

Appendix 3

Chart of Recommendations and Costs

Cost of proposed and recommended measures for the Yuba River Development Project. Green shaded rows indicate agreement regarding the measure.

YCWA Proposed Condition and FPA Section 4(e), 10(j) and 10(a) Recommendations			Cost Over 30 Years, Excluding Energy Unless Otherwise Stated (2016\$) ¹		
#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
GENERAL					
1	Organize Ecological Group and Host Meetings	YCWA (GEN1) FS (4e 2) FWS (p. 33) CDFW (10j 1.1) FWN (pp. 3 & 60)	\$0	\$525,000	\$17,500
2	Annual Review of Special-Status Species Lists and Assessment of New Species on NFS Lands	YCWA (GEN2) FS (4e 30)	\$0	\$540,000	\$18,000
3	Annual Review of Special-Status Species Lists and Assessment of New Species on NFS Lands	CDFW (10j 1.2) FWN (p. 3)	The commenters did not provide an estimated cost to implement their recommendations. YCWA could not develop an estimate because the recommendations were vague (<i>See</i> Section III.B.5).		
4	Special Status Species Protection, Mitigation and Consultation	NMFS (10j 7)			
5	Consult with USFWS on Effects on ESA Listed Species	FWS (10j 6)			
6	Recovery of Special-Status Aquatic Species in the Lower Yuba River	FS (10a 6)			
7	Provide Environmental Training to Employees	YCWA (GEN3) FS (4e 28) FWS (p. 33) CDFW (10j 1.3) FWN (p. 3)	\$0	\$215,000	\$7,167
8	Develop and Implement a Coordinated Operations Plan to Assure Licensee's Compliance with the Yuba River Development Project New License	YCWA (GEN4) FWS (p. 34) CDFW (10j 2.8) FWN (p. 4)	\$0	\$330,000	\$11,000
9	Special-Status Species on NFS Lands	YCWA (GEN5) FS (4e 29) FWS (p. 34)	\$0	\$500,000	\$16,667
10	Review of Improvements on NFS Lands	YCWA (GEN6) FS (4e 25) FWS (p. 34)	\$0	\$240,000	\$8,000
GEOLOGY AND SOILS					
11	Implement Erosion and Sediment Control Plan	YCWA (GS1) FS (4e 52) FWS (p. 34) CDFW (10j 2.16) FWN (p. 4)	\$0	\$0	\$0

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#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
GEOLOGY AND SOIL (cont'd)					
12	Implement Our House and Log Cabin Diversion Dams Sediment Management Plan	YCWA (GS2) FS (4e 37) FWS (p. 34) CDFW (10j 2.17) FWN (p. 4)	\$750,000	\$8,050,100	\$293,337
13	Implement Our House and Log Cabin Diversion Dams and New Bullards Bar Reservoir Woody Material Management Plan	YCWA (GS3) FS (4e 38) CDFW (10j 2.18)	\$1,100,000	\$3,716,400	\$160,547
14	Revise Licensee's GS3 - Include Rapid LWM and Woody Debris Removal During Wood-Flow Events at New Bullards Bar Reservoir	FWS (10j 7) FWN (IX) NMFS (10j 3)	The commenters did not provide an estimated cost to implement their recommendations. YCWA did not develop a cost estimate because the recommendations were vague (<i>See</i> Section III.I.1).		
15	Implement Large Woody Material Augmentation Program	NMFS (10j 3)			
16	Large Woody Material and Sediment Enhancement Management Plan for the North Yuba River	FS (10a 5) FWS (10j 9) BLM (10a 3) CDFW (10j 2.19) FWN (VIII) SWRCB (11)	The commenters did not provide an estimated cost to implement their recommendations. YCWA estimates the cost over 30 years would be approximately \$20,000,000 (annualized cost of \$666,667) (<i>See</i> Section III.C.2.b).		
17	Develop Shot Rock Removal and Stabilization and Gravel Augmentation Plan for the Englebright Dam Reach	FWN (XI)	The FWN did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.B.2).		
WATER RESOURCES					
18	Implement Hazardous Materials Management Plan	YCWA (WR1) FS (4e 21 & 10a 7) CDFW (10j 1.4) FWN (p. 4)	\$0	\$0	\$0
19	Determine Water Year Types for Conditions Pertaining to Our House Diversion Dam, Log Cabin Diversion Dam and New Bullards Bar Dam	YCWA (WR2) FS (4e 31 & 10a 1) FWS (p. 34) CDFW (10j 2.1) FWN (p. 4)	\$0	\$30,000	\$1,000
20	Determine Water Year Types for Conditions Pertaining to Narrows 2 Powerhouse and Narrows 2 Full Bypass	YCWA (WR3)	\$0	\$30,000	\$1,000
21	Revise Licensee's WR2 – Lower Yuba River Water Year Types	FWS (10j 18) CDFW (10j 2.2) FWN (VI)	The commenters did not provide an estimated cost to implement their recommendations. YCWA did not develop a detailed cost estimate (<i>See</i> Section III.A.7).		

Cost of proposed and recommended measures for the Yuba River Development Project. Green shaded rows indicate agreement regarding the measure. (continued)

YCWA Proposed Condition and FPA Section 4(e), 10(j) and 10(a) Recommendations			Cost Over 30 Years, Excluding Energy Unless Otherwise Stated (2016\$) ¹		
#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
WATER RESOURCES (cont'd)					
22	Implement Streamflow and Reservoir Level Compliance Monitoring Plan	YCWA (WR4) FS (4e 36 & 10a 4) FWS (p. 34) CDFW (10j 2.14) FWN (p. 4)	\$1,650,000	\$300,000	\$65,000
23	Maintain New Bullards Bar Reservoir Minimum Pool	YCWA (WR5) FWN (p. 4)	\$0	\$0	\$0
24	Operate New Bullards Bar Reservoir for Flood Control	YCWA (WR6) FWN (p. 4)	\$0	\$300,000	\$10,000
25	Implement Water Temperature Monitoring Plan	YCWA (WR7) FS (4e 44 & 10a 14) FWS (p. 34) CDFW (10j 2.24) FWN (p. 4)	\$60,000	\$1,314,000	\$43,867
26	Implement Water Quality Monitoring Plan	YCWA (WR8) FS (4e 45 & 10a 15) FWS (p. 34) CDFW (10j 2.25) FWN (p. 4)	\$15,000	\$925,020	\$31,334
27	Implement Drought Management Plan	YCWA (WR9)	\$0	\$45,000	\$1,500
28	Revise Licensee’s WR9 - Drought Management Plan	FWS (14) BLM (10a 6) CDFW (10j 2.15) FWN (IV) SWRCB (23)	The commenters did not provide an estimated cost to implement their recommendations. YCWA estimates the cost over 30 years to develop a new plan would be \$60,000 (annualized cost of \$2,000) (<i>See</i> Section III.G).		
29	Use of New Colgate Power Tunnel Intake	FWS (10j 13) CDFW (10j 2.7)	The commenters did not provide an estimated cost to implement their recommendations. YCWA estimates the cost over 30 years would be approximately \$33,000,000 (annualized cost of \$1,100,000) (<i>See</i> Section III.A.5).		
30	Forecasted Target Flow and Flow Ramping Information	FWN (XIV)	The FWN did not provide an estimated cost to implement its recommendation. YCWA did not develop a cost estimate (<i>See</i> Section III.I.7).		
AQUATIC RESOURCES					
31	Maintain Minimum Streamflows below Our House Diversion Dam and Log Cabin Diversion Dam	YCWA (AR1) FS (4e 32) FWS (p. 34) CDFW (10j 2.3) FWN (p. 4)	\$2,587,500	\$475,200	\$102,090

Cost of proposed and recommended measures for the Yuba River Development Project. Green shaded rows indicate agreement regarding the measure. (continued)

YCWA Proposed Condition and FPA Section 4(e), 10(j) and 10(a) Recommendations			Cost Over 30 Years, Excluding Energy Unless Otherwise Stated (2016\$) ¹		
#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
AQUATIC RESOURCES (cont'd)					
32	Control Project Spills at Our House Diversion Dam	YCWA (AR2) FS (4e 33) CDFW (10j 2.9)	\$0	\$45,000	\$1,500
33	Maintain Minimum Streamflows at Narrows 2 Powerhouse and Narrows 2 Full Bypass	YCWA (AR3)	\$0	\$360,000	\$12,000
34	Maintain Minimum Streamflows in Lower Yuba River to Conserve Salmonid and Ecosystem Function	FWS (10j 1) BLM (10a 7) CDFW (10j 2.5) FWN (I)	The commenters did not provide an estimated cost to implement their recommendations. YCWA did not develop a detailed cost estimate (<i>See</i> Sections III.A.2 & III.A.4.)		
35	Maintain Summer Water Temperatures in the Lower Yuba River in Schedule 6 Water Years	FWS (10j 2) BLM (10a 8) NMFS (10j 2) CDFW (10j 2.6)	The commenters did not provide an estimated cost to implement their recommendations. YCWA did not develop a detailed cost estimate (<i>See</i> Section III.A.6).		
36	Control Project Spills at New Bullards Bar Dam	YCWA (AR4) FS (10a 3) CDFW (10j 2.11) FWN (p. 4)	\$0	\$0	\$0
37	Revise Licensee's AR4 - Spills at New Bullards Bar Dam	FWS (10j 12)	The FWS did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.C.3).		
38	Implement Aquatic Invasive Species Management Plan	YCWA (AR5) FS (4e 39 & 10a 8) CDFW (10j 2.20) FWN (p. 4)	\$50,000	\$407,000	\$15,523
39	Revise Licensee's AR5 - Aquatic Invasive Species Management Plan	FWS (p. 39)	The FWS did not provide an estimated cost to implement its recommendations. YCWA did not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.I.2).		
40	Implement New Bullards Bar Reservoir Fish Stocking Plan	YCWA (AR6) FS (10a 19) CDFW (10j 2.21) FWN (p. 5)	\$0	\$591,500	\$19,717
41	Implement Upper Yuba River Aquatic Monitoring Plan	YCWA (AR7) FS (4e 43 & 10a 13) FWS (p. 35) CDFW (10j 2.23) FWN (p. 5)	\$0	\$5,765,400	\$192,180

Cost of proposed and recommended measures for the Yuba River Development Project. Green shaded rows indicate agreement regarding the measure. (continued)

YCWA Proposed Condition and FPA Section 4(e), 10(j) and 10(a) Recommendations			Cost Over 30 Years, Excluding Energy Unless Otherwise Stated (2016\$) ¹		
#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
AQUATIC RESOURCES (cont'd)					
42	Revise Licensee's AR7 – Upper Yuba River Aquatic Monitoring Plan	FWS (p. 39)	The FWS did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.I.3).		
43	Implement Lower Yuba River Aquatic Monitoring Plan	YCWA (AR8) FWS (p. 35) CDFW (10j 2.26) FWN (p. 5)	\$0	\$9,434,000	\$314,467
44	Anadromous Fish Monitoring	NMFS (10j 6)	The NMFS did not provide an estimated cost to implement its recommendation. YCWA estimates the cost over 30 years would add approximately \$5,100,000 (annualized cost of \$170,000) to YCWA's estimated cost for YCWA's Proposed Condition AR8 (<i>See</i> Section III.B.4)		
45	Control Project Ramping and Flow Fluctuations Downstream of Englebright Dam	YCWA (AR9)	\$0	\$2,340,000	\$78,000
46	Revise Licensee's AR9 - Project Ramping and Flow Fluctuations Downstream of Englebright Dam	FWS (10j 16) BLM (10a 9) CDFW (10j 2.12)	The commenters did not provide an estimated cost to implement their recommendations. YCWA did not develop a detailed cost estimate (<i>See</i> Section III.A.3)		
47	Control Project Ramping Downstream of Englebright Dam to Support Riparian Seedling Survival	FWS (10j 17) BLM (10a 5)			
48	Maintain Minimum Streamflow Below New Bullards Bar Dam	YCWA (AR10)	\$0	\$0	\$0
49	Revise Licensee's AR10 - Minimum Streamflows Below New Bullards Bar Dam	FS (10a 2) FWS (10j 11) BLM (10a 10) CDFW (10j 2.4) FWN (VII)	The commenters did not provide an estimated cost to implement their recommendations. YCWA estimates the lost generation and O&M cost over 30 years would add approximately \$16,756,319 (annualize cost of \$558,554) to YCWA's estimated cost for YCWA's Proposed Condition AR10 (<i>See</i> Section III.C.1.e).		
50	Periodically Close Lohman Ridge Diversion Tunnel	YCWA (AR11) FS (4e 35)	\$5,500,000	\$198,000	\$189,933
51	Revise Licensee's AR11 - Close Lohman Ridge Diversion Tunnel	FWS (10j 10) CDFW (10j 2.13) FWN (p. XII)	The commenters did not provide an estimated cost to implement the recommendation. YCWA estimates the lost generation cost (i.e., without any O&M costs) over 30 years would add approximately \$14,512,020 (annualized cost of \$483,734) to YCWA's estimated cost for YCWA's Proposed Condition AR11 (<i>See</i> Sections III.D.1.d and III.D.1.j).		
52	Control Project Spills at Log Cabin Diversion Dam	YCWA (AR12) FS (4e 34) FWS (p. 35) CDFW (10j 2.10) FWN (p. 5)	\$0	\$13,500	\$450

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#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
AQUATIC RESOURCES (cont'd)					
53	Reservation of Section 10(j) Fish Passage Authority	CDFW (10j 2.30)	The CDFW did not provide an estimated cost to implement its recommendation. YCWA could not develop an estimate because the recommendation was vague (<i>See</i> Section III.F.1).		
54	Fish Passage	FWN (III)	The FWN did not provide an estimated cost to implement its recommendation. YCWA could not develop an estimate because the recommendation was vague (<i>See</i> Section III.F.2).		
55	Restore and Enhance Juvenile Salmonid Rearing Habitat in the Lower Yuba River	FWS (10j 3) BLM (10a 4) CDFW (10j 2.29) FWN (II)	The commenters did not provide an estimated cost to implement their recommendations. YCWA estimates the cost over 30 years would be approximately \$300,000,000 (annualized cost of \$10,000,000) (<i>See</i> Section III.B.1.e).		
56	Mitigate for Loss of Floodplain Resulting from Operations of the Proposed Flood Control Outlet	FWS (10j 15)			
57	Develop and Implement Physical Habitat Improvement Projects for Juvenile Salmonid Rearing	NMFS (10j 4)			
58	Develop and Implement Narrows Reach Fish Stranding Prevention Plan	FWS (10j 4) CDFW (10j 2.27) FWN (X) SWRCB (17)	The commenters did not provide an estimated cost to implement their recommendations. YCWA could not develop an estimate because the recommendations were vague (<i>See</i> Section III.B.3).		
59	Fish Exclusion Devices and Stranding Prevention and Reporting	NMFS (10j 5)			
60	Report Unplanned Flow Reductions in a Timely Manner	FWS (10j 5) CDFW (10j 2.28)	The commenters did not provide an estimated cost to implement their recommendations. YCWA could not develop a cost estimate because the recommendations were vague (<i>See</i> Section III.I.5).		
61	Develop a Sensitive Amphibians Management Plan	FWS (10j 8)	The FWS did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.I.6).		
62	Comply with NMFS Recovery Plan for Central Valley Spring-run Chinook Salmon	FWS (10a 1)	The FWS did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.B.6).		
63	Support Actions as Identified by the Anadromous Fish Restoration Program's Final Restoration Plan	FWS (10a 2)	The FWS did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.B.7).		
64	Restoration Plan	SWRCB (3)	The SWRCB did not provide an estimated cost to implement its recommendation. YCWA could not develop an estimate because the recommendation was vague (<i>See</i> Section III.I.9.).		
65	Our House and Log Cabin Diversion Dam Mitigation Plan	SWRCB (10)	The SWRCB did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.D.2).		

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#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
AQUATIC RESOURCES (cont'd)					
66	Placeholder for Future Actions for USACE's Yuba River Ecosystem Restoration Program	FOR (p. 8)	The FOR did not provide an estimated cost to implement its recommendation. YCWA could not develop an estimate because the recommendation was vague (<i>See</i> Section III.I.8).		
TERRESTRIAL RESOURCES					
67	Implement Integrated Vegetation Management Plan	YCWA (TR1) FS (4e 40 & 10a 9) CDFW (10j 3.1)	\$0	\$1,400,040	\$46,668
68	Implement Bald Eagle and American Peregrine Falcon Management Plan	YCWA (TR2) FS (4e 41 & 10a 10) FWS (p. 35) CDFW (10j 3.2)	\$0	\$750,000	\$25,000
69	Implement Ringtail Management Plan	YCWA (TR3) FS (10a 12) (FWS (p. 35) CDFW (10j 3.3)	\$0	\$65,000	\$2,167
70	Implement Bat Management Plan	YCWA (TR4) FS (4e 42 & 10a 11) FWS (p. 35) CDFW(10j 3.4)	\$15,000	\$65,000	\$2,667
RECREATION RESOURCES					
71	Implement Recreation Facilities Plan	YCWA (RR1) FS (4e 46 & 10a 16)	\$37,064,000	\$25,523,000	\$2,086,231
72	Revise Licensee's RR1 – Recreation Facilities Plan	FWN (XIII)	The FWN did not provide an estimated cost to implement its recommendation. YCWA could not develop an estimate because the recommendation was vague (<i>See</i> Section III.H.1).		
73	Provide Recreation Flow Information	YCWA (RR2) FS (4e 47 & 10a 18) FWS (p. 35) FWN (p. 5)	\$0	\$150,000	\$5,000
74	Revise Licensee's RR2 – Recreation Flow Information	FWN (XIII)	The FWN did not provide an estimated cost to implement its recommendation. YCWA could not develop an estimate because the recommendation was vague (<i>See</i> Section III.H.1).		
75	Provide Whitewater Boating Below Our House Diversion Dam	YCWA (RR3) FS (4e 48) FWS (p. 35) FWN (p. 5)	\$0	\$54,000	\$1,800

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#	Description	Commenter and Reference Designation ²	Capital Cost	O&M Cost	Annualized Cost
RECREATION RESOURCES (cont'd)					
76	Revise Licensee's RR3 – Whitewater Boating Below Our House Diversion Dam	FWN (XIII)	The FWN did not provide an estimated cost to implement its recommendation. YCWA could not develop an estimate because the recommendation was vague (<i>See</i> Section III.H.1).		
77	Access to the North Fork Yuba River	FS (10a 17) BLM (10a 14) CDFW 10j 2.22) FWN (XIII) SWRCB (22)	The commenters did not provide an estimated cost to implement their recommendations. YCWA did not develop a detailed cost estimate (<i>See</i> Section III.H.3).		
78	Daguerre Point Dam Portage Trail	BLM (10a 11)	The BLM did not provide an estimated cost to implement its recommendation. YCWA estimates the cost over 30 years would be approximately \$300,000 (annualized cost of \$20,000) (<i>See</i> Section III.H.4).		
79	Hammon Grove Takeout	BLM (10a 12)	The BLM did not provide an estimated cost to implement its recommendation. YCWA estimates the cost over 30 years would be approximately \$120,000 (annualized cost of \$4,000) (<i>See</i> Section III.H.5).		
80	Sign Plan	BLM (10a 13)	The BLM did not provide an estimated cost to implement its recommendation. YCWA estimates the cost over 30 years would be approximately \$75,000 (annualized cost of (\$2,500) (<i>See</i> Section III.H.6).		
81	Allow up to 120 Houseboats with a Maximum Size of 18 feet Wide by 70 feet Long on New Bullards Bar Reservoir	ECM	The ECM did not provide an estimated cost to implement its recommendation. YCWA did not develop a detailed cost estimate (<i>See</i> Footnote 17).		
LAND USE					
82	Implement Transportation System Management Plan	YCWA (LU1) FS (4e 51 & 10a 21)	\$0	\$24,464,500	\$815,483
83	Implement Fire Prevention and Response Plan	YCWA (LU2) FS (4e 53)	\$0	\$30,000	\$1,000
84	Revise Licensee's LU2 – Fire Prevention and Response Plan	FWS (p. 39)	The FWN did not provide an estimated cost to implement its recommendation. YCWA could not develop a cost estimate because the recommendation was vague (<i>See</i> Section III.I.4).		
AESTHETICS					
85	Implement Visual Resource Management Plan	YCWA (AR1) FS (4e 49) FWS (p. 35)	\$0	\$63,000	\$2,100

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CULTURAL RESOURCES					
86	Implement Historic Properties Management Plan	YCWA (CR1) FS (4e 50 & 10a 20)	\$0	\$1,956,000	\$65,200

¹ Unless otherwise indicated, all cost estimates were developed by YCWA. Where YCWA proposed the condition, refer to Table 6.2.2-2 in Exhibit D of YCWA's Amended FLA for a justification of the estimated cost.

² The notation refers to the relevant proposed condition in YCWA's Amended FLA, and the relevant recommendation number or page number in the FS's, FWS's, BLM's, NMFS's, CDFW's, FWN's and FOR's comment letter, including, as relevant, whether the recommendation was a Section 4(e) condition or a Section 10(a) or 10(j) recommendation.