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Conjunctive Use on the Yuba: Lessons from Drought Management in the Yuba Watershed*

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Introduction

The story of the Yuba River Watershed's ("Yuba Watershed") drought management began long before the drought took the state's water hostage. Instead, it began with nearly twenty years of conflict and litigation surrounding instream flow requirements in the Yuba River. That conflict eventually led to negotiation, which in turn produced the Lower Yuba River Accord ("Accord"). The Accord was the product of three years of negotiations between a diverse group of 18 agencies and nongovernmental organizations, culminating in a comprehensive river management plan that the State Water Resources Control Board ("State Board") adopted in 2008. In addition to prescribing different flow schedules based on water availability, the Accord also established water transfers to users outside Yuba County and a groundwater substitution program. During the drought, the Accord played a critical role in facilitating cooperation between stakeholders and effective drought response.

California's most recent drought gave the Accord its first major test. In response to a severely dry 2013, the Yuba County Water Agency ("YCWA") took several actions. Its most significant was filing a Temporary Urgency Change

Petition (“TUCP”) with the State Board in February 2014 to restrict flows in hopes of saving water to bolster summer and fall flows. YCWA filed another TUCP and later a change of use petition to allow a water transfer recipient to store conserved transferred water for use in subsequent years.

The Accord’s framework, and more importantly the priorities and cooperation behind it, allowed the Yuba Watershed to respond quickly and proactively to potential water shortages. And previous sustainable groundwater management provided a reliable supply to supplement surface flow shortages. Specifically, these supplies allowed YCWA to rely on groundwater substitution to meet local demands while continuing its water transfers. Ultimately, the following lessons can be gleaned from the Yuba Watershed’s drought management:

- 1) The Yuba’s drought management shows the importance of planning in effective drought management.
- 2) The Accord and its established flow schedules enabled watershed managers to act more quickly and with more consensus.
- 3) Properly managing groundwater basins can provide the flexibility to maintain instream flows during a drought.
- 4) Although negotiation and consensus have become the standard means of problem solving in the basin, the State Board initially spurred reform by setting strong instream flow standards.
- 5) Water transfers provide one way to increase instream flows, while also benefiting water suppliers.

I. Background

Beginning on the western slopes of the Sierra Nevada Mountains, the Yuba River Watershed extends from Donner Pass to the Feather River near Marysville and Yuba City. Three main tributaries, the North, Middle, and South Yuba Rivers, combine to form the Yuba River. In an average year, 2.4 million acre-feet of snow and water runoff pass down the Yuba, but record flows have reached almost five million acre-feet in the past.¹ On average, YCWA diverts four percent of the annual flow for irrigation supplies to seven water districts and companies.² Irrigation is an important water use, especially since rice is the county’s number one crop.³ Other districts and individual water rights holders divert seven percent, and other watersheds

1. *The Water Supply*, Yuba County Water Agency (Mar. 16, 2016), <http://www.ycwa.com/about/water-supply> [hereinafter “*The Water Supply*”].

2. *Id.*

3. Susan Lauer & Sue McClurg, *The Lower Yuba River Accord: From Controversy to Consensus* 5 (Water Educ. Found., 2009), <http://www.ycwa.com/documents/622> [hereinafter “*From Controversy to Consensus*”].

divert 17 percent for water supply and electricity production.⁴ The remaining 72 percent of the water remains in the stream for fish and wildlife.⁵ That water then flows into the Delta where it is either diverted by downstream Delta water users, state and federal projects, or flows into the ocean.⁶ As of the late 1980s, various Northern California cities, the California Department of Water Resources, the Environmental Water Account program, other water districts, state-managed drought water banks, and dry-year purchase programs have purchased water from YCWA.⁷

Historically, the Yuba River's waters have also supported the Central Valley's largest naturally-reproducing population of steelhead, and today it still provides a much needed habitat for a persistent population of steelhead.⁸ In fact, the lower Yuba River remains one of the last Central Valley tributaries with naturally-spawning, spring-run Chinook salmon and steelhead populations.⁹ Because the Yuba River provides a spawning and rearing habitat for fall, late fall, and spring-run Chinook salmon as well as steelhead, anadromous fish live in the river nearly year-round.¹⁰

While the upper portion of the watershed is largely forested, the lower watershed suffers from flooding, which historic hydraulic mining exacerbated. In particular, the debris from hydraulic mining raised riverbeds, making the area even more susceptible to flooding. Primarily to combat this flooding, several dams have been constructed on the Yuba and its tributaries. The Englebright Dam on the lower Yuba River, for example, was constructed to hold back debris from hydraulic mining.¹¹ The dam stretches 1,142 feet wide and stands 260 feet tall, which makes it too tall to construct fish ladders.¹² Consequently, Englebright Dam functions as an impenetrable barrier for fish trying to reach the Upper Yuba. New Bullards Bar Dam, the other main dam on the Yuba River, also provides flood control. It stands at 645 feet and stores nearly a million acre-feet of water that is used to irrigate crops, generate energy, and manage downstream river temperatures.¹³ Because of its height,

4. *The Water Supply*, *supra* note 1.

5. *Id.*

6. *Id.*

7. *From Controversy to Consensus*, *supra* note 3 at 5.

8. *National Marine Fisheries Service, Recovery Plan for Central Valley Chinook Salmon and Steelhead* Appendix A 54 (National Oceanic and Atmospheric Administration, 2014), http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/california_central_valley/appendix_a_watershed_profiles_7102014.pdf.

9. *Id.*

10. *From Controversy to Consensus*, *supra* note 3 at 13.

11. *Welcome to Englebright Lake*, US Army Corps of Engineers (Mar. 16, 2016) <http://www.spk.usace.army.mil/Locations/SacramentoDistrictParks/EnglebrightLake.aspx>.

12. *Id.*

13. *Water's Journey*, Yuba County Water Agency, <http://www.ycwa.com/about/waters-journey>.

New Bullards Bar Dam also prevents fish passage and stands too tall for a fish ladder.

The Yuba Watershed has two groundwater basins, and although the North Yuba subbasin has historically been in good condition, the South Yuba subbasin previously suffered from severe overdraft.¹⁴ In the south basin, agricultural and urban water users relied heavily on groundwater due to limited surface water supplies.¹⁵ As a result, between 1949 and 1982 groundwater users overdrafted the aquifer an estimated 100 feet at some locations.¹⁶ But in 1984, YCWA developed a south diversion and canal system, which delivered surface water from New Bullards Bar Reservoir to the South Yuba Subbasin and returned the groundwater elevation to near historical levels.¹⁷

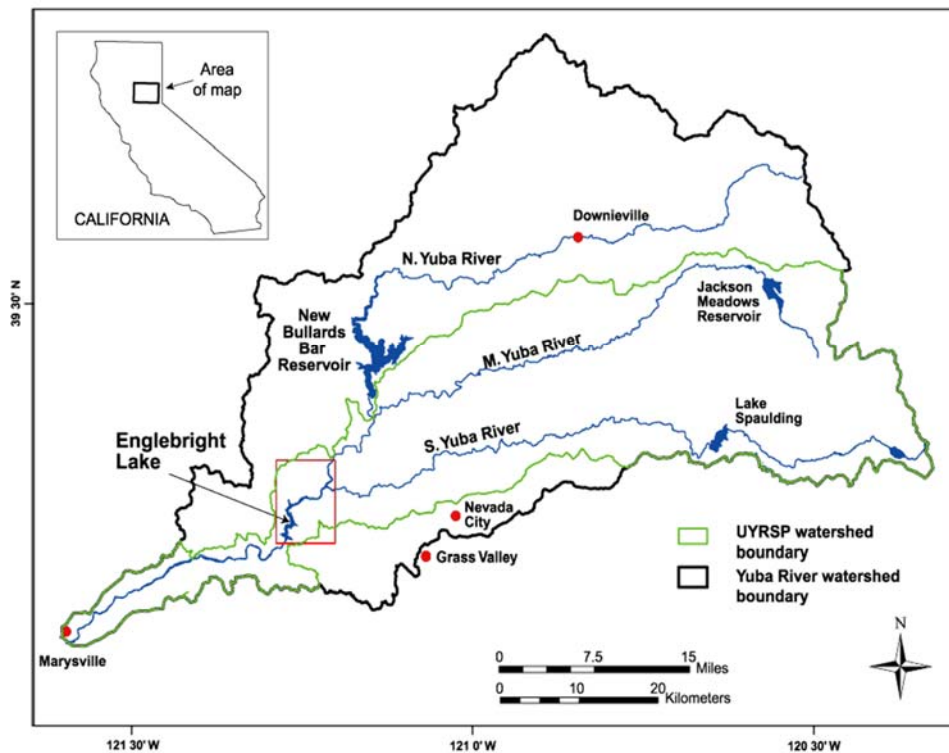


Figure 1: Map of Upper River Yuba Watershed.¹⁸

14. *From Controversy to Consensus*, *supra* note 3 at 22.

15. *Id.*

16. *Id.*

17. *Id.*

18. Jonathan R, Childs et al., *Bathymetric and geophysical surveys of Englebright Lake, Yuba-Nevada Counties, California*, U.S. GEOLOGICAL SERVICES (Apr. 7, 2014), <https://pubs.us>

II. YCWA's Water Rights

YCWA was created for flood control and to manage a severely over-drafted groundwater basin. Two major floods have hit Yuba County in the past 30 years. The first flood occurred in 1986 when a levee collapsed, killing two people and destroying or damaging about 3,000 homes.¹⁹ The second occurred in 1997, forcing one of the largest evacuations in state history and displacing over 100,000 people.²⁰ As a major water right holder on the Yuba River, YCWA directly diverts up to 1,550 cfs from the lower Yuba River from September 1st to June 30th for irrigation and other uses under Permits 15026, 15027, and 15030.²¹ These permits also authorize a diversion of up to 1,050,000 acre-feet for storage in New Bullards Bar Reservoir from October 1st to June 30th.²² YCWA also operates multiple hydropower facilities on the Yuba River, under the Yuba River Development Project.²³ The Federal Energy Regulatory Commission (FERC) regulates these operations through the provisions of Federal Power License 2246, which FERC originally issued in 1963.²⁴ In 1966, FERC amended the license to include release and instream flow requirements, so YCWA must meet those minimum flow requirements throughout the year below New Bullards Bar Reservoir, Englebright Dam and Daguerre Point Dam.²⁵

III. Background of the Lower Yuba Accord

Water management on the Yuba River differs from other watersheds across the state because a diverse group of stakeholders on the Yuba River have reached a set of three agreements that together form the Accord. One

gs.gov/of/2003/0383/intro.html.

19. *From Controversy to Consensus*, *supra* note 3 at 20.

20. *Id.*

21. State Water Resources Control Bd., Corrected Order WR 2008 – 0014 Order WR 2008 – 0014, 33 (May 20, 2008), http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2008/wro2008_0014corrected.pdf [hereinafter “Corrected Order WR 2008 – 0014”].

22. *Id.*

23. *Id.* at 3.

24. *Id.*

25. *Id.* See also *Compliance Handbook* 12-13 (Federal Energy Regulatory Commission, Division of Hydropower Administration & Compliance, 2015), https://www.ferc.gov/industries/hydropower/gen-info/handbooks/compliance_handbook.pdf (“Most licenses or exemptions contain conditions that require specific minimum flows to be released continuously, or during specified periods of time. The purpose of these . . . is to protect and enhance the recreational, scenic, and environmental resource values of a project. Therefore, many licenses and exemptions contain monitoring and reporting requirements of minimum flows. DHAC reviews the reports to ensure compliance with minimum flow requirements set forth in licenses and exemptions.”).

of the most important elements of the Accord is the series of agreed-upon flow schedules designed to adjust to water availability.

The Accord was the product of nearly 20 years of conflict between Yuba River stakeholders. The Department of Fish and Game released a *Lower Yuba River Fisheries Management Plan* in the early 1990s, proposing increases in instream flow requirements to improve lower Yuba River fisheries habitat.²⁶ The plan proposed drastically increased flows of up to 500,000 acre-feet per year from New Bullards Bar Reservoir compared to 176,320 acre-feet in wet years under the 1965 flow requirements.²⁷

In the early 2000s, the State Board entered the conflict under court order.²⁸ To address fishery protection and water rights issues, the State Water Resources Control Board (“State Water Board”) issued Revised Water Right Decision 1644 (“Revised Decision”) on July 16, 2003, which catalyzed the latest round of litigation and negotiations, ultimately leading to the Accord.²⁹ The Revised Decision “established schedules for interim and long-term instream flow requirements for protection of fish in the lower Yuba River between Englebright Dam and Marysville as conditions of water right permits for consumptive use held by [YCWA].”³⁰ The State Board cited their authority under “the public trust doctrine, applicable provisions of the Water Code, and article X, section 2 of the California Constitution” to justify its power.³¹ In response to the Revised Decision, YCWA, other water purveyors in Yuba County, and environmental groups filed five separate suits challenging the decision, which the court consolidated under *Yuba County Water Agency v. State Water Resources Control Board*, Case No. CV026505.³² As part of the litigation, YCWA and the other water purveyors argued that the Revised Decision’s flow requirements were unsubstantiated and excessive, while the environmental groups argued the decision did not provide sufficient protection for fish.³³ Additionally, YCWA wanted to operate New Bullards Bar Reservoir to provide local water and continue to conduct water transfers, which generated funding for YCWA’s flood control activities.

IV. The Lower Yuba River Accord

After significant negotiations, 18 agencies and NGOs signed the Accord in October 2007 to resolve instream flow issues associated with the Yuba River Development Project while also protecting and enhancing lower Yuba

²⁶ *From Controversy to Consensus*, *supra* note 3 at 10.

²⁷ *Id.*

²⁸ *Id.* at 11.

²⁹ *Corrected Order* WR 2008 – 0014, *supra* note 21 at 1.

³⁰ *Id.*

³¹ *Id.* at 4-5.

³² *Id.* at 5.

³³ *Id.*

River fisheries, safeguarding local water supply reliability, and providing water for the transfers that fund local flood control and water supply projects.³⁴ The Accord governs the Yuba River below Englebright Dam to its confluence with the Feather River and is comprised of three agreements: the Fisheries Agreement, the Water Purchases Agreement, and the conjunctive use agreement. Finally, to ensure compliance, each party to the Accord has the right to seek a court order to compel YCWA to perform its obligations under the agreement.³⁵

First, YCWA, the South Yuba River Citizens League, Trout Unlimited, The Bay Institute, and Friends of the River, along with California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service developed the comprehensive proposal behind the Fisheries Agreement.³⁶ The Fisheries Agreement established higher minimum instream flows during specified periods of the year, which has increased flows by as much as 170,000 acre-feet per year. In particular, the Accord established wet year flows of 519,345 acre-feet and dry year flows 366,099 acre-feet.³⁷ This was a dramatic increase from both the Revised Decision's interim flows of 387,327 acre-feet and 251,911 acre-feet, respectively, and the previous required flows of 176,320 acre-feet and 165,859 acre-feet.³⁸

³⁴ *Id.* at 6.

³⁵ *Lower Yuba River Fisheries Agreement* 9 (Lower Yuba River Accord, 2008), <http://www.ycwa.com/res/docs/FisheriesAgreement.pdf> [hereinafter: "Fisheries Agreement"].

³⁶ *The Proposed Lower Yuba Accord: A Collaborative Settlement Initiative* 5 (Yuba County Water Agency, 2007), <http://www.ycwa.com/documents/624>.

³⁷ *From Controversy to Consensus*, *supra* note 3 at 11.

³⁸ *Id.*

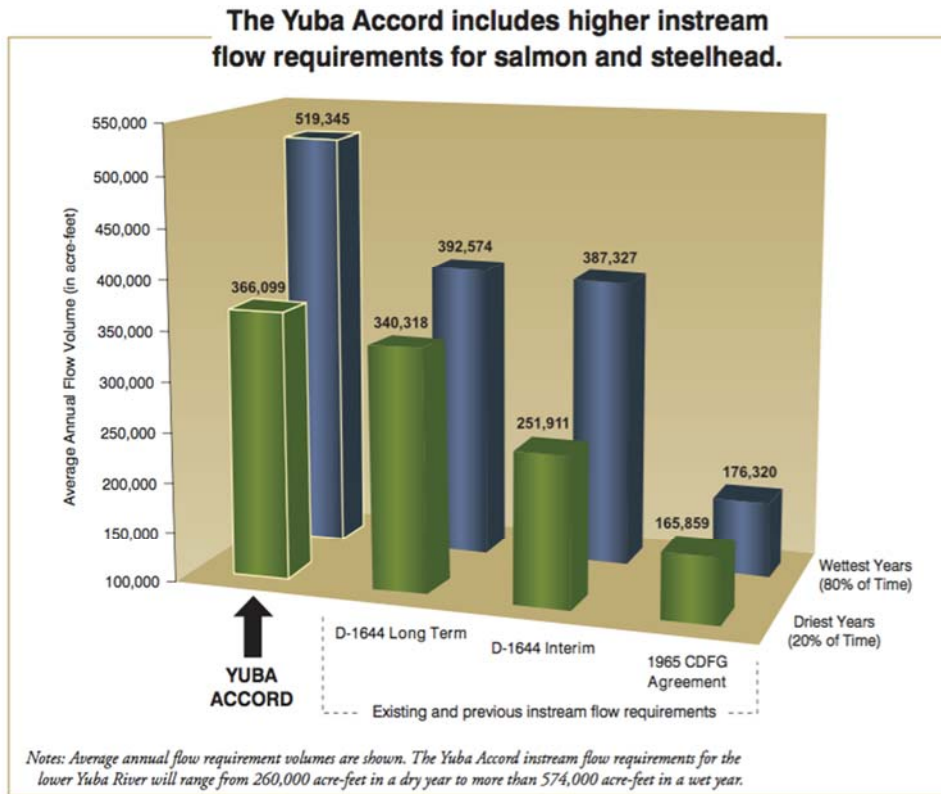


Figure 2: Flow schedules under Lower Yuba Accord.³⁹

In particular, the Fisheries Agreement sets out seven different flow schedules. They are labeled schedules one through six, with one representing the schedule for the wettest years. The seventh flow schedule, called “Conference Year,” is reserved for extremely dry years. To determine the flow schedule, YCWA uses the North Yuba Index, which is based on the storage in New Bullards Bar Reservoir in the previous year and the actual inflow into the reservoir for the current water year.⁴⁰ For example, the Conference Year schedule is only for years where the North Yuba Index is less than 500,000 acre-feet.⁴¹ The Fisheries Agreement also establishes and funds a River Management Team to determine the effectiveness of the Accord and the health of the Yuba’s fisheries.⁴²

39. *Id.*

40. The water year is from October 1st through September 30th of the following year.

41. *Fisheries Agreement*, *supra* note 35 at 2

42. *From Controversy to Consensus*, *supra* note 3 at 16.

**FLOW SCHEDULE YEAR TYPES
BASED ON THE NORTH YUBA INDEX
FOR ESTABLISHING REQUIRED FLOWS IN THE LOWER YUBA RIVER FISHERIES AGREEMENT**

The water year hydrologic classification for the Yuba River to determine the flow requirements of Yuba County Water Agency's water right permits shall be based on the North Yuba Index. Determinations of a year's flow schedule year type shall be made in February, March, April, and May and for any subsequent updates.

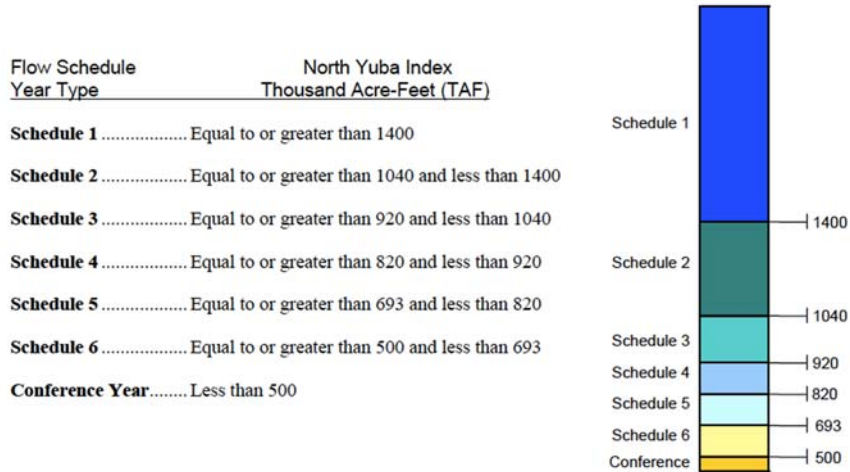


Figure 3: Flow schedules under Lower Yuba Accord.⁴³

Second, under the Water Purchase Agreement, the California Department of Water Resources and U.S. Bureau of Reclamation entered into a long-term agreement to purchase water from YCWA to improve reliability for the State Water Project and Central Valley Project. This transfer improves water supply reliability and includes 60,000 acre-feet per year for the

43. Fisheries Agreement, *supra* note 35 at 46.

Marysville Gage (cfs)

Schedule	OCT		NOV	DEC	JAN	FEB	MAR	APR		MAY		JUN		JUL	AUG	SEP	Total Annual Volume (AF)
	1-15	16-31	1-30	1-31	1-31	1-29	1-31	1-15	16-30	1-15	16-31	1-15	16-30	1-31	1-31	1-30	
1	500	500	500	500	500	500	700	1000	1000	2000	2000	1500	1500	700	600	500	574200
2	500	500	500	500	500	500	700	700	800	1000	1000	800	500	500	500	500	429086
3	500	500	500	500	500	500	500	700	700	900	900	500	500	500	500	500	366722
4	400	400	500	500	500	500	500	600	900	900	600	400	400	400	400	400	361944
5	400	400	500	500	500	500	500	500	600	600	400	400	400	400	400	400	334818
6	350	350	350	350	350	350	350	350	500	500	400	300	150	150	150	350	232155

* Indicated flows represent average volumes for the specified time period. Actual flows may vary from the indicated flows according to established criteria.
 * Indicated Schedule 6 flows do not include an additional 30 TAF available from groundwater substitution to be allocated according to established criteria.

Smartville Gage (cfs)

Schedule	OCT		NOV	DEC	JAN	FEB	MAR	APR		MAY		JUN		JUL	AUG	SEP	Total Annual Volume (AF)
	1-15	16-31	1-30	1-31	1-31	1-29	1-31	1-15	16-30	1-15	16-31	1-15	16-30	1-31	1-31	1-30	
A	700	700	700	700	700	700	700	700	-	-	-	-	-	-	-	700	-
B	600	600	600	550	550	550	550	600	-	-	-	-	-	-	-	500	-

* Schedule A used with Schedules 1, 2, 3 and 4 at Marysville.
 * Schedule B used with Schedules 5 and 6 at Marysville.

Figure 4: Yuba River instream flow requirements.⁴⁴

Environmental Water Account, which provided the Account’s first major long-term water acquisition.⁴⁵ The Water Purchase Agreement also includes transferring up to an additional 140,000 acre-feet in dry years to the State Water Project (“SWP”) and the Central Valley Project (“CVP”) for uses that include fish and wildlife habitat.⁴⁶ YCWA provides these transfers by releasing stored water from New Bullards Bar Reservoir.⁴⁷ Some of this water will come from water users who forgo their surface water deliveries and instead pump groundwater.⁴⁸ YCWA will also transfer water it releases to meet instream flow needs on the Yuba River under the Fisheries Agreement’s flow schedules to outside water districts.⁴⁹

44 Fisheries Agreement, *supra* note 35 at 45.

45 Yuba County Water Agency, *The Proposed Lower Yuba Accord: A Collective Settlement Initiative* 7.

46 *Id.*

47. *Corrected Order* WR 2008 – 0014, *supra* note 21 at 9.

48. *Id.*

49. *Id.*

Third, seven agreements with seven local water districts form the Conjunctive Use Agreement. The agreement establishes a comprehensive groundwater program, with the goal of improving overall water supply reliability for local farmers. These agreements establish that farmers will pump groundwater in lieu of using surface water in dry years in order to free up surface water supplies to complete the transfers outlined in the Water Purchase Agreement.⁵⁰ YCWA operates this groundwater substitution program when Schedule 6 is in effect.⁵¹

In a Schedule 6 year, the groundwater substitution program will add 30,000 acre-feet of flows in the lower Yuba River.⁵² Even if the water is for transfers, the River Management Team, which the Accord established to monitor the fisheries, will determine how to release the 30,000 acre-feet in order to give the maximum fish benefit during the transfer period.⁵³

During the decades leading up to the Accord, YCWA ran a successful conjunctive use program that balances its surface water and groundwater supplies while still executing water transfers.⁵⁴ And by using Yuba River flows to restore groundwater levels during wet years, YCWA has returned groundwater supplies to sustainable levels.⁵⁵ By supplementing dry year water supplies with the recharged groundwater from wet years, YCWA can continue providing reliable water to local users under the Accord's conjunctive use program.⁵⁶ According to the Accord, no groundwater will be directly exported out of Yuba County.⁵⁷ Instead, water users will only use water to irrigate farmland, and "YCWA and its participating members are implementing strategic steps to assure total diversions do not exceed specified amounts."⁵⁸ Furthermore, YCWA has a special groundwater monitoring program to make sure that groundwater pumping under the Accord does not exceed the sustainable yield.⁵⁹ By using groundwater for irrigation, YCWA ensures that farmers will not fallow land to execute a water transfer because "[t]aking land out of production to accommodate a water transfer has had adverse economic impacts in other parts of California. As a matter of policy YCWA does not approve land fallowing water transfers."⁶⁰

50. *Id.* at 10.

51. *Lower Yuba River Fisheries Agreement* 9 (Lower Yuba River Accord, 2008), <http://www.ycwa.com/res/docs/FisheriesAgreement.pdf>.

52. *Id.*

53. *Id.*

54. *From Controversy to Consensus*, *supra* note 3 at 22.

55. *Id.*

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id.*

60. *Id.* at 22 (quoting Curt, YCWA General Manager) (internal quotation marks omitted).

Finally, to implement the Accord, YCWA filed a petition with the State Board to alter the flow requirements of the Revised Order. The State Water Board approved the petition and ordered to:

(1) delete RD-1644's long-term instream flow requirements; (2) amend RD-1644's currently described minimum "interim" instream flow requirements by (a) reducing specified flows in "Below-Normal" years during the period late April through June, (b) reducing flows in "Critical" years during the period mid-October to mid-April, and (c) including a new "Conference" year flow regime; (3) reclassify these instream flow requirements as permanent; (4) make the flow schedule subject to the North Yuba Index, as opposed to the Yuba River Index; (5) make the Yuba Accord Fisheries Agreement flow schedule the permit schedule, should the Fisheries Agreement terminate early; and (6) replace all flows with FERC flows once a new long-term FERC license is issued.⁶¹

V. Drought Management Under the Accord

The first major test for the Accord came in the form of California's most recent drought. Through 2013, flows on the Yuba had not dropped below a schedule 2 during the current drought.⁶² October through December of 2012 was one of the wettest October through December periods on record.⁶³ Then abruptly, conditions turned in January 2013,⁶⁴ and from January 1, 2013, through January 15, 2014, the Yuba Watershed experienced the driest conditions ever recorded in the 100 year history of recorded precipitation.⁶⁵ By the late spring of 2013, snowpack was already very low, and from April to July the Yuba unimpaired flow was 35% of average.⁶⁶

The method the Accord uses to determine what flow schedule to follow left the Yuba very vulnerable to a water year like 2013, where significant

61. *Corrected Order WR 2008 – 0014*, *supra* note 21 at 12.

62. *Lower Yuba River Accord River Management Team, Aquatic Resources of the Lower Yuba River Past, Present & Future: Yuba Accord Monitoring and Evaluation Program Draft Interim Report 7-5* (Yuba Accord M&E Program, 2013), http://www.yubaaccordrmt.com/Interim%20ME%20Report/ME%20Interim%20Report_Draft_April%202013.pdf.

63. Stephen Grinnell, *Yuba River Development Project 2014 Drought Planning Report*, YUBA COUNTY WATER AGENCY 3 (2014) http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_notices/2014/a15204_attach.pdf [hereinafter "2014 Drought Planning Report"].

64. *Id.*

65. *Id.*

66. *Id.*

precipitation was followed by a steep drop off.⁶⁷ To determine a flow schedule, each month the Accord uses the North Yuba Index, which “is comprised of two components: (1) active storage in New Bullards Bar Reservoir at the commencement of the current water year and; (2) total inflow to New Bullards Bar Reservoir for the current water year, including diversions from the Middle Yuba River and Oregon Creek to New Bullards Bar Reservoir.”⁶⁸ While the precipitation in October through December 2012 was included in the 2013 index calculation, most of that inflow was not actually available for use because it had been immediately released to preserve the mandatory flood reservation pool.⁶⁹ Consequently, the index was artificially high and triggered schedule 2 flows, which are intended for wetter years.⁷⁰ By the end of the 2013 water year on September 30, 2013, New Bullards Bar Reservoir storage was about 100,000 acre-feet lower than the typical target storage for the end of the water year.⁷¹

The drought continued in the beginning of the 2014 water year. From October 1, 2013, through January 15, 2014, New Bullards Bar Reservoir only received less than 22,600 acre-feet, making it one of the driest periods on record.⁷² And storage in the reservoir fell to 418,512 acre-feet on January 15, 2014, the lowest for that date in twenty-nine years.⁷³ Despite these shortages, YCWA was still operating at schedule 2 flows, and the next opportunity to adjust the North Yuba Index would have been in February 2014.⁷⁴

To cope with these conditions, YCWA filed two TUCPs with the State Board. The most significant one came in February 2014, when YCWA sought to preemptively adjust flow schedules to conserve water for the coming summer and fall and to prevent New Bullards Bar Reservoir from reaching dead pool in August. The second TUCP, filed in January 2014, sought to allow water users who received water transferred under the Accord, to store any water they conserve for use during the following water year. YCWA would later file a change of use petition to allow those same users to store water from year to year without filing a TUCP. While first the TUCP illustrates the virtues of the Accord, including its adaptability, scenario planning, reliance on science, and collaboration, both TUCPs illustrate the benefits and potential challenges that can arise in long term water management planning and forecasting.

67. *Id.*

68. Fisheries Agreement at 48.

69. 2014 Drought Planning Report, *supra* note 63 at 4.

70. *Id.*

71. *Id.* (When dry conditions continued into December, YCWA and its eight member districts worked together to implement a curtailment of irrigation diversions beginning December 18, 2013. On interviewer noted that curtailments during the drought have been well received because the growers can just switch to groundwater.)

72. *Id.*

73. *Id.*

74. *Id.* at 4-5.

A. YCWA's February 2014 TUCP Application

In response to the record dry conditions and the lag in the North Yuba Index's response to them, YCWA filed a TUCP on February 5, 2014.⁷⁵ In their application, YCWA sought authorization to deviate from the mandated schedule 2 flows.⁷⁶ Based on the severe drought conditions, YCWA anticipated that they would eventually have to resort to the lowest and most drastic flow reduction schedule – a conference year.⁷⁷ To support this determination, YCWA submitted forecasted water supply and conditions data.⁷⁸ YCWA analyzed snowpack data, forecasts from the National Weather Service's California Nevada River Forecast Center,⁷⁹ the lowest inflow scenario, and historical data to support its conclusions.⁸⁰ If YCWA took no action, it estimated that conditions would trigger schedule 5 or 6 flows in February and March and then a conference year schedule in April.⁸¹ This meant that flows would remain at 500 cfs until April, when they would drop to 245 cfs.⁸² As a result, flows would fall below 100 cfs in July and remain there until October when they would increase to 400 cfs.⁸³ Under this scenario, the New Bullards Bar Reservoir would drop to minimum pool in mid-August and by the end of the water year, storage in the reservoir would plummet to 218,444 acre-feet.⁸⁴

YCWA filed their TUCP in order to more proactively manage water supplies and flows for the Yuba River by conserving water during the months of February and March.⁸⁵ To accomplish this, YCWA proposed an immediate shift to a conference year flow schedule.⁸⁶ Reducing flows in February “would result in lower, but more stable releases in the spring and will increase the possibility of shaping releases later in the year.”⁸⁷ This would help to lessen the falling levels of New Bullards Bar Reservoir, improve water temperatures in the late summer, and avoid the sharp reduction in flows in April predicted

75. Notice of TUCP 2/14, 1.

76. 2014 Drought Planning Report, *supra* note 63 at 13.

77. *Id.*

78. *Id.* at 6-12.

79. State Water Resources Control Bd., *Order Approving Temporary Urgency Change, Applications 5632, 15204, and 15574 2* (Feb. 19, 2014), http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_notices/2014/a15204_order.pdf [hereinafter “Feb. TUCP Order”].

80. 2014 Drought Planning Report, *supra* note 63 at 6-9.

81. *Id.* at 10.

82. *Id.* at 11.

83. *Id.*

84. *Id.*

85. *Id.* at 13.

86. *Id.*

87. *Id.*

by the no-action scenario. YCWA requested to shift the conference year flow schedule until May 15, 2014, because YCWA estimated that by May 1st, the North Yuba Index would have caught up and reflected the severity of the drought conditions, obviating any need for a change in the permitted regime.⁸⁸

Table 2: No Action and YCWA Proposed Plan Scenarios Yuba Accord Schedule Required Flows by Month

Control:	SMV	SMV	Both*	MRY	MRY	MRY	MRY	MRY	Both*	MRY
Scenarios	February	March	April	May	June	July	August	September	October	November
No Action	683	683	600/500	245	245	70	70	70	350/600	600
Proposed	500	500	500/245	245	245	70	70	70	350/600	600

Notes: Controlling refers to which flow requirement controls releases from Englebright Dam, SMV – Smartsville and MRV – Marysville. “Both” for April means the Smartsville requirement controls for the first half of the month and Marysville for the second half and for October means Marysville requirement controls for the first half of the month and Smartsville requirement for the second half.

Figure 5: Yuba River instream flows at the Smartville Gage under “no action” scenario and the YCWA proposed schedule.⁸⁹

Table 3: No Action and Proposed Scenarios Yuba Accord Schedule Required Release Volume by Month

Scenarios	February	March	April	May	June	July	August	September	October	November
No Action	37,932	41,996	14,579	15,064	14,579	4,304	4,304	4,165	29,455	35,702
Proposed	27,769	30,744	19,636	15,064	14,579	4,304	4,304	4,165	29,455	35,702
Difference	10,163	11,252	(5,058)

Figure 6: Water release volumes from New Bullards Bar Reservoir under “no action” scenario and the YCWA proposed plan.⁹⁰

⁸⁸ *Id.* at 16.

⁸⁹ *Id.* at 17

⁹⁰ *Id.*

Along with its petition, YCWA filed a Notice of Exemption from CEQA, arguing that the TUCP was “exempt for the following reasons: (a) approval of the TUCP is necessary to preserve scarce water supplies in NBBR and natural resources in the lower Yuba River; (b) the existence of emergency conditions is confirmed by the Governor’s January 17, 2014, Proclamation of State of Drought Emergency for the State of California . . . (c) the requested changes are within the scope of stream flows authorized in YCWA’s permits.”⁹¹ The State Board approved this exemption, noting that “YCWA has indicated that there is a compelling need to take extraordinary measures to manage very limited water supplies,” so “the project is statutorily exempt from CEQA because it is necessary to prevent or mitigate an emergency.”⁹²

Prior to approving a TUCP, the State Board must find that petition satisfies four factors: (1) “[t]he permittee or licensee has an urgent need to make the proposed change;” (2) “[t]he proposed change may be made without injury to any other lawful user of water;” (3) “[t]he proposed change may be made without unreasonable effect upon fish, wildlife, or other instream beneficial uses;” (4) “[t]he proposed change is in the public interest.”⁹³

The State Board found that YCWA petition satisfied all four factors. For the first criteria, the State Board cited Governor Brown’s January 17, 2014, Drought Proclamation and found that YCWA had an urgent need “due to the current critically dry hydrologic conditions that are facing the State of California.”⁹⁴ Second, the State Board found “no evidence in the record that the change associated with YCWA’s TUCP would result in injury to any other lawful user of water.”⁹⁵

Third, the State Board noted that the change would not unreasonably affect fish, wildlife, or other instream beneficial uses.⁹⁶ In particular, the TUCP would conserve water to provide more stable flows later in the year and improve water temperature conditions later in the year, so it did not have an unreasonable effect upon fish.⁹⁷ YCWA consulted with the Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the National Marine Fisheries Service to develop the TUCP, and YCWA submitted letters supporting the flow change from those three agencies and four different environmental organizations.⁹⁸ Furthermore, at the recommendation of the three agencies, the State Board incorporated measures to ensure that flows were ramped

91. *Feb. TUCP Order*, *supra* note 79 at 2.

92. *Id.*

93. *Id.* at 3 (citing Cal. Water Code § 1435 (b)(1-4)).

94. *Id.* at 3-4.

95. *Id.* at 4.

96. *Id.*

97. *Id.*

98. *Id.*

down slowly enough to prevent stranding and that proper monitoring would take place.⁹⁹ Finally, YCWA also included a Temporary Amendment to Lower Yuba River Fisheries Agreement, which it entered into with the California Department of Fish and Wildlife, South Yuba River Citizens League, Friends of the River, Trout Unlimited, and The Bay Institute.¹⁰⁰

Finally, the State Board declared the change was in the public interest, since it would allow YCWA to conserve water in order to “more effectively manage the very limited water supply.”¹⁰¹ The State Board was concerned that without action, YCWA would have to severely restrict water supplies and New Bullards Bar Reservoir would reach minimum pool by August.¹⁰²

The State Board quickly approved the TUCP on February 19, 2014. In that time frame, the Yuba Watershed was fortunate to receive a large amount of rain. And in fact, February and March saw precipitation that was 173 percent of the historical average, reducing the need to take the drastic measures outlined in the TUCP.¹⁰³ Consequently, YCWA did not have to resort to conference flows and was able to provide flows at least a Schedule 5 level in 2014. Although the TUCP ultimately proved unnecessary, the process showcased the benefits of the Accord. The stakeholders groundwork over the previous decade allowed them to act quickly and gain the State Board’s approval in 14 days.

99 *Id.*

100 Letter from Curt Aikens, General Manager, Yuba County Water Agency, to Kimberly D. Bose, Secretary, Fed. Energy Regulatory Comm’n at 7-13 (Feb. 7, 2014).

101 *Feb. TUCP Order, supra* note 79 at 4.

102 *Id.*

103 Aikens, *Water Outlook on Yuba* (One interviewee noted that he did not believe the TUCP was actually implemented and consequently, monitoring data was never reported).

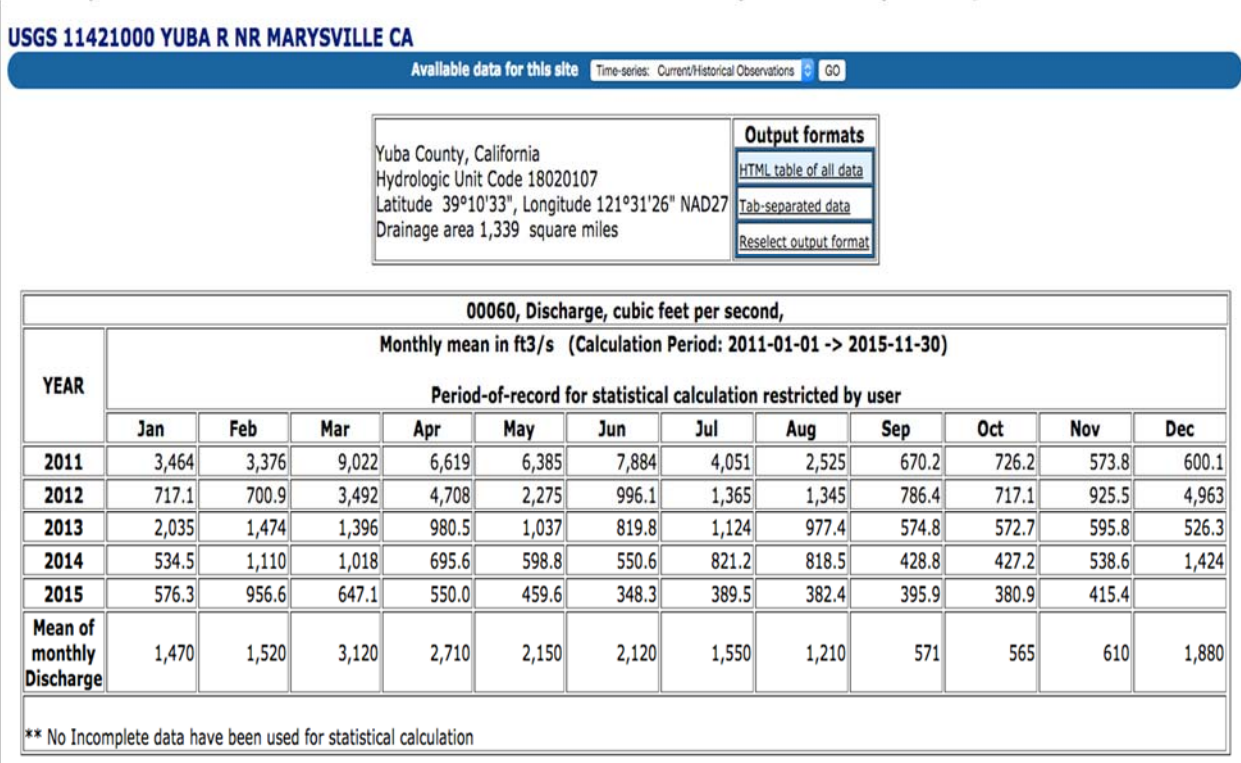
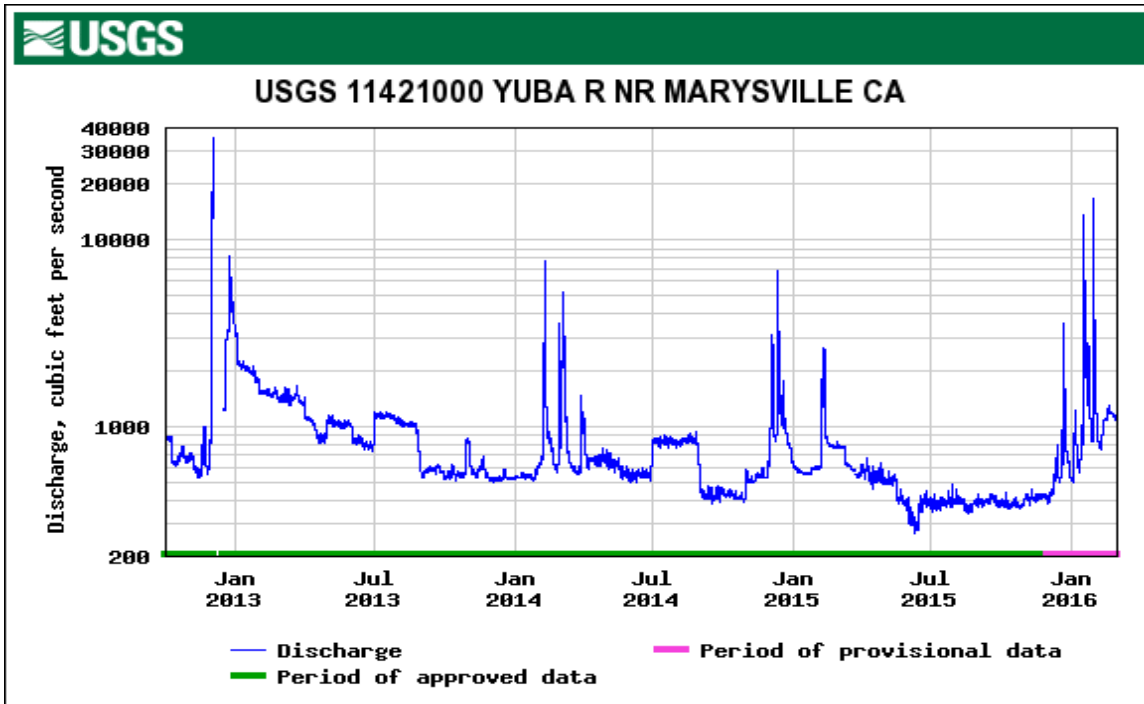


Figure 7: Observed Yuba River instream flows from January 2011 to May 2015.¹⁰⁴

104. U.S. Geological Service, USGS 11421000 Yuba R NR Marysville CA Provisional Data Subject to Revision (Mar. 2017) https://waterdata.usgs.gov/ca/nwis/uv?site_no=11421000.



Source: U.S. Geological Survey

Figure 8: Observed Yuba River instream flows from January 2011 to May 2015.¹⁰⁵

B. YCWA’s January 2014 TUCP Application (5632)

The State Board’s Corrected Order WR 2008-0014 authorized a transfer of up to 200,000 acre-feet of water from YCWA to outside water users under Permit 15026.¹⁰⁶ The San Luis Delta-Mendota Water Authority (the “Delta-Mendota”) receives part of those transfers. Their water flows from YCWA to the San Luis Reservoir during a three-month transfer window from July through September.¹⁰⁷ On January 23, 2014, YCWA filed a TUCP to add the

105. *Id.*

106. State Water Resources Control Bd., *Order Approving Petition for Change on Long-Term Transfer, Application 5632 1* (Mar. 18, 2014), http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/docs/a5632_order_freepport.pdf.

107. Yuba County Water Agency, *Petition for Change, Applications 5632* (Jan. 23, 2014) http://www.waterboards.ca.gov/waterrights/water_issues/programs/application_s/transfers_tu_notices/2014/5632tempurg_pet.pdf [hereinafter “Jan. TUCP App.”].

San Luis Reservoir dam as a point of re-diversion under Permit 15026.¹⁰⁸ Labeling the San Luis Reservoir a point of re-diversion was a bit misleading, since in actuality the conserved water was already in the reservoir.¹⁰⁹ Instead, the TUCP's goal was to allow the Delta-Mendota to continue to store the 2013 water into 2014, so that the Delta-Mendota's members could divert it in 2014.¹¹⁰ Essentially, the TUCP was an application to reschedule transfer flows in order to meet the needs of the Delta-Mendota's members. Specifically, the Delta-Mendota conserved approximately 7,400 acre-feet of the water it purchased from the Department of Water Resources under the Accord in 2013.¹¹¹ The Delta-Mendota's members wanted to store that conserved water to increase their 2014 supplemental supplies.¹¹² And granting the TUCP would allow the Delta-Mendota and the U.S. Bureau of Reclamation to enter into a Warren Act contract to use the San Luis Reservoir to store that water for use in 2014.¹¹³

The Delta-Mendota felt extra pressure to store the water because its members anticipated receiving no water from the Bureau of Reclamation's February 2014 allocation to the South of Delta Central Valley Project Agriculture Service Contractors in 2014. Granting the petition was particularly important because "[d]enying this petition would also prevent [members] from completing other transfers that bring supplemental water into the districts because having the ability to store Yuba Accord water would free up capacity on delivery schedules. Many of these additional transfers must be delivered "on pattern" and cannot be stored, rescheduled, or shown delivered in future months. Once the opportunity for executing these transfers is lost, they cannot be recovered in future months. By storing Yuba Accord water, the districts can exercise multiple water management strategies to efficiently maximize the beneficial use of the water."¹¹⁴ Because the water subject to the TUCP was already in the San Luis Reservoir, and the petition only looked to keep it stored there, the petition presented minimal if any environmental concerns.¹¹⁵ YCWA compiled an addendum to the Yuba Accord Final EIR, which stated that the petition would not add new significant environmental impacts not previously considered or substantial increases in the impacts studied under the Final EIR.¹¹⁶ Additionally, prior to approving the petition, the State Board found that the proposed change did not unreasonably affect

108. Feb. TUCP Order, *supra* note 79 at 1.

109. Jan. TUCP App., *supra* note 107 at 5.

110. Feb. TUCP Order, *supra* note 79 at 1.

111. *Id.* at 5.

112. *Id.* at 1.

113. *Id.*

114. Jan. TUCP App., *supra* note 107 at 5.

115. Feb. TUCP Order, *supra* note 79 at 2-4.

116. *Id.* at 2.

fish, wildlife, or other instream beneficial uses.¹¹⁷ The State Board contacted the Department of Fish and Wildlife, who also did not express any concerns over the petition.¹¹⁸

C. YCWA's October 2014 Change of Use Petition

In October of 2014, YCWA filed a Petition for Change under Water Code § 1735, et seq. to add a point of diversion, which would permit the same type of storage that the January TUCP Order allowed every year through 2025.¹¹⁹ Under the petition, the Delta-Mendota could store up 70,000 acre-feet of conserved Accord water in the San Luis Reservoir over multiple CVP contract years.¹²⁰ Much like the preceding TUCP, this petition would not involve any additional water beyond what is already transferred under the Accord.¹²¹

In October 2014, YCWA adopted a new addendum to the Accord's environmental impact report, which found that the new point of re-diversion would not have "(a) new significant environmental impacts not analyzed in the Yuba Accord EIR, (b) substantial increases in the severity of significant impacts analyzed in the Yuba Accord EIR, or (c) any other conditions or circumstances that would require preparation of a subsequent or supplemental EIR under Public Resources Code section 2166 and CEQA Guidelines section 15162."¹²² More specifically, the State Board found that the proposed change would not alter YCWA's operations in the Yuba Watershed and would not affect flow and water temperatures in the Feather and Sacramento rivers.¹²³ The addendum also "found that the proposed project would not be expected to reduce habitat suitability for warmwater and coldwater fish species in [the San Luis Reservoir]" and that it "would not result in significant environmental impacts or a substantial increase in the severity of previously identified significant impacts to warmwater fishes in [the reservoir]."¹²⁴ Furthermore, the proposed change may benefit coldwater fishes, since storage levels in the reservoir could increase 8.5% in September of dry and critical water years.¹²⁵ These minimal and even possibly beneficial effects led the State Board to approve the change on February 25, 2015.¹²⁶

117. *Id.* at 4.

118. *Id.* at 3.

119. State Water Resources Control Bd., *Order Approving Petition for Change on Long-Term Transfer 1* (Feb. 25, 2015) http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/petitions/2014.shtml.

120. *Id.*

121. *Id.*

122. *Id.* at 2.

123. *Id.*

124. *Id.*

125. *Id.* at 3.

126. *Id.* at 4-5.

VI. Lessons Learned During the Drought

While drought management in the Yuba Watershed benefited from late winter rains in 2014, the Yuba's comparative success during the drought stands as a great testament to those who manage it. The Yuba provides a prime example of the benefits of proactive management and functioning working relationships among diverse stakeholders.

1. The Yuba's drought management shows the importance of planning in effective drought management.

The Yuba Watershed provides examples of both good and poor proactive planning. First, YCWA's February TUCP petition is a prime demonstration of the benefits of utilizing science and data proactively to develop a drought management strategy. Such preemptive planning allows parties to ensure that water is available when it's needed most and that water is released in a way that maximizes the benefit to the fisheries. Second, while YCWA's January TUCP petition also provides an example of quality preemptive planning by the Delta-Mendota, who conserved water in preparation for lower deliveries the following year, the fact they needed a TUCP to allow them to reap the benefits of their conservation illuminates a problem with one-year water transfers. In particular, a system where a party potentially loses water it transfers if it does not use that water within the same water year does not incentivize conservation. It does the opposite. For example, if the Delta-Mendota had long-term guaranteed transfers and did not face the threat of not receiving water from another one of their suppliers, they would have had no incentive to conserve any water. This type of system fails to encourage parties to plan for multiyear droughts. Thus, if the Accord is an example of the benefits of pre-arranged long-term transfers, then it also must be an example of how other aspects of the system must be updated to ensure that parties prioritize conservation.

2. The Accord and its established flow schedules enabled watershed managers to act more quickly and with more consensus.

The State Board approved YCWA's February TUCP in a mere 14 days. Such efficiency can be attributed to the high level of stakeholder cooperation on the Yuba, and the extensive pre-application work they completed. In addition to the extensive forecasting and flow study that YCWA submitted with its application, YCWA also consulted with the Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the National Marine Fisheries

Service.¹²⁷ YCWA also submitted letters supporting the flow change from three fishery agencies and four different environmental organizations.¹²⁸ Not only is this coordination evidence of a highly functional watershed, it also helps YCWA and other stakeholders react more quickly to changing water conditions. In particular, one interviewee lauded the parties' coordination and how it helped the State Board approve the TUCP application more quickly. Not only does consulting the agencies and NGOs make the application stronger, but consulting with them also limits the number of complaints the State Board receives. In particular, the support of these agencies and organizations signals to other interested parties that the action is the proper one. This efficiency not only makes it easier for the State Board to process and approve a TUCP, but that groundwork allows stakeholders to better respond to changing drought conditions.

3. Properly managing groundwater basins can provide the flexibility to maintain instream flows during a drought.

Even prior to the Accord, YCWA's successful conjunctive use program replenished a severely over-drafted aquifer by balancing surface water and groundwater transfers and using flows from the Yuba River to replenish the aquifer.¹²⁹ One interviewee stressed the importance of the healthy groundwater basin, noting that it allows the Accord and YCWA to curtail surface water deliveries to protect instream flows without receiving significant backlash from growers.¹³⁰ For example, in April 2015, YCWA announced its first surface water delivery reductions in its history, but growers felt they could still plant most of their crop due to healthy groundwater supplies.¹³¹ Furthermore, the conjunctive use program adds predictability for growers, who know that they will receive water regardless of the Yuba's flow schedule. They also know ahead of time where their water will come from in the event of curtailments, which makes issuing curtailments much easier.

127. Feb. TUCP Order, *supra* note 79 at 4.

128. *Id.*

129. *From Controversy to Consensus*, *supra* note 3 at 22.

130. A group of citizens filed an initiative in May 2015 to ban groundwater transfers outside Yuba County, but it faced strong opposition and evidence that the aquifers remained healthy throughout the drought. Andrew Creasey, *Group Looks to Stop Yuba County Water Transfers*, APPEAL DEMOCRAT (May 31, 2015), <http://www.ycwa.com/documents/1059>. The initiative did not gather enough signature to make it on the ballot. Eric Vodden, *Yuba County Water Initiative Hits a Dry Hole*, APPEAL DEMOCRAT (Nov. 15, 2015), http://www.appeal-democrat.com/mobile_adv/news/.

131. Andrew Creasey, *Historic Water Cuts on Tap in Yuba County*, APPEAL DEMOCRAT, (April 22, 2015), <http://www.ycwa.com/documents/1034>.

4. The State Board spurred reform by setting higher instream flow standards

While conflict and litigation had already begun before the State Board issued its Revised Decision in 2003, interviewees indicated that the revised decision motivated the different stakeholders on the watershed to come together. During that time, power supply shortages plagued California, and the Yuba Project provided an important producer of hydropower. So, “[t]he State Water Board took an unusual step,” and “adopted the [revised] D-1644 order, and delayed the higher flow requirements for five years based on the potential negative impact on hydropower.”¹³² The decision to stay implementation then gave the parties time to negotiate a settlement. Furthermore, one interviewee talked about the importance of negotiating a settlement because such negotiations opened up the door to more creative solutions than more traditional resolution processes such as litigation.

In order to reach a consensus, negotiations took a significant amount of time. During negotiations to create the Accord, a team of biologists spent two years studying Chinook salmon and steelhead life cycles and habitat requirements.¹³³ The team prioritized the needs of the fish and examined the needs of different species on a month-to-month basis in order to identify the best monthly flows.¹³⁴ As a result, “[t]he Yuba Accord flow schedules were designed to provide the best of both worlds – a general mimicking of the pattern of unimpaired hydrology during winter and spring, with additional releases from storage during summer and fall to provide more beneficial habitat conditions in the lower Yuba River.”¹³⁵

5. Water transfers provide one way to increase instream flows, while also benefiting water suppliers.

One of the most important elements of the Accord was the fact that continuing YCWA’s water transfers allowed them to increase instream flows.¹³⁶ In addition, water transfers funded both portions of the Accord, like the fish monitoring and evaluation program, as well as YCWA’s efforts to improve

132. *From Controversy to Consensus*, *supra* note 3 at 11 (quoting Board Member Art Baggett, who was serving as a hearing officer at the time).

133. *Id.* at 14 (“The technical team comprised diverse experts from YCWA, NMFS, USFWS, DFG and DWR, as well as advocacy and environmental organizations such as Trout Unlimited, SYRCL, Friends of the River and The Bay Institute.”).

134. *Id.*

135. *Id.* at 15 (quoting Paul Bratovich, a fisheries biologist who consultants for YCWA) (internal quotation marks omitted).

136. *Id.* at 19.

flood control levees.¹³⁷ Specifically, “[r]educing our flood risk is a priority for YCWA, and it’s why the Yuba Accord is so important. . . . The Yuba Accord allows YCWA to improve fishery conditions and raise revenue for our desperately needed flood control measures.”¹³⁸ This arrangement gave both YCWA and environmental agencies what they each wanted most.

Few watersheds may have the attributes to replicate the Yuba’s transfers, but others still may have the potential to boost flows and promote good water management through downstream transfers. Nevertheless, it is important to identify any watershed that could reach similar agreements because agreements like the Accord benefit people outside the watershed by supplying much needed water on a consistent basis. It is also important to look for ways in which parties can find common ground. For example, as YCWA’s January TUCP shows, utilizing existing storage facilities can provide a way to schedule water transfers to maximize the benefit fisheries, while also supplying downstream users with water when they need it most.

Conclusion

The Yuba Watershed and the Accord are undoubtedly an example of effective drought management. In particular, scenario planning, stakeholder collaboration, environmentally beneficial water transfers, and sustainable groundwater management are keys to this successful management. Still, stakeholders on the Yuba must continue adapting to the challenges of unpredictable and longer lasting droughts, and their next opportunity for collaborative planning is the renewal of the Yuba River Project’s FERC license, which expired in 2016.

137. *Id.* at 18.

138. *Id.* at 5-6 (quoting Mary Jane Griego, a Yuba County supervisor and YCWA director) (internal quotation marks omitted).
