PARTIAL RE-ALIGNMENT

PEYTON SLOUGH
MARTINEZ, CA

ACTIVITY	QUANTITY	UNIT	UNIT RATE	COST	COMMENT
Item 1. Pre-Construction Activities					
Pre-Construction Studies/Permits	1	estimate	$900,000	$900,000	
Remedial Design	1	estimate	$800,000	$800,000	
Prepare bid specifications/contractor selection/contract negotiations	1	estimate	$250,000	$250,000	
Mobilization and set-up of equipment for dredge operation.	1	estimate	$50,000	$50,000	
Mobilization with setup of administrative/engineering facility	1	estimate	$0	$0	Assume no facitity needed. Costs included in Item 8: Optional Items.
Post-Construction equipment decontamination	1	estimate	$50,000	$50,000	
Demobilization	1	estimate	$50,000	$50,000	
			Item 1 Total	**$2,100,000**	
Item 2. Site Preparation					
Engineering design of temporary facitities	1	estimate	$50,000	$50,000	Includes geotechnical analysis
Site paving and engineering controls	1	estimate	$1,000,000	$1,000,000	
Construct three trestle bridges	7,500	SF	$20	$150,000	At levee, south section of existing slough, and at small slough to north/east access road on existing slough
Excavation of Dredge Spoil Piles	8,400	CY	$5	$42,000	Excavation and stockpiling of dredge spoil piles prior to temporary road placement. Assumes that excavation in south levee area is 2' below grade and includes a 20%.
Hauling and placing gravel for access roads along existing Slough	28,175	CY	$22	$633,656	Access roads constructed with crushed 3/4" stone base, approx. 2' thick. Assumed 5,500' access road with 10 turnouts of 100'x30'. 25% volume is added for reinforcement, and a 15% bulking factor is assumed.
Purchase and place geofabric	225,400	SY	$1.93	$435,022	Assumes ideal conditions.
Sheetpiling/Trestle at South end of Slough for access road	25,000	SF	$20	$500,000	Includes installation and removal of a 1000 ft long 25 ft deep sheet pile wall to support the excavator at the south end of the Slough.
Hauling and placing gravel for access roads on new alignment	9,890	CY	$22	$222,426	Access roads constructed with crushed 3/4" stone base, approx. 2' thick. Assumed 4,500' access road with 10 turnouts of 100'x30'. 25% volume is added for reinforcement. A bulking factor of 15% is assumed.
Purchase and place geofabric	79,120	SY	$1.93	$152,702	Assumes ideal conditions.
Construct temporary staging area	8,300	SY	$7	$58,515	Staging Area of 75,000 SF constructed with asphaltic concrete 4" thick ($7.05/SY).
Construct stockpile/drying pad	30,000	SY	$7	$211,500	Pad capable of containing entire ex-situ sediment volume from new slough or existing Slough. Costructed with asphaltic concrete 4" height ($7.05/SY). Assume natrural drying processes with no chemical additives.
Site clearing	1	estimate	$5,000	$5,000	Clear light brush for staging areas and other temporary facilities/roads in an estimated 5 acre area.
Drag the slough for fish species	1	estimate	$60,000	$60,000	Drag the north and south slough using a seine prior to dredging and capping.
Sheetpiling along staging areas	1,500	SF	$20	$30,000	Includes installation and removal of two 60 ft long 25 ft deep sheet pile walls to support the load of the crane at the bank of the Slough.
Construct engineered closures to contain water in Peyton Slough during excavation activities	1	estimate	$50,000	$50,000	Assume low-tech coffer dams and/or silt curtains.
			Item 2 Total	**$3,600,820**	

PARTIAL RE-ALIGNMENT

PEYTON SLOUGH
MARTINEZ, CA

Item 3. Partial Slough Re-Alignment					
Land purchase for south slough re-alignment.	1	estimate	$50,000	$50,000	Nominal fee for land access agreement.
Construction Management	1	estimate	$2,000,000	$2,000,000	Assume 3 dedicated staff for 5 months.
Excavate partial new slough	7,644	CY	$6	$45,867	Assume a 4-ft deep, 30-ft wide trapezoidal slough cross-section. Includes excavation and hauling sediments to storage pads. Costs based on verbal quote from Cooper Crane 2/21/01.
Analysis of sediments removed from new alignment	10	sample	$1,000	$9,938	One soil sample ($1000) per 1,000 CY. Includes sampling, analytical, labor, and reporting.
Remove access roadways on new alignment	11,374	CY	$5	$56,868	Roadway volume placed is increased by a 15% bulking factor.
Install new tide gate	1	estimate	$750,000	$750,000	Per Tony Koo's conversation with MAD on 2/21/01.
Install pipe bypass	2,500	LF	$18	$45,000	
Operate pipe bypass	120	day	$1,174	$140,914	Assumes bypass will receive 1 million gallons per day (MGD).
Drag the slough for fish species	1	estimate	$60,000	$60,000	Drag the slough using a seine in 1,000 ft sections separated by silt screens.
			Item 3 Total	**$3,158,586**	

Item 4. Sediment Removal and Treatment Activities					
Excavate sediments from existing Slough (existing north section plus widened bypass slough)	42,827	CY	$6	$257,000	Per Cooper Crane 03/01. Assume 4:1 sideslope in the existing Slough to a depth of 3.5 feet.
Dewatering	0	estimate	$80,000	$0	
Addition of Liquid Polymer for Dewatering	0	estimate		$0	
Analytical testing and monitoring of treated water	0	sample	$550	$0	
Stabilization of Sediments	0	CY	$20	$0	
Analysis of processed sediments	0	sample	$1,000	$0	
			Item 4 Total	**$257,000**	

Item 5. Capping					
5C. Capping in the South Slough including Levee Fill					
Purchase and place bay mud sediment cap with geotextile liner	17,805	CY	$25	$445,125	Assume 25-ft wide cap with 2:1 sidewall slope to high tide line along 5,550-linear foot slough. Cost includes geotextile liner and all mobilization and installation costs. Assume 3 ft sediment cap. 1.3 Bulking Factor
Purchase and place geomembrane.	201,940	SF	$2.90	$585,626	Liner covers bottom and sidewalls.
Pre/post-cap bathymetric survey	2	est. per survey	$25,000	$50,000	
			Item 5C Total	**$1,080,751**	
5D. Capping the North Slough including the levee fill					
Purchase and place bay mud sediment cap with geotextile liner	18,833	CY	$25	$470,825	Assume 25-ft wide cap with 2:1 sidewall slope to high tide line along 5,550-linear foot slough. Cost includes geotextile liner and all mobilization and installation costs. Assume 3 ft sediment cap. 1.3 Bulking Factor
Purchase and place geomembrane.	185,345	SF	$2.90	$537,500	Liner covers bottom and sidewalls.
Haul and place sediment excavated from new alignment	9,938	CY	$6	$59,627	Per verbal quote from Cooper Crane 2/21/01.
			Item 5D Total	**$1,067,952**	

PARTIAL RE-ALIGNMENT

PEYTON SLOUGH
MARTINEZ, CA

Item 6. Site Restoration					
Remove temporary facilities (staging areas, silt screens, etc.)	1	estimate	$150,000	$150,000	Removal and disposal of temporary facility areas. Regrade/restore. Cap repair.
Haul and place backfill material to meet grade in AOCs	33,190	CY	$25	$829,748	Assumes a 30% bulking factor.
Regrade	50,243	SY	$0.13	$6,532	Regrading former dredge spoil piles/temporary access facility and road areas. Means 2001
Purchase plants and replant on cap (south section)	39	1/4-acres	$1,355.00	$52,562	Replanting area in former dredge spoil piles/temporary access facility and road areas. Assume 100 plants per 1/4-acre and $13.55 per container.
Long Term Monitoring for Cap	4	5-year	$20,000	$80,000	Chemical testing of sediment
			Item 6 Total	**$1,118,842**	
Item 7. Sediment Disposal					
7A. On-site Containment Facility					
Design OCF	1	estimate	$150,000	$150,000	Engineering, design, permitting, specifications, CQA. Assume 1/4-acre for 6 ft. high landfill. Requires no mitigation.
Stabilization of Sediments	55,675	CY	$20	$1,113,510	Sediment volume is bulked up by a factor of 1.3 after removal.
Cap and Liner Installation	1	estimate	$200,000	$200,000	Assume imported clay, clay/HDPE liner and leachate collection system.
Analysis of processed sediments	11	sample	$1,000	$11,135	One soil sample ($1,000) per 5,000 CY. Includes sampling, analytical, labor, and reporting.
Site Work	1	estimate	$150,000	$150,000	Drainage system, piping, sumps, monitoring wells and site preparation.
			Item 7A Total	**$1,624,645**	
7B. Off-site Disposal					
Analysis of processed sediments	11	sample	$1,000	$11,135	One soil sample ($1,000) per 5,000 CY. Includes sampling, analytical, labor, and reporting.
T&D of Excess excavated materials and dredge spoils	89,100	tons	$27	$2,410,000	
			Item 7B Total	**$2,421,135**	

Item 8. Optional Items					
Mobilization with setup of administrative/engineering facility	1	estimate	$50,000	$50,000	
Constuct stablization/solidification cells	5,000	CY	$7	$35,000	To reduce mobility and toxicity, and to supplement air drying process. Same assumptions as Staging Area constuction.
Stabilization of Sediments	55,675	CY	$20	$1,113,510	If needed for offsite disposal in order to meet discharge requirements (i.e., paint filter or TCLP analysis). Sediment volume is bulked up by a factor of 1.3 after removal.
			Item 8 Total	**$1,198,510**	

Notes:
1 Dredging Depth = 3 ft with 0.5 ft tolerance = 3.5 ft total
2:1 sidewall slope from Tulie line to current slough bottom
2 Average Cross Section of current slough = 128 SF along the 5500 ft slough (40ft by 5ft pre-dredging for 3.5 ft dredge cut with 2:1 embankments)
3 Average Cross Section of new slough = 100 SF along the 2400 ft slough (30ft by 4ft cut with 2:1 sloped embankments)
4 Assumes 3-ft thick cap is adequate to limit COC migration via pore water movement.
Final thickness will be based on flux modeling and geotechnical evaluations.
5 Does not include the scraping of dredge spoil piles from embankments and revegetation of those areas.
6 Tonnage of Sediment to Dispose = (Inplace Volume in CF) * (CY/27 CF) * (1.3 bulking) * (1.6 ton/CY)
7 Backfill material will undergo consolidiation of 1.3
8 Assumes removal of 275 CF/day during dredging.
9 Assumes a 10 hour work day (single shift operation).
OCF will require 30-year monitoring for COCs.

COST DETAIL
ALTERNATIVE 6-Modified
LAND BASED EXCAVATION AND CAPPING to 6.5 FEET

PEYTON SLOUGH
MARTINEZ, CA

ACTIVITY	QUANTITY	UNIT	UNIT RATE	COST	COMMENT
Item 1. Pre-Construction Activities					
Pre-Construction Studies/Permits	1	estimate	$900,000	$900,000	
Remedial Design	1	estimate	$800,000	$800,000	
Prepare bid specifications/contractor selection/contract negotiations	1	estimate	$250,000	$250,000	
Mobilization and set-up of equipment for dredge operation.	1	estimate	$50,000	$50,000	
Mobilization with setup of administrative/engineering facility	1	estimate	$0	$0	Assume no facitity needed. Costs included in Item 8: Optional Items.
Post-Construction equipment decontamination	1	estimate	$50,000	$50,000	
Demobilization	1	estimate	$50,000	$50,000	
			Item 1 Total	**$2,100,000**	

Item 2. Site Preparation					
Engineering design of temporary facitities	1	estimate	$50,000	$50,000	Includes geotechnical analysis
Site paving and engineering controls	1	estimate	$1,000,000	$1,000,000	
Construct three trestle bridges	7,500	SF	$20	$150,000	At levee, south section of existing slough, and at small slough to north/east access road on existing slough
Excavation of Dredge Spoil Piles	8,400	CY	$5	$42,000	Excavation and stockpiling of dredge spoil piles prior to temporary road placement. Assumes that excavation in south levee area is 2' below grade and includes a 20% bulking factor.
Hauling and placing gravel for access roads along existing Slough	26,306	CY	$22	$591,628	Access roads constructed with crushed 3/4" stone base, approx. 2' thick. Assumed 5,920' access road with 10 turnouts of 100'x30'. 25% volume is added for reinforcement and a 30% bulking factor is assumed.
Purchase and place geofabric	210,450	SY	$1.93	$406,168	Assumes ideal conditions.
Construct temporary staging areas	8,300	SY	$7	$59,000	One staging Areas at 75,000 SF. Costructed with asphaltic concrete 4" height ($7.05/SY).
Construct stockpile/drying pad	30,000	SY	$7	$211,500	Pad capable of containing entire ex-situ sediment volume. Costructed with asphaltic concrete 4" height ($7.05/SY). Assume natrural drying processes with no chemical additives.
Site clearing	1	estimate	$5,000	$5,000	Clear light brush for staging areas and other temporary facilities/roads in an estimated 4 acre area.
Drag the slough for fish species	1	estimate	$50,000	$50,000	Drag the slough using a seine in 1000 ft sections separated by silt screens. Drag prior to dredging and prior to capping.
Install pipe bypass	2,500	LF	$18	$45,000	
Operate pipe bypass	120	days	$1,174	$140,914	Assumes bypass receives 1 million gallons per day (MGD).
Construct trestle bridge along levee	1	estimate	$100,000	$100,000	Optional - Includes installation of a 500 ft long trestle bridge near the levee for access to the staging area from the east side of the Slough.
Sheetpiling/Trestle at South end of Slough for access road	25,000	SF	$20	$500,000	Includes installation and removal of a 1000 ft long 25 ft deep sheet pile wall to support the excavator at the south end of the Slough.
Sheetpiling along both sides of slough for slope stablility	277,500	SF	$20	$5,550,000	Includes installation and removal of 5550 feet of 25 ft deep sheet pile walls to support both sidewalls in the slough during excavation.
Construct engineered closures to contain water during dredging activities	1	estimate	$75,000	$75,000	Permeable, non-woven silt screens placed at every 1000 ft. and at location of Strait, culvert, and tide gate. Assume 5 screens in the south slough and 3 screens in the north slough.
			Item 2 Total	**$8,976,210**	

Item 3. Slough Re-Alignment	
Not Applicable	

COST DETAIL
ALTERNATIVE 6-Modified
LAND BASED EXCAVATION AND CAPPING to 6.5 FEET

PEYTON SLOUGH
MARTINEZ, CA

ACTIVITY	QUANTITY	UNIT	UNIT RATE	COST	COMMENT
Item 4. Sediment Removal and Treatment Activities					
Construction Management	1	estimate	$2,000,000	$2,000,000	Includes proj./construction management, construction quality assurance, and overtime.
Excavate sediments from existing slough	104,999	CY	$6	$630,000	Per Cooper Crane, 3/01. Assumes 6.5' excavation at 2:1 sidewall slope.
Dewatering	0	estimate	$100,000	$0	Assume no dewatering necessary
Addition of Liquid Polymer for Dewatering	0	estimate		$0	
Analytical testing and monitoring of treated water	0	sample	$550	$0	
Stabilization of Sediments	0	CY	$20	$0	Optional - See Item 8
Analysis of processed sediments	0	sample	$1,000	$0	
			Item 4 Total	**$2,630,000**	
Item 5. Capping					
5A. Armorflex Cap					
Purchase and place Armorflex cap with geotextile liner	348,740	SF	$6	$2,089,000	Assume 73-ft wide cap with 2:1 sidewall slope to tulie along 5,550-linear feet of slough. Cost includes mobilization and installation costs.
Analyze borrow material for sediment cover of Armorflex cap	201	sample	$1,500	$302,000	1 sample/500 CY. $1500/sample. 1.3 consolidation factor
Purchase and place sediment cover for Armorflex cap	100,747	CY	$25	$2,518,677	Assume 6 ft sediment cover and a bulking factor of 30%.
Pre/post-cap bathymetric survey	2	est. per survey	$25,000	$50,000	
			Item 5A Total	**$4,959,677**	
5B. Bentonite cap					
Purchase and place geocomposite clay liner (GCL)	348,740	SF	$0.80	$278,992	Assume GCL 40-ft wide with sidewalls capped along 5,550-linear foot slough. Cost includes mobilization and installation costs.
Purchase and place geomembrane.	348,740	SF	$2.90	$1,011,346	Liner covers bottom and sidewalls.
Sediment layer	100,747	CY	$25	$2,518,677	Assume 6 ft sediment cover and a bulking factor of 30%.
Pre/post-cap bathymetric survey	2	est. per survey	$25,000	$50,000	
			Item 5B Total	**$3,859,015**	
5C. Sediment cap					
Purchase and place bay mud/sand sediment cap with geotextile liner	96,160	CY	$25.00	$2,404,007	Assume 40-ft wide cap with 2:1 sidewall slope to tulie line along 5,550-linear foot slough. Cost includes mobilization and installation costs. Assume 6 ft sediment cap. 1.3 bulking factor.
Purchase and place geomembrane.	348,740	SF	$2.90	$1,011,346	Liner covers bottom and sidewalls.
Pre/post-cap bathymetric survey	2	est. per survey	$25,000	$50,000	
			Item 5C Total	**$3,465,353**	
Item 6. Site Restoration					
Remove temporary facilities (staging areas, silt screens, etc.)	1	estimate	$100,000	$100,000	Removal and disposal of temporary facility areas. Regrade/restore. Cap repair.
Remove temporary access roadways	30,252	CY	$5	$151,261	Remove gravel fill and geotextile.
Regrade	23,875	SY	$0.13	$3,104	Regrading former dredge spoil piles/temporary access facility and road areas. Means 2001
Replant	22	1/4-acres	$1,355.00	$30,095	Replanting area in former dredge spoil piles/temporary access facility and road areas. Assume 100 plants per 1/4-acre at $13.55 per container.
Remediation Documentation Report	1	estimate	$100,000	$100,000	RWQCB requirement.
Long-term monitoring of restoration	4	5-year	$20,000	$80,000	Chemical testing of sediment
			Item 6 Total	**$464,460**	

COST DETAIL
ALTERNATIVE 6-Modified
LAND BASED EXCAVATION AND CAPPING to 6.5 FEET

PEYTON SLOUGH
MARTINEZ, CA

ACTIVITY	QUANTITY	UNIT	UNIT RATE	COST	COMMENT
Item 7. Sediment Disposal					
7A. On-site Containment Facility					
Design OCF	1	estimate	$200,000	$200,000	Engineering, design, permitting,
Cap and Liner Installation	1	estimate	$250,000	$250,000	Assume imported clay, clay/HDPE liner and leachate collection system.
Stabilization of Sediments	131,249	CY	$20	$2,624,977	If needed for offsite disposal in order to meet discharge requirements (i.e., paint filter or TCLP analysis). Sediment volume is bulked up by a factor of 1.3 after removal. Stabiliazation further bulks the material by about 25%.
Analysis of processed sediments	21	sample	$1,000	$21,000	One soil sample ($1,000) per 5,000 CY. Includes sampling, analytical, labor, and reporting.
Site Work	1	estimate	$200,000	$200,000	Drainage system, piping, sumps, monitoring wells and site preparation.
Long-term monitoring of OCF	30	years of quarterly sampling in one well.	$10,000	$300,000	Assumes monitoring of groundwater in one well for copper and zinc only, and quarterly reports.
			Item 7A Total	**$3,595,977**	
7B. Off-site Disposal					
Analysis of processed sediments	105	sample	$1,000	$104,999	One soil sample ($1,000) per 1,000 CY. Includes sampling, analytical, labor, and reporting.
T&D of Excess excavated materials and dredge spoils	223,438	tons	$27	$6,030,000	Quote from T. Koo - T&D from mining waste to local Class 2 landfill.
			Item 7B Total	**$6,134,999**	
ITEM 8 - Optional Items					
Mobilization with setup of administrative/engineering facility	1	estimate	$50,000	$50,000	
Constuct stablization/solidification cells	10,000	SY	$7	$70,000	To reduce mobility and toxicity, and to supplement air drying process. Same assumptions as Staging Area construction.
Stabilization of Sediments	131,249	CY	$20	$2,624,977	If needed for offsite disposal in order to meet discharge requirements (i.e., paint filter or TCLP analysis). Sediment volume is bulked up by a factor of 1.3 after removal. Stabiliazation further bulks the material by about 25%.
			Item 8 Total	**$2,744,977**	

Notes:
1 Excavation Depth = 6 ft with 0.5 ft tolerance = 6.5 ft total
2:1 sidewall slope from Tulie line to current slough bottom
2 Average Excavation Cross Section = 473 SF along the 5550 ft slough (6.5 ft deep dredge cut with **2:1** embankments)
3 Assumes 6-ft thick cap is adequate to limit COC migration via pore water movement.
Final thickness will be based on flux modeling and geotechnical evaluations.
4 Tonnage of Sediment to Dispose = (Inplace Volume in CF) * (CY/27 CF) * (1.3 bulking) * (1.6 ton/CY)
5 Backfill material will undergo consolidiation of 1.3
6 Assumes a 10 hour work day (single shift operation).
7 OCF will require 30-year monitoring for COCs.

COST DETAIL
ALTERNATIVE 7b-Modified
FULL SLOUGH RE-ALIGNMENT USING LAND-BASED EXCAVATION

PEYTON SLOUGH
MARTINEZ, CA

ACTIVITY	QUANTITY	UNIT	UNIT RATE	COST	COMMENT
Item 1. Pre-Construction Activities					
Pre-Construction Studies/Permits	1	estimate	$900,000	$900,000	
Remedial Design	1	estimate	$800,000	$800,000	
Prepare bid specifications/contractor selection/contract negotiations	1	estimate	$250,000	$250,000	
Mobilization and set-up of equipment for dredge operation.	1	estimate	$50,000	$50,000	
Mobilization with setup of administrative/engineering facility	1	estimate	$0	$0	Assume no facitity needed. Costs included in Item 8: Optional Items.
Post-Construction equipment decontamination	1	estimate	$50,000	$50,000	
Demobilization	1	estimate	$50,000	$50,000	
			Item 1 Total	**$2,100,000**	
Item 2. Site Preparation					
Engineering design of temporary facitities	1	estimate	$50,000	$50,000	
Site paving and engineering controls	1	estimate	$1,000,000	$1,000,000	
Construct three trestle bridges	7,500	SF	$20	$150,000	At levee, south section of existing slough and at small slough to north/east access road on existing slough
Hauling and placing gravel for access roads along existing Slough	26,450	CY	$22	$594,861	Access roads constructed with crushed 3/4" stone base, approx. 2' thick. Assumed 5,500' access road with 10 turnouts of 100'x30'. 25% volume is added for reinforcement, and a 15% bulking factor is assumed.
Excavation of Dredge Spoil Piles	8,400	CY	$5	$42,000	Excavation and stockpiling of dredge spoil piles prior to temporary road placement. Assumes that excavation in south levee area is 2' below grade and includes a 20%.
Purchase and place geofabric	209,600	SY	$1.93	$404,528	Assumes ideal conditions.
Sheetpiling/Trestle at South end of Slough for access road	25,000	SF	$20	$500,000	Includes installation and removal of a 1000 ft long 25 ft deep sheet pile wall to support the excavator at the south end of the Slough.
Hauling and placing gravel for access roads on new alignment	17,250	CY	$22	$387,953	Access roads constructed with crushed 3/4" stone base, approx. 2' thick. Assumed 4,500' access road with 10 turnouts of 100'x30'. 25% volume is added for reinforcement. A bulking factor of 15% is assumed.
Purchase and place geofabric	211,600	SY	$1.93	$408,388	Assumes ideal conditions.
Construct temporary staging area	8,300	SY	$7	$58,515	Staging Area of 75,000 SF constructed with asphaltic concrete 4" thick ($7.05/SY).
Construct stockpile/drying pad	20,000	SY	$7	$141,000	Pad capable of containing entire ex-situ sediment volume from new slough. Costructed with asphaltic concrete 4" height ($7.05/SY). Assume natrural drying processes with no chemical additives.
Site clearing	1	estimate	$5,000	$5,000	Clear light brush for staging areas and other temporary facilities/roads in an estimated 5 acre area.
Construct engineered closures to contain water in Peyton Slough during excavation activities	1	estimate	$50,000	$50,000	Assume low-tech coffer dams.
			Item 2 Total	**$3,792,244**	

COST DETAIL
ALTERNATIVE 7b-Modified
FULL SLOUGH RE-ALIGNMENT USING LAND-BASED EXCAVATION

PEYTON SLOUGH
MARTINEZ, CA

Item 3. Slough Re-Alignment					
Land purchase for south slough re-alignment.	1	estimate	$100,000	$100,000	Nominal land purchase cost is likely, as well as taking ownership and maintenance responsibilities for the levee.
Construction Management	1	estimate	$2,000,000	$2,000,000	Includes proj./construction management, construction quality assurance, and overtime.
Excavate New Slough Alignment	52,130	CY	$6	$312,780	Assume a 4-ft deep, 30-ft wide trapezoidal slough cross-section. Includes excavation and hauling temporary access road and sediments to storage pads. Assumes a 30% bulking factor.
Remove access roadways on new alignment	19,838	CY	$5	$99,188	Roadway volume placed is increased by a 15% bulking factor.
Install new tide gate	1	estimate	$750,000	$750,000	Per Tony Koo's conversation with MAD on 2/21/01.
Install pipe bypass	2,500	LF	$18	$45,000	
Operate pipe bypass	28	day	$1,174	$32,880	Assumes bypass will receive 1 million gallons per day (MGD).
Drag the slough for fish species	1	estimate	$60,000	$60,000	Drag the slough using a seine in 1,000 ft sections separated by silt screens.
			Item 3 Total	**$3,399,847**	
Item 4. Sediment Removal and Treatment Activities					
Not applicable					
Item 5. Capping					
5D. Capping and Backfilling the Peyton Slough					
Analysis of sediments removed from new alignment	68	sample	$1,000	$67,769	One soil sample ($1000) per 1,000 CY to confirm backfill quality for existing slough. Includes sampling, analytical, labor, and reporting.
Haul and place cap material from storage area	40,950	CY	$5	$204,750	Assumes a 30% bulking factor.
Purchase plants and replant on cap	20	1/4-acres	$1,355.00	$27,374	Replanting area in former dredge spoil piles/temporary access facility and road areas. Assume 100 plants per 1/4-acre and $13.55 per container.
			Item 5D Total	**$299,893**	
Item 6. Site Restoration					
Remove temporary facilities (staging areas, silt screens, etc.)	1	estimate	$150,000	$150,000	Removal and disposal of temporary facility areas. Regrade/restore. Cap repair.
Remove temporary access roadways	30,418	CY	$5	$152,088	Assume a 4-ft deep, 30-ft wide trapezoidal slough cross-section. Includes excavation and hauling temporary access road and sediments to storage pads.
Haul and place backfill material to meet grade in AOCs	33,190	CY	$25	$829,748	Assumes a 30% bulking factor.
Regrade	50,243	SY	$0.13	$6,532	Regrading former dredge spoil piles/temporary access facility and road areas. Means 2001
Purchase plants and replant	42	1/4-acres	$1,355.00	$56,264	Replanting area in former dredge spoil piles/temporary access facility and road areas. Assume 100 plants per 1/4-acre and $13.55 per container.
Remediation Documentation Report	1	estimate	$100,000	$100,000	RWQCB requirement.
Long Term Monitoring	4	5-year	$20,000	$80,000	Chemical testing of sediment
			Item 6 Total	**$1,374,632**	
Item 7. Sediment Disposal					
7A. On-site Containment Facility					
Design OCF		estimate	$150,000	$0	
Cap and Liner Installation		estimate	$200,000	$0	
Site Work		estimate	$150,000	$0	
			Item 7A Total	**$0**	
7B. Off-site Disposal					
T&D of Excess Dredge Spoil Materials	16,000	tons	$27.00	$432,000	Quote from T. Koo - T&D from mining waste to local Class 2 landfill. It is assumed that all but 10,000 cy of dredge spoil material will be placed in the existing slough prior to capping.
			Item 7B Total	**$432,000**	
Item 8. Optional Items					
Mobilization with setup of administrative/engineering facility	1	estimate	$50,000	$50,000	
			Item 8 Total	**$50,000**	

Notes:
1 Average Cross Section of current slough = 128 SF along the 5,500 ft slough (40ft by 4ft assuming 2:1 embankments)
2 Average Cross Section of new slough = 100 SF along the 4,500 ft slough (30ft by 4ft cut with 2:1 sloped embankments)
3 Tonnage of Sediment to Dispose = (Inplace Volume in CF) * (CY/27 CF) * (1.3 bulking) * (1.6 ton/CY)
4 Backfill material will undergo consolidiation of 1.3
5 Assumes a 10 hour work day (single shift operation).

PARTIAL RE-ALIGNMENT

PEYTON SLOUGH
MARTINEZ, CA

ACTIVITY	QUANTITY	UNIT	UNIT RATE	COST	COMMENT
Item 1. Pre-Construction Activities					
Pre-Construction Studies/Permits	1	estimate	$900,000	$900,000	
Remedial Design	1	estimate	$800,000	$800,000	
Prepare bid specifications/contractor selection/contract negotiations	1	estimate	$250,000	$250,000	
Mobilization and set-up of equipment for dredge operation.	1	estimate	$50,000	$50,000	
Mobilization with setup of administrative/engineering facility	1	estimate	$0	$0	Assume no facitity needed. Costs included in Item 8: Optional Items.
Post-Construction equipment decontamination	1	estimate	$50,000	$50,000	
Demobilization	1	estimate	$50,000	$50,000	
			Item 1 Total	**$2,100,000**	
Item 2. Site Preparation					
Engineering design of temporary facitities	1	estimate	$50,000	$50,000	Includes geotechnical analysis
Site paving and engineering controls	1	estimate	$1,000,000	$1,000,000	
Construct three trestle bridges	7,500	SF	$20	$150,000	At levee, south section of existing slough, and at small slough to north/east access road on existing slough
Excavation of Dredge Spoil Piles	8,400	CY	$5	$42,000	Excavation and stockpiling of dredge spoil piles prior to temporary road placement. Assumes that excavation in south levee area is 2' below grade and includes a 20%.
Hauling and placing gravel for access roads along existing Slough	28,175	CY	$22	$633,656	Access roads constructed with crushed 3/4" stone base, approx. 2' thick. Assumed 5,500' access road with 10 turnouts of 100'x30'. 25% volume is added for reinforcement, and a 15% bulking factor is assumed.
Purchase and place geofabric	225,400	SY	$1.93	$435,022	Assumes ideal conditions.
Sheetpiling/Trestle at South end of Slough for access road	25,000	SF	$20	$500,000	Includes installation and removal of a 1000 ft long 25 ft deep sheet pile wall to support the excavator at the south end of the Slough.
Hauling and placing gravel for access roads on new alignment	9,890	CY	$22	$222,426	Access roads constructed with crushed 3/4" stone base, approx. 2' thick. Assumed 4,500' access road with 10 turnouts of 100'x30'. 25% volume is added for reinforcement. A bulking factor of 15% is assumed.
Purchase and place geofabric	79,120	SY	$1.93	$152,702	Assumes ideal conditions.
Construct temporary staging area	8,300	SY	$7	$58,515	Staging Area of 75,000 SF constructed with asphaltic concrete 4" thick ($7.05/SY).
Construct stockpile/drying pad	30,000	SY	$7	$211,500	Pad capable of containing entire ex-situ sediment volume from new slough or existing Slough. Costructed with asphaltic concrete 4" height ($7.05/SY). Assume natrural drying processes with no chemical additives.
Site clearing	1	estimate	$5,000	$5,000	Clear light brush for staging areas and other temporary facilities/roads in an estimated 5 acre area.
Drag the slough for fish species	1	estimate	$60,000	$60,000	Drag the north and south slough using a seine prior to dredging and capping.
Sheetpiling along staging areas	1,500	SF	$20	$30,000	Includes installation and removal of two 60 ft long 25 ft deep sheet pile walls to support the load of the crane at the bank of the Slough.
Construct engineered closures to contain water in Peyton Slough during excavation activities	1	estimate	$50,000	$50,000	Assume low-tech coffer dams and/or silt curtains.
			Item 2 Total	**$3,600,820**	

PARTIAL RE-ALIGNMENT

PEYTON SLOUGH
MARTINEZ, CA

Item 3. Partial Slough Re-Alignment					
Land purchase for south slough re-alignment.	1	estimate	$50,000	$50,000	Nominal fee for land access agreement.
Construction Management	1	estimate	$2,000,000	$2,000,000	Assume 3 dedicated staff for 5 months.
Excavate partial new slough	7,644	CY	$6	$45,867	Assume a 4-ft deep, 30-ft wide trapezoidal slough cross-section. Includes excavation and hauling sediments to storage pads. Costs based on verbal quote from Cooper Crane 2/21/01.
Analysis of sediments removed from new alignment	10	sample	$1,000	$9,938	One soil sample ($1000) per 1,000 CY. Includes sampling, analytical, labor, and reporting.
Remove access roadways on new alignment	11,374	CY	$5	$56,868	Roadway volume placed is increased by a 15% bulking factor.
Install new tide gate	1	estimate	$750,000	$750,000	Per Tony Koo's conversation with MAD on 2/21/01.
Install pipe bypass	2,500	LF	$18	$45,000	
Operate pipe bypass	120	day	$1,174	$140,914	Assumes bypass will receive 1 million gallons per day (MGD).
Drag the slough for fish species	1	estimate	$60,000	$60,000	Drag the slough using a seine in 1,000 ft sections separated by silt screens.
			Item 3 Total	**$3,158,586**	

Item 4. Sediment Removal and Treatment Activities					
Excavate sediments from existing Slough (existing north section plus widened bypass slough)	42,827	CY	$6	$257,000	Per Cooper Crane 03/01. Assume 4:1 sideslope in the existing Slough to a depth of 3.5 feet.
Dewatering	0	estimate	$80,000	$0	
Addition of Liquid Polymer for Dewatering	0	estimate		$0	
Analytical testing and monitoring of treated water	0	sample	$550	$0	
Stabilization of Sediments	0	CY	$20	$0	
Analysis of processed sediments	0	sample	$1,000	$0	
			Item 4 Total	**$257,000**	

Item 5. Capping					
5C. Capping in the South Slough including Levee Fill					
Purchase and place bay mud sediment cap with geotextile liner	17,805	CY	$25	$445,125	Assume 25-ft wide cap with 2:1 sidewall slope to high tide line along 5,550-linear foot slough. Cost includes geotextile liner and all mobilization and installation costs. Assume 3 ft sediment cap. 1.3 Bulking Factor
Purchase and place geomembrane.	201,940	SF	$2.90	$585,626	Liner covers bottom and sidewalls.
Pre/post-cap bathymetric survey	2	est. per survey	$25,000	$50,000	
			Item 5C Total	**$1,080,751**	
5D. Capping the North Slough including the levee fill					
Purchase and place bay mud sediment cap with geotextile liner	18,833	CY	$25	$470,825	Assume 25-ft wide cap with 2:1 sidewall slope to high tide line along 5,550-linear foot slough. Cost includes geotextile liner and all mobilization and installation costs. Assume 3 ft sediment cap. 1.3 Bulking Factor
Purchase and place geomembrane.	185,345	SF	$2.90	$537,500	Liner covers bottom and sidewalls.
Haul and place sediment excavated from new alignment	9,938	CY	$6	$59,627	Per verbal quote from Cooper Crane 2/21/01.
			Item 5D Total	**$1,067,952**	

PARTIAL RE-ALIGNMENT

PEYTON SLOUGH
MARTINEZ, CA

Item 6. Site Restoration					
Remove temporary facilities (staging areas, silt screens, etc.)	1	estimate	$150,000	$150,000	Removal and disposal of temporary facility areas. Regrade/restore. Cap repair.
Haul and place backfill material to meet grade in AOCs	33,190	CY	$25	$829,748	Assumes a 30% bulking factor.
Regrade	50,243	SY	$0.13	$6,532	Regrading former dredge spoil piles/temporary access facility and road areas. Means 2001
Purchase plants and replant on cap (south section)	39	1/4-acres	$1,355.00	$52,562	Replanting area in former dredge spoil piles/temporary access facility and road areas. Assume 100 plants per 1/4-acre and $13.55 per container.
Long Term Monitoring for Cap	4	5-year	$20,000	$80,000	Chemical testing of sediment
			Item 6 Total	**$1,118,842**	
Item 7. Sediment Disposal					
7A. On-site Containment Facility					
Design OCF	1	estimate	$150,000	$150,000	Engineering, design, permitting, specifications, CQA. Assume 1/4-acre for 6 ft. high landfill. Requires no mitigation.
Stabilization of Sediments	55,675	CY	$20	$1,113,510	Sediment volume is bulked up by a factor of 1.3 after removal.
Cap and Liner Installation	1	estimate	$200,000	$200,000	Assume imported clay, clay/HDPE liner and leachate collection system.
Analysis of processed sediments	11	sample	$1,000	$11,135	One soil sample ($1,000) per 5,000 CY. Includes sampling, analytical, labor, and reporting.
Site Work	1	estimate	$150,000	$150,000	Drainage system, piping, sumps, monitoring wells and site preparation.
			Item 7A Total	**$1,624,645**	
7B. Off-site Disposal					
Analysis of processed sediments	11	sample	$1,000	$11,135	One soil sample ($1,000) per 5,000 CY. Includes sampling, analytical, labor, and reporting.
T&D of Excess excavated materials and dredge spoils	89,100	tons	$27	$2,410,000	
			Item 7B Total	**$2,421,135**	

Item 8. Optional Items					
Mobilization with setup of administrative/engineering facility	1	estimate	$50,000	$50,000	
Constuct stablization/solidification cells	5,000	CY	$7	$35,000	To reduce mobility and toxicity, and to supplement air drying process. Same assumptions as Staging Area constuction.
Stabilization of Sediments	55,675	CY	$20	$1,113,510	If needed for offsite disposal in order to meet discharge requirements (i.e., paint filter or TCLP analysis). Sediment volume is bulked up by a factor of 1.3 after removal.
			Item 8 Total	**$1,198,510**	

Notes:
1 Dredging Depth = 3 ft with 0.5 ft tolerance = 3.5 ft total
2:1 sidewall slope from Tulie line to current slough bottom
2 Average Cross Section of current slough = 128 SF along the 5500 ft slough (40ft by 5ft pre-dredging for 3.5 ft dredge cut with 2:1 embankments)
3 Average Cross Section of new slough = 100 SF along the 2400 ft slough (30ft by 4ft cut with 2:1 sloped embankments)
4 Assumes 3-ft thick cap is adequate to limit COC migration via pore water movement.
Final thickness will be based on flux modeling and geotechnical evaluations.
5 Does not include the scraping of dredge spoil piles from embankments and revegetation of those areas.
6 Tonnage of Sediment to Dispose = (Inplace Volume in CF) * (CY/27 CF) * (1.3 bulking) * (1.6 ton/CY)
7 Backfill material will undergo consolidiation of 1.3
8 Assumes removal of 275 CF/day during dredging.
9 Assumes a 10 hour work day (single shift operation).
OCF will require 30-year monitoring for COCs.