
Attachment C

Cost Estimate Worksheets

- C1 Component Summary Worksheets and Common Costs
- C2 Cost Estimate Worksheets – **Raise Friant Dam**
- C3 Cost Estimate Worksheets – **Temperance Flat Reservoir RM 274**
- C4 Cost Estimate Worksheets – **Temperance Flat Reservoir RM 279**
- C5 Cost Estimate Worksheets – **Temperance Flat Reservoir RM 286**
- C6 Cost Estimate Worksheets – **Fine Gold Reservoir**
- C7 Cost Estimate Worksheets – **Yokohl Valley Reservoir**

Attachment C Table of Contents

Attachment C1: Component Summary Worksheets and Common Costs

▪ TABLE C-1: <i>CONSTRUCTION COSTS SUMMARY</i>	(4 pages)
▪ KER_PH1_ABAN	(1 page)
▪ KER_PH1_ABAN&RSTR	(1 page)
▪ KER_PH1_INTK	(1 page)
▪ KER_PH2_ABAN	(1 page)
▪ KER_PH2_INTK	(1 page)
▪ KER_OW&GATES	(1 page)
▪ ROADS	(2 pages)
▪ AUB_RD	(3 pages)
▪ AUB_BRG	(6 pages)
▪ MILL LK _NEW PH	(13 pages)
▪ RED_NEW PH	(11 pages)
▪ COMMON _ADJ COSTS	(1page)
▪ KER_PH2_DIV TNL	(11 pages)
▪ WISH_PH	(1 page)
▪ BGCR4_PH	(1 page)
▪ Aux. Mech. Systems Summary (Ker. #2 and Red. Dams)	(4 pages)
▪ LANDS	(1 page)

Attachment C2: Raise Friant Dam

▪ FRI_25	(3 pages)
▪ FRI_60	(3 pages)
▪ FRI_140	(3 pages)
▪ FRI_ADD COSTS	(1 page)

Attachment C3: Temperance Flat Reservoir at RM 274

▪ TF274_800_CFR	(3 pages)
▪ TF274_865_CFR	(3 pages)
▪ TF274_960_CFR	(3 pages)
▪ TF274_985_CFR	(3 pages)
▪ TF274_1100_CFR	(3 pages)
▪ TF274_ADJ COSTS	(1 page)

Attachment C4: Temperance Flat Reservoir at RM 279

- TF279_900_RCC (2 pages)
- TF279_985_RCC (2 pages)
- TF279_1100_CFR (3 pages)
- TF279_1115_CFR (3 pages)
- TF279_1200_CFR (3 pages)
- TF279_1300_CFR (3 pages)
- TF279_ADJ COSTS (1 page)

Attachment C5: Temperance Flat Reservoir at RM 286

- TF286_1200_RCC (2 pages)
- TF286_1300_RCC (2 pages)
- TF286_1400_RCC (2 pages)
- TF286_ADJ COSTS (2 pages)
- TF286_SY&TRANS (2 pages)
- TF286_PH(180MW)+OW (11 pages)
- RED_OP EQUIP (1 page)
- KER_PH2_TURB RPLC (6 pages)
- Aux. Mech. Systems Summary (Dam at RM286) (1 pages)

Attachment C6: Fine Gold Reservoir

- FG_900_RCC (2 pages)
- FG_900_CFR (3 pages)
- FG_1100_RCC (2 pages)
- FG_1100_CFR (4 pages)

Attachment C7: Yokohl Valley Reservoir

- YV_790 (3 pages)
- YV_TRANS (1 page)

Attachment C1

**Component Summary Worksheets
AND
Common Costs**

TABLE C-1: Construction Costs for Componets and Features Included in Surface Water Storage Measures

Estimate Worksheet Name	Component/Feature	Original Cost Year	Contract Cost (\$M)	Contingency		Original Field Costs (rounded)	Price Escalation ⁷		Indexed Field Cost, 07/04 (rounded)	Feature Indirect Costs		Construction Cost, 7/04 (rounded)	Lands (Attachment 1, LANDS)	Lands Indirect Costs		Acquisition Cost	Construction Cost including Land Acquisition (rounded)
				% ¹	\$		%	\$		%	\$			%	\$		
Raise Friant Dam (Chapter 2, Table 2-8)																	
Storage Components																	
FRI_25_3	25 Foot Raise Option (RCC Overlay, Saddle Dams)	Jul-03	\$ 81	30%	\$ 24	\$ 105	7%	\$ 7	\$ 110	25%	\$ 30	\$ 140	\$ 27	20%	\$ 5	\$ 32	\$ 170
FRI_60_3	60 Foot Raise Option (RCC Overlay, Saddle Dams)	Jul-03	\$ 195	30%	\$ 55	\$ 250	7%	\$ 18	\$ 270	25%	\$ 70	\$ 340	\$ 42	20%	\$ 8	\$ 50	\$ 390
FRI_140_3	140 Foot Raise Option (RCC Overlay, Saddle Dams)	Jul-03	\$ 510	30%	\$ 150	\$ 660	7%	\$ 46	\$ 710	25%	\$ 180	\$ 890	\$ 65	20%	\$ 13	\$ 78	\$ 970
KER_PH1_ABAN&RSTR	Abandon and Restore Kerckhoff Powerhouse (140 Foot Raise Option)	Jul-04	\$ 3		\$ 1	\$ 3	0	\$ -	\$ 3	25%	\$ 1	\$ 4				\$ 4	\$ 4
KER_PH2_ABAN	Abandon In Place Kerckhoff No. 2 Powerhouse (60 and 140 Foot Raise Options)	Jul-04	\$ 1		\$ 0	\$ 2	0	\$ -	\$ 2	25%	\$ 0	\$ 2				\$ 2	\$ 2
KER_PH2_INTK	Remove Intake to Kerckhoff No. 2 Powerhouse (140 Foot Raise Option)	Jul-04	\$ 1		\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 0	\$ 1				\$ 1	\$ 1
--	Floodwall for Kerckhoff No. 2 Powerhouse Access (25 Foot Raise Option) ²	--	\$ 1	30%	\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 1	\$ 2				\$ 2	\$ 2
ROADS_1	Millerton Road Relocation	Jul-04	\$ 17	30%	\$ 5	\$ 22	0	\$ -	\$ 22	25%	\$ 6	\$ 28				\$ 28	\$ 28
Power Generation Components																	
FRI_ADD COSTS	5 MW Additional Generation Capacity at Friant Dam (25 Foot Raise Option)	--	\$ 12	25%	\$ 3	\$ 14	0	\$ -	\$ 14	25%	\$ 4	\$ 18				\$ 18	\$ 18
FRI_ADD COSTS	13 MW Additional Generation Capacity at Friant Dam (60 Foot Raise Option)	--	\$ 31	25%	\$ 8	\$ 39	0	\$ -	\$ 39	25%	\$ 10	\$ 49				\$ 49	\$ 49
FRI_ADD COSTS	30 MW Additional Generation Capacity at Friant Dam (140 Foot Raise Option)	--	\$ 72	25%	\$ 18	\$ 90	0	\$ -	\$ 90	25%	\$ 25	\$ 115				\$ 115	\$ 115
COMMON_ADJ COSTS	Construct New Kerckhoff 90MW Powerhouse at Millerton Lake (60 Foot Raise Option)	Jul-04	\$ 81	30%	\$ 24	\$ 105	0	\$ -	\$ 105	25%	\$ 25	\$ 130				\$ 130	\$ 130
COMMON_ADJ COSTS	Construct New Kerckhoff 40MW Powerhouse at Millerton Lake (140 Foot Raise Option)	Jul-04	\$ 54	30%	\$ 16	\$ 70	0	\$ -	\$ 70	25%	\$ 18	\$ 88				\$ 88	\$ 88
Temperance Flat Reservoir at RM 274 (Chapter 3, Table 3-8)																	
Storage Components																	
TF274_ADJ COSTS	800 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 320	30%	\$ 100	\$ 420	7%	\$ 29	\$ 450	25%	\$ 110	\$ 560	\$ 1	20%	\$ 0	\$ 1	\$ 560
TF274_ADJ COSTS	865 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 379	30%	\$ 111	\$ 490	7%	\$ 34	\$ 520	25%	\$ 130	\$ 650	\$ 2	20%	\$ 0	\$ 2	\$ 650
TF274_ADJ COSTS	960 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 450	30%	\$ 140	\$ 590	7%	\$ 41	\$ 630	25%	\$ 160	\$ 790	\$ 4	20%	\$ 1	\$ 5	\$ 790
TF274_ADJ COSTS	985 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 470	30%	\$ 140	\$ 610	7%	\$ 43	\$ 650	25%	\$ 160	\$ 810	\$ 4	20%	\$ 1	\$ 5	\$ 810
TF274_ADJ COSTS	1100 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 550	30%	\$ 170	\$ 720	7%	\$ 50	\$ 770	25%	\$ 190	\$ 960	\$ 7	20%	\$ 1	\$ 8	\$ 970
KER_PH1_ABAN	Abandon In Place Kerckhoff Powerhouse	Jul-04	\$ 1		\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 1	\$ 2				\$ 2	\$ 2
KER_PH1_INTK	Remove Intake to Kerckhoff Powerhouse	Jul-04	\$ 1		\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 0	\$ 1				\$ 1	\$ 1
KER_PH2_ABAN	Abandon In Place Kerckhoff No. 2 Powerhouse	Jul-04	\$ 1		\$ 0	\$ 2	0	\$ -	\$ 2	25%	\$ 0	\$ 2				\$ 2	\$ 2
KER_PH2_INTK	Remove Intake to Kerckhoff No. 2 Powerhouse	Jul-04	\$ 1		\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 0	\$ 1				\$ 1	\$ 1
KER_OW&GATES	Remove Kerckhoff Dam Outlet Works and Gates (960, 985, and 1100 Foot Options)	Jul-04	\$ 1		\$ 0	\$ 2	0	\$ -	\$ 2	25%	\$ 0	\$ 2				\$ 2	\$ 2
WISH_PH	Abandon Wishon Powerhouse (1100 Foot Option)	Jul-04	\$ 1		\$ 0	\$ 2	0	\$ -	\$ 2	25%	\$ 0	\$ 2				\$ 2	\$ 2
BIGCR4_PH	Abandon Big Creek No. 4 Powerhouse (1100 Foot Option)	Jul-04	\$ 3		\$ 1	\$ 3	0	\$ -	\$ 3	25%	\$ 1	\$ 4				\$ 4	\$ 4
ROADS_1	Auberry Road Relocation (1100 Foot Option)	Jul-04	\$ 11	30%	\$ 3	\$ 14	0	\$ -	\$ 14	25%	\$ 4	\$ 18				\$ 18	\$ 18
ROADS_1	Auberry Road Bridge Relocation (1100 Foot Option)	Jul-04	\$ 13	30%	\$ 4	\$ 17	0	\$ -	\$ 17	25%	\$ 4	\$ 21				\$ 21	\$ 21
Power Replacement Components																	
TF274_ADJ COSTS	80MW Powerhouse at RM274 (800 and 865 Foot Options)	Jul-03	\$ 100	30%	\$ 30	\$ 130	4%	\$ 5	\$ 135	25%	\$ 35	\$ 170				\$ 170	\$ 170
TF274_ADJ COSTS	100MW Powerhouse at RM274 (960, 985, and 1100 Foot Options)	Jul-03	\$ 115	30%	\$ 35	\$ 150	4%	\$ 6	\$ 155	25%	\$ 40	\$ 195				\$ 195	\$ 195
COMMON_ADJ COSTS	Construct New 20MW Powerhouse at Kerckhoff Dam (800 and 865 Foot Options)	Jul-04	\$ 36	30%	\$ 11	\$ 47	0	\$ -	\$ 47	25%	\$ 12	\$ 59				\$ 59	\$ 59
RED_NEW PH_1	Construct New 13MW Wishon Powerhouse (1100 Foot Option) ³	Jul-04	\$ 29		\$ 8	\$ 37	0	\$ -	\$ 37	25%	\$ 9	\$ 46				\$ 46	\$ 46
COMMON_ADJ COSTS	Construct 80 MW Redinger Powerhouse (1100 Foot Option)	Jul-04	\$ 72	25%	\$ 18	\$ 90	0	\$ -	\$ 90	25%	\$ 25	\$ 115				\$ 115	\$ 115

TABLE C-1: Construction Costs for Componets and Features Included in Surface Water Storage Measures

Estimate Worksheet Name	Component/Feature	Original Cost Year	Contract Cost (\$M)	Contingency		Original Field Costs (rounded)	Price Escalation ⁷		Indexed Field Cost, 07/04 (rounded)	Feature Indirect Costs		Construction Cost, 7/04 (rounded)	Lands (Attachment 1, LANDS)	Lands Indirect Costs		Acquisition Cost	Construction Cost including Land Acquisition (rounded)
				% ¹	\$		%	\$		%	\$			%	\$		
	Temperance Flat Reservoir at RM 279 (Chapter 4, Table 4-7,8)																
	Storage Components																
TF279_ADJ COSTS	900 Foot RCC Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 260	30%	\$ 80	\$ 340	7%	\$ 24	\$ 360	25%	\$ 90	\$ 450	\$ 2	20%	\$ 0	\$ 2	\$ 450
TF279_ADJ COSTS	985 Foot RCC Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 380	30%	\$ 110	\$ 490	7%	\$ 34	\$ 520	25%	\$ 130	\$ 650	\$ 3	20%	\$ 1	\$ 4	\$ 650
TF279_ADJ COSTS	1100 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 500	30%	\$ 150	\$ 650	7%	\$ 46	\$ 700	25%	\$ 180	\$ 880	\$ 6	20%	\$ 1	\$ 7	\$ 890
TF279_ADJ COSTS	1115 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 530	30%	\$ 160	\$ 690	7%	\$ 48	\$ 740	25%	\$ 190	\$ 930	\$ 6	20%	\$ 1	\$ 7	\$ 940
TF279_ADJ COSTS	1200 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 700	30%	\$ 210	\$ 910	7%	\$ 64	\$ 950	25%	\$ 250	\$ 1,200	\$ 8	20%	\$ 2	\$ 10	\$ 1,200
TF279_ADJ COSTS	1300 Foot CFR Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-03	\$ 890	30%	\$ 260	#####	7%	\$ 81	\$ 1,250	25%	\$ 300	\$ 1,550	\$ 10	20%	\$ 2	\$ 12	\$ 1,550
KER_PH1_ABAN	Abaondon In Place Kerckhoff Powerhouse	Jul-04	\$ 1		\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 1	\$ 2					\$ 2
KER_PH1_INTK	Remove Intake to Kerckhoff Powerhouse	Jul-04	\$ 1		\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 0	\$ 1					\$ 1
KER_PH2_ABAN	Abaondon In Place Kerckhoff No. 2 Powerhouse	Jul-04	\$ 1		\$ 0	\$ 2	0	\$ -	\$ 2	25%	\$ 0	\$ 2					\$ 2
KER_PH2_INTK	Remove Intake for Kerckhoff No. 2 Powerhouse*	Jul-04	\$ 1		\$ 0	\$ 1	0	\$ -	\$ 1	25%	\$ 0	\$ 1					\$ 1
KER_OW&GATES	Remove Kerckhoff Dam Outlet Works and Gates	Jul-04	\$ 1		\$ 0	\$ 2	0	\$ -	\$ 2	25%	\$ 0	\$ 2					\$ 2
WISH_PH	Abandon Wishon Powerhouse (1100, 1115, 1200, and 1300 Foot Options)	Jul-04	\$ 1		\$ 0	\$ 2	0	\$ -	\$ 2	25%	\$ 0	\$ 2					\$ 2
BIGCR4_PH	Abaondon Big Creek No. 4 Powerhouse (1100, 1115, 1200, and 1300 Foot Options)	Jul-04	\$ 3		\$ 1	\$ 3	0	\$ -	\$ 3	25%	\$ 1	\$ 4					\$ 4
ROADS_1	Auberry Road Relocation (1100 and 1115 Foot Options) ⁴	Jul-04	\$ 11	30%	\$ 3	\$ 14	0	\$ -	\$ 14	25%	\$ 4	\$ 18					\$ 18
ROADS_1	Auberry Road Bridge Relocation (1100 and 1115 Foot Options) ⁴	Jul-04	\$ 13	30%	\$ 4	\$ 17	0	\$ -	\$ 17	25%	\$ 4	\$ 21					\$ 21
AUB_RD_1200	Auberry Road Relocation (1200 Foot Option)	Jul-04	\$ 11		\$ 3	\$ 14	0	\$ -	\$ 14	25%	\$ 4	\$ 18					\$ 18
AUB_BRG_1200_2	Auberry Road Bridge Relocation (1200 Foot Option)	Jul-04	\$ 22		\$ 5	\$ 27	0	\$ -	\$ 27	25%	\$ 7	\$ 34					\$ 34
AUB_RD_1300	Auberry Road Relocation (1300 Foot Option)	Jul-04	\$ 26		\$ 6	\$ 32	0	\$ -	\$ 32	25%	\$ 8	\$ 40					\$ 40
AUB_BRG_1300_2	Auberry Road Bridge Relocation (1300 Foot Option)	Jul-04	\$ 24		\$ 6	\$ 30	0	\$ -	\$ 30	25%	\$ 8	\$ 38					\$ 38
	Power Replacement Components																
TF279_ADJ COSTS	15MW Powerhouse at RM279 Dam ^a	Jul-03	\$ 45	30%	\$ 15	\$ 60	4%	\$ 2	\$ 60	25%	\$ 15	\$ 75					\$ 75
TF279_ADJ COSTS	120MW Powerhouse at RM279 Dam ^a	Jul-03	\$ 125	30%	\$ 40	\$ 165	4%	\$ 7	\$ 170	25%	\$ 40	\$ 210					\$ 210
TF279_ADJ COSTS	120MW Powerhouse at Millerton Lake ^a	Jul-04	\$ 94	30%	\$ 26	\$ 120	0	\$ -	\$ 120	25%	\$ 30	\$ 150					\$ 150
KER_PH2_DIV_TNL_1	Kerckhoff No. 2 Diversion Tunnel Extension ^a	Jul-04	\$ 74	30%	\$ 22	\$ 96	0	\$ -	\$ 96	25%	\$ 24	\$ 120					\$ 120
KER_PH2_DIV_TNL_1	Kerckhoff No. 2 Diversion Tunnel, Steel Liner (1100 and 1115 Foot Options) ^a	Jul-04	\$ 29	25%	\$ 25	\$ 36	0	\$ -	\$ 36	25%	\$ 9	\$ 45					\$ 45
KER_PH2_DIV_TNL_1	Kerckhoff No. 2 Diversion Tunnel, Steel Liner (1200 Foot Option) ^a	Jul-04	\$ 54	25%	\$ 25	\$ 68	0	\$ -	\$ 68	25%	\$ 17	\$ 85					\$ 85
KER_PH2_DIV_TNL_1	Kerckhoff No. 2 Diversion Tunnel, Steel Liner (1300 Foot Option) ^a	Jul-04	\$ 80	25%	\$ 25	\$ 100	0	\$ -	\$ 100	25%	\$ 25	\$ 125					\$ 125
KER_PH2_DIV_TNL_9	Kerckhoff No. 2 Diversion Tunnel, Backfill Concrete ^a	Jul-04	\$ 2		\$ 1	\$ 3	0	\$ -	\$ 3	25%	\$ 0	\$ 3					\$ 3
KER_PH2_DIV_TNL_1	Modify Kerckhoff No. 2 Diversion Intake (1100 and 1115 Foot Options) ^a	Jul-04	\$ 11	30%	\$ 3	\$ 14	0	\$ -	\$ 14	25%	\$ 4	\$ 18					\$ 18
KER_PH2_DIV_TNL_5	Modify Kerckhoff No. 2 Diversion Intake (1200 Foot Option) ^a	Jul-04	\$ 20		\$ 6	\$ 26	0	\$ -	\$ 26	25%	\$ 7	\$ 33					\$ 33
KER_PH2_DIV_TNL_1	Modify Kerckhoff No. 2 Diversion Intake (1300 Foot Option) ^a	Jul-04	\$ 25	25%	\$ 7	\$ 31	0	\$ -	\$ 31	25%	\$ 8	\$ 39					\$ 39
RED_NEW_PH_1	Construct New 13MW Wishon Powerhouse (1100, 1115, 1200, and 1300 Foot Options) ³	Jul-04	\$ 29		\$ 8	\$ 37	0	\$ -	\$ 37	25%	\$ 9	\$ 46					\$ 46
COMMON_ADJ COSTS	Construct 80 MW Redinger Powerhouse (1100 and 1115 Foot Options)	Jul-04	\$ 72	25%	\$ 18	\$ 90	0	\$ -	\$ 90	25%	\$ 25	\$ 115					\$ 115
COMMON_ADJ COSTS	Construct 30 MW Redinger Powerhouse (1200 and 1300 Foot Options)	Jul-04	\$ 44	25%	\$ 11	\$ 55	0	\$ -	\$ 55	25%	\$ 14	\$ 69					\$ 69

TABLE C-1: Construction Costs for Componets and Features Included in Surface Water Storage Measures

Estimate Worksheet Name	Component/Feature	Original Cost Year	Contract Cost (\$M)	Contingency		Original Field Costs (rounded)	Price Escalation ⁷		Indexed Field Cost, 07/04 (rounded)	Feature Indirect Costs		Construction Cost, 7/04 (rounded)	Lands (Attachment 1, LANDS)	Lands Indirect Costs		Acquisition Cost	Construction Cost including Land Acquisition (rounded)
				% ¹	\$		%	\$		%	\$			%	\$		
Temperance Flat Reservoir at RM 286 (Chapter 5, Table 5-8,9,10)																	
Storage Components																	
TF286_1200_RCC_2	1200 Foot RCC Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-04	\$ 200		\$ 60	\$ 250	0 %	\$ -	\$ 250	25%	\$ 60	\$ 310	\$ 5	20%	\$ 1	\$ 6	\$ 320
TF286_ADJ COSTS_1	1275 Foot RCC Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-04	\$ 220	25%	\$ 50	\$ 280	0 %	\$ -	\$ 280	25%	\$ 70	\$ 350	\$ 6	20%	\$ 1	\$ 7	\$ 360
TF286_1300_RCC_2	1300 Foot RCC Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-04	\$ 230		\$ 60	\$ 290	0 %	\$ -	\$ 290	25%	\$ 70	\$ 360	\$ 7	20%	\$ 1	\$ 8	\$ 370
TF286_1400_RCC_2	1400 Foot RCC Dam (River Diversion, Spillway, Outlet Works, Dam)	Jul-04	\$ 350		\$ 90	\$ 440	0 %	\$ -	\$ 440	25%	\$ 110	\$ 550	\$ 9	20%	\$ 2	\$ 11	\$ 560
TF286_ADJ COSTS_1	River Outlet Works at RM 286 (1200 Foot Option)	Jul-03	\$ 40	30%	\$ 12	\$ 52	7%	\$ 4	\$ 56	25%	\$ 14	\$ 70					\$ 70
TF286_ADJ COSTS_1	River Outlet Works at RM 286 (1275 and 1300 Foot Options)	Jul-03	\$ 51	30%	\$ 16	\$ 66	7%	\$ 5	\$ 71	25%	\$ 17	\$ 88					\$ 88
TF286_ADJ COSTS_1	River Outlet Works at RM 286 (1400 Foot Option)	Jul-03	\$ 61	30%	\$ 18	\$ 79	7%	\$ 6	\$ 85	25%	\$ 20	\$ 105					\$ 105
KER_PH1_ABAN&RSTR	Abandon and Restore Kerckhoff Powerhouse	Jul-04	\$ 3		\$ 1	\$ 3	0 %	\$ -	\$ 3	25%	\$ 1	\$ 4					\$ 4
KER_PH1_INTK	Remove Intake to Kerckhoff Powerhouse	Jul-04	\$ 1		\$ 0	\$ 1	0 %	\$ -	\$ 1	25%	\$ 0	\$ 1					\$ 1
KER_PH2_ABAN	Abandon In Place Kerckhoff No. 2 Powerhouse [^]	Jul-04	\$ 1		\$ 0	\$ 2	0 %	\$ -	\$ 2	25%	\$ 0	\$ 2					\$ 2
KER_PH2_INTK	Remove Intake to Kerckhoff No. 2 Powerhouse [^]	Jul-04	\$ 1		\$ 0	\$ 1	0 %	\$ -	\$ 1	25%	\$ 0	\$ 1					\$ 1
KER_OW&GATES	Remove Kerckhoff Dam Outlet Works and Gates	Jul-04	\$ 1		\$ 0	\$ 2	0 %	\$ -	\$ 2	25%	\$ 0	\$ 2					\$ 2
WISH_PH	Abandon Wishon Powerhouse	Jul-04	\$ 1		\$ 0	\$ 2	0 %	\$ -	\$ 2	25%	\$ 0	\$ 2					\$ 2
BIGCR4_PH	Abandon Big Creek No. 4 Powerhouse	Jul-04	\$ 3		\$ 1	\$ 3	0 %	\$ -	\$ 3	25%	\$ 1	\$ 4					\$ 4
RED_OP EQUIP	Remove Redinger Dam Operating Equipment (1400 Foot Option)	Jul-04	\$ 5		\$ 1	\$ 6	0 %	\$ -	\$ 6	25%	\$ 2	\$ 8					\$ 8
AUB_RD_1200	Auberry Road Relocation (1200 Foot Option)	Jul-04	\$ 11		\$ 3	\$ 14	0 %	\$ -	\$ 14	25%	\$ 4	\$ 18					\$ 18
AUB_BRG_1200_2	Auberry Road Bridge Relocation (1200 Foot Option)	Jul-04	\$ 22		\$ 5	\$ 27	0 %	\$ -	\$ 27	25%	\$ 7	\$ 34					\$ 34
ROADS_2	Auberry Road Relocation (1275 Foot Option) ⁵	Jul-04	-		-	\$ 29	0 %	\$ -	\$ 29	25%	\$ 7	\$ 36					\$ 36
ROADS_2	Auberry Road Bridge Relocation (1275 Foot Option) ⁵	Jul-04	-		-	\$ 28	0 %	\$ -	\$ 28	25%	\$ 7	\$ 35					\$ 35
AUB_RD_1300	Auberry Road Relocation (1300 Foot Option)	Jul-04	\$ 26		\$ 6	\$ 32	0 %	\$ -	\$ 32	25%	\$ 8	\$ 40					\$ 40
AUB_BRG_1300_2	Auberry Road Bridge Relocation (1300 Foot Option)	Jul-04	\$ 24		\$ 6	\$ 30	0 %	\$ -	\$ 30	25%	\$ 8	\$ 38					\$ 38
AUB_RD_1400	Auberry Road Relocation (1400 Foot Option)	Jul-04	\$ 35		\$ 9	\$ 44	0 %	\$ -	\$ 44	25%	\$ 11	\$ 55					\$ 55
AUB_BRG_1400_2	Auberry Road Bridge Relocation (1400 Foot Option)	Jul-04	\$ 31		\$ 8	\$ 39	0 %	\$ -	\$ 39	25%	\$ 10	\$ 49					\$ 49
Power Replacement Components																	
TF286_ADJ COSTS_2	150MW Powerhouse at RM286 (1200 Foot Option) ^{6*}	Jul-04	-		-	-	-	-	-	-	-	\$ 115					\$ 115
TF286_ADJ COSTS_2	160MW Powerhouse at RM286 (1275 Foot Option) ^{6*}	Jul-04	-		-	-	-	-	-	-	-	\$ 120					\$ 120
TF286_ADJ COSTS_2	170MW Powerhouse at RM286 (1300 Foot Option) ^{6*}	Jul-04	-		-	-	-	-	-	-	-	\$ 120					\$ 120
TF286_ADJ COSTS_2	180MW Powerhouse at RM286 (1400 Foot Option) ^{6*}	Jul-04	-		-	-	-	-	-	-	-	\$ 125					\$ 125
TF286_ADJ COSTS_2	New 170MW Powerhouse at Millerton Lake (1200 Foot Option) [^]	Jul-04	\$ 110	25%	\$ 30	\$ 140	0 %	\$ -	\$ 140	25%	\$ 35	\$ 175					\$ 175
TF286_ADJ COSTS_2	New 185MW Powerhouse at Millerton Lake (1275 and 1300 Foot Options) [^]	Jul-04	\$ 115	25%	\$ 30	\$ 145	0 %	\$ -	\$ 145	25%	\$ 35	\$ 180					\$ 180
TF286_ADJ COSTS_2	New 200MW Powerhouse at Millerton Lake (1400 Foot Option) [^]	Jul-04	\$ 120	25%	\$ 30	\$ 150	0 %	\$ -	\$ 150	25%	\$ 40	\$ 190					\$ 190
TF286_ADJ COSTS_2	40MW Powerhouse at RM286 (1200 Foot Option) ⁻	Jul-03	\$ 76	30%	\$ 23	\$ 99	4%	\$ 4	\$ 105	25%	\$ 25	\$ 130					\$ 130
TF286_ADJ COSTS_2	50MW Powerhouse at RM286 (1275 and 1300 Foot Options) ⁻	Jul-03	\$ 84	30%	\$ 26	\$ 110	4%	\$ 4	\$ 115	25%	\$ 30	\$ 145					\$ 145
TF286_ADJ COSTS_2	60MW Powerhouse at RM286 (1400 Foot Option) ⁻	Jul-03	\$ 92	30%	\$ 28	\$ 120	4%	\$ 5	\$ 125	25%	\$ 30	\$ 155					\$ 155
TF286_SY&TRANS_2	RM286 Switchyard and Transmission Line	Jul-04	\$ 12	25%	\$ 3	\$ 14	0 %	\$ -	\$ 14	25%	\$ 4	\$ 18					\$ 18
TF286_ADJ COSTS_2	140MW Kerckhoff No. 2 Turbine Replacement (1200 Foot Option) ⁻	Jul-04	\$ 43	25%	\$ 11	\$ 54	0 %	\$ -	\$ 54	25%	\$ 14	\$ 68					\$ 68
TF286_ADJ COSTS_2	155MW Kerckhoff No. 2 Turbine Replacement (1275 Foot Option) ⁻	Jul-04	\$ 45	25%	\$ 11	\$ 56	0 %	\$ -	\$ 56	25%	\$ 14	\$ 70					\$ 70
TF286_ADJ COSTS_2	160MW Kerckhoff No. 2 Turbine Replacement (1300 Foot Option) ⁻	Jul-04	\$ 45	25%	\$ 11	\$ 56	0 %	\$ -	\$ 56	25%	\$ 14	\$ 70					\$ 70
KER_PH2_TURB RPLC_1	186MW Kerckhoff No. 2 Turbine Replacement (1400 Foot Option) ⁻	Jul-04	\$ 49		\$ 13	\$ 62	0 %	\$ -	\$ 62	25%	\$ 16	\$ 78					\$ 78
KER_PH2_DIV TNL_11	Kerckhoff No. 2 Penstock, Ring Follower Gate ⁻	Jul-04	\$ 18		\$ 4	\$ 22	0 %	\$ -	\$ 22	25%	\$ 6	\$ 28					\$ 28
KER_PH2_DIV TNL_1	Kerckhoff No. 2 Diversion Tunnel, Steel Liner (1200 Foot Option) [^]	Jul-04	\$ 54	25%	\$ 25	\$ 68	0 %	\$ -	\$ 68	25%	\$ 17	\$ 85					\$ 85
KER_PH2_DIV TNL_1	Kerckhoff No. 2 Diversion Tunnel, Steel Liner (1275 Foot Option) [^]	Jul-04	\$ 73	25%	\$ 25	\$ 92	0 %	\$ -	\$ 92	25%	\$ 23	\$ 115					\$ 115
KER_PH2_DIV TNL_1	Kerckhoff No. 2 Diversion Tunnel, Steel Liner (1300 Foot Option) [^]	Jul-04	\$ 80	25%	\$ 25	\$ 100	0 %	\$ -	\$ 100	25%	\$ 25	\$ 125					\$ 125
KER_PH2_DIV TNL_3	Kerckhoff No. 2 Diversion Tunnel, Steel Liner (1400 Foot Option) [^]	Jul-04	\$ 105	25%	\$ 25	\$ 131	0 %	\$ -	\$ 131	25%	\$ 34	\$ 165					\$ 165
KER_PH2_DIV TNL_9	Kerckhoff No. 2 Diversion Tunnel, Backfill Concrete [^]	Jul-04	\$ 2		\$ 1	\$ 3	0 %	\$ -	\$ 3	25%	\$ 0	\$ 3					\$ 3
KER_PH2_DIV TNL_5	Modify Kerckhoff No. 2 Diversion Intake (1200 Foot Option) [^]	Jul-04	\$ 20		\$ 6	\$ 26	0 %	\$ -	\$ 26	25%	\$ 7	\$ 33					\$ 33
TF286_ADJ COSTS_2	Modify Kerckhoff No. 2 Diversion Intake (1275 Foot Options) [^]	Jul-04	\$ 23	30%	\$ 7	\$ 30	0 %	\$ -	\$ 30	25%	\$ 8	\$ 38					\$ 38
TF286_ADJ COSTS_2	Modify Kerckhoff No. 2 Diversion Intake (1300 Foot Option) [^]	Jul-04	\$ 25	25%	\$ 6	\$ 31	0 %	\$ -	\$ 31	25%	\$ 8	\$ 39					\$ 39
KER_PH2_DIV TNL_7	Modify Kerckhoff No. 2 Diversion Intake (1400 Foot Option) [^]	Jul-04	\$ 29		\$ 6	\$ 35	0 %	\$ -	\$ 35	25%	\$ 9	\$ 44					\$ 44
RED_NEW PH_1	Construct New 13MW Wishon Powerhouse	Jul-04	\$ 29		\$ 8	\$ 37	0 %	\$ -	\$ 37	25%	\$ 9	\$ 46					\$ 46
COMMON_ADJ COSTS	Construct 30 MW Redinger Powerhouse (1200, 1275 and 1300 Foot Options)	Jul-04	\$ 44	25%	\$ 11	\$ 55	0 %	\$ -	\$ 55	25%	\$ 14	\$ 69					\$ 69
TF286_PH(180MW)+OW_1	PH (180MW) + OW at RM286, including transmission	Jul-04	\$ 145		\$ 40	\$ 185	0 %	\$ -	\$ 185	25%	\$ 45	\$ 230					\$ 230

TABLE C-1: Construction Costs for Componets and Features Included in Surface Water Storage Measures

Estimate Worksheet Name	Component/Feature	Original Cost Year	Contract Cost (\$M)	Contingency		Original Field Costs (rounded)	Price Escalation ⁷		Indexed Field Cost, 07/04 (rounded)	Feature Indirect Costs		Construction Cost, 7/04 (rounded)	Lands (Attachment C-1, LANDS)		Acquisition Cost	Construction Cost including Land Acquisition (rounded)	
				% ¹	\$		%	\$		%	\$		%	\$			
	Fine Gold Reservoir (Chapter 6, Table 6-7)																
FG_900_RCC_2	900 Foot RCC Dam (Dam and Appurtenances)	Jul-03	\$ 130	30%	\$ 150	\$ 170	7%	\$ 12	\$ 180	25%	\$ 50	\$ 230	\$ 6	20%	\$ 1	\$ 7	\$ 240
FG_900_CFR_3	900 Foot CFR Dam (Dam and Appurtenances)	Jul-03	\$ 130	30%	\$ 150	\$ 170	7%	\$ 12	\$ 180	25%	\$ 50	\$ 230	\$ 6	20%	\$ 1	\$ 7	\$ 240
FG_1100_CFR_4 (btm of pg)	1020 Foot CFR Dam (Dam and Appurtenances)	Jul-03	\$ 240	30%	\$ 150	\$ 310	7%	\$ 22	\$ 330	25%	\$ 80	\$ 410	\$ 14	20%	\$ 3	\$ 17	\$ 430
FG_1100_RCC_2	1100 Foot RCC Dam (Dam and Appurtenances)	Jul-03	\$ 350	30%	\$ 150	\$ 460	7%	\$ 32	\$ 490	25%	\$ 120	\$ 610	\$ 22	20%	\$ 4	\$ 26	\$ 640
FG_1100_CFR_4	1100 Foot CFR (Dam and Appurtenances)	Jul-03	\$ 320	30%	\$ 150	\$ 420	7%	\$ 29	\$ 450	25%	\$ 110	\$ 560	\$ 22	20%	\$ 4	\$ 26	\$ 590
FG_1100_CFR_4 (btm of pg)	1110 Foot CFR (Dam and Appurtenances)	Jul-03	\$ 330	30%	\$ 150	\$ 430	7%	\$ 30	\$ 460	25%	\$ 120	\$ 580	\$ 22	20%	\$ 4	\$ 26	\$ 610
ROADS_1	Road 210 Relocation (900 Foot Option)	Jul-04	\$ 17	30%	\$ 5	\$ 22	0	\$ -	\$ 22	25%	\$ 6	\$ 28					\$ 28
ROADS_1	Road 210 Bridge(s) (900 Foot Option)	Jul-04	\$ 9	30%	\$ 3	\$ 12	0	\$ -	\$ 12	25%	\$ 3	\$ 15					\$ 15
ROADS_1	Road 210 Relocation (1020 Foot Option)	Jul-04	\$ 14	30%	\$ 4	\$ 18	0	\$ -	\$ 18	25%	\$ 5	\$ 23					\$ 23
ROADS_1	Road 210 Bridge(s) (1020 Foot Option)	Jul-04	\$ 9	30%	\$ 3	\$ 12	0	\$ -	\$ 12	25%	\$ 3	\$ 15					\$ 15
ROADS_1	Road 210 Relocation (1100 and 1110 Foot Options)	Jul-04	\$ 11	30%	\$ 3	\$ 14	0	\$ -	\$ 14	25%	\$ 4	\$ 18					\$ 18
ROADS_1	Road 210 Bridge(s) (1100 and 1110 Foot Options)	Jul-04	\$ 9	30%	\$ 3	\$ 12	0	\$ -	\$ 12	25%	\$ 3	\$ 15					\$ 15
	Yokohl Valley Reservoir (Chapter 7, Table 7-3)																
YV_790_3	790 Foot Zoned Earthfill Dam (Dam, Appurtenant Features)	Jul-03	\$ 220	30%	\$ 70	\$ 290	7%	\$ 20	\$ 310	25%	\$ 80	\$ 390	\$ 9	20%	\$ 2	\$ 11	\$ 400
ROADS_1	Yokohl Drive Relocation (790 Foot Option)	Jul-04	\$ 35	30%	\$ 10	\$ 45	0	\$ -	\$ 45	25%	\$ 11	\$ 56					\$ 56
YV_TRANS	Transmission Lines Relocation (790 Foot Option)	Jul-03	\$ 7	30%	\$ 2	\$ 9	8%	\$ 1	\$ 9	25%	\$ 3	\$ 12					\$ 12

¹ Typically 30% Contingency is used for 2003 Contract Costs and 25% is used for 2004 Contract Costs. For those 2004 costs with a higher potential for inaccuracy 30% was used. If no contingency percentage is listed, the contingency reflects the value shown in the TSC worksheet for the corresponding Component/Feature.

² The \$1M Contract Cost 25 ft raise floodwall was roughly estimated assuming a 2-5 ft high floodwall based on flood pool assumptions.

³ The \$29M TSC Contract Cost for construction of a 13MW Redinger Dam (RED_NEW PH_1) was used for a 13MW Wishon Dam Contract Cost

⁴ For RM279 Auberry Road and Bridge Contract Costs at Elev. 1100 the respective Contract Costs for RM274 at Elev. 1100 were used

⁵ The 1275 Foot Option Auberry Road costs were estimated using a curve of the Field Costs estimated by TSC for other elevations, therefore, a Contract Cost and Contingency were not calculated for this option

⁶ Construction Cost calculated without Outlet Works and Transmission (see RM286_ADJ COSTS). Because calculations and adjustments made using Construction Costs, all other fields left blank.

⁷ Reclamation cost trends indices from July '03 to July '04: (1)Powerplants - 4%, (2)Earth Dam Structures - 5%, (3)Outlet Works - 7%, (4)Steel Tower Lines - 8%, (5)Composite Trend - 7%

*Power Option 1 (for the respective alternative)

^Power Option 2 (for the respective alternative)

-Power Option 3 (for the respective alternative)

KER_PH1_ABAN&RSTR

ESTIMATE WORKSHEET

BUREAU OF RECLAMATION

PLANT ACCOUNT		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT														
PROJECT:																						
FEATURE: Upper San Joaquin River Basin Powerplant at RM 286 Appraisal Level Quantity Estimates			PROJECT: Upper San Joaquin River Basin																			
Demolition			<table border="1"> <tr> <th>REGION</th> <th>MP</th> <th>PRICE LEVEL:</th> <th colspan="4">Appraisal</th> </tr> <tr> <td colspan="7">FILE: J:\US_Bureau_Reclamation\NDIC_01CS202108\Upper_San_Joaquin_FF EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost worksheets\Group 1 - July04\RM 286 Powerplant - K1 & K2 Demo -</td> </tr> </table>						REGION	MP	PRICE LEVEL:	Appraisal				FILE: J:\US_Bureau_Reclamation\NDIC_01CS202108\Upper_San_Joaquin_FF EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost worksheets\Group 1 - July04\RM 286 Powerplant - K1 & K2 Demo -						
REGION	MP	PRICE LEVEL:	Appraisal																			
FILE: J:\US_Bureau_Reclamation\NDIC_01CS202108\Upper_San_Joaquin_FF EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost worksheets\Group 1 - July04\RM 286 Powerplant - K1 & K2 Demo -																						
Kerckhoff Powerhouse No. 1 - Restore to Near Natural Conditions																						
	1	Hazardous material removal.	D-8160	1	LS *		\$600,000.00	\$600,000.00														
		Hazardous material inventory.																				
		Drain and dispose of oils.																				
		Vacuum recovery of refrigerants.																				
		Removal of CO ₂ cylinders.																				
		Removal and disposal of storage batteries.																				
		Remove and dispose of asbestos-containing materials.																				
		Remove and dispose of mercury-containing equip																				
		<i>* NOTE: Plug value. Many unknowns (at this time) including quantities and extent of cleanup/removal of hazardous materia</i>																				
	2	Transformer and circuit breaker disposal.	D-8420																			
		Step-up transformers (7 ea.).		315,000	lbs.		\$0.50	\$157,500.00														
		Station Service transformers (4 ea.).		80,000	lbs.		\$0.50	\$40,000.00														
		Oil-filled circuit breaker (3 ea.)		180,000	lbs.		\$0.50	\$90,000.00														
	3	Reinforced concrete demolition.	D-8160	1,500	CY		\$200.00	\$300,000.00														
		Dispose in powerplant substructure.																				
	4	Backfill concrete for powerplant and draft tube.	D-8160	250	CY		\$400.00	\$100,000.00														
	5	Concrete plug for intake.	D-8160	225	CY		\$400.00	\$90,000.00														
	6	Removal and disposal of mechanical equipment.	D-8420																			
		Turbines (3 ea.).		321,000	lbs.		\$0.50	\$160,500.00														
		Governors (3 ea.)		39,000	lbs.		\$0.50	\$19,500.00														
	7	Removal and disposal of electrical equipment.	D-8420	140,000	lbs.		\$0.50	\$70,000.00														
	8	Overhead power cable removal and disposal.	D-8420	100,000	lbs.		\$0.50	\$50,000.00														
	9	Site grading and landscaping.	D-8160	2,000	CY		\$10.00	\$20,000.00														
	10	Surge Chamber	D-8160																			
		Lean concrete plug		110	CY		\$400.00	\$44,000.00														
		Earth backfill.		2,500	CY		\$200.00	\$500,000.00														
		Subtotal						\$2,241,500.00														
		Mobilization +/- 5%						\$110,000.00														
		Subtotal w/ mobilization						\$2,351,500.00														
		Unlisted Items +/- 15%						\$348,500.00														
		CONTRACT COST						\$2,700,000.00														
		Contingencies +/- 25%						\$700,000.00														
		FIELD COST						\$3,400,000.00														
QUANTITIES				PRICES																		
BY	Carlton D. Smith (D-8160) Dave Hulse (D-8420)		CHECKED	BY		D. Donaldson CHECKED																
DATE PREPARED	6/10/04		PEER REVIEW	DATE PREPARED		02/22/05 PEER REVIEW																

KER_PH2_ABAN

ESTIMATE WORKSHEET

BUREAU OF RECLAMATION

FLANT ACCOUNT		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
FEATURE: Upper San Joaquin River Basin Powerplant at RM 286 Appraisal Level Quantity Estimates			PROJECT: Upper San Joaquin River Basin					
			REGION		MP	PRICE LEVEL:		Appraisal
Demolition			FILE: J:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FF EIS-EIR_(Phase_2)\Reclamation products\TSC products\Cost worksheets\Group 1 - July04\RM 286 Powerplant - K1 & K2 Demo -					
			<i>* NOTE: Plug value. Many unknowns (at this time) including quantities and extent of cleanup/removal of hazardous materia</i>					
	1		Kerckhoff Powerhouse No. 2 - Abandon in Place					
			Hazardous Material Removal	D-8160	1	LS *	\$300,000.00	\$300,000.00
			Hazardous material inventory.					
			Drain and dispose of oils.					
			Vacuum recovery of refrigerants.					
			Removal of CO ₂ cylinders.					
			Removal and disposal of storage batteries.					
	2		Transformer Disposal	D-8420				
			Step-up transformers (3 ea.).		420,000	lbs.	\$0.50	\$210,000.00
	3		Concrete plug for intake and draft tube.	D-8160	250	CY	\$400.00	\$100,000.00
			3,000 psi concrete					
	4		Surge Chamber	D-8160				
			Remove and dispose 110 ft. dia. steel tank		36,500	lbs.	\$0.50	\$18,250.00
			assume 1/2" thick steel, no bottom.					
			Concrete plug		200	CY	\$400.00	\$80,000.00
			Earth backfill.		24,000	CY	\$15.00	\$360,000.00
	5		Vandal proofing.	D-8160	1	LS **	\$30,000.00	\$30,000.00
			<i>** NOTE: Plug value. Many unknowns (at this time) regarding quantities and extent of vandal proofing.</i>					
			Subtotal					\$1,098,250.00
			Mobilization					\$55,000.00
			Subtotal w/ mobilization					\$1,153,250.00
			Unlisted Items					\$196,750.00
			CONTRACT COST					\$1,350,000.00
			Contingencies					\$300,000.00
			FIELD COST					\$1,650,000.00
QUANTITIES				PRICES				
BY	Carlton D. Smith (D-8160) Dave Hulse (D-8420)			CHECKED	BY	D. Donaldson		
DATE PREPARED	6/10/04			PEER REVIEW	DATE PREPARED	02/22/05		

KER_OW&GATES

CODE:0-8170

ESTIMATE WORKSHEET

SHEET ___ OF ___

FEATURE:		22-Feb-05	PROJECT:				
Kerchoff Dam Decommissioning Spillway Gates and Hoist Removal Outlet Works Gates and Hoist Removal Concrete Pier Removal to EL 971.34 Concrete Plug		Upper San Joaquin River Basin					
		DIVISION:					
		FILE:					J:\US_Bureau_Reclamation\DIR_01\CS202108\Upper_San_Joaquin_FR-EIS-ER_(Phase_2)\Reclamation products\TSC products\Cost worksheets\Group 2 - Sept 04\Kerchoff Dam Decommissioning_8-4-04.xls\Page 1
PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Spillway Gates and Hoists					
		Remove 14 - 14' x 20' Radial Gates		210,000	LBS	\$2.00	\$420,000.00
		Remove 5 Gate Hoists		18,500	LBS	\$2.00	\$37,000.00
	2	Outlet Works Gates and Hoists					
		Remove 3 - 78-inch Dia. Slide Gates		24,000	LBS	\$2.00	\$48,000.00
		Remove 3 Gate Hoists		1,800	LBS	\$4.00	\$7,200.00
	3	Remove Rails for Gate Hoists		27,500	LBS	\$2.00	\$55,000.00
	4	Remove Reinforced Concrete					
		Concrete from Spillway Hoist Decks		325	CY	\$350.00	\$113,750.00
		Concrete from Piers		1,025	CY	\$350.00	\$358,750.00
		Float Control House for Outlet Works		45	CY	\$700.00	\$31,500.00
	6	Remove Electric Service Transformer		1	LS	\$50,000.00	\$50,000.00
SUBTOTAL							\$1,121,200.00
		Mobilization	(+/-) 5%				\$56,000.00
		Subtotal w/ mobilization					\$1,177,200.00
		Unlisted Items	(+/-) 15%				\$172,800.00
CONTRACT COST							\$1,350,000.00
		Contingencies	(+/-) 25%				\$350,000.00
FIELD COST							\$1,700,000.00
QUANTITIES				PRICES			
BY	S. Higinbotham		CHECKED	BY		D. Donaldson	
DATE PREPARED	APPROVED		DATE	PRICE LEVEL		02/22/05 Appraisal	

CONTRACT COSTS FOR VARIOUS RELOCATED ROADS
(length of new or improved road to be constructed for relocated route)

Site	Length		Type	Contract cost (\$M)
	Feet	Miles		
Friant	12,180	2.3	New Road	\$17.1
RM274 1100	5,969	1.2	New Road	\$8.4
RM274 1100	3,395	0.6	Improved Road	\$3.1
RM274 1100	733	0.1	New Bridge	\$13.4
Fine Gold 900	12,313	2.4	New Road	\$17.2
Fine Gold 900	502	0.1	New Bridge	\$9.2
Fine Gold 1020	average FG900 and FG1100		New Road	\$13.9
Fine Gold 1020	average FG900 and FG1100		New Bridge	\$9.2
Fine Gold 1100 Alt. 'B'	7,580	1.5	New Road	\$10.6
Fine Gold 1100 Alt. 'B'	500		New Bridge	\$9.2
Yokohl 790	38,530	7.3	Improved Road	\$34.7

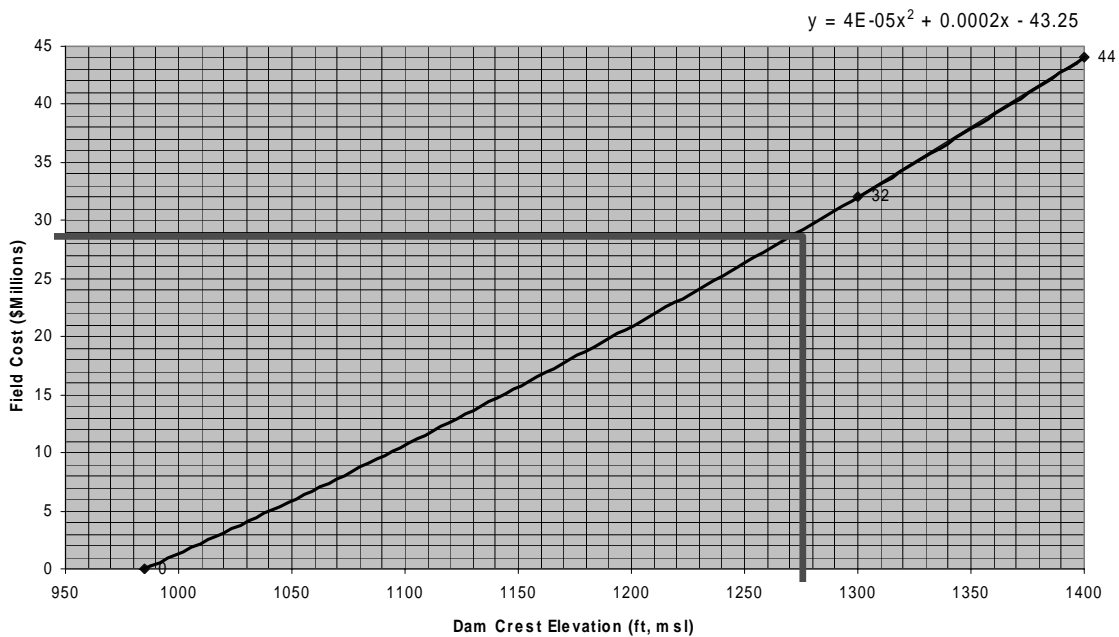
Lengths calculated from 2000 US Census data (TIGER).

Lengths are not surveyed and are approximate only.

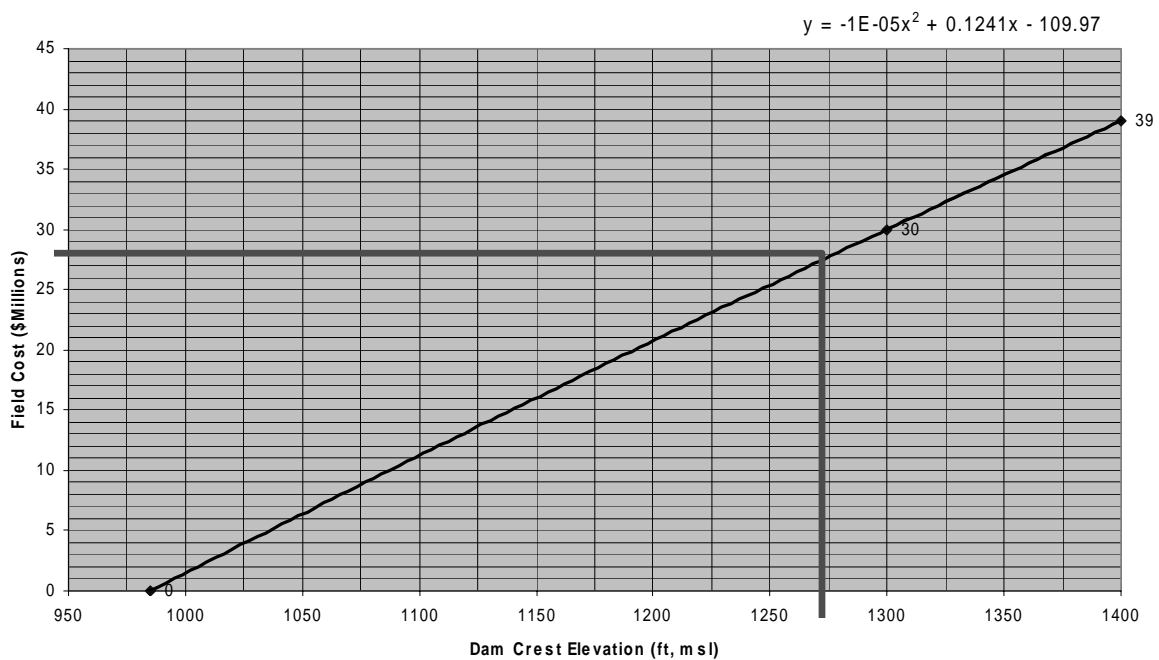
Unit Contract Costs:

<i>\$/foot</i>	<i>Type</i>	
\$1,400	New road	from ave of TSC estimates for Auberry Rd (Jul-2004 costs)
\$18,300	New bridge	from ave of TSC estimates for Auberry Rd Bridge (Jul-2004 costs)
\$900	Improved road	guess 67% of new (rounded)

Auberry Road Relocation Cost
(Jul-2004 costs)



Auberry Road Bridge Field Cost
(Jul-2004 costs)



CODE: D-9170

ESTIMATE WORKSHEET

SHEET_1_ OF _1_

FEATURE: Upper San Joaquin River Basin Auberry Road Relocation El. 1200	23-Feb-05	PROJECT: Upper San Joaquin River Basin
	WOID: UPSJS	
	FILE: J:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(P	

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Excavation (100% rock assumed)	8140	255,000	CY	\$15.00	\$3,825,000.00
	2	Embankment (buy) and compacted	8140	160,000	CY	\$25.00	\$4,000,000.00
	3	Hot bituminous pavement (4,200 CY x 1.8 =	8140	7,560	TONS	\$100.00	\$756,000.00
	4	Aggregate base course	8140	8,400	CY	\$30.00	\$252,000.00
	5	Furnish and install 24-inch dia. CMP	8140	2,100	LF	\$65.00	\$136,500.00
	6	Metal beam guardrail	8140	8,300	LF	\$30.00	\$249,000.00
		SUBTOTAL					\$9,218,500.00
		Mobilization (+/-) 5%					\$460,000.00
		Subtotal w/ mobilization					\$9,678,500.00
		Unlisted Items (+/-) 15%					\$1,321,500.00
		CONTRACT COST					\$11,000,000.00
		Contingencies (+/-) 25%					\$3,000,000.00
		FIELD COST					\$14,000,000.00

QUANTITIES		PRICES	
BY Mark Leavitt	CHECKED	BY D. Donaldson	CHECKED
DATE PREPARED 02/23/05	APPROVED	DATE 02/23/05	PRICE LEVEL Appraisal

AUB_RD_1400

CODE:D-8170

ESTIMATE WORKSHEET

SHEET __1__ OF __1__

FEATURE: Upper San Joaquin River Basin Auberry Road Relocation El. 1400		23-Feb-05 PROJECT: Upper San Joaquin River Basin					
		WOID: UPSJS					
		FILE: J:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-E					
PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Excavation (100% rock assumed)	8140	1,180,000	CY	\$10.00	\$11,800,000.00
	2	Embankment (buy) and compacted	8140	610,000	CY	\$25.00	\$15,250,000.00
	3	Hot bituminous pavement (7,500 CY x 1.8 =	8140	13,500	TONS	\$100.00	\$1,350,000.00
	4	Aggregate base course	8140	15,000	CY	\$30.00	\$450,000.00
	5	Furnish and install 24-inch dia. CMP	8140	3,800	LF	\$65.00	\$247,000.00
	6	Metal beam guardrail	8140	10,500	LF	\$30.00	\$315,000.00
		SUBTOTAL					\$29,412,000.00
		Mobilization (+/-) 5%					\$1,450,000.00
		Subtotal w/ mobilization					\$30,862,000.00
		Unlisted Items (+/-) 15%					\$4,138,000.00
		CONTRACT COST					\$35,000,000.00
		Contingencies (+/-) 25%					\$9,000,000.00
		FIELD COST					\$44,000,000.00
QUANTITIES				PRICES			
BY Mark Leavitt		CHECKED		BY D. Donaldson		CHECKED	
DATE PREPARED 02/23/05		APPROVED		DATE 02/23/05		PRICE LEVEL Appraisal	

AUB_BRG_1200_1

CODE: D-8140

ESTIMATE WORKSHEET

SHEET __1__ OF __2__

FEATURE: Upper San Joaquin River Basin Auberry Road Bridge Water surface elevation 1200 Bridge is three spans, 1192 feet long	20-Sep-04	PROJECT: Upper San Joaquin River Basin
		WOID: UPSJS
		FILE: J:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Mobilization and preparatory work (see next sht)	8140	1	LS		
	2	Drilling 5.5-inch diameter holes for pier footing foundation	8140	4,000	LF	\$165.00	\$660,000.00
	3	Furnishing and installing rock anchors for pier footing foundations (VSL E6-12 single corrosion protection) 12-.6-inch dia. strands	8140	4,000	LF	\$80.00	\$320,000.00
	4	Excavation for structures	8140	5,000	CY	\$80.00	\$400,000.00
		Backfill about structures	8140	2,500	CY	\$50.00	\$125,000.00
		Compacting backfill about structures	8140	1,500	CY	\$50.00	\$75,000.00
		Furnishing and installing post tensioning system for piers (VSL Type L fixed end anchorage)	8140	2,600	LF	\$80.00	\$208,000.00
	5	Furnishing and installing longitudinal post tensioning system in the following sizes:					
		Tendons with 12 - 0.6-inch dia. strands	8140	16,000	LF	\$50.00	\$800,000.00
		Tendons with 19 - 0.6-inch dia. strands	8140	19,000	LF	\$60.00	\$1,140,000.00
	6	Furnishing and installing transverse post-tensioning system (4 - 0.6-inch diameter strands per tendon) @ 2-foot spacing	8140	2,200	LF	\$25.00	\$55,000.00
	7	Furnishing and installing 1-inch diameter vertical tension bars	8140	31,000	LF	\$10.00	\$310,000.00
	8	Grouting ducts	8140	2,100	LF	\$60.00	\$126,000.00
	9	Bridge bearings (pot bearings with upper and lower units, PM1500 Versiflex HLMR bearing, multi directional PM device) D.S. Brown	8140	4	EA	\$10,000.00	\$40,000.00
	10	Substructure concrete	8140	4,700	CY	\$750.00	\$3,525,000.00
	11	Superstructure concrete	8140	7,000	CY	\$1,100.00	\$7,700,000.00
	12	Reinforcement	8140	1,400,000	LBS	\$1.40	\$1,960,000.00
		Preformed elastomeric compression joint seals (WABO Flex SR4 Type C) Watson Bowman	8140	70	LF	\$30.00	\$2,100.00
	13	1-inch thick sponge rubber filler	8140	400	SF	\$20.00	\$8,000.00
	14	Furnishing & handling cementitious materials	8170	3,300	TON	\$180.00	\$594,000.00
Sheet Subtotal							\$18,048,100.00

QUANTITIES		PRICES	
BY Jesus G. Romero	CHECKED	BY D. Donaldson	CHECKED
DATE PREPARED 7/29/04	APPROVED	DATE 09/20/04	PRICE LEVEL Appraisal

CODE:D-8140

ESTIMATE WORKSHEET

SHEET__1__ OF __2__

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT									
FEATURE: Upper San Joaquin River Basin Auberry Road Bridge Water surface elevation 1300 Bridge is three spans, 1307 feet long			20-Sep-04		PROJECT: Upper San Joaquin River Basin												
					WOID: UPSJS												
					FILE: J:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-El												
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="3" style="text-align: center;">Sheet Subtotal</td> <td colspan="6" style="text-align: right;">\$19,809,300.00</td> </tr> </table>									Sheet Subtotal			\$19,809,300.00					
Sheet Subtotal			\$19,809,300.00														
QUANTITIES					PRICES												
BY		CHECKED			BY		CHECKED										
Jesus G. Romero					D. Donaldson												
DATE PREPARED		APPROVED			DATE		PRICE LEVEL										
7/29/2004					09/20/04		Appraisal										

CODE:D-8140

ESTIMATE WORKSHEET

SHEET__1__OF__2__

FEATURE: Upper San Joaquin River Basin Auberry Road Bridge Water surface elevation 1400 Bridge is three spans, 1711 feet long	20-Sep-04	PROJECT: Upper San Joaquin River Basin
		WOID: UPSJS
		FILE: J:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Mobilization and preparatory work (see next sht)	8140	1	LS		
	2	Drilling 5.5-inch diameter holes for pier footing foundation	8140	5,700	LF	\$165.00	\$940,500.00
	3	Furnishing and installing rock anchors for pier footing foundations (VSL E6-12 single corrosion protection) 12-.6-inch dia. strands	8140	5,700	LF	\$80.00	\$456,000.00
	4	Excavation for structures	8140	7,200	CY	\$80.00	\$576,000.00
		Backfill about structures	8140	3,600	CY	\$50.00	\$180,000.00
		Compacting backfill about structures	8140	2,100	CY	\$50.00	\$105,000.00
		Furnishing and installing post tensioning system for piers (VSL Type L fixed end anchorage)	8140	3,700	LF	\$80.00	\$296,000.00
	5	Furnishing and installing longitudinal post tensioning system in the following sizes:					
		Tendons with 12 - 0.6-inch dia. strands	8140	23,000	LF	\$50.00	\$1,150,000.00
		Tendons with 19 - 0.6-inch dia. strands	8140	27,000	LF	\$60.00	\$1,620,000.00
	6	Furnishing and installing transverse post-tensioning system (4 - 0.6-inch diameter strands per tendon) @ 2-foot spacing	8140	3,100	LF	\$25.00	\$77,500.00
	7	Furnishing and installing 1-inch diameter vertical tension bars	8140	45,000	LF	\$10.00	\$450,000.00
	8	Grouting ducts	8140	3,000	LF	\$60.00	\$180,000.00
	9	Bridge bearings (pot bearings with upper and lower units, PM1500 Versiflex HLMR bearing, multi directional PM device) D.S. Brown	8140	4	EA	\$10,000.00	\$40,000.00
	10	Substructure concrete	8140	6,700	CY	\$750.00	\$5,025,000.00
	11	Superstructure concrete	8140	10,000	CY	\$1,100.00	\$11,000,000.00
	12	Reinforcement	8140	2,000,000	LBS	\$1.40	\$2,800,000.00
		Preformed elastomeric compression joint seals (WABO Flex SR4 Type C) Watson Bowman	8140	70	LF	\$30.00	\$2,100.00
	13	1-inch thick sponge rubber filler	8140	400	SF	\$20.00	\$8,000.00
	14	Furnishing & handling cementitious materials	8170	4,710	TON	\$180.00	\$847,800.00
Sheet Subtotal							\$25,753,900.00

QUANTITIES		PRICES	
BY Jesus G. Romero	CHECKED	BY D. Donaldson	CHECKED
DATE PREPARED 7/29/2004	APPROVED	DATE 09/20/04	PRICE LEVEL Appraisal

MILL LK_NEW PH_2

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET_2_ OF _13_

FEATURE: Upper San Joaquin River Basin New Powerplant at K2 Appraisal Level Quantity Estimates Cofferdam for Powerplant - Civil/Structural		PROJECT: Upper San Joaquin River Basin <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">REGION</td> <td style="width: 20%;">MP</td> <td style="width: 40%;">PRICE LEVEL:</td> <td style="width: 20%;">Appraisal</td> </tr> <tr> <td colspan="4">FILE: JAUS_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost_worksheets\Group 2 - Sept 04\Powerplant - New</td> </tr> </table>						REGION	MP	PRICE LEVEL:	Appraisal	FILE: JAUS_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost_worksheets\Group 2 - Sept 04\Powerplant - New			
REGION	MP	PRICE LEVEL:	Appraisal												
FILE: JAUS_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost_worksheets\Group 2 - Sept 04\Powerplant - New															
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT								
		Construct/Remove Cellular Cofferdam Assume construct from shore without barge. Assume circular cellular cofferdam. Length= 400 ft, 32-ft dia. cells, 40 ft high Top of cofferdam - El.580, Bottom of cofferdam - El. 540													
	1	Furnish and install sheet pile walls Arbed AS 500-12, 30 psf	D8120	1,200	TONS	\$2,200.00	\$2,640,000.00								
	2	Backfill cells with free-draining granular material	D8120	26,100	CY	\$30.00	\$783,000.00								
	3	Unwater behind cofferdam Assume sumps and surface pumps	D8120	6	MOS	Included in Pay Item 4									
	4	Operate unwatering pumps	D8120	6	MOS	\$55,000.00	\$330,000.00								
		Remove Cofferdam													
	5	Remove and stockpile granular material	D8120	26,100	CY	\$25.00	\$652,500.00								
	6	Extract and salvage sheet pile cutoff wall	D8120	1,200	TONS	\$300.00	\$360,000.00								
		Cofferdam for Powerplant - Civil/Structural Subtotal					\$4,765,500.00								
QUANTITIES				PRICES											
BY M. R. O'Shea		CHECKED		BY D. Donaldson		CHECKED									
DATE PREPARED		PEER REVIEW		DATE PREPARED 02/22/05		PEER REVIEW									

MILL LK_NEW PH_3

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET 3 OF 13

FEATURE: Upper San Joaquin River Basin New Powerplant at K2 Appraisal Level Quantity Estimates Powerplant - Civil/Structural			PROJECT: Upper San Joaquin River Basin				
			REGION	MP	PRICE LEVEL: Appraisal		
			FILE: E:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost_worksheets\Group 2 - Sept 04\Powerplant - New K2.xls\Summary				
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Access Road					
	1	Clearing and Grubbing	D8140		AC	Included in Unlisted Items	
	2	Excavation (rock)	D8140	17,000	CY	\$25.00	\$425,000.00
	3	Compacted embankment	D8140	7,400	CY	\$10.00	\$74,000.00
	4	Gravel surfacing	D8140	970	CY	\$25.00	\$24,250.00
	5	24" dia corrugated metal pipe	D8140	400	LF	\$65.00	\$26,000.00
	6	Metal Beam Guard Rail	D8140		LF	Included in Unlisted Items	
		Powerplant Site					
	7	Rock excavation to Service Yard El.605.0	D8120	334,500	CY	\$10.00	\$3,345,000.00
	8	Rock excavation for penstock pipe trench	D8120	14,200	CY	\$25.00	\$355,000.00
	9	Backfill for penstock pipe trench	D8120		CY	Included in Unlisted Items	
		Dewatering During Construction:					
		Assume no groundwater flows into excavation.					
		Structural Excavation and Backfill					
		Assume all rock excavation.					
		Assume stockpile rock for later use as riprap or rockfill.					
	10	Excavation for powerplant tailrace (drill & blast)	D8120	35,800	CY	\$20.00	\$716,000.00
	11	Excavation of rock for structures (drill & blast)	D8120	160,000	CY	\$15.00	\$2,400,000.00
	12	Furnish backfill for structures (assume local borrow)	D8120		CY	Included in Unlisted Items	
	13	Place and compact backfill around structures	D8120		CY	Included in Unlisted Items	
	14	Furnish, place, & compact backfill for manifold pipe (assume local borrow)	D8120		CY	Included in Unlisted Items	
Sheet Subtotal							\$7,365,250.00
QUANTITIES			PRICES				
BY M. R. O'Shea Mark Leavitt		CHECKED	BY D. Donaldson		CHECKED		
DATE PREPARED 8/11/04		PEER REVIEW	DATE PREPARED 06/03/05		PEER REVIEW		

MILL LK_NEW PH_4

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET_4_OF_13_

FEATURE:		PROJECT:					
Upper San Joaquin River Basin New Powerplant at K2 Appraisal Level Quantity Estimates		Upper San Joaquin River Basin					
Powerplant - Civil/Structural		REGION	MP	PRICE LEVEL:		Appraisal	
		FILE: J:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost_worksheets\Group 2 - Sept 04\Powerplant - New K2.xls\Summary					
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		Construct Powerplant Structure					
	15	Furnish, form, and place reinforced concrete	D8120	35.630	CY	\$350.00	\$12,470,500.00
	16	Furnish and place concrete reinforcement. Assume 110 #/CY	D8120	3,920.000	LBS	\$0.80	\$3,136,000.00
	17	Furnish and handle cement (.282T/CY)	D8120	10.050	TONS	\$110.00	\$1,105,500.00
	18	Furnish & install precast, prestressed double tees for roof 8DT 24B+2 = 8' wide & 20" deep - 68' Span	D8120	37	EA	\$35,000.00	\$1,295,000.00
		Penstock Pipe Encasement					
	19	Furnish, form, and place reinforced concrete	D8120	1,800	CY	\$400.00	\$720,000.00
	20	Furnish and place concrete reinforcement. Assume 125 #/CY	D8120	225,000	LBS	\$1.00	\$225,000.00
	21	Furnish and handle cement (.282T/CY)	D8120	508	TONS	\$140.00	\$71,120.00
		Manifold Pipe Encasement					
	22	Furnish, form, and place reinforced concrete	D8120	4,300	CY	\$400.00	\$1,720,000.00
	23	Furnish and place concrete reinforcement. Assume 125 #/CY	D8120	537,500	LBS	\$0.80	\$430,000.00
	24	Furnish and handle cement (.282T/CY)	D8120	1,200	TONS	\$130.00	\$156,000.00
		Structural Steel					
	25	Included in Unlisted Items	D8120		LBS	Included in Unlisted Items	
		Miscellaneous Metalwork					
	26	Included in Unlisted Items	D8120		LBS	Included in Unlisted Items	
		Sheet Subtotal					\$21,329,120.00
QUANTITIES			PRICES				
BY	M. R. O'Shea	CHECKED	BY	D. Donaldson	CHECKED		
DATE PREPARED	8/11/04	PEER REVIEW	DATE PREPARED	02/22/05	PEER REVIEW		

MILL LK_NEW PH_5

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET 5 OF 13

FEATURE: Upper San Joaquin River Basin New Powerplant at K2 Appraisal Level Quantity Estimates Powerplant - Civil/Structural				PROJECT: Upper San Joaquin River Basin				
		REGION	MP	PRICE LEVEL: Appraisal				
FILE: J:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost_worksheets\Group 2 - Sept 04\Powerplant - New K2.xls\Summary								
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
		All underground work is unlined, self supporting, and excavated in granite. Water problems will be minimal.						
	27	Construct Surge Adit Construct 1,700-ft long, 20.00-ft finished diameter and 23.00-ft excavated diameter adit. Adit will be excavated by drill and blast and driven uphill.						
		Excavation (26,200 CY, approx 16 CY/LF)	D-8140	1,700	LF	\$3,300.00	\$5,610,000.00	
	28	Construct Surge Riser Construct 129-ft deep, 20.00-ft finished diameter, 20.7-ft excavated diameter, tunnel. Shaft will be excavated by raise boring.						
		Excavation (1,600 CY, approx 13 CY/LF)	D-8140	129	LF	\$5,300.00	\$683,700.00	
	29	Construct Surge tank Construct 550-ft deep, 91.00-ft finished diameter, 95.00-ft excavated diameter shaft. Shaft will be excavated by raise boring and slash down method. Slashing down will be by drill and blast. (144,000 CY, approx 262 CY/LF)						
		Excavation	D-8140	550	LF	\$5,500.00	\$3,025,000.00	
		Construct shaft plug of unreinforced concrete (3 ksi)	D-8140	500	CY	\$400.00	\$200,000.00	
		Cementitious materials	D-8140	118	TONS	\$160.00	\$18,880.00	
		Construct tunnel plug of unreinforced concrete (3 ksi)	D-8140	850	CY	\$400.00	\$340,000.00	
		Cementitious materials	D-8140	200	TONS	\$160.00	\$32,000.00	
		Excavate shaft top (surge tank) @ 115 ft diameter by drill and blast in granite	D-8140	16,000	CY	\$30.00	\$480,000.00	
		Sheet 5 Subtotal					\$10,389,580.00	
		Sheet 4 Subtotal					\$21,329,120.00	
		Sheet 3 Subtotal					\$7,365,250.00	
		Powerplant - Civil/Structural Subtotal					\$39,083,950.00	
QUANTITIES				PRICES				
BY Bill Thompson		CHECKED Kevin Atwater		BY D. Donaldson		CHECKED		
DATE PREPARED 8/19/04		PEER REVIEW		DATE PREPARED 02/22/05		PEER REVIEW		

MILL LK_NEW PH_6

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET 6 OF 13

FEATURE: Upper San Joaquin River Basin New Powerplant at K2 Appraisal Level Quantity Estimates		PROJECT: Upper San Joaquin River Basin					
Powerplant - Mechanical		REGION MP	PRICE LEVEL: Appraisal				
		FILE: J:\US_Bureau_Reclamation\DIQ_01CS202108\Upper_San_Joaquin_F R-EIS-EIR_(Phase_2)\Reclamation_products\TSC_products\Cost worksheets\Group 2 - Sept 04\Powerplant - New K2.xls\Summary					
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		<u>Furnish and install the following:</u>					
	1	Valves	D8420				
	a	96" Dia. Spherical Valve 250,000 lbs. each 4 valves = 1,000,000 lbs.		1,000,000	LBS	\$8.50	\$8,500,000.00
	2	Steel Pipe for ROW and Penstock Steel plate used for pipe fabrication: ASTM A36: Sy = 36 kpsi Sa = 18 kpsi	D8420				
		(All pipe sizes are inside diameters. Total wt rounded to nearest 100 lbs)					
	a	96" Dia., 1-1/16" wall, L= 175 ft., 1,213 lbs/ft		212,300	LBS	\$2.00	\$424,600.00
	b	136" Dia., 1-1/2" wall, L= 78 ft., 2,425 lbs/ft		189,200	LBS	\$2.00	\$378,400.00
	c	192" Dia., 1-9/16" wall, L= 842 ft., 3,557 lbs/ft		1,994,500	LBS	\$2.00	\$3,989,000.00
	d	192" Dia., 1-5/8" wall, L= 38.25 ft., 3,700 lbs/ft		141,500	LBS	\$2.00	\$283,000.00
	e	192" Dia., 1-11/16" wall, L= 38.25 ft., 3,843 lbs/ft		147,000	LBS	\$2.00	\$294,000.00
	f	192" Dia., 1-3/4" wall, L= 38.25 ft., 3,987 lbs/ft		152,500	LBS	\$2.00	\$305,000.00
	g	192" Dia., 1-13/16" wall, L= 38.25 ft., 4,131 lbs/ft		158,000	LBS	\$2.00	\$316,000.00
	h	192" Dia., 1-7/8" wall, L= 38.25 ft., 4,275 lbs/ft		163,500	LBS	\$2.00	\$327,000.00
	i	192" Dia., 1-15/16" wall, L= 38.24 ft., 4,418 lbs/ft		169,000	LBS	\$2.00	\$338,000.00
	j	192" Dia., 2" wall, L= 38.25 ft., 4,562 lbs/ft		174,500	LBS	\$2.00	\$349,000.00
	k	192" Dia., 2-1/16" wall, L= 38.25 ft., 4,707 lbs/ft		180,000	LBS	\$2.00	\$360,000.00
	l	192" Dia., 2-1/8" wall, L= 22.02 ft., 4,851 lbs/ft		106,800	LBS	\$2.00	\$213,600.00
		Sheet Subtotal					\$16,077,600.00
QUANTITIES			PRICES				
BY Rick Frisz	CHECKED		BY D. Donaldson	CHECKED			
DATE PREPARED			DATE PREPARED	02/22/05		PEER REVIEW	

ESTIMATE WORKSHEET

PLANT ACCOUNT		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
FEATURE: Upper San Joaquin River Basin New Powerplant at K2 Appraisal Level Quantity Estimates Powerplant - Mechanical			PROJECT: Upper San Joaquin River Basin REGION MP PRICE LEVEL: Appraisal FILE: J:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_F R-EIS-EIR_(Phase_2)\Reclamation products\TSC products\Cost worksheets\Group 2 - Sept 04\Powerplant - New K2.xls\Summary					
		3	Turbine Weight - 4 units CF3 18-8 stainless Runner, 6.0' outlet dia. Turbine-Vertical Francis, 62,356 hp 360 rpm, 604 ft. Design Head Gross Head Range, 845 - 457 feet 216,300 lbs/each unit	D-8420	865,200	LBS	\$13.00	\$11,247,600.00
		4	Digital Governor - 4 units 135,832 ft-lb capacity 26,600 lbs/each unit	D-8420	106,400	LBS	\$11.50	\$1,223,600.00
Sheet Subtotal								\$12,471,200.00
QUANTITIES				PRICES				
BY Dave Hulse		CHECKED		BY D. Donaldson		CHECKED		
DATE PREPARED				DATE PREPARED		PEER REVIEW		
				02/22/05				

ESTIMATE WORKSHEET

FEATURE:		PROJECT:					
Upper San Joaquin River Basin New K2 Powerplant <i>Appraisal Level Quantity Estimates</i>		Upper San Joaquin River Basin					
Plant - Mechanical		REGION	PN	PRICE LEVEL:		Appraisal	
		FILE: J:\US_Bureau_Reclamation\BDO_01CS20210B\Upper_San_Joaquin_F R-EIS-EIR_(Phase_2)\Reclamation products\TSC products\Cost worksheets\Group 2 - Sept 04\Powerplant - New K2.xls\Summary					
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	CO2 High Pressure Fire Extinguishing System: 10 - 100# Storage Cylinders w/ control panel and appurtenances and 700 lbs. of sch. 80 carbon steel pipe, valves & fittings	D-8410	2	EA	\$32,000.00	\$64,000.00
	2	Fire Suppression System: 8 Fire hose reels w/ 75 feet of hose 24 - Portable hand-held 20# extinguishers 3,000 lbs. of sch. 40 carbon steel pipe, valves & fittings 1 - Fire pump, split-case, 500 gpm @ 300 ft of head	D-8410	1	LS	\$67,000.00	\$67,000.00
	3	Unit Cooling Water System: 5 - Cooling water pumps, end-suction type, 150 gpm 2 - 8-inch automatic, self-cleaning strainers 14,000 lbs. of sch. 40 carbon steel pipe, valves & fittings 1,200 lbs. of ductile iron, mechanical joint pipe & fittings	D-8410	1	LS	\$276,000.00	\$276,000.00
	4	Lubricating Oil System: 2- 500 gal carbon steel storage tanks 1 - 10 gpm @ 100 psi oil pump 1 - lube oil filter 3,000 lbs. of sch. 40 carbon steel pipe, valves & fittings	D-8410	1	LS	\$41,000.00	\$41,000.00
	5	Compressed Air System: 2 - 100 cfm @ 125 psi rotary screw air compressors 1 - 250 gal. carbon steel air receiver 1 - 100 cfm air dryer 1,000 lbs. of sch. 40 carbon steel pipe, valves & fittings	D-8410	1	LS	\$58,000.00	\$58,000.00
	6	Service Water System: 1 - Service water pump, 75 gpm @ 200 ft. of head 1 - Hydro pneumatic Tank, 300 gal. 1,700 lbs. of type K copper tubing, valves & fittings	D-8410	1	LS	\$99,000.00	\$99,000.00
	7	Gravity Drainage System: 54 - Floor drains, cast iron 16,000 lbs. of cast iron hub & spigot, service weight soil pipe	D-8410	1	LS	\$166,000.00	\$166,000.00
Sheet Subtotal							\$771,000.00
QUANTITIES			PRICES				
BY John Grass	CHECKED		BY D. Donaldson	CHECKED			
DATE PREPARED	PEER REVIEW		DATE PREPARED	PEER REVIEW			
			02/22/05				

MILL LK_NEW PH_9

BUREAU OF RECLAMATION

ESTIMATE WORKSHEET

SHEET_9_OF_13_

FEATURE: Upper San Joaquin River Basin New K2 Powerplant <i>Appraisal Level Quantity Estimates</i>		PROJECT: Upper San Joaquin River Basin					
		REGION PN	PRICE LEVEL: Appraisal				
Plant - Mechanical		FILE: J:\US_Bureau_Reclamation\BIO_01CS20210B\Upper_San_Joaquin_FR-EIS-EIR_(Phase_2)\Reclamation products\TSC products\Cost worksheets\Group 2 - Sept 04\Powerplant - New K2.xls\Summary					
PLANT ACCOUNT	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	8	Plant Unwatering System: 2 - Vertical turbine type sump pump, 500 gpm @ 50 ft hd 1 - Drainage jet type drainage pump 1,500 lbs. of type K copper tube, valves & fittings 3,800 lbs. of ductile iron, mechanical joint pipe & fittings	D-8410	1	EA	\$125,000.00	\$125,000.00
	9	Domestic Water and Sanitary Waste System: 2 - Water Closets 1 - Urinal 2 - Lavatories & accessories 1 - Duplex Sewage Ejector 2,800 lbs. of cast iron hub & spigot service weight sewer pipe 300 lbs. of type K copper tubing, valves & fittings	D-8410	1	EA	\$60,000.00	\$60,000.00
	10	150 Ton Overhead Crane, 63'-0" span, 250' long a. Crane: 200,000 lbs (includes 25T aux.) b. Trolley: 65,000 lbs c. 250 ft x 2 = 500 ft of 175# rail = 29,000#	D8410	1	LS	\$1,800,000.00	\$1,800,000.00
	11	75 Ton Overhead Crane, 63'-0" span, 100 ft long a. Crane: 116,000 lbs (includes 20T aux.) b. Trolley: 45,000 lbs c. 100 ft x 2 = 200 ft of 175# rail = 12,000#	D8410	1	LS	\$1,050,000.00	\$1,050,000.00
Sheet Subtotal							\$3,035,000.00
QUANTITIES			PRICES				
BY John Grass/Alex Ritt		CHECKED	BY D. Donaldson		CHECKED		
DATE PREPARED		PEER REVIEW	DATE PREPARED 02/22/05		PEER REVIEW		