

Attachment C4

Cost Estimate Worksheets

**Temperance Flat Reservoir at RM 279
(Chapter 4)**

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 1 OF 2

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
FEATURE:			PROJECT:					
RM279 Dam			USJRBSI					
Elev. 900			DIVISION:					
Concrete Gravity Dam (RCC)			FILE:					
			P:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TM\STM Temperanc\USBR products\Cost Sheets - Sept 2003 - Updated Options\pdc 900 FY03.xls\pdc 900 FY03					
1			Diversion and care of river					
			Upstream Cofferdam (Crest @ El. 635)					
			Excavation for Left Abutment Diversion Tunnel					
			Concrete Liner for Left Abutment Diversion Tunnel					
			Rock Bolts - Left Abt. Div. Tunnel					
			Total Drilling - Left Abt. Div. Tunnel					
			Excavation for Right Abutment Diversion Tunnel					
			Concrete Liner for Right Abutment Diversion Tunnel					
			Rock Bolts - Right Abt. Div. Tunnel					
			Total Drilling - Right Abt. Div. Tunnel					
			Downstream Cofferdam (Crest @ El. 578)					
2			Excavation, all classes, for dam foundation					
3			RCC in dam					
4			Concrete facing elements					
5			Concrete cap on top of dam					
6			Leveling concrete in dam foundation					
7			Concrete in spillway crest					
8			Concrete in spillway training walls					
9			Concrete in Outlet Works Intake Structure					
10			Excavation of Outlet Shaft and Gate Structure					
11			Temp. Supports - Rock Bolts					
12			Total Drilling for Rock Bolts					
13			Concrete in Outlet Shaft and Gate Structure					
			Subtotal					
			\$140,036,280					
QUANTITIES				PRICES				
BY		CHECKED		BY		CHECKED		
S. Higinbotham				R. Baumgarten				
DATE PREPARED		APPROVED		DATE		PRICE LEVEL		
				09/09/03		Appraisal 03		

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 2 OF 2

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT																				
FEATURE:			PROJECT:																									
RM279 Dam Elev. 900 Concrete Gravity Dam (RCC)			USJRBSI																									
			DIVISION:																									
			FILE: P:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_Phase_1 ments\Surface Storage Option TMs\TM Temperance\USBR products\Cost She Sept 2003 - Updated Options\pdc_900 FY03.xls\pdc_900 FY03																									
			<table border="1"> <thead> <tr> <th colspan="2">QUANTITIES</th> <th colspan="2">PRICES</th> </tr> <tr> <th>BY</th> <th>CHECKED</th> <th>BY</th> <th>CHECKED</th> </tr> </thead> <tbody> <tr> <td>S. Higinbotham</td> <td></td> <td>R. Baumgarten</td> <td></td> </tr> <tr> <th>DATE PREPARED</th> <th>APPROVED</th> <th>DATE</th> <th>PRICE LEVEL</th> </tr> <tr> <td></td> <td></td> <td>09/09/03</td> <td>Appraisal 03</td> </tr> </tbody> </table>						QUANTITIES		PRICES		BY	CHECKED	BY	CHECKED	S. Higinbotham		R. Baumgarten		DATE PREPARED	APPROVED	DATE	PRICE LEVEL			09/09/03	Appraisal 03
QUANTITIES		PRICES																										
BY	CHECKED	BY	CHECKED																									
S. Higinbotham		R. Baumgarten																										
DATE PREPARED	APPROVED	DATE	PRICE LEVEL																									
		09/09/03	Appraisal 03																									
	14		Excavation for Powerplant		170,620	CY	\$15.00	\$2,559,300																				
	15		Concrete in Powerplant		42,350	CY	\$350.00	\$14,822,500																				
	16		Furnishing and Handling Cement		354,000	TONS	\$90.00	\$31,860,000																				
	17		Furnishing and Handling Reinforcement		14,496,000	LBS	\$0.60	\$8,697,600																				
	18		Grout Hole Drilling		22,950	LF	\$35.00	\$803,250																				
	19		Foundation Grouting		22,950	Sacks	\$29.00	\$665,550																				
	20		Set up for Drain Holes in Gallery		153	Holes	\$200.00	\$30,600																				
	21		Drilling Drain Holes		20,770	LF	\$55.00	\$1,142,350																				
	22		Outlet Works Trashracks		495,000	LBS	\$2.50	\$1,237,500																				
	23		Steel Pipe		11,735,310	LBS	\$1.50	\$17,602,965																				
	24		Valves, all Sizes and Types		4,460,000	LBS	\$5.00	\$22,300,000																				
	25		Turbines		1,956,000	LBS	\$6.50	\$12,714,000																				
	26		Generators		1,500,000	LBS	\$8.00	\$12,000,000																				
	27		Governors, Motors, etc.		3-Units	LS		\$3,600,000																				
			Mobilization (5%)					\$13,500,000																				
			Subtotal					\$283,571,895																				
			Unlited Items (15%)					\$46,428,105																				
			Contract Cost					\$330,000,000																				
			Contingencies (30%)					\$100,000,00																				
			Field Cost					\$430,000,000																				

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 1 OF 2

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
FEATURE:			PROJECT: USJRBSI					
RM279 Dam Elev. 985 (Interpolated) Concrete Gravity Dam (RCC)			DIVISION:					
			FILE: C:\Documents and Settings\Rebecca L Fedak\Desktop\temp\USJ\RM279_985_RCC_2.xls\Interpolated_960					
1			Diversion and care of river					
			Upstream Cofferdam (Crest @ El. 635)					
			Excavation for Left Abutment Diversion Tunnel					
			Concrete Liner for Left Abutment Diversion Tunnel					
			Rock Bolts - Left Abt. Div. Tunnel					
			Total Drilling - Left Abt. Div. Tunnel					
			Excavation for Right Abutment Diversion Tunnel					
			Concrete Liner for Right Abutment Diversion Tunnel					
			Rock Bolts - Right Abt. Div. Tunnel					
			Total Drilling - Right Abt. Div. Tunnel					
			Downstream Cofferdam (Crest @ El. 578)					
2			Excavation, all classes, for dam foundation					
3			RCC in dam					
4			Concrete facing elements					
5			Concrete cap on top of dam					
6			Leveling concrete in dam foundation					
7			Concrete in spillway crest					
8			Concrete in spillway training walls					
9			Concrete in Outlet Works Intake Structure					
10			Excavation of Outlet Shaft and Gate Structure					
11			Temp. Supports - Rock Bolts					
12			Total Drilling for Rock Bolts					
13			Concrete in Outlet Shaft and Gate Structure					
			Subtotal					
			\$193,308,169					
QUANTITIES				PRICES				
BY		CHECKED		BY		CHECKED		
B. Foster		S. Osgood 11/21/03		B. Foster		S. Osgood 11/21/2003		
DATE PREPARED		APPROVED		DATE		PRICE LEVEL		
11/10/2003				11/10/03		Appraisal 03		

TF279_985_RCC_2

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 2 OF 2

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
FEATURE:			PROJECT:					
RM279 Dam Elev 985 (Interpolated) Concrete Gravity Dam (RCC)			DIVISION:					
			FILE: C:\Documents and Settings\Rebecca L Fedak\Desktop\temp\USJ\RM279_985_RCC_2.xls\Interpolated_960					
Subtotal pg 1								\$193,308,169
Subtotal pg 2								\$178,709,559
Mobilization								\$19,000,000
Subtotal								\$391,017,728
Unlited Items (15%)								\$58,982,272
Contract Cost								\$450,000,000
Contingencies (30%)								\$130,000,000
Field Cost								\$580,000,000
QUANTITIES				PRICES				
BY B. Foster		CHECKED S. Osgood		BY B. Foster		CHECKED S. Osgood 11/21/2003		
DATE PREPARED 11/10/2003		APPROVED		DATE 11/10/03		PRICE LEVEL Appraisal 03		

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 1 OF 3

FEATURE: RM279 Dam Site Elev. 1100 Concrete Faced Rockfill Dam (CFR)	PROJECT: USJRBSI
	DIVISION:
	FILE: P:\US_Bureau_Reclamation\VDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Piloin cost sheets\MP2 CFRF 2003.xls\MP279_900

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Diversion and care of river					
		Upstream Cofferdam (Crest @ El. 635)		1,792,470	CY	\$13.50	\$24,198,345
		Excavation for Left Abutment Diversion Tunnel		147,970	CY	\$140.00	\$20,715,800
		Concrete Liner for Left Abutment Diversion Tunnel		32,760	CY	\$245.00	\$8,026,200
		Rock Bolts - Left Abt. Div. Tunnel		3,430	Bolts	\$600.00	\$2,058,000
		Total Drilling - Left Abt. Div. Tunnel		61,740	LF	\$20.00	\$1,234,800
		Excavation for Right Abutment Diversion Tunnel		278,850	CY	\$140.00	\$39,039,000
		Concrete Liner for Right Abutment Diversion Tunnel		48,400	CY	\$245.00	\$11,858,000
		Rock Bolts - Right Abt. Div. Tunnel		3,010	Bolts	\$600.00	\$1,806,000
		Total Drilling - Right Abt. Div. Tunnel		69,230	LF	\$20.00	\$1,384,600
		Furnishing and Handling Cement		22,900	TONS	\$100.00	\$2,290,000
		Furnishing and Handling Reinforcement		12,174,000	LBS	\$0.60	\$7,304,400
		Diversion and Care of River Subtotal					\$119,915,145
		Spillway					
		Excavation for Spillway		1,271,750	CY	\$8.50	\$10,809,875
		Concrete in spillway crest		6,250	CY	\$180.00	\$1,125,000
		Concrete in spillway training walls and Apron		2,750	CY	\$220.00	\$605,000
		Furnishing and Handling Cement		4,420	TONS	\$110.00	\$486,200
		Furnishing and Handling Reinforcement		2,350,500	LBS	\$0.65	\$1,527,825
		Concrete in Gravity Wall		6,670	CY	\$250.00	\$1,667,500
		Spillway subtotal					\$16,221,400

QUANTITIES		PRICES	
BY	CHECKED	BY	CHECKED
S. Higinbotham		R. Baumgarten	
DATE PREPARED	APPROVED	DATE	PRICE LEVEL
		09/09/03	Appraisal 03

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

FEATURE:			PROJECT:				
RM279 Dam Site Elev. 1100 Concrete Faced Rockfill Dam (CFR)			DIVISION:				
			FILE: P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperature\Piloin cost sheets\MP2 CFRF 2003.xls\MP279_900				
			PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY
		CFRF Dam					
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	208,000	CY	\$6.50	\$1,352,000
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	30,000	CY	\$9.00	\$270,000
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	50,000	CY	\$7.00	\$350,000
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	290,000	CY	\$16.00	\$4,640,000
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	290,000	CY	\$16.50	\$4,785,000
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	10,000,000	CY	\$7.75	\$77,500,000
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	10,500,000	CY	\$7.50	\$78,750,000
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	97,500	CY	\$205.00	\$19,987,500
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	5,500	CY	\$205.00	\$1,127,500
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	24,700	anchors	\$40.00	\$988,000
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	4,050	CY	\$400.00	\$1,620,000
	130	Drilling for grout program (setup, drill, test), setups=1153	8313	71,000	LF	\$31.00	\$2,201,000
	140	Grouting (grout injection into competent granite.	8313	53,000	bags	\$22.00	\$1,166,000
	150	Unwatering (assumes 48 month construction duration)	8313	1	LS		\$2,400,000
		Subtotal, CFRF Dam					\$197,137,000
		SUMMARY OF COSTS					
		Diversion and Care of River					\$119,900,000
		Spillway					\$16,200,000
		Outlet Works					\$9,300,000
		Powerplant					\$144,300,000
		CFRF Dam					\$197,100,000
		Mobilization - 5%					\$24,000,000
		Subtotal					\$510,800,000
		Unlisted Items - 15%					\$79,200,000
		Contract Cost					\$590,000,000
		Contingencies - 30%					\$180,000,000
		Field Cost					\$770,000,000
QUANTITIES			PRICES				
BY	Mark Pabst		BY	R. Baumgarten	CHECKED		
DATE PREPARED	8/11/2002		DATE	09/09/03	PRICE LEVEL	Appraisal 03	

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT
FEATURE:			PROJECT:					
RM279 Dam Site			USJRBSI					
Elev. 1115 (Interpolated)			DIVISION:					
Concrete Faced Rockfill Dam (CFR)			FILE: P:\US_Bureau_Reclamation\VDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Piloin cost sheets\MP279 CFRF 2003.xls\MP279 1100					
			Outlet Works					
			Concrete in Outlet Works Intake Structure					
			Excavation of Outlet Shaft and Gate Structure					
			Rock Bolt Supports					
			Total Drilling for Rock Bolts					
			Concrete in Outlet Shaft and Gate Structure					
			Furnishing and Handling Cement					
			Furnishing and Handling Reinforcement					
			Outlet Works Trashracks					
			Outlet Works subtotal					
			Powerplant					
			Steel Pipe					
			Valves, all Sizes and Types					
			Hydraulic Control System					
			Concrete in Powerplant					
			Excavation for Powerplant					
			Furnishing and Handling Cement					
			Furnishing and Handling Reinforcement					
			Turbines					
			Generators					
			Governors, Motors, etc.					
			Powerplant subtotal					
QUANTITIES				PRICES				
BY		CHECKED		BY		CHECKED		
B. Foster		S. Osgood 11/21/2003		B. Foster		S. Osgood 11/21/2003		
DATE PREPARED		APPROVED		DATE		PRICE LEVEL		
11/10/2003				11/10/03		Appraisal 03		

CODE: D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

FEATURE:		PROJECT:					
RM279 Dam Site Elev. 1115 (Interpolated) Embankment Dam (CFR)		DIVISION:					
		FILE: P:\US_Bureau_Reclamation\VDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Pilorin cost sheets\MP279 CFRF 2003.xls\MP279_1100					
PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CFRF Dam					
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	271,900	CY	\$6.35	\$1,726,565
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	37,500	CY	\$8.89	\$333,281
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	106,250	CY	\$6.89	\$731,797
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	320,825	CY	\$15.93	\$5,109,138
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	320,825	CY	\$16.35	\$5,245,489
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	11,351,875	CY	\$7.69	\$87,338,488
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	11,857,500	CY	\$7.44	\$88,264,266
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	108,199	CY	\$202.38	\$21,896,722
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	5,565	CY	\$202.38	\$1,126,116
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	24,993	anchors	\$40.00	\$999,700
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	4,319	CY	\$395.50	\$1,707,967
	130	Drilling for grout program (setup, drill, test)	8313	72,526	LF	\$30.85	\$2,237,435
	140	Grouting (grout injection into competent granite.	8313	54,163	bags	\$22.00	\$1,191,575
	150	Unwatering	8313	1	LS		\$2,512,500
		Subtotal, CFRF Dam					\$220,421,038
		RCC Dike					
		Excavation, all classes, for Dike Foundation		699	CY	\$8.50	\$5,942
		RCC in Dike		6,350	CY	\$48.00	\$304,776
		Concrete facing elements in Dike		714	CY	\$180.00	\$128,520
		Concrete cap on top of Dike		84	CY	\$250.00	\$21,000
		Leveling concrete in Dike Foundation		140	CY	\$200.00	\$28,050
		Subtotal, RCC Dike					\$488,288
		SUMMARY OF COSTS					
		Diversion and Care of River					\$122,600,000
		Spillway					\$14,900,000
		Outlet Works					\$9,400,000
		Powerplant					\$144,900,000
		CFRF Dam					\$220,400,000
		RCC Dike					\$500,000
		Mobilization - 5%					\$26,000,000
		Subtotal					\$538,700,000
		Unlisted Items - 15%					\$81,300,000
		Contract Cost					\$620,000,000
		Contingencies - 30%					\$190,000,000
		Field Cost					\$810,000,000
QUANTITIES			PRICES				
BY	CHECKED	BY	CHECKED				
B. Foster	S. Osgood 11/21/2003	B. Foster	S. Osgood 11/21/2003				
DATE PREPARED	APPROVED	DATE	PRICE LEVEL				
11/10/03		11/10/03	Appraisal 03				

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 2 OF 3

PLANT ACCT.		PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
FEATURE:			PROJECT:					
RM279 Dam Site			USJRBSI					
Elev. 1200 (Interpolated)			DIVISION:					
Concrete Faced Rockfill Dam (CFR)			FILE: P:\US_Bureau_Reclamation\NDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Piloin cost sheets\MP279 CFRF 2003.xls\MP279_1100					
Outlet Works								
			Concrete in Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150
			Excavation of Outlet Shaft and Gate Structure		12,600	CY	\$280.00	\$3,528,000
			Rock Bolt Supports		380	Bolts	\$370.00	\$140,600
			Total Drilling for Rock Bolts		6,100	LF	\$20.00	\$122,000
			Concrete in Outlet Shaft and Gate Structure		6,250	CY	\$442.50	\$2,765,625
			Furnishing and Handling Cement		2,615	TONS	\$115.00	\$300,725
			Furnishing and Handling Reinforcement		1,404,000	LBS	\$0.65	\$912,600
			Outlet Works Trashracks		495,000	LBS	\$2.50	\$1,237,500
			Outlet Works subtotal					\$9,831,200
Powerplant								
			Steel Pipe		22,651,855	LBS	\$1.50	\$33,977,783
			Valves, all Sizes and Types		10,687,900	LBS	\$5.00	\$53,439,500
			Hydraulic Control System		168,500	LBS	\$10.00	\$1,685,000
			Concrete in Powerplant		42,350	CY	\$350.00	\$14,822,500
			Excavation for Powerplant		307,100	CY	\$13.00	\$3,992,300
			Furnishing and Handling Cement		11,945	TONS	\$100.00	\$1,194,500
			Furnishing and Handling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500
			Turbines		1,945,000	LBS	\$6.50	\$12,642,500
			Generators		2,420,000	LBS	\$8.00	\$19,360,000
			Governors, Motors, etc.		3-Units	LS		\$3,600,000
			Powerplant subtotal					\$148,525,583
QUANTITIES				PRICES				
BY	B. Foster		CHECKED	S. Osgood 11/21/2003		BY	B. Foster	
DATE PREPARED	11/10/2003		APPROVED			DATE	11/10/03	
						PRICE LEVEL	Appraisal 03	

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

FEATURE: RM279 Dam Site Elev. 1200 (Interpolated) Embankment Dam	PROJECT:
	DIVISION:
	FILE: P:\US_Bureau_Reclamation\NDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\Documents\Surface Storage Option TMs\TM Temperance\Piloinr cost sheets\MP279 CFRF 2003.xls\MP279_1100

PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		CFRF Dam					
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	634,000	CY	\$5.50	\$3,487,000
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	80,000	CY	\$8.25	\$660,000
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	425,000	CY	\$6.25	\$2,656,250
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	495,500	CY	\$15.50	\$7,680,250
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	495,500	CY	\$15.50	\$7,680,250
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	19,012,500	CY	\$7.38	\$140,217,188
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	19,550,000	CY	\$7.13	\$139,293,750
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	168,825	CY	\$187.50	\$31,654,688
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	5,930	CY	\$187.50	\$1,111,875
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	26,650	anchors	\$40.00	\$1,066,000
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	5,840	CY	\$370.00	\$2,160,800
	130	Drilling for grout program (setup, drill, test)	8313	81,175	LF	\$30.00	\$2,435,250
	140	Grouting (grout injection into competent granite.	8313	60,750	bags	\$22.00	\$1,336,500
	150	Unwatering	8313	1	LS		\$3,150,000
		Subtotal, CFRF Dam					\$344,589,800
		RCC Dike					
		Excavation, all classes, for Dike Foundation		4,660	CY	\$8.50	\$39,610
		RCC in Dike		42,330	CY	\$48.00	\$2,031,840
		Concrete facing elements in Dike		4,760	CY	\$180.00	\$856,800
		Concrete cap on top of Dike		560	CY	\$250.00	\$140,000
		Leveling concrete in Dike Foundation		935	CY	\$200.00	\$187,000
		Subtotal, RCC Dike					\$3,255,250
		SUMMARY OF COSTS					
		Diversion and Care of River					\$137,600,000
		Spillway					\$16,700,000
		Outlet Works					\$9,800,000
		Powerplant					\$148,500,000
		CFRF Dam					\$344,600,000
		RCC Dike					\$3,300,000
		Mobilization - 5%					\$33,000,000
		Subtotal					\$693,500,000
		Unlisted Items - 15%					\$106,500,000
		Contract Cost					\$800,000,000
		Contingencies - 30%					\$240,000,000
		Field Cost					\$1,040,000,000
QUANTITIES			PRICES				
BY	CHECKED	BY	CHECKED				
B. Foster	S. Osgood 11/21/2003	B. Foster	S. Osgood 11/21/2003				
DATE PREPARED	APPROVED	DATE	PRICE LEVEL				
11/10/03		11/10/03	Appraisal 03				

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 1 OF 2

FEATURE:		PROJECT:					
RM279 Dam Site Elev. 1300 Concrete Faced Rockfill Dam (CFR)		DIVISION:					
		FILE: P:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_Phase_1\ements\Surface Storage Option TMs\TM Temperance\Pilorin cost sheets\MP279 CFRF 2003.xls\MP279_1100					
PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Diversion and care of river					
		Upstream Cofferdam (Crest @ El. 635)		2,667,000	CY	\$12.50	\$33,337,500
		Excavation for Left Abutment Diversion Tunnel		213,600	CY	\$140.00	\$29,904,000
		Concrete Liner for Left Abutment Diversion Tunnel		47,300	CY	\$255.00	\$12,061,500
		Rock Bolts - Left Abt. Div. Tunnel		4,950	Bolts	\$500.00	\$2,475,000
		Total Drilling - Left Abt. Div. Tunnel		89,100	LF	\$20.00	\$1,782,000
		Excavation for Right Abutment Diversion Tunnel		320,000	CY	\$140.00	\$44,800,000
		Concrete Liner for Right Abutment Diversion Tunnel		55,600	CY	\$255.00	\$14,178,000
		Rock Bolts - Right Abt. Div. Tunnel		3,870	Bolts	\$600.00	\$2,322,000
		Total Drilling - Right Abt. Div. Tunnel		89,010	LF	\$20.00	\$1,780,200
		Furnishing and Handling Cement		29,020	TONS	\$100.00	\$2,902,000
		Furnishing and Handling Reinforcement		15,435,000	LBS	\$0.60	\$9,261,000
		Diversion and Care of River Subtotal					\$154,803,200
		Spillway					
		Excavation for Spillway		1,642,000	CY	\$8.50	\$13,957,000
		Concrete in spillway crest		7,670	CY	\$180.00	\$1,380,600
		Concrete in spillway training walls and Apron		7,500	CY	\$210.00	\$1,575,000
		Furnishing and Handling Cement		4,280	TONS	\$110.00	\$470,800
		Furnishing and Handling Reinforcement		2,275,500	LBS	\$0.65	\$1,479,075
		Spillway subtotal					\$18,862,475
QUANTITIES			PRICES				
BY		CHECKED		BY		CHECKED	
S. Higinbotham				R. Baumgarten			
DATE PREPARED		APPROVED		DATE		PRICE LEVEL	
7/01/2003						Appraisal 03	

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 2 OF 3

FEATURE:		PROJECT:					
RM279 Dam Site Elev. 1300 Concrete Faced Rockfill Dam (CFR)		DIVISION:					
		FILE: P:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_Phase_ments\Surface Storage Option TMs\TM Temperance\Piloin cost sheets\MP279_2003.xls\MP279_1100					
PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
		OutletWorks					
		Concrete in Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150
		Excavation of Outlet Shaft and Gate Structure		12,730	CY	\$280.00	\$3,564,400
		Rock Bolt Supports		480	Bolts	\$360.00	\$172,800
		Total Drilling for Rock Bolts		5,760	LF	\$20.00	\$115,200
		Concrete in Outlet Shaft and Gate Structure		7,050	CY	\$450.00	\$3,172,500
		Furnishing and Handling Cement		2,870	TONS	\$110.00	\$315,700
		Furnishing and Handling Reinforcement		1,524,000	LBS	\$0.65	\$990,600
		Outlet Works Trashracks		495,000	LBS	\$2.50	\$1,237,500
		Outlet Works subtotal					\$10,392,850
		Powerplant					
		Steel Pipe		26,236,300	LBS	\$1.50	\$39,354,450
		Valves, all Sizes and Types		10,322,400	LBS	\$5.00	\$51,612,000
		Hydraulic Control System		187,000	LBS	\$10.00	\$1,870,000
		Concrete in Powerplant		42,350	CY	\$350.00	\$14,822,500
		Excavation for Powerplant		267,300	CY	\$13.00	\$3,474,900
		Furnishing and Handling Cement		11,945	TONS	\$100.00	\$1,194,500
		Furnishing and Handling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500
		Turbines		2,000,000	LBS	\$6.50	\$13,000,000
		Generators		2,500,000	LBS	\$8.00	\$20,000,000
		Governors, Motors, etc.		3-Units	LS		\$3,600,000
		Powerplant subtotal					\$152,739,850
QUANTITIES			PRICES				
BY S. Higinbotham		CHECKED		BY R. Baumgarten		CHECKED	
DATE PREPARED 7/01/2003		APPROVED		DATE		PRICE LEVEL Appraisal 03	

CODE:D-8170

ESTIMATE WORKSHEET

SHEET 3 OF 3

FEATURE:		PROJECT:					
RM279 Dam Site Elev. 1300 Embankment Dam (CFR)		DIVISION:					
		FILE: P:\US_Bureau_Reclamation\NDIQ_01CS20210B\Upper_San_Joaquin_Phase_ments\Surface Storage Option TMs\TM Temperance\Piloricost sheets\MP_CFRF 2003.xls\MP279_1100					
		PLANT ACCT.	PAY ITEM	DESCRIPTION	CODE	QUANTITY	UNIT
		CFRF Dam					
	20	Excavation - common (removal of alluvium, rock slope cleaning by dozer to sound rock, minimal ripping.)	8313	1,060,000	CY	\$4.50	\$4,770,000
	30	Zone 1A - Exc, haul, & place (CL, SM, GM in 6" lifts to 98% Proctor, 2 mile haul) Toe slab imperv. Cap	8313	130,000	CY	\$7.50	\$975,000
	40	Zone 1B - Exc, haul, & place (random in 18" lifts to 95% Proctor, 0.5 mile haul) Shell for Zone 1A	8313	800,000	CY	\$5.50	\$4,400,000
	50	Zone 2 - Exc, haul, & place processed SM, GM in 18" lifts to 98% Proctor, 0.5 mile haul) Deck foundation	8313	701,000	CY	\$15.00	\$10,515,000
	60	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to 95% Proctor, 0.5 mile haul) Transition to Shell	8313	701,000	CY	\$14.50	\$10,164,500
	70	Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts, blasting operation 0.5 mile away) Upstream Shell	8313	28,025,000	CY	\$7.00	\$196,175,000
	80	Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts, blasting operation 0.5 mile away) Downstream Shell	8313	28,600,000	CY	\$6.75	\$193,050,000
	90	Concrete deck (3,000 psi strength, 0.4% reinforcing)	8313	240,150	CY	\$170.00	\$40,825,500
	100	Concrete toe slab (3,000 psi strength, 0.3% reinforcing)	8313	6,360	CY	\$170.00	\$1,081,200
	110	Anchor bars for toe slab (4' deep grouted into granite)	8313	28,600	anchors	\$40.00	\$1,144,000
	120	Parapet Wall (3,000 psi, 0.4% reinforcing)	8313	7,630	CY	\$340.00	\$2,594,200
	130	Drilling for grout program (setup, drill, test), setups=1334	8313	91,350	LF	\$29.00	\$2,649,150
	140	Grouting (grout injection into competent granite)	8313	68,500	bags	\$22.00	\$1,507,000
	150	Unwatering (assumes 36 month construction duration)	8313	1	LS		\$3,900,000
		Subtotal, CFRF Dam					
		\$473,750,550					
		RCC Dike					
		Excavation, all classes, for Dike Foundation		9,320	CY	\$8.50	\$79,220
		RCC in Dike		84,660	CY	\$48.00	\$4,063,680
		Concrete facing elements in Dike		9,520	CY	\$180.00	\$1,713,600
		Concrete cap on top of Dike		1,120	CY	\$250.00	\$280,000
		Leveling concrete in Dike Foundation		1,870	CY	\$200.00	\$374,000
		Subtotal, RCC Dike					
		\$6,510,500					
		SUMMARY OF COSTS					
		Diversion and Care of River					
		\$154,800,000					
		Spillway					
		\$18,900,000					
		Outlet Works					
		\$10,400,000					
		Powerplant					
		\$152,700,000					
		CFRF Dam					
		\$473,800,000					
		Saddle Dam - RCC Dike					
		\$6,500,000					
		Mobilization - 5%					
		\$41,000,000					
		Subtotal					
		\$858,100,000					
		Unlisted Items - 15%					
		\$131,900,000					
		Contract Cost					
		\$990,000,000					
		Contingencies - 30%					
		\$300,000,000					
		Field Cost					
		\$1,300,000,000					
QUANTITIES				PRICES			
BY		CHECKED		BY		CHECKED	
Mark Pabst, Steve Higinbotham		Mark Pabst		R Baumgarten			
DATE PREPARED		APPROVED		DATE		PRICE LEVEL	
7/1/2003						Appraisal 03	

TF279_ADJ COSTS

RESERVOIR CONTRACT COST FOR VARIOUS TF279 STORAGE SIZES			
Description	Amount		
900 Foot RCC, including Powerhouse (from TF279_900_RCC_2)	\$330,000,000		
40MW Powerhouse			
RM279 PH (40MW), 2003 prices, from Phase 1 est. for 900 Foot RCC Dam	\$91,568,965		
Less portion of pipes and valves attributable to O.W., from below	-\$32,146,777		
Subtotal	\$59,422,188		
Mobilization (5%)	\$3,000,000		
Subtotal	\$62,422,188		
Unlisted items (~15%)	\$9,577,812		
Powerhouse Contract Cost	\$72,000,000		
Contract Costs for RM279 900 Foot RCC Dam, excluding 40MW Powerhouse (Jul-Jul-2003 cost)	\$260,000,000		
985 Foot RCC, including Powerhouse (from TF279_985_RCC_2)	\$450,000,000		
40MW Powerhouse			
RM279 PH (40MW), 2003 prices, from Phase 1 est. for 985 Foot RCC Dam	\$91,568,965		
Less portion of pipes and valves attributable to O.W., from below	-\$32,146,777		
Subtotal	\$59,422,188		
Mobilization (5%)	\$3,000,000		
Subtotal	\$62,422,188		
Unlisted items (~15%)	\$9,577,812		
Powerhouse Contract Cost	\$72,000,000		
Contract Costs for RM279 985 Foot RCC Dam, excluding 40MW Powerhouse (Jul-2003 costs)	\$380,000,000		
1100 Foot CFR, including Powerhouse (from TF279_1100_CFR_3)	\$590,000,000		
60MW Powerhouse			
40MW Powerhouse Contract Cost (reference above)	\$72,000,000		
80MW Powerhouse Contract Cost (reference below)	\$105,000,000		
Powerhouse Average Contract Cost	\$88,500,000		
Contract Costs for RM279 1100 Foot CFR Dam, excluding 60MW Powerhouse (Jul-2003 costs)	\$500,000,000		
1115 Foot CFR, including Powerhouse (from TF279_1115_CFR_3)	\$620,000,000		
60MW Powerhouse			
40MW Powerhouse Contract Cost (reference above)	\$72,000,000		
80MW Powerhouse Contract Cost (reference below)	\$105,000,000		
Powerhouse Average Contract Cost	\$88,500,000		
Contract Costs for RM279 1115 Foot CFR Dam, excluding 60MW Powerhouse (Jul-2003 costs)	\$530,000,000		
1200 Foot CFR, including Powerhouse (from TF279_1200_CFR_3)	\$800,000,000		
70MW Powerhouse			
40MW Powerhouse Contract Cost (reference above)	\$89,000,000		
80MW Powerhouse Contract Cost (reference below)	\$105,000,000		
Powerhouse Average Contract Cost	\$97,000,000		
Contract Costs for RM279 1200 Foot CFR Dam, excluding 70MW Powerhouse (Jul-2003 costs)	\$700,000,000		
1300 Foot CFR, including Powerhouse (from TF279_1300_CFR_3)	\$990,000,000		
80MW Powerhouse			
RM279 PH (80MW), 2003 prices, from Phase 1 est. for 1300 Foot CFR Dam	\$152,739,850		
Less portion of pipes and valves attributable to O.W., from below	-\$65,960,727		
Subtotal	\$86,779,123		
Mobilization (5%)	\$4,300,000		
Subtotal	\$91,079,123		
Unlisted items (~15%)	\$13,920,877		
Powerhouse Contract Cost	\$105,000,000		
Contract Costs for RM279 1300 Foot CFR Dam, excluding 80MW Powerhouse (Jul-2003 costs)	\$890,000,000		
	Capacity (MW)	% to PH	% to OVW
(reference TF286_ADJ COSTS_1)	180	41%	59%
(reference TF286_ADJ COSTS_1)	40	19%	81%
(reference TF286_ADJ COSTS_1)	60	24%	76%
(reference TF286_ADJ COSTS_1)	80	27%	73%
For 900 Foot RCC Dam (w/ 40MW PH), Jul-2003 costs			
Steel pipe, from Phase 1 est. for 900 Foot RCC Dam	\$17,602,965		
Valves, from Phase 1 est. for 900 Foot RCC Dam	\$22,300,000		
Subtotal, pipe and valves	\$39,902,965		
Portion of pipes and valves attributable to O.W.	\$32,146,777		
Portion of pipes and valves attributable to 40MW PH	\$7,756,188		
For 1300 Foot CFR Dam (w/ 80MW PH), Jul-2003 costs			
Steel pipe, from Phase 1 est. for 1300 Foot CFR Dam	\$39,354,450		
Valves, from Phase 1 est. for 1300 Foot CFR Dam	\$51,612,000		
Subtotal, pipe and valves	\$90,966,450		
Portion of pipes and valves attributable to O.W.	\$65,960,726.78		
Portion of pipes and valves attributable to 80MW PH	\$25,005,723.22		
CONTRACT COST FOR NEW POWERHOUSE AT RM279			
	40MW Contrat Cost (from above)	\$72,000,000	
	60MW Contrat Cost (from above)	\$89,000,000	
Description	Amount		
15MW Powerhouse			
Conversion Factor (square root of MW ratio)	0.61		
Adjusted Contract Cost for 15MW Powerhouse at RM279 (Jul-2003 costs)	\$45,000,000		
120MW Powerhouse			
Conversion Factor (square root of MW ratio)	1.41		
Adjusted Contract Cost for 120MW Powerhouse at RM279 (Jul-2003 costs)	\$125,000,000		
CONTRACT COST FOR NEW POWERHOUSE AT MILLERTON LAKE			
	4X45MW Contrat Cost (from MILL LK_NEW PH_1)	\$115,000,000	
Description	Amount		
120MW Powerhouse			
Conversion Factor (square root of MW ratio)	0.82		
Adjusted Contract Cost for 120MW Powerhouse at Millerton Lake (Jul-2004 costs)	\$94,000,000		

