

STUDY REPORT RR-02
WHITEWATER BOATING TAKE-OUT IMPROVEMENT FEASIBILITY

ATTACHMENT C

**WARD'S FERRY BRIDGE WHITEWATER BOATING TAKE-OUT
CONCEPTUAL DESIGNS PRELIMINARY COST ESTIMATES**

Don Pedro Hydroelectric Project (FERC No. 2299) - Ward's Ferry Bridge Whitewater Boating Take-Out
 Conceptual Design Preliminary Cost Estimate - River Right Upgrade Option

EST. AS OF: December-12
 PREPARED BY: CR MacDonald
 REVIEWED BY: J Gagnon / G Hickman

CODE	DESCRIPTION	QUANTITY	MATERIAL UNIT	PRICE	QUANTITY	LABOR UNIT	RATE	QUANTITY	EQUIPMENT UNIT	RATE	Total Rate Plus O&P	DIRECT TOTAL \$	TOTAL \$	COMMENTS
100	GENERAL												\$57,500	
110	Mobilization										\$35,000	\$35,000		Assumed for adverse site location, narrow roads, remote location
120	Temporary Services										\$5,000	\$5,000		Assumed for power, data, and water
130	Site Management										\$15,000	\$15,000		Assumed, includes stockpile and surplus management, traffic control, trailer / office facilities and general oversight
140	Site Access										\$2,500	\$2,500		Assumed travel costs for inspection and supervision
1000	UPGRADE EXISTING ACCESS ROAD ON RIVER RIGHT												\$127,748	Note: Costs provided are in Q2 2012 Dollars based in Modesto Ca. Values for labor and equipment have been increased by an additional factor of 2 over means values and notes below due to the remote nature of the site.
1100	Road Restoration (Widen to 15' total to Old Abutment)													
1110	Rock Blasting	52	cuyd	\$3.03	52	cuyd	\$123.22	52	cuyd	\$126.60	\$252.85	\$13,111		Average of: Means ID: 31231630020 Drilling and blasting rock, open face, under 1500 C.Y. and Means ID: 312316301900 Drilling and blasting rock, restricted areas, up to 1500 C.Y.
1120	Rock Removal	52	cuyd	\$0.00	52	cuyd	\$34.52	52	cuyd	\$32.44	\$66.96	\$3,472		Means ID: 312316305000 Drilling and blasting rock, less than 0.5 C.Y., excavate and load boulders & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
1130	Wall Construction	250	sqft	\$21.27	250	sqft	\$15.63	250	sqft	\$1.74	\$38.64	\$9,660		Means ID: 32323137150 Segmental retaining walls, unit masonry interlocking wall system, straight split, 6" high x 18" wide x 20" deep, includes pins, and void fill, excludes base. Multiplied by a factor of 1.5, as Means does not provide an appropriate line item for this wall system. Assume 5 feet tall by length.
1140	Wall Footing	50	cuft	\$25.21	50	cuft	\$48.94	50	cuft	\$2.36	\$76.51	\$3,826		Assuming a 1' wide x 1' tall footing along the length of wall. Means ID: 031113450020 C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning & Means ID: 03310250150 Concrete, hand mix for small quantities or remote areas, 5000 psi, using gas powered cement mixer, includes local bulk aggregate & sand, bagged Portland cement, excludes, forms, reinforcing, placing & finishing
1150	Common Borrow / Road Build Up	23	cuyd	\$19.41	23	cuyd	\$16.52	23	cuyd	\$22.62	\$58.55	\$1,355		Means ID: 312323154000 Borrow, common earth, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
1160	Select Road Materials	589	cuyd	\$21.22	589	cuyd	\$16.28	589	cuyd	\$22.34	\$59.84	\$35,239		Means ID: 312323155000 Borrow, select granular fill, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
1170	Pavement	7,950	sqft	\$2.40	7,950	sqft	\$0.68	7,950	sqft	\$0.54	\$3.62	\$28,779		Means ID: 32126140025 Asphaltic concrete, parking lots & driveways, 6" stone base, 2" binder course, 2" topping, no asphalt hauling included
1180	Pavement Hauling	192	ton	\$0.00	192	ton	\$13.98	192	ton	\$19.58	\$33.56	\$6,448		Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip. Assumed as a more appropriate delivery charge given the presumed travel distance.
1190	Guardrail	530	lf	\$40.43	530	lf	\$5.18	530	lf	\$3.18	\$48.79	\$25,859		RS Means 2012 4 th Quarter Update, Modified to Modesto, Ca rates with Contractor O&P, Sales Tax and Insurance.
2000	UPGRADE RIVER RIGHT EXISTING TRAIL TO RIVER												\$11,107	
2100	Widen Trail to 4'													
2110	Grade Existing Trail	1,540	sqft	\$0.00	1,540	sqft	\$2.48	1,540	sqft	\$0.30	\$2.78	\$4,281		Means ID: 312216101200 Fine grading, fine grade granular base for sidewalks and bikeways
2110	Select Trail Materials	114	cuyd	\$21.22	114	cuyd	\$16.28	114	cuyd	\$22.34	\$59.84	\$6,826		Means ID: 312323155000 Borrow, select granular fill, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3000	CONSTRUCT NEW ROAD TO RIVER ON RIVER RIGHT												Varies	
3100	Rock Cut Option - Option 1												\$265,324	
3110	Rock Blasting	830	cuyd	\$3.03	830	cuyd	\$123.22	830	cuyd	\$126.60	\$252.85	\$209,771.85		Average of: Means ID: 31231630020 Drilling and blasting rock, open face, under 1500 C.Y. and Means ID: 312316301900 Drilling and blasting rock, restricted areas, up to 1500 C.Y.
3120	Rock Removal	830	cuyd	\$0.00	830	cuyd	\$34.52	830	cuyd	\$32.44	\$66.96	\$55,552.00		Means ID: 312316305000 Drilling and blasting rock, less than 0.5 C.Y., excavate and load boulders & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3200	MSE Wall - Option 2												\$228,534	
3210	Common Borrow / Road Build Up	741	cuyd	\$19.41	741	cuyd	\$16.52	741	cuyd	\$22.62	\$58.55	\$43,370.37		Means ID: 312323154000 Borrow, common earth, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3220	Wall	4,000	sqft	\$21.27	4,000	sqft	\$15.63	4,000	sqft	\$1.74	\$38.64	\$154,560.00		Means ID: 32323137150 Segmental retaining walls, unit masonry interlocking wall system, straight split, 6" high x 18" wide x 20" deep, includes pins, and void fill, excludes base. Multiplied by a factor of 1.5, as Means does not provide an appropriate line item for this wall system. Assume 10 feet tall by length.
3230	Wall Footing	400	cuft	\$25.21	400	cuft	\$48.94	400	cuft	\$2.36	\$76.51	\$30,604.00		Assuming a 1' wide x 1' tall footing along the length of wall. Means ID: 031113450020 C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning (units x3 to yield sqft per LF) & Means ID: 03310250150 Concrete, hand mix, for small quantities or remote areas, 5000 psi, using gas powered cement mixer, includes local bulk aggregate & sand, bagged Portland cement, excludes, forms, reinforcing, placing & finishing
3300	General Road Construction												\$54,971	
3310	Select Road Materials	296	cuyd	\$21.22	296	cuyd	\$16.28	296	cuyd	\$22.34	\$59.84	\$17,730.37		Means ID: 312323155000 Borrow, select granular fill, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3320	Pavement	4,000	sqft	\$2.40	4,000	sqft	\$0.68	4,000	sqft	\$0.54	\$3.62	\$14,480.00		Means ID: 32126140025 Asphaltic concrete, parking lots & driveways, 6" stone base, 2" binder course, 2" topping, no asphalt hauling included
3330	Pavement Hauling	97	ton	\$0.00	97	ton	\$13.98	97	ton	\$19.58	\$33.56	\$3,244.13		Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip. Assumed as a more appropriate delivery charge given the presumed travel distance.
3340	Guardrail	400	lf	\$40.43	400	lf	\$5.18	400	lf	\$3.18	\$48.79	\$19,516.00		RS Means 2012 4 th Quarter Update, Modified to Modesto, Ca rates with Contractor O&P, Sales Tax and Insurance.

CONSTRUCTION COST ROCK CUT SUBTOTAL \$516,650
CONSTRUCTION COST MSE WALL SUBTOTAL \$479,860

OPTION 1 - CONSTRUCTION COST ROCK CUT
 ENGINEERING 15% \$77,497
 CONTINGENCY 30% \$154,995

OPTION 1 - CONSTRUCTION COST ROCK CUT TOTAL \$749,142

OPTION 2 - CONSTRUCTION COST MSE WALL
 ENGINEERING 15% \$71,979
 CONTINGENCY 30% \$143,958

OPTION 2 - CONSTRUCTION COST MSE WALL TOTAL \$695,798

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Conceptual Design Preliminary Cost Estimate - River Left Upgrade Option**

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CODE	DESCRIPTION	QUANTITY	MATERIAL UNIT	PRICE	QUANTITY	LABOR UNIT	RATE	QUANTITY	EQUIPMENT UNIT	RATE	Total Rate Plus O&P	DIRECT TOTAL \$	TOTAL \$	COMMENTS
100	GENERAL												\$57,000	
110	Mobilization										\$35,000	\$35,000		Assumed for adverse site location, narrow roads, remote location
120	Temporary Services										\$5,000	\$5,000		Assumed for cover, data, and water
130	Site Management										\$15,000	\$15,000		Assumed, includes stockpile and surplus management, traffic control, trailer / office facilities and general oversight
140	Site Access										\$2,500	\$2,500		Assumed travel costs for inspection and supervision
1000	UPGRADE EXISTING ACCESS ROAD ON RIVER LEFT												Varies	Note: Costs provided are in Q2 2012 Dollars based in Modesto Ca. Values for labor and equipment have been increased by an additional factor of 2 over means values and notes below due to the remote nature of the site.
1100	Road Restoration Rock Cut - Option 1												\$27,693	
1110	Rock Blasting	87	cuyd	\$3.03	87	cuyd	\$123.22	87	cuyd	\$126.60	\$252.85	\$21,895		Average of Means ID: 312316300020 Drilling and blasting rock, open face, under 1500 C.Y. and Means ID: 312316301900 Drilling and blasting rock, restricted areas, up to 1500 C.Y.
1120	Rock Removal	87	cuyd	\$0.00	87	cuyd	\$34.52	87	cuyd	\$32.44	\$66.96	\$5,799		Means ID: 312316305000 Drilling and blasting rock, less than 0.5 C.Y., excavate and load boulders & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
1200	Road Restoration MSE Wall - Option 2												\$49,568	
1210	Wall Construction	835	sqft	\$21.27	835	sqft	\$15.63	835	sqft	\$1.74	\$38.64	\$32,264		Means ID: 323223137150 Segmental retaining walls, unit masonry interlocking wall system, straight split, 8" high x 18" wide x 20" deep, includes pins, and void fill, excludes base. Multiplied by a factor of 1.5, as Means does not provide an appropriate line item for this wall system. Assume 5 feet tall by length.
1220	Wall Footing	167	cuft	\$25.21	167	cuft	\$48.94	167	cuft	\$2.36	\$76.51	\$12,777		Assuming a 1' wide x 1' tall footing along the length of wall: Means ID: 031113450020 C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning & Means ID: 033106201900 Concrete, hand mix, for small quantities or remote areas, 5000 psi, using gas-powered cement mixer, includes local bulk aggregate & sand, bagged Portland cement, excludes, forms, reinforcing, placing & finishing
1230	Common Borrow / Road Build Up	77	cuyd	\$19.41	77	cuyd	\$16.52	77	cuyd	\$22.62	\$58.55	\$4,527		Means ID: 312323154000 Borrow, common earth, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
1300	General Road Construction (To Old Abutment)												\$56,757	
1310	Select Road Materials	306	cuyd	\$21.22	306	cuyd	\$16.28	306	cuyd	\$22.34	\$59.84	\$18,307		Means ID: 312323155000 Borrow, select granular fill, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
1320	Pavement	4,130	sqft	\$2.40	4,130	sqft	\$0.68	4,130	sqft	\$0.54	\$3.62	\$14,951		Means ID: 321216140025 Asphaltic concrete, parking lots & driveways, 6" stone base, 2" binder course, 2" topping, no asphalt hauling included
1330	Pavement Hauling	100	ton	\$0.00	100	ton	\$13.98	100	ton	\$19.58	\$33.56	\$3,350		Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip. Assumed as a more appropriate delivery charge given the presumed travel distance.
1400	Guardrail	413	lf	\$40.43	413	lf	\$5.18	413	lf	\$3.18	\$48.79	\$20,150		RS Means 2012 4 th Quarter Update, Modified to Modesto, Ca rates with Contractor OH&P, Sales Tax and Insurance.
2000	UPGRADE RIVER RIGHT EXISTING TRAIL TO RIVER ON RIVER RIGHT												\$11,107	
2100	Widen Trail to 4'													
2110	Grade Existing Trail	1,540	sqft	\$0.00	1,540	sqft	\$2.48	1,540	sqft	\$0.30	\$2.78	\$4,281		Means ID: 312216101200 Fine grading, fine grade granular base for sidewalks and bikeways
2110	Select Trail Materials	114	cuyd	\$21.22	114	cuyd	\$16.28	114	cuyd	\$22.34	\$59.84	\$6,826		Means ID: 312323155000 Borrow, select granular fill, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3000	CONSTRUCT NEW ROAD TO RIVER ON RIVER LEFT												Varies	
3100	Rock Cut Option - Option 1												\$265,324	
3110	Rock Blasting	830	cuyd	\$3.03	830	cuyd	\$123.22	830	cuyd	\$126.60	\$252.85	\$209,771.85		Average of Means ID: 312316300020 Drilling and blasting rock, open face, under 1500 C.Y. and Means ID: 312316301900 Drilling and blasting rock, restricted areas, up to 1500 C.Y.
3120	Rock Removal	830	cuyd	\$0.00	830	cuyd	\$34.52	830	cuyd	\$32.44	\$66.96	\$65,552.00		Means ID: 312316305000 Drilling and blasting rock, less than 0.5 C.Y., excavate and load boulders & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3200	MSE Wall - Option 2												\$228,534	
3210	Common Borrow / Road Build Up	741	cuyd	\$19.41	741	cuyd	\$16.52	741	cuyd	\$22.62	\$58.55	\$43,370.37		Means ID: 312323154000 Borrow, common earth, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3220	Wall	4,000	sqft	\$21.27	4,000	sqft	\$15.63	4,000	sqft	\$1.74	\$38.64	\$154,560.00		Means ID: 323223137150 Segmental retaining walls, unit masonry interlocking wall system, straight split, 8" high x 18" wide x 20" deep, includes pins, and void fill, excludes base. Multiplied by a factor of 1.5, as Means does not provide an appropriate line item for this wall system. Assume 10 feet tall by length.
3230	Wall Footing	400	cuft	\$25.21	400	cuft	\$48.94	400	cuft	\$2.36	\$76.51	\$30,604.00		Assuming a 1' wide x 1' tall footing along the length of wall: Means ID: 031113450020 C.I.P. concrete forms, footing, continuous wall, plywood, 1 use, includes erecting, bracing, stripping and cleaning (units x3 to yield sqft per lf) & Means ID: 033106201900 Concrete, hand mix, for small quantities or remote areas, 5000 psi, using gas-powered cement mixer, includes local bulk aggregate & sand, bagged Portland cement, excludes, forms, reinforcing, placing & finishing
3300	General Road Construction												\$54,971	
3310	Select Road Materials	296	cuyd	\$21.22	296	cuyd	\$16.28	296	cuyd	\$22.34	\$59.84	\$17,730.37		Means ID: 312323155000 Borrow, select granular fill, 1 C.Y. bucket, loading and/or spreading, shovel & Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip
3320	Pavement	4,000	sqft	\$2.40	4,000	sqft	\$0.68	4,000	sqft	\$0.54	\$3.62	\$14,480.00		Means ID: 321216140025 Asphaltic concrete, parking lots & driveways, 6" stone base, 2" binder course, 2" topping, no asphalt hauling included
3330	Pavement Hauling	97	ton	\$0.00	97	ton	\$13.98	97	ton	\$19.58	\$33.56	\$3,244.13		Means ID: 312323151840 Borrow, delivery charge, minimum 20 tons, 2 hour round trip. Assumed as a more appropriate delivery charge given the presumed travel distance.
3340	Guardrail	400	lf	\$40.43	400	lf	\$5.18	400	lf	\$3.18	\$48.79	\$19,516.00		RS Means 2012 4 th Quarter Update, Modified to Modesto, Ca rates with Contractor OH&P, Sales Tax and Insurance.
4000	REPLACE EXISTING STRUCTURES												\$50,900	
4100	Replace Toilet Facility													
4110	Demolish Existing Structure										\$3,000.00	\$3,000.00		Assumed price based on other concrete structures of similar size and construction. Looked at Means IDs: 024113440700, 024113430200 and 024113340200 for approximate equal (similar sized concrete structures)
4120	Construct Replacement Structure										\$47,900.00	\$47,900.00		Quoted price from CXT Precast for delivery and installation for a project in the Mountain West with similar remote access issues

	CONSTRUCTION COST ROCK CUT	SUBTOTAL	\$524,252
	CONSTRUCTION COST MSE WALL	SUBTOTAL	\$509,338
OPTION 1 - CONSTRUCTION COST ROCK CUT	ENGINEERING	15%	\$78,638
	CONTINGENCY	30%	\$157,276
	OPTION 1 - CONSTRUCTION COST ROCK CUT	TOTAL	\$760,165
OPTION 2 - CONSTRUCTION COST MSE WALL	ENGINEERING	15%	\$76,401
	CONTINGENCY	30%	\$152,801
	OPTION 2 - CONSTRUCTION COST MSE WALL	TOTAL	\$738,540