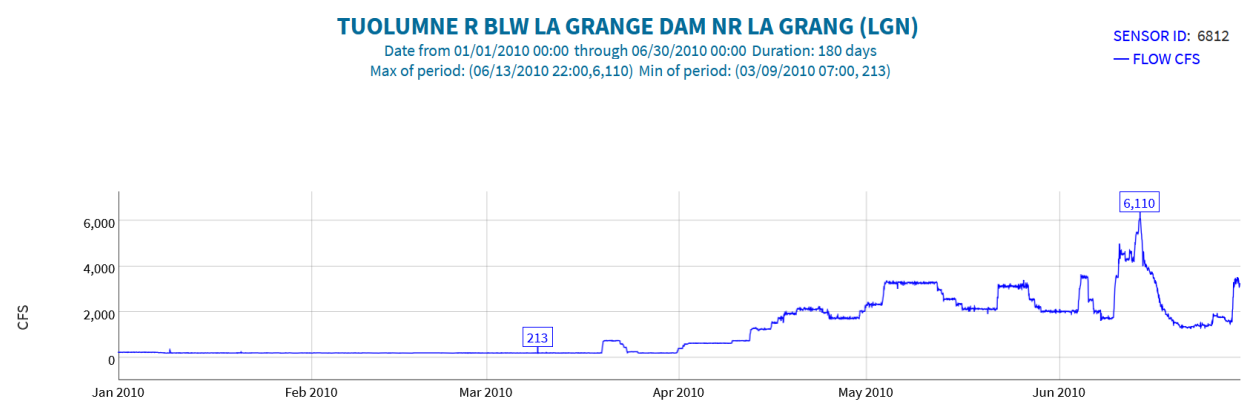
January through June Hydrographs Lower Tuolumne River La Grange Gage 2007-2017

Recommended for Review in
Conjunction with
Draft Supplement Table 2-3
Reproduced on Page 5 of the
Foregoing Comments







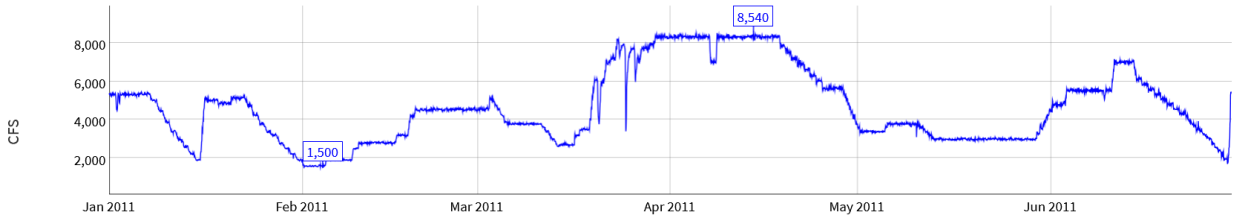


Note: Some dates are cut off the ends of some graphs due to reporting errors of high volumes that skew the scale of 6-month hydrograph and devalue the comparative function.

TUOLUMNE R BLW LA GRANGE DAM NR LA GRANG (LGN)

Date from 01/01/2011 00:00 through 06/30/2011 00:00 Duration: 180 days
Max of period: (04/14/2011 09:00,8,540) Min of period: (02/04/2011 07:00, 1,500)

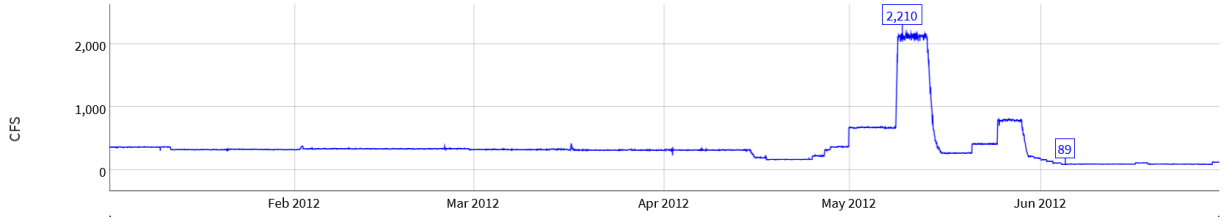
SENSOR ID: 6812
— FLOW CFS



TUOLUMNE R BLW LA GRANGE DAM NR LA GRANG (LGN)

Date from 01/02/2012 00:00 through 06/30/2012 00:00 Duration: 180 days
Max of period: (05/09/2012 15:00,2,210) Min of period: (06/05/2012 01:00, 89)

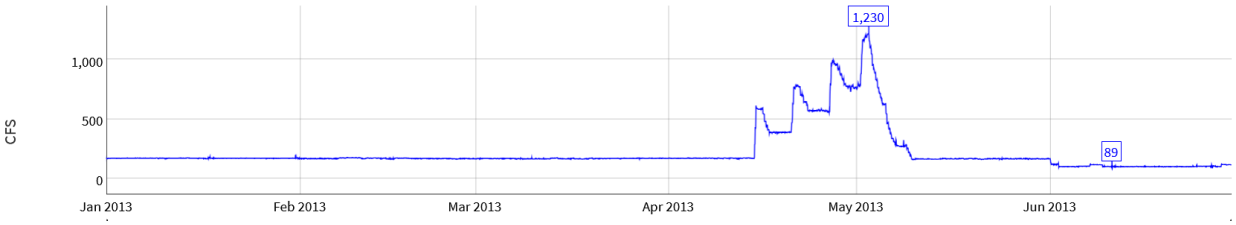
SENSOR ID: 6812
— FLOW CFS



TUOLUMNE R BLW LA GRANGE DAM NR LA GRANG (LGN)

Date from 01/01/2013 00:00 through 06/30/2013 00:00 Duration: 180 days
Max of period: (05/03/2013 00:00,1,230) Min of period: (06/10/2013 21:00, 89)

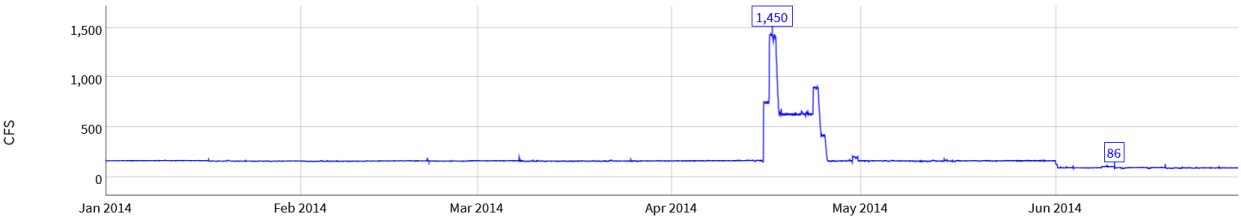
SENSOR ID: 6812
— FLOW CFS



TUOLUMNE R BLW LA GRANGE DAM NR LA GRANG (LGN)

Date from 01/01/2014 00:00 through 06/30/2014 00:00 Duration: 180 days
Max of period: (04/17/2014 00:00,1,450) Min of period: (06/10/2014 09:00, 86)

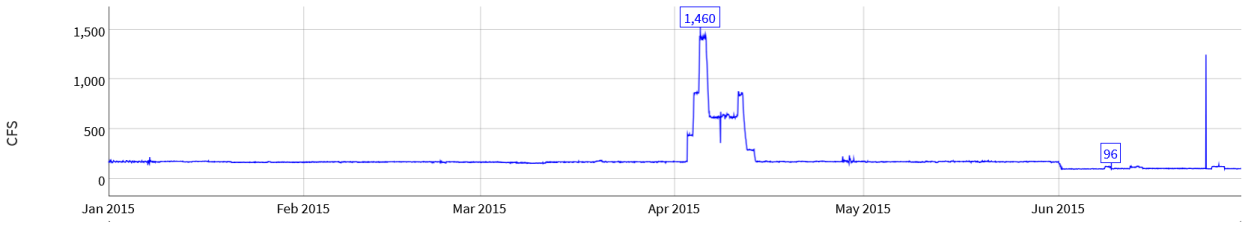
SENSOR ID: 6812
— FLOW CFS



TUOLUMNE R BLW LA GRANGE DAM NR LA GRANG (LGN)

Date from 01/01/2015 00:00 through 06/30/2015 00:00 Duration: 180 days
Max of period: (04/05/2015 02:00,1,460) Min of period: (06/09/2015 09:00, 96)

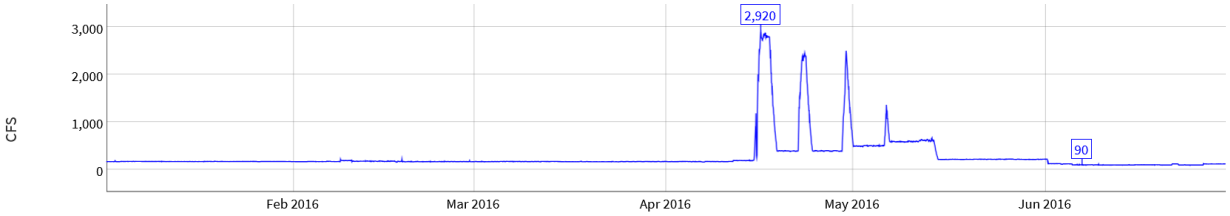
SENSOR ID: 6812
— FLOW CFS



TUOLUMNE R BLW LA GRANGE DAM NR LA GRANG (LGN)

Date from 01/02/2016 00:00 through 06/30/2016 00:00 Duration: 180 days
Max of period: (04/16/2016 06:00,2,920) Min of period: (06/06/2016 22:00, 90)

SENSOR ID: 6812
— FLOW CFS



TUOLUMNE R BLW LA GRANGE DAM NR LA GRANG (LGN)

Date from 01/01/2017 00:00 through 06/30/2017 00:00 Duration: 180 days
Max of period: (02/21/2017 12:00,15,500) Min of period: (01/02/2017 11:00, 167)

SENSOR ID: 6812
— FLOW CFS