	Work Performed	Probable Cost		Construction Contingency		Upper Probable Cost
Alternative 1						
Phase 1	Alternative 1 Total Costs \$	8,178,000	\$	1,775,000	\$	9,953,000
Alternative 2						
Phase 1	\$	14,088,000	\$	3,072,000	\$	17,160,000
Phase 2	\$	11,237,000	\$	2,646,000	\$	13,883,000
Phase 3	\$	9,133,000	\$	2,151,000	\$	11,283,000
Phase 4	\$		\$	1,200,000	\$	6,297,000
	Alternative 2 Total Costs \$	34,458,000	\$	7,869,000	\$	42,326,000
Alternative 3						
Phase 1	\$	11,797,000	\$	2,533,000	\$	14,330,000
Phase 2	\$		\$	2,785,000	\$	14,613,000
Phase 3	\$		\$	2,026,000	\$	10,630,000
Phase 4	\$, ,	\$	436,223	\$	2,288,719
	Alternative 3 Total Costs \$	34,080,495	\$	7,780,223	\$	41,861,719
Alternative 4						
Alternative 4 Phase 1	Alternative 4 Total Costs \$	21,122,000	\$	4,823,000	\$	25,945,000
					<u> </u>	
Alternative 5			_			
Phase 1	\$, ,	\$	2,404,000	\$	13,255,000
Phase 2	\$	-, -,	\$	6,481,000	\$	33,261,000
Phase 3	Alternative 5 Total Costs \$	4,029,000 41,659,000	\$ \$	949,000 9.834,000	\$ \$	4,978,000 51,494,000
Alternative 6						
Phase 1	\$			3,155,000		17,191,000
Phase 2	\$, ,	\$	6,481,000		33,261,000
Phase 3	Alternative 6 Total Costs \$	-] -]	\$ \$	723,000 10,359,000	\$ \$	3,795,000
	Alternative 6 Total Costs \$	43,888,000	2	10,359,000	Þ	54,247,000
Alternative 7						
Phase 1 (multi-yr)			\$	8,706,000		45,446,000
Phase 2	\$		\$	6,481,000	\$	33,261,000
Phase 3 (multi-yr)	\$	-]]	\$	2,626,000	\$	13,515,000
	Alternative 7 Total Costs \$	74,409,000	\$	17,813,000	\$	92,222,000
Alternative 8						
Phase 1 (multi-yr)	\$	39,856,000	\$	9,234,000	\$	49,090,000
Phase 2 (multi-yr)			\$	11,646,000		61,101,000
	\$		\$	6,323,000		33,175,000
Phase 3	J.	20,002,000	Ψ	0,020,000	Ψ	
Phase 3 Phase 4a & 4b:	\$		\$	7,102,000		36,519,000

Table B-1 Summary of Costs – Whatcom Waterway Site

Table B-2 Alternative 1 - Phase 1

Whatcom Waterway Remediation Estimated Costs

imated	Costs		

ALTERNATIVE 1 - Phase 1 Capping in Areas 5B, 6B, 6C and 8 MNR in other areas

ltem	Description	Unit	Quantity	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization					\$62,350	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	0	\$4,800.00	\$0	<i>402,000</i>	4
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	\$3,000		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	\$3,000.00	\$3,000		4
1.4	Front-end loader	EA	2	\$100.00	\$200		3
1.5	Tug, push, diesel, 500-hp	EA	1	\$2,000.00	\$2,000		4
1.6	Barge, flat-deck, 400-ton capacity	EA	2	\$300.00	\$600		4
1.7	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	\$1,400		4
1.8	Barge, flat-deck, 6,000-ton capacity	EA	0	\$1,500.00	\$0		4
1.9	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	\$100		3
1.10	Conveyor, 24" x 50', trough belt, 7-1/2 hp electr.	EA	3	\$200.00	\$600		2
1.11	Construction office setup	EA	1	\$1,450.00	\$1,450		3.12
1.12	Nonscheduled contract costs	EA	1	\$50,000.00	\$50,000		4
2	Capping (2 units, 10-hr days, high production)					\$5,317,342	1
2.1	Capping sand procurement and delivery (Areas 5B, 6B, 6C, and 8)	CY	206,653	\$15.00	\$3,099,791		3
2.2	Sand cap placement by pushing with dozer	CY	206,653	\$6.50	\$1,343,243		4
2.3	Conveyor system for ASB	MONTH	6	\$3,300.00	\$19,800		2,20
2.4	Front-end loader for conveyor	MONTH	6	\$15,780.00	\$94,680		2
2.5	Bulldozer anchors	MONTH	6	\$32,921.00	\$197,526		4,19
2.6	Bathymetric Survey (50 ft center to center, single beam sonar) (three events)	Acre	120	\$50.00	\$6,000		4
			6	\$16,000.00	\$96,000		10
2.7	Floodlights	MONTH					
2.7 2.8 3	Floodlights Construction office Log Pond Shoreline Enhancements (Addendum 1)	MONTH MONTH LS	6 1	\$76,717.00 \$522,926	\$460,302 \$522,926	\$522,926	11
2.8	Construction office	MONTH	6	\$76,717.00	\$460,302	. ,	11
2.8 3	Construction office Log Pond Shoreline Enhancements (Addendum 1)	MONTH	6	\$76,717.00	\$460,302	\$522,926 \$14,150	
2.8 3 4	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	MONTH	6	\$76,717.00 \$522,926 \$4,800.00	\$460,302 \$522,926	. ,	1
2.8 3 4 4.1	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp	MONTH LS EA	6 1 0	\$76,717.00 \$522,926	\$460,302 \$522,926 \$0 \$3,000	. ,	1 4
2.8 3 4 4.1 4.2	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	MONTH LS EA EA	6 1 0 2	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00	\$460,302 \$522,926 \$0	. ,	1 4 4
2.8 3 4 4.1 4.2 4.3	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader	MONTH LS EA EA EA	6 1 0 2 1 2	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00	\$460,302 \$522,926 \$0 \$3,000 \$3,000	. ,	1 4 4 4
2.8 3 4.1 4.2 4.3 4.4	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket	MONTH LS EA EA EA EA	6 1 0 2 1	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$3,000.00	\$460,302 \$522,926 \$0 \$3,000 \$3,000 \$200	. ,	1 4 4 4 3
2.8 3 4.1 4.2 4.3 4.4 4.5	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp	MONTH LS EA EA EA EA EA EA	6 1 2 1 2 2 2	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$2,000.00	\$460,302 \$522,926 \$0 \$3,000 \$3,000 \$200 \$4,000	. ,	1 4 4 3 4
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity	MONTH LS EA EA EA EA EA EA	6 1 2 1 2 2 2 2	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$2,000.00 \$300.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600	. ,	1 4 4 3 4 4
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 2,000-ton capacity	MONTH LS EA EA EA EA EA EA EA	6 1 2 1 2 2 2 2 2	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$3,000.00 \$1,00.00 \$2,000.00 \$300.00 \$600.00	\$460,302 \$522,926 \$0 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200	. ,	1 4 4 3 4 4 4 4
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity	MONTH LS EA EA EA EA EA EA EA EA	6 1 2 1 2 2 2 2 2 0	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$300.00 \$300.00 \$600.00 \$1,500.00	\$460,302 \$522,926 \$0 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0	. ,	1 4 4 3 4 4 4 4 4
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	MONTH LS EA EA EA EA EA EA EA EA EA	6 1 2 2 2 2 2 0 1	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$300.00 \$300.00 \$1,500.00 \$1,500.00 \$1,500.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100	. ,	1 4 4 3 4 4 4 4 4 3
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Conveyor, 24" x 50', trough belt, 7-1/2 hp electr.	MONTH LS EA EA EA EA EA EA EA EA EA EA	6 1 2 2 2 2 2 0 1 3	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$1,500.00 \$100.00 \$2,000.00 \$300.00 \$600.00 \$1,500.00 \$100.00 \$200.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100 \$600	. ,	1 4 4 3 4 4 4 4 4 4 4 3 2
2.8 3 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 400-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Conveyor, 24" x 50', trough belt, 7-1/2 hp electr. Construction office teardown	MONTH LS EA EA EA EA EA EA EA EA EA EA	6 1 2 2 2 2 2 0 1 3	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$1,500.00 \$100.00 \$2,000.00 \$300.00 \$600.00 \$1,500.00 \$100.00 \$200.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100 \$600	\$14,150	1 4 4 3 4 4 4 4 4 4 3 2 3,12
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 400-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Conveyor, 24" x 50', trough belt, 7-1/2 hp electr. Construction office teardown Subtotal	MONTH LS EA EA EA EA EA EA EA EA EA EA	6 1 2 2 2 2 2 2 0 1 3 1	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$1,500.00 \$100.00 \$2,000.00 \$300.00 \$600.00 \$1,500.00 \$100.00 \$200.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100 \$600	\$14,150	1 4 4 3 4 4 4 4 4 4 3 2 3,12 1
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Conveyor, 24" x 50', trough belt, 7-1/2 hp electr. Construction office teardown Subtotal Design, Engineering & Permitting	MONTH LS EA EA EA EA EA EA EA EA EA EA	6 1 2 1 2 2 2 2 2 0 1 3 1 1 2%	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$1,500.00 \$100.00 \$2,000.00 \$300.00 \$600.00 \$1,500.00 \$100.00 \$200.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100 \$600	\$14,150 \$14,150 \$5,916,768 \$710,012	1 4 4 3 4 4 4 4 4 4 3 2 3,12 1 4
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Conveyor, 24" x 50', trough belt, 7-1/2 hp electr. Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring	MONTH LS EA EA EA EA EA EA EA EA EA EA	6 1 2 1 2 2 2 2 2 0 1 3 1 1 12% 7%	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$1,500.00 \$100.00 \$2,000.00 \$300.00 \$600.00 \$1,500.00 \$100.00 \$200.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100 \$600	\$14,150 \$14,150 \$5,916,768 \$710,012 \$414,174	1 4 4 3 3 4 4 4 4 4 3 2 3,12 1 1 4
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 400-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Conveyor, 24" x 50', trough belt, 7-1/2 hp electr. Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring	MONTH LS EA EA EA EA EA EA EA EA EA EA	6 1 2 1 2 2 2 2 2 0 1 3 1 1 2 2 2 2 0 1 3 1 1 1 2% 7% LS	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$1,500.00 \$100.00 \$2,000.00 \$300.00 \$600.00 \$1,500.00 \$100.00 \$200.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100 \$600	\$14,150 \$14,150 \$5,916,768 \$710,012 \$414,174 \$640,000	1 4 4 3 3 4 4 4 4 4 3 2 3,12 1 1 4
2.8 3 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 4.10	Construction office Log Pond Shoreline Enhancements (Addendum 1) Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 400-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Conveyor, 24" x 50', trough belt, 7-1/2 hp electr. Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring Sales Taxes	MONTH LS EA EA EA EA EA EA EA EA EA EA	6 1 2 1 2 2 2 2 2 0 1 3 1 1 2 2 2 2 0 1 3 1 1 1 2% 7% LS	\$76,717.00 \$522,926 \$4,800.00 \$1,500.00 \$1,500.00 \$100.00 \$2,000.00 \$300.00 \$600.00 \$1,500.00 \$100.00 \$200.00	\$460,302 \$522,926 \$3,000 \$3,000 \$200 \$4,000 \$600 \$1,200 \$0 \$100 \$600	\$14,150 \$14,150 \$5,916,768 \$710,012 \$414,174 \$640,000 \$497,009	1 4 4 3 3 4 4 4 4 4 3 2 3,12 1 1 4

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes

1 2005 dollars

- 2 Supplier quote.
- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.
- 4 Professional judgment based on previous projects.
- Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day.
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- 18 Pipe rerouting includes a dredge mate and a general laborer working each shift to move pipe (1 shift/day x (\$307/shift + \$255/shift) = \$562/day) plus a skift (\$150/day) for a total of \$712/day.
- 19 Anchor dozers (2 dozers ea dredge x 11 months x \$3,900/month + 2 ea x 219 days x 4 hr operating/day x \$16/hr + 1 dozer operators x 219 days x \$307/8-hr day = \$181,065/ dredge) for 2 dredges per month (2 x \$181,065/ 11 months) is \$32,921/month.
- 20 Conveyor sand from staging area over the ASB berm to barge: assume 3 ea (rental @ \$1,000/ea/month, operations at \$0.42/ea/hr x 10 hr/day x 24 days/month) at \$1,100/ea/month, or for 3 at total of \$3,300/month.

Table B-3 Alternative 2 - Phase 1

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 2 - Phase 1

Capping in Area 8 CAD construction for containment of dredged sediments Construction of offload facility outside CAD

	[
ltem	Description	Unit	Quantity	Unit Cost (2004)	Cost Escalator (2004-2005)	Unit Cost	Item Cost	Total Cost	Notes
nem	Description	onic	Quantity	(2004)	1.85%	onit cost	item cost	10121 0031	Notes
1	Mobilization							\$62,994	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	0	\$4,800.00	1.0185	\$4,888.80	\$0		4
1.2	Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA EA	2	\$1,500.00 \$3,000.00	1.0185 1.0185	\$1,527.75 \$3,055.50	\$3,056 \$3,056		4 4
1.3	Front-end loader	EA	2	\$3,000.00	1.0185	\$101.85	\$204		3
1.4	Tug, push, diesel, 500-hp	EA	1	\$2,000.00	1.0185	\$2,037.00	\$2,037		4
1.6	Barge, flat-deck, 2,000-ton capacity	EA	3	\$700.00	1.0185	\$712.95	\$2,139		4
1.7	Barge, flat-deck, 6,000-ton capacity	EA	0	\$1,500.00	1.0185	\$1,527.75	\$0		4
1.8	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.9	Construction office setup Nonscheduled contract costs	EA EA	1	\$1,450.00 \$50,000.00	1.0185	\$1,476.83 \$50,925.00	\$1,477 \$50,925		3,12 4
1.10		E/(φ00,000.00	1.0100	<i>\\</i> 00,020.00	φ00,020		-
2	Contained Aquatic Disposal and Offload Facility Construct		105 000	A00 75	1 0 1 0 5	* 04.07	6 4,000,440	\$5,542,510	4.04
2.1	Rock Procurement Rock Placement	CY DAY	125,330 84	\$33.75 \$3,250.00	1.0185	\$34.37 \$3,315.00	\$4,308,140 \$276,979		4, 21 4, 25
2.2	Offload Facility Dock Construction	SF	8,000	\$110.00	1.0185	\$112.04	\$896,280		4,23
2.4	Mooring Dolphins	LS	1	\$60,000.00	1.0185	\$61,110.00	\$61,110		4
		-	-			-			
3.1	Dredging Floodlights	MONTH	6	\$16,000.00	1.0185	\$16,296.00	\$97,776	\$566,594	1 10
3.1	Construction office	MONTH	6	\$76,717.00	1.0185	\$78,136.26	\$468,818		10
0.2	Construction once	MONTH	0	ψ/0,/11.00	1.0105	\$70,130.20	\$400,010		
4	Capping							\$3,534,819	1
4.1	Capping sand procurement and delivery (Area 8)	CY	145,187	\$15.00	1.0185	\$15.28	\$2,218,087		3
4.2	Sand cap placement by small dredge	CY MONTH	145,187	\$6.50	1.0185 1.0185	\$6.62	\$961,171		4
4.3	Conveyor system for ASB Front-end loader for conveyor	MONTH	5	\$3,222.00 \$15.780.00	1.0185	\$3,281.61 \$16,071.93	\$16,659 \$81,588		2,20
4.5	Conveyor rerouting	DAY	112	\$712.00	1.0185	\$725.17	\$80,989		4,18
4.6	Bulldozer anchors	MONTH	5	\$32,921.00	1.0185	\$33,530.04	\$170,214		4,19
4.7	Bathymetric Survey (50 ft center to center, single beam sonar)	Acre	120	\$50.00	1.0185	\$50.93	\$6,110		4
5	Log Pond Shoreline Enhancements (Addendum 1)	LS	1	\$522,926	1.0000	\$522,926	\$522,926	\$522,926	3
6	Demobilization							\$11,764	1
6.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	0	\$4,800.00	1.0185	\$4,888.80	\$0		4
6.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4 4
6.3 6.4	Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader	EA	1 2	\$3,000.00 \$100.00	1.0185	\$3,055.50 \$101.85	\$3,056 \$204		3
6.5	Tug, push, diesel, 500-hp	EA	1	\$2,000.00	1.0185	\$2,037.00	\$2,037		4
6.6	Barge, flat-deck, 2,000-ton capacity	EA	3	\$600.00	1.0185	\$611.10	\$1,833		4
6.7	Barge, flat-deck, 6,000-ton capacity	EA	0	\$1,500.00	1.0185	\$1,527.75	\$0		4
6.8	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
6.9	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$10,241,606	1
	Design, Engineering & Permitting		12%					\$1,228,993	4
	Construction management and monitoring		7%					\$716,912	4
	Long-term environmental monitoring		LS 8.4%					\$1,040,000	
	Sales Taxes TOTAL Cost Excluding Construction Contingency		0.4%					\$860,295 \$14,087,805	
	Contingency @		30%					\$3,072,482	4
	Total*							\$17,160,287	1
*	Exclusions include land costs for staging area, mitigation, legal	costs assoc	iated with d	eed restrictior	ns and property o	wner agreemer	its, and litigation	costs.	
Notes									
1	2005 dollars, based on escalating 2004 unit costs by 1.85% (RS	Means Co	nstruction C	ost Increase)					
2	Supplier quote.								
3	RSMeans Heavy Construction Cost Data 2004 with cost index of	of 110% for	Bellingham						
4	Professional judgment based on previous projects.				* • • • • •				
10	Floodlights, trailer mounted with generator, 2-1,000 watt lights, r				\$100/day.				
11	\$1,000/month + (30 days/month x \$100/day) = \$4,000/month/c Construction office includes rental (\$350/month), utilities and eq = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/mo	uipment (\$6	30/month),	1-superintend					
12	x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/	month = \$1	2,030/mont	h) for a total c	of \$76,717/month	l			

Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).

18 Pipe rerouting includes a dredge mate and a general laborer working each shift to move pipe (1 shift/day x (\$307/shift + \$255/shift) = \$562/day) plus a skiff (\$150/day) for a total of \$712/day. Anchor dozers (2 dozers ea dredge x 11 months x \$3,900/month + 2 ea x 219 days x 4 hr operating/day x \$16/hr + 1 dozer operators x 219 days x \$307/8-hr day = \$181,065/ dredge) for 2 dredges per month (2 x \$181,065 / 11 months) is \$32,921/month. 19

Conveyor sand from staging area over the ASB berm to barge: assume 3 ea (rental @ \$1,000/ea/month, operations at \$0.42/ea/hr x 8 hr/day x 22 days/month) at \$1.074/ea/month. or for 3 at total of \$3.222/month. 20

21 Rock berm for the CAD consists of 6 to 12-inch cobble. Approx length is 3,200 lf. with side slopes of 2:1 built to elevation +3ft. Start filling from the shoreline and work backwards towards the berm. Fill impacted material first followed by 1A/1B material followed by 3 ft clean import sand capping to elevation 0 ft. Per Tom Nathan of Glacier Northwest - Dupont Facility, barging cobble from Tacoma to Bellingham is approx. \$5/ton plus \$17.50 per ton for material totals \$22.50 per ton delivered or \$33.75 per cy

Assume dock size 200 ft by 40 ft, all inclusive 24

25 Skip attached to a crane for placement of rock for berm.\$1,250 /day plus operating costs of \$250/hr (equip and personnel) x 10-hr or \$2,500 totals \$3,250

Table B4 Alternative 2 - Phase 2

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 2 - Phase 2 Capping in Areas 2A, 2B, 2C, 3A, 3B Dredge Areas 2A, 2B, 2C, 3A, and 3B

							2A, 2D, 2C, 3A, a	-	
ltem	Description	Unit	Quantity	Unit Cost (2004)	Cost Escalator 2004-2005	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.85%			\$127,873	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	\$127,075	4
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00		\$40,740.00	\$40,740		4
1.5	Barge-mounted Tremie	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		
1.6	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		3
1.7	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
1.8	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
1.9	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.10	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.11	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.12	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.13	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2 2.1	Dredging Dredge contaminated sediments (Areas 2A, 2B, 2C, 3A & 3B)	DAY	102	\$9,225.00	1.0185	\$9,395.66	\$955,346	\$5,738,964	1 7,8
							days, 170 cy/hr	production	
2.2	Overdredge contaminated sediments	DAY	28	\$5,500.00	1.0185	\$5,601.75	\$157,943		22,23
				* · · · · • • • • •			days, 50 cy/yr pr	oduction rate	
2.3	Transportation of contaminated sediments to CAD	DAY	130	\$14,400.00		\$14,666.40	\$1,904,795		16
2.4	Placement of contaminated sediments in CAD	DAY	130	\$14,446.00		\$14,713.25	\$1,910,880		17
2.5	Floodlights	MONTH	6	\$16,000.00		\$16,296.00	each, 70 cy/hr pl \$96,202	acement rate	10
2.5	Construction office	MONTH	6	\$76,717.00		\$78,136.26	\$461,269		11
2.0	Water Quality Monitoring	MONTH	6	42,000	1.0185	\$42,777.00	\$252,530		24
3 3.1	Capping Capping sand procurement and delivery (Areas 2A, 2B, 2C, 3A, 3B)	СҮ	110,584	\$15.00	1.0185	\$15.28 days, high proc	\$1,689,451	\$2,876,830	1 3
3.2	Front-end loader for loading barges	MONTH	4	\$15,780.00		\$16,071.93	\$62,143		2
3.3	Transport capping sand to placement locations	DAY	85	\$4,500.00	1.0185	\$4,583.25	\$389,873		14
3.4	Sand cap placement	CY	110,584	\$6.50	1.0185	\$6.62	\$732,095		4
3.5	Bathymetric Survey (50 ft center to center, single beam sonar)	Acre	64	\$50.00	1.0185	\$50.93	\$3,267		4
					three events	•		ATATAA	
4	Demobilization	EA	4	£4.000.00	1 0105	¢4.000.00	¢4.000	\$76,744	1
4.1 4.2	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80 \$1,527.75	\$4,889 \$3,056		4 4
4.2	Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
4.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00		\$40,740.00	\$40,740		4
4.5	Barge-mounted Tremie	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		
4.6	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		3
4.7	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
4.8	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
4.9	Barge, flat-deck, 2,000-ton capacity	EA	2	\$600.00	1.0185	\$611.10	\$1,222		4
4.10	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
4.11	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
4.12	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$8,820,410	1
	Design, Engineering & Permitting		12%					\$1,058,449	4
	Construction management and monitoring		7%					\$617,429	4
	Long-term environmental monitoring	inc	luded in Yea	ar 1				NA	
	Sales Taxes		8.4%					\$740,914	
	TOTAL Cost Excluding Construction Contingency							\$11,237,202	
	Contingency @		30%					\$2,646,123	4
	Total*							\$13,883,325	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes

2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1

- 2 Supplier quote.
- RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham. 3
- Professional judgment based on previous projects. 4
- Dredge contaminated sediment: 1700 cy/hr x 20 hr/day = 3,400 cy/20-hr day
- Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day. 8
- 10 Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day.
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) 11 = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- 14
- Assume two 2,000-ton barge and one tug to bring capping sand to waterway. Cost each combination for rental (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost.
- 16 Assume two 6,000-ton barges available per dredge to transport contaminated sediment to CAD, two tugs alternate to rotate barges between loading at waterway and unloading at CAD. Rental (2 ea x \$2000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea
- x \$220/hr x 20 hr tug) at \$8,800/day for a total of \$14,400/day. Labor included in operations costs. Assume contaminated and uncontaminated sediment transfer to CAD by combination of 2 cranes (2 -20 hr) offloading over the CAD into smaller barges inside the 17 CAD, and 2 hopper/tremie on barge to dump the material. Rental (\$1,250 * 2 /day crane + \$1,250 * 2/day tremie + \$853*2 /day 400T barge
- 2 donkey tugs x \$150/day) at \$7,006/day and operations (\$39 x40 hr/day crane+\$39/hr x 40 hr/day tremie + \$20 x 40 hr/day tug) at \$3,120/day and labor (5 ea x \$432/ea/10-hr shift x
 - 2 shifts/day) at \$4,320/day for a total of \$14,446/day.
- 22 Overdredge sediment production rate: 1400 cy/20-hr day Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 20 hr or \$4,000/day totals 23 \$5500/day.
- 24 \$1500/day, 28 days/month

Table B5Alternative 2 - Phase 3Whatcom Waterway RemediationEstimated Costs

ALTERNATIVE 2 - Phase 3

Dredge Areas 1A, 1B and 1C Cap Areas 5B, 6B, 6C

Item Description Unit Quantity Unit Cost Escalator Item Cost Total Cost Notes 1 Mobilization 1.85% <td< th=""><th></th><th></th><th>1</th><th></th><th></th><th>Cost</th><th></th><th></th><th></th><th></th></td<>			1			Cost				
Mobilization 1.85% 576,948 1 1.1 Barge-mounted derrick crane, 100-ton, 7-cy bucket EA 1 \$4,800.00 1.0185 \$4,888.80 \$4,889 4 1.2 Tug, bow, diesel, 900-hp EA 2 \$1,500.00 1.0185 \$4,888.80 \$4,889 4 1.3 Barge-mounted backhoe, 5-cy bucket EA 1 \$4,000.00 1.0185 \$3,055.05 \$8,117 4 1.4 Barge-mounted backhoe, 5-cy bucket EA 2 \$3,000.00 1.0185 \$3,005.05 \$6,111 3 1.6 Front-end loader EA 2 \$100.00 1.0185 \$2,007.00 \$6,111 4 1.8 Barge, flat-deck, 2,000-ton capacity EA 2 \$3000.00 1.0185 \$101.85 \$101.85 \$111 4 1.8 Barge, flat-deck, 2,000-ton capacity EA 2 \$1,000.00 1.0185 \$1,027.75 \$3,056 3 1.10 Barge, flat-deck, 2,000-ton capacity EA 2 \$1,500.70					Unit Cost					
1 Mobilization 1.85% 1 Barge-mounted derrick crane, 100-ton, 7-cy bucket EA 1 \$4,800.00 1.0185 \$4,888.80 \$4,889 4 1.2 Tug, bow, diesel, 900-hp EA 2 \$1,500.00 1.0185 \$3,055.00 \$1,677.75 \$3,056 4 1.4 Barge-mounted backhoe, 5-cy bucket EA 1 \$44,000.00 1.0185 \$40,740.00 \$40,740 4 1.6 Barge-mounted backhoe, 5-cy bucket EA 1 \$44,000.00 1.0185 \$40,740.00 \$40,740 4 1.6 Front-end loader EA 2 \$300.00 1.0185 \$204 4 1.7 Tug, push, diesel, 500-hp EA 2 \$100.00 1.0185 \$101.85 \$201.11 4 1.8 Barge, flat-deck, 2.000-ton capacity EA 2 \$150.00 1.0185 \$172.95 \$1,426 4 1.10 Barge, flat-deck, 2.000-ton capacity EA 1 \$140.00 1.0185 \$172.95 \$1,426	Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
1 Mobilization \$76,948 1 1.1 Barge-mounted derick crane, 100-ton, 7-cy bucket EA 1 \$4,80.00 1.0185 \$1,527.75 \$3,056 4 1.2 Tug, bow, diesel, 900-hp EA 2 \$1,500.00 1.0185 \$1,527.75 \$3,056 4 1.3 Barge-mounted Jackhee, 5-cy bucket EA 1 \$40,000.00 1.0185 \$3,040.00 \$40,740.0			•		()	1.85%				
1.2 Tug bow, diesel, 900-hp EA 2 \$1,500.00 1.0185 \$1,527.75 \$3,056 4 1.3 Barge-mounted derick crane, 40-ton, 4-cy bucket EA 3 \$3,000.00 1.0185 \$3,075.50 \$9,167 4 1.4 Barge-mounted derick crane, 40-ton, 4-cy bucket EA 1 \$40,000.00 1.0185 \$40,740.00	1	Mobilization							\$76,948	1
1.3 Barge-mounted derrick crane. 40-ton, 4-cy bucket EA 3 \$3,000.00 1.0185 \$3,055.50 \$9,167 4 1.4 Barge-mounted backhoe, 5-cy buckt EA 1 \$40,000.00 1.0185 \$40,740.00 \$40,740 4 1.5 Barge-mounted Tremie EA 2 \$3,000.00 1.0185 \$3,055.50 \$6,111 3 1.6 Front-end loader EA 2 \$3,000.00 1.0185 \$2,007.00 \$6,111 4 1.8 Barge, flat-deck, 200-ton capacity EA 2 \$300.00 1.0185 \$2,037.00 \$6,111 4 1.8 Barge, flat-deck, 6,000-ton capacity EA 2 \$300.00 1.0185 \$1,226 4 1.10 Barge, flat-deck, 6,000-ton capacity EA 2 \$1,500.00 1.0185 \$1,02 3.12 1.11 Dozer, diesel, crawler, 100-bp EA 1 \$1,600.00 1.0185 \$1,476.83 \$1,476.83 \$1,476.43 1.12 Construction office setup EA 1 \$1,000.00 1.0185 \$5,830.91 \$426,683 6.8 <td>1.1</td> <td>Barge-mounted derrick crane, 100-ton, 7-cy bucket</td> <td>EA</td> <td>1</td> <td>\$4,800.00</td> <td>1.0185</td> <td>\$4,888.80</td> <td>\$4,889</td> <td>·</td> <td>4</td>	1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	·	4
1.4 Barge-mounted backhoe, 5-cy bucket EA 1 \$40,000.00 1.0185 \$40,740.00 \$40,740 4 1.5 Barge-mounted Tremie EA 2 \$3,000.00 1.0185 \$3,055.50 \$6,111 3 1.6 Front-end loader EA 2 \$100.00 1.0185 \$2,007.00 \$6,111 4 1.7 Tug, push, dissel, \$00-hp EA 2 \$300.00 1.0185 \$210.35 \$6,111 4 1.8 Barge, flat-deck, 400 ton capacity EA 2 \$300.00 1.0185 \$121.35 \$10.2 3.12 1.10 Darge, flat-deck, 6,000-ton capacity EA 1 \$100.00 1.0185 \$1476.83 \$1,477 4 1.11 Dozer, disesl, crawler, 100-hp EA 1 \$100.00 1.0185 \$1476.83 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$51,925.00 \$50,925 5 2.1 Dredging S1.01.162	1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.5 Barge-mounted Tremie EA 2 \$3,000.00 1.0185 \$3,055.50 \$6,111 3 1.6 Front-end loader EA 2 \$100.00 1.0185 \$204 4 1.7 Tug, push, dissel, 500-hp EA 3 \$2,000.00 1.0185 \$2,037.00 \$6,111 4 1.8 Barge, flat-deck, 4,000-ton capacity EA 2 \$300.00 1.0185 \$305.55 \$611 4 1.9 Barge, flat-deck, 2,000-ton capacity EA 2 \$700.00 1.0185 \$171.295 \$1,426 4 1.10 Barge, flat-deck, 6,000-ton capacity EA 2 \$1,500.00 1.0185 \$1,02 3,12 1.11 Dozer, dissel, crawler, 100-hp EA 1 \$1,00.00 1.0185 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$5,830.91 \$242,683 6,8 2.1 Dredging 2 1.0185 \$5,830.91 \$272,085 7,8 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY	1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
1.6 Front-end loader EA 2 \$100.00 1.0185 \$101.85 \$204 4 1.7 Tug, push, dissel, 500-hp EA 3 \$2,000.00 1.0185 \$2,037.00 \$6,111 4 1.8 Barge, flat deck, 400 ton capacity EA 2 \$300.00 1.0185 \$712.95 \$1,426 4 1.9 Barge, flat deck, 6,000-ton capacity EA 2 \$100.00 1.0185 \$712.95 \$1,426 4 1.10 Barge, flat deck, 6,000-ton capacity EA 2 \$1,000.00 1.0185 \$101.85 \$102 3,12 1.11 Dozer, diesel, crawler, 100-hp EA 1 \$1,460.00 1.0185 \$101.85 \$102 3,12 1.12 Construction office setup EA 1 \$1,600.00 1.0185 \$101.85 \$102 3,12 1.12 Construction office setup EA 1 \$1,600.00 1.0185 \$50,925.00 \$50,925 2.0 Dredging \$100.000 1.0185 <td>1.4</td> <td>Barge-mounted backhoe, 5-cy bucket</td> <td>EA</td> <td>1</td> <td>\$40,000.00</td> <td>1.0185</td> <td>\$40,740.00</td> <td>\$40,740</td> <td></td> <td>4</td>	1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.7 Tug, push, diesel, 500-hp EA 3 \$2,000.00 1.0185 \$2,037.00 \$6,111 4 1.8 Barge, flat deck, 400 ton capacity EA 2 \$300.00 1.0185 \$712.95 \$1,426 4 1.9 Barge, flat-deck, 6,000-ton capacity EA 2 \$700.00 1.0185 \$712.95 \$1,426 4 1.10 Barge, flat-deck, 6,000-ton capacity EA 2 \$100.00 1.0185 \$1,527.75 \$3,056 3 1.11 Dozer, diesel, crawler, 100-hp EA 1 \$100.00 1.0185 \$114.76.83 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$51,925.00 \$50,925 2 Dredging 2 Tredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$5,725.00 1.0185 \$51,830.91 \$426,683 6.8 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$51,647.75 \$10,050 22,23 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DA	1.5	Barge-mounted Tremie	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		3
1.8 Barge, flat deck, 400 ton capacity EA 2 \$300.00 1.0185 \$305.55 \$611 4 1.9 Barge, flat-deck, 2,000-ton capacity EA 2 \$700.00 1.0185 \$1,527.75 \$3,166 3 1.10 Barge, flat-deck, 6,000-ton capacity EA 2 \$1,500.00 1.0185 \$1,527.75 \$3,056 3 1.11 Dozer, diesel, crawler, 100-hp EA 1 \$100.00 1.0185 \$1,476.83 \$1,477 4 1.12 Construction office setup EA 1 \$1,450.00 1.0185 \$1,476.83 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$5,830.91 \$22,085 \$5,830.91 \$22,085 \$1 2.1 Dredge uncontaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$1,800,502 22,23 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$1,607,704 16 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY	1.6	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		4
1.9 Barge, flat-deck, 2,000-ton capacity EA 2 \$700.00 1.0185 \$712.95 \$1,426 4 1.10 Barge, flat-deck, 6,000-ton capacity EA 2 \$1,500.00 1.0185 \$1,527.75 \$3,056 3 1.11 Dozer, disel, crawler, 100-hp EA 1 \$100.00 1.0185 \$10.20 3.12 1.12 Construction office setup EA 1 \$1,450.00 1.0185 \$1,476.83 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$5,925.00 \$50,925 2 Dredging EA 1 \$50,000.00 1.0185 \$5,830.91 \$426,683 6,8 1.10 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$5,725.00 1.0185 \$5,830.91 \$426,683 6,8 1 production dredge, 10-hr days, 150 cy/hr production total from the dredge 2.0 Dredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$3,564.75 \$100.502 22,23 2.5 Transportation of contaminated sediments	1.7	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
1.10 Barge, flat-deck, 6,000-ton capacity EA 2 \$1,500.00 1.0185 \$1,527.75 \$3,056 3 1.11 Dozer, diesel, crawler, 100-hp EA 1 \$100.00 1.0185 \$101.85 \$102 3,12 1.12 Construction office setup EA 1 \$100.00 1.0185 \$14,77 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$50,925.00 \$50,925 2 Dredging \$2 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$5,725.00 1.0185 \$5,830.91 \$426,683 6,8 2.1 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$272,085 7,8 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$10,185.00 \$1,07,704 16 2.5 Transportation of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 148 \$10,000.00 1.0185 \$10,185.00 \$1,07,704 16 2.6 Placement of contaminated sed	1.8	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
1.11 Dozer, diesel, crawler, 100-hp EA 1 \$100.00 1.0185 \$101.85 \$102 3.12 1.12 Construction office setup EA 1 \$1,450.00 1.0185 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$1,450.00 1.0185 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$50,925.00 \$50,925 2 Dredging \$426,683 68 <td>1.9</td> <td>Barge, flat-deck, 2,000-ton capacity</td> <td>EA</td> <td>2</td> <td>\$700.00</td> <td>1.0185</td> <td>\$712.95</td> <td>\$1,426</td> <td></td> <td>4</td>	1.9	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.12 Construction office setup EA 1 \$1,450.00 1.0185 \$1,476.83 \$1,477 4 1.13 Nonscheduled contract costs EA 1 \$50,000.00 1.0185 \$50,925 \$50,925 2 Dredging \$4,814,650 1 \$\$4,814,650 1 2.1 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$\$5,725.00 1.0185 \$\$5,830.91 \$\$426,683 6,8 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$\$5,725.00 1.0185 \$\$5,830.91 \$\$272,085 7,8 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 24 \$\$1,000.00 1.0185 \$\$10,0502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 24 \$\$10,000.00 1.0185 \$\$10,77.04 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$\$12,047.73 \$1,872,267 17 2.7 Floodlights MONTH 7 <t< td=""><td>1.10</td><td>Barge, flat-deck, 6,000-ton capacity</td><td>EA</td><td>2</td><td>\$1,500.00</td><td>1.0185</td><td>\$1,527.75</td><td>\$3,056</td><td></td><td>3</td></t<>	1.10	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		3
1.13 Nonscheduled contract costs EA 1 \$50,000 1.0185 \$50,925 2 Dredging \$4,814,650 1 2.1 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$5,725.00 1.0185 \$5,830.91 \$426,683 6,8 2.1 Dredge uncontaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$426,683 6,8 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$2272,085 7,8 1 production dredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$100,502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$1,872,267 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$16,296.00 \$1,872,267 17 2.7 Floodlights MONTH 7 \$16,000.	1.11	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3,12
2 Dredging \$4,814,650 1 2.1 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$5,725.00 1.0185 \$5,830.91 \$426,683 6.8 1 production dredge, 10-hr days, 150 cy/hr production total from the dredge 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$272,085 7,8 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,700.00 1.0185 \$3,664.75 \$100,502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$11,165.00 \$1,167.704 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$12,647.73 \$1,872,267 17 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$12,647.73 \$1,872,267 17 2.7 Floodlights MONTH Y \$16,000.	1.12	Construction office setup	EA	1		1.0185		\$1,477		4
2.1 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$5,725.00 1.0185 \$5,830.91 \$426,683 6,8 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$272,085 7,8 1 production dredge, 10-hr days, 150 cy/hr production total from the dredge 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$272,085 7,8 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$10,185.00 \$1,507,704 16 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$10,185.00 \$1,507,704 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76	1.13	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		
2.1 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 73 \$5,725.00 1.0185 \$5,830.91 \$426,683 6,8 2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$272,085 7,8 1 production dredge, 10-hr days, 150 cy/hr production total from the dredge 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$272,085 7,8 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$10,0502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$10,185.00 \$1,507,704 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76,717.00 1.										
2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1 production dredge, 10-hr days, 150 cy/hr production total from the dredge 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$5,830.91 \$272,085 7,8 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$3,564.75 \$10,0502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$12,647.73 \$1,877,267 17 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,647.73 \$1,872,267 17 2 Tremie Units, 20-hr days each, 70 cy/hr placement rate 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.9 Water Quality Monitoring MONTH 7 \$276,717.00 1.0185 \$15,28 \$939,050 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>\$4,814,650</td><td>-</td></t<>									\$4,814,650	-
2.2 Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 47 \$5,725.00 1.0185 \$5,830.91 \$272,085 7,8 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$3,564.75 \$100,502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$1,0185.00 \$1,507,704 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2.7 Floodlights DAY 148 \$12,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$16,000.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$15.28 \$939,050 3 3.1 Cappi	2.1	Dredge uncontaminated sediments (Areas 1A & 1B)	DAY	73	\$5,725.00			+ -)		
1 production dredge, 10-hr days, 150 cy/hr production total from the dredge 2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$3,564.75 \$100,502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$10,185.00 \$1,507,704 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76,717.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 3 Capping Sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.							edge, 10-hr day	s, 150 cy/hr prod	duction total from	n the dredge
2.3 Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1C3) DAY 28 \$3,500.00 1.0185 \$3,564.75 \$100,502 22,23 2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$10,185.00 \$1,507,704 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2 Tremie Units, 20-hr days each, 70 cy/hr placement rate 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76,717.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 \$1,599,157 1 \$1,599,157 1 3 Capping \$15,00 1.0185 \$15,28 \$939,050 3 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C)	2.2	Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3)	DAY	47	\$5,725.00					,
2.5 Transportation of contaminated and uncontaminated sediments DAY 148 \$10,000.00 1.0185 \$10,185.00 \$1,507,704 16 2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2 Tremie Units, 20-hr days each, 70 cy/hr placement rate 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76,717.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 \$1,599,157 1 3.1 Capping \$1,1,01+r days, high production \$10,0145 \$15.28 \$939,050 3 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2									duction total from	0
2.6 Placement of contaminated and uncontaminated sediments DAY 148 \$12,418.00 1.0185 \$12,647.73 \$1,872,267 17 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76,717.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 \$1,599,157 1 3.1 Capping \$10,466 \$15.00 1.0185 \$15.28 \$939,050 3 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2	-			-	+-)		1 7	1 1		
Z Tremie Units, 20-hr days each, 70 cy/hr placement rate 2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76,717.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 3 Capping \$10 \$10,466 \$15.00 1.0185 \$15.28 \$939,050 3 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2				-			1 7	1 1 1		
2.7 Floodlights MONTH 7 \$16,000.00 1.0185 \$16,296.00 \$109,651 10 2.8 Construction office MONTH 7 \$76,717.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 \$1,599,157 1 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 1 unit, 10-hr days, high production 1 1 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2	2.6	Placement of contaminated and uncontaminated sediments	DAY	148	\$12,418.00					17
2.8 Construction office MONTH 7 \$76,717.00 1.0185 \$78,136.26 \$525,757 11 2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 3 Capping \$1,599,157 1 \$1,599,157 1 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2									ment rate	
2.9 Water Quality Monitoring MONTH 7 42,000 1.0185 \$42,777.00 \$287,834 24 3 Capping \$1,599,157 1 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2										
3 Capping \$1,599,157 1 3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 1 unit, 10-hr days, high production 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2										
3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 1 unit, 10-hr days, high production 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2	2.9	Water Quality Monitoring	MONTH	7	42,000	1.0185	\$42,777.00	\$287,834		24
3.1 Capping sand procurement and delivery (Areas 5B, 6B, and 6C) CY 61,466 \$15.00 1.0185 \$15.28 \$939,050 3 1 unit, 10-hr days, high production 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2	•	O-marine a							\$4 FOO 4FT	4
1 unit, 10-hr days, high production 3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2			01/	04 400	\$45.00	1 0405	\$45.00	#000.0FC	\$1,599,157	
3.2 Front-end loader for loading barges MONTH 2 \$15,780.00 1.0185 \$16,071.93 \$34,541 2	3.1	Capping sand procurement and delivery (Areas 5B, 6B, and 6C)	CY	61,466	\$15.00					3
	0.0	Front and books for locally a bound	MONITU	0	#45 7 00 00					0
		ů ů					1 7			
3.3 Transport capping sand to placement locations DAY 47 \$4,500.00 1.0185 \$4,583.25 \$216,704 14 0.4							. ,			
3.4 Sand cap placement CY 61,466 \$6.50 1.0185 \$6.62 \$406,922 4 3.7 Dethumetric Survey (50 th center to center circle beem center) Acro 38 \$50.00 1.0185 \$6.62 \$406,922 4			-							
3.7 Bathymetric Survey (50 ft center to center, single beam sonar) Acre 38 \$50.00 1.0185 \$50.93 \$1,940 4	3.1	Damymetric Survey (SU it center to center, single beam sonar)	Acre	38	\$20.00		\$20.93	\$1,940		4

three events

Table B5Alternative 2 - Phase 3Whatcom Waterway RemediationEstimated Costs

ALTERNATIVE 2 - Phase 3

Dredge Areas 1A, 1B and 1C Cap Areas 5B, 6B, 6C

		T	г		Cost				
				Unit Cost	Escalator				
ltom	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
Item	Description	Unit	Quantity	(2004)	1.85%	Unit Cost	item Cost	Total Cost	Notes
4	Demobilization				1.85%			¢75.067	4
•		EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	\$75,267	1
4.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA			1.0185		1 1		4
4.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00		\$1,527.75	\$3,056		4
4.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket		3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
4.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
4.5	Barge-mounted Tremie	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		3
4.6	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		4
4.7	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
4.8	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
4.9	Barge, flat-deck, 2,000-ton capacity	EA	2	\$600.00	1.0185	\$611.10	\$1,222		4
4.10	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		3
4.11	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3,12
4.12	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		
5	Under-Dock Work Stabilization	LS	1	591,659	1.0185	\$602,604.69	\$602,605	\$602,605	
	Subtotal							\$7,168,626	1
	Design, Engineering & Permitting		12%					\$860,235	4
	Construction management and monitoring		7%					\$501,804	4
	Long-term environmental monitoring	inc	luded in Year	r 1				NA	
	Sales Taxes		8.4%					\$602,165	
	TOTAL Cost Excluding Construction Contingency							\$9,132,830	
	Contingency @		30%					\$2,150,588	4
	Total*							\$11,283,418	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

ALTERNATIVE 2 - Phase 3

Dredge Areas 1A, 1B and 1C Cap Areas 5B, 6B, 6C

					Cost				
				Unit Cost	Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%				

Notes

- 1 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)
- 2 Supplier quote.
- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.
- 4 Professional judgment based on previous projects.
- 6 Dredge uncontaminated sediment: 1700 cy/hr x 10 hr/day x 1 = 1,700 cy/10-hr day
- 7 Dredge contaminated sediment: 1700 cy/hr x 10 hr/day x 1 = 1,700 cy/10-hr day
- 8 Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 10 hr or \$3,500/day totals \$5,725/day.
- 10 Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day. \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- 14 Assume two 2,000-ton barge and one tug to bring capping sand to waterway. Cost each combination for rental (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost.
- 16 Assume two 6,000-ton barges available to transport contaminated and uncontaminated sediment to CAD, two tugs alternate to rotate barges between loading at waterway and unloading at CAD. Rental (2 ea x \$2000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea x \$220/hr x 10 hr tug) at \$4,400/day for a total of \$10,000/day. Labor included in operations costs.

Assume contaminated and uncontaminated sediment transfer to CAD by combination of 2 cranes (2 -20 hr) offloading over the CAD into smaller barges inside the CAD, and 2

- 17 hopper/tremie on barge to dump the material. Rental (\$1,250 * 2 /day crane + \$1,250 * 2/day tremie +\$853*4 /day 400T barge). \$6,706/day and operations (\$39 x40 hr/day crane+\$39/hr x 40 hr/day tremie) at \$3,120/day and labor (3 ea x \$432/ea/10-hr shift x 2 shifts/day) at \$2,592/day for a total of \$12,418/day.
- 22 Overdredge sediment production rate: 700 cy/10-hr day
- 23 Overdredge contaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 10 hr or \$2,000/day totals \$3500/day.
- 24 \$1500/day, 28 days/month

Table B6 Alternative 2 - Phase 4

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 2 - Phase 4 Cap CAD with 3-ft clean import sand

Cost Unit Cost Escalator (2004) 2004-2005 ltem Unit Quantity Unit Cost Item Cost Total Cost Description Notes 1.85% 1 Mobilization \$19,504 Barge-mounted derrick crane, 100-ton, 7-cy bucket 1 0185 \$4 888 80 11 FA 0 \$4 800 00 \$0 4 \$1,500,00 \$1 527 75 \$1 528 12 Tug, bow, diesel, 900-hp FA 1 1 0185 4 Barge-mounted derrick crane, 40-ton, 4-cy bucket \$3.055.50 EA \$3.000.00 \$6.111 1.3 2 1.0185 4 Barge-mounted backhoe, 5-cy bucket ΕA 0 \$3,000.00 \$3,055.50 1.0185 1.4 \$0 4 Barge-mounted Tremie \$3,055.50 \$6,111 1.5 EA \$3.000.00 1.0185 2 3 Front-end loader EA \$100.00 1.0185 \$101.85 1.6 \$102 4 1.7 Tug, push, diesel, 500-hp ΕA \$2,000.00 1.0185 \$2,037.00 \$2,037 4 1.8 Barge, flat deck, 400 ton capacity ΕA \$300.00 1.0185 \$305.55 \$611 4 1.9 Barge, flat-deck, 2,000-ton capacity EΑ 2 \$700.00 1.0185 \$712.95 \$1,426 4 Barge, flat-deck, 6,000-ton capacity \$1.527.75 1.10 EΑ 0 \$1,500.00 1.0185 \$0 3 1.11 \$102 Dozer, diesel, crawler, 100-hp ΕA 1 \$100.00 1.0185 \$101.85 3,12 1.12 Construction office setup \$1,450.00 1.0185 \$1,476.83 \$1,477 ΕA 4 1.13 \$50,925 Nonscheduled contract costs EA \$50,000.00 1.0185 \$50,925.00 2 \$3.963.036 Capping 1 Capping sand procurement and delivery (Area within CAD from 0 to -3) CY \$15.00 1.0185 \$15.28 \$2,155,884 141.115 2.1 3 2.2 2 Front-End loader for loading barges MONTHS \$15,780.00 1.0185 \$16,071.93 \$72,993 5 Transport capping sand to placement locations DAY 109 \$4,500.00 1.0185 \$4,583.25 \$497,512 14 2.3 Sand cap placement DAY 109 \$11,126.00 1.0185 \$11,331.83 \$1,235,170 4 2.4 2 Tremie Units, 10-hr days each, 70 cy/hr placement rate 2.5 Bathymetric Survey (50 ft center to center, single beam sonar) \$50.93 \$1.477 4 Acre 29 \$50.00 1.0185 three events 3 Demobilization \$18,027 3.1 Barge-mounted derrick crane, 100-ton, 7-cy bucket ΕA \$4,800.00 1.0185 \$4,888.80 \$0 4 3.2 Tug, bow, diesel, 900-hp ΕA \$1,500.00 1.0185 \$1,527.75 \$1,528 Δ 1 3.3 Barge-mounted derrick crane, 40-ton, 4-cy bucket EΑ 2 \$3,000.00 1.0185 \$3,055.50 \$6,111 4 3.4 Barge-mounted backhoe, 5-cy bucket EA 0 \$3.000.00 1.0185 \$3.055.50 \$0 4 3.5 Barge-mounted Tremie \$3,000.00 1.0185 \$3,055.50 \$6,111 ΕA 2 3 3.6 Front-end loader ΕA \$100.00 1.0185 \$101.85 \$102 4 Tug, push, diesel, 500-hp 3.7 EA \$2.000.00 1.0185 \$2.037.00 \$2.037 4 3.8 Barge, flat deck, 400 ton capacity FA \$300.00 1 0185 \$305.55 \$611 4 2 Barge, flat-deck, 2,000-ton capacity 3.9 EA 2 \$700.00 1.0185 \$712.95 \$1.426 4 \$1.527.75 3.10 Barge, flat-deck, 6,000-ton capacity EA 0 \$1.500.00 1.0185 \$0 3 3.11 Dozer, diesel, crawler, 100-hp ΕA \$100.00 1.0185 \$101.85 \$102 3,12 Construction office Teardown \$1,450.00 \$1,476.83 \$1,477 3.12 EA 1.0185 •

Subtotal		\$4,000,568	1
Design, Engineering & Permitting	12%	\$480,068	4
Construction management and monitoring	7%	\$280,040	4
Long-term environmental monitoring	included in Year 1	NA	
Sales Taxes	8.4%	\$336,048	
TOTAL Cost Excluding Construction Contingency		\$5,096,723	
Contingency @	30%	\$1,200,170	4
Total*		\$6,296,894	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes

- 1 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)
- 2 Supplier quote.

3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.

4 Professional judgment based on previous projects.

12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).

14 Assume two 2,000-ton barge and one tug to bring capping sand to CAD. Cost each combination for rental

(\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost.

Table B7 Alternative 3 - Phase 1

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 3 - Phase 1 Construction of Offload Facility outside ASB Divide ASB and move Materials from corner of ASB Water Management from ASB

			-		-	-			
Item	Description	Unit	Quantity	2004	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
I				Unit Cost	Cost				
	l	1			Escalator 1.85%				
1	Mobilization				1.0370			\$69,421	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889		4
1.2	Hydraulic Dredge	EA	1	\$3,260.00	1.0185	\$3,320.31	\$3,320		4
1.3	Tug, bow, diesel, 900-hp	EA	1	\$1,500.00	1.0185	\$1,527.75	\$1,528		4
1.4	Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader	EA EA	1	\$3,000.00	1.0185	\$3,055.50	\$3,056		4 3
1.6	Crane	EA	1	\$100.00 \$250.00	1.0185	\$101.85 \$254.63	\$102 \$255		3
1.7	Tug, push, diesel, 500-hp	EA	1	\$2,000.00	1.0185	\$2,037.00	\$2,037		4
1.0	Barge, flat deck, 400 ton capacity	EA	1	\$300.00	1.0185	\$305.55	\$306		4 4
1.10	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.11	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.12	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.13	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
•	ACD Deals Dame and Offland Engility Construction							¢C 500 704	
2.1	ASB Rock Berm and Offload Facility Construction Rock Procurement	CY	83,487	\$33.75	1.00	\$33.75	\$2,817,686	\$6,532,724	4, 21
2.1	Rock Placement	DAY	56	\$3,250.00	1.0185	\$3,310.13	\$184,235		4,21
2.3	Sand Blanket Procurement	CY	6,456	\$15.00	1.0185	\$15.28	\$98,625		27
2.4	Sand Blanket Placement	DAY	6	\$3,250.00	1.0185	\$3,310.13	\$21,369		24, 28
2.5	Clay Liner Purchase	SF	58,100	\$1.00	1.0185	\$1.02	\$59,175		4
2.6	Clay Liner Placement	SF	58,100	\$2.00	1.0185	\$2.04	\$118,350		4
2.7	Construct gravel ramps Remove top of out ASB berms to +16	CY CY	1,200	23	1.0185	23	\$28,111		4
2.8	Transport removed material to load/stockpile site	CY	25,600 25,600	4.00 3.00	1.0185 1.0185	4.07 3.06	\$104,294 \$78,221		2, 4, 30 30,31
2.1	Load onto barge or stockpile	CY	25,600	0.62	1.0185	0.63	\$16,079		30,32
2.11	Pile driving equipment and labor, including setup	DAY	76	6,473	1.0185	6,593	\$501,071		3
2.12	Steel sheet piling (to be left in place)	SF	76,000	20	1.0185	20	\$1,548,120		3
2.13	Offload Facility Dock Construction	SF	8,000	\$110.00	1.0185	\$112.04	\$896,280		4,24
2.14	Mooring Dolphins	LS	1	\$60,000.00	1.0185	\$61,110.00	\$61,110		4
•	Des Julie a							****	
3.1	Dredging Layout 12" pipeline to dredge	LF	1,000	\$23.66	1.0185	\$24.10	\$24,098	\$569,001	<u>1</u> 3
3.2	Pump Setup	EA	3	\$200.00	1.0185	\$203.70	\$611		4
3.3	Pump lagoon to elev. +3'	DAY	39	\$900.00	1.0185	\$916.65	\$35,749		33
3.4	Pump rental	MONTH	7	\$6,000.00	1.0185	\$6,111.00	\$42,777		34
3.5	Setup dredge using truck crane	EA	1	\$2,302.00	1.0185	\$2,344.59	\$2,345		35
3.6	Hydraulic Dredge contaminated sediments (Portion of Area 8		71,424	\$2.93	1.0185	\$2.98	\$213,144		36
3.7	Pipe Rerouting	DAY	49	\$712.00	1.0185	\$725.17	\$35,720		37
<u>3.8</u> 3.9	Bulldozer Anchors Construction office	MONTH MONTH	2	\$17,370.00 \$76,717.00	1.0185 1.0185	\$17,691.35 \$78,136.26	\$39,611 \$174,947		<u>38</u> 11
0.0		WONTH	2	\$70,717.00	1.0105	ψ/0,130.20	ψ17 4 ,947		
4	Discharge to POTW							\$731,142	1
4.1	Hydraulic Dredge supernatant	CCF	28,927	\$13.52	1.0185	\$13.77	\$398,324		26, 39
4.2	Rainwater from lagoon	CCF	39,200	\$2.21	1.0185	\$2.25	\$88,236		2,43
4.3	Pump Rental	MONTH	2	\$2,000.00	1.0185	\$2,037.00	\$4,718		42
4.4	Pump Operation	DAYS MONTH	51 7	\$900.00	1.0185	\$916.65	\$46,712		42
4.5	Water Filtration Unit, handle up to 300 gpm Chitosan for Filtration, 1% solution	GAL	2,309	\$20,000.00 \$10.91	1.0185 1.0185	\$20,370.00 \$11.11	\$141,550 \$25,652		2 41
4.7	Water Treatment Operator, full-time	DAY	51	\$500.00	1.0185	\$509.25	\$25,951		4
	······					1000-0	1 -0,000		
5	Log Pond Shoreline Enhancements (Addendum 1)	LS	1	\$522,925.70	1.00	\$522,926	\$522,926	\$522,926	
6	Demobilization	F 4		¢4.000.00	4 0 1 0 5	¢4.000.00	£4.000	\$18,496	1
6.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889		4 4
<u>6.2</u> 6.3	Hydraulic Dredge Tug, bow, diesel, 900-hp	EA	1	\$3,260.00 \$1,500.00	1.0185 1.0185	\$3,320.31 \$1,527.75	\$3,320 \$1,528		4 4
6.4	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	\$3,000.00	1.0185	\$3,055.50	\$3,056		4 4
6.5	Front-end loader	EA	1	\$100.00	1.0185	\$101.85	\$102		3
6.6	Crane	EA	1	\$250.00	1.0185	\$254.63	\$255		3
6.7	Tug, push, diesel, 500-hp	EA	1	\$2,000.00	1.0185	\$2,037.00	\$2,037		4
6.8	Barge, flat deck, 400 ton capacity	EA	1	\$300.00	1.0185	\$305.55	\$306		4
6.9	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
<u>6.10</u> 6.11	Dozer, diesel, crawler, 100-hp Construction office setup	EA EA	1	\$100.00 \$1,450.00	1.0185	\$101.85 \$1,476.83	\$102 \$1,477		3 3,12
0.11		LA	I	ψ1, 1 30.00	1.0105	ψι,+/0.03	ψι,+11		5,12
	Subtotal							\$8,443,710	1
	Design, Engineering & Permitting		12%					\$1,013,245	4
	Construction management and monitoring		7%					\$591,060	4
	Long-term environmental monitoring		LS					\$1,040,000	4
	Sales Taxes		8.4%					\$709,272	
	TOTAL Cost Excluding Construction Contingency							\$11,797,287	
								<i></i>	
	Contingency @		30%					\$2,533,113	4
	Total*							\$14,330,400	1

Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs. *

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1
- 2 Supplier quote
- RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham. 3
- Professional judgment based on previous projects. 4
- 5 Since work to be done during fish window, assume work is performed using two units working 10-hr shifts per day, six days per week.
- Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). Rock berm for the ASB interior consists of 6 to 12-inch cobble. Approx length is 700 lf. with side slopes of 2:1 built to elevation +22ft. Per Tom Nathan of Glacier 12
- 21 Northwest - Dupont Facility, barging cobble from Tacoma to Bellingham is approx. \$5/ton plus \$17.50 per ton for material totals \$22.5 per ton delivered or \$33.75 per cy
- 24 Assume dock size 200 ft by 40 ft, all inclusive
- Assume tool of the provided to a crane for placement of rock for berm.\$1,250 /day plus operating costs of \$250/hr (equip and personnel) x 10-hr or \$2,500 totals \$3,250 Assume 53,000,000 gal to pump (from +3' to "dry") to POTW. This is -71,000 ccf x \$2,21/ccf = \$156,900. Assume monthly average of 6.25 lb BOD/1,000 lb of effluent, and monthly average of 5.0 lb TSS/1,000 lb of effluent. 25 26
- 27 Assume Sand Blanket 3 feet thick on one side of ASB cutoff berm to provide for filling cobble interstitial space and blanketing layer. 700 lf for slope at 2:1 from -15 to +22 = 83 ft.
- Assume Sand Placement Rate at 1000 CY/day Average Berm cross-section from +24 to +16 = 576 sf, 1200 lf removed 28
- 29
- Assumes that all types of berm materials moved at same rates 30 31 Assumes 6 trucks at 10 trips ea/day at \$75/hr for 1200 cy/day = \$3/cy
- 32
- Assumes of acts at 10 tips earled at 15 tips earling at 15 33
- plus \$100/day operating cost for a total of \$900/day; 34 3 pumps * 39 days each = 4 months + 2 months for final dewatering = 6 months
- Dredge setup includes truck crane (\$1,100), crane operator (\$307), dredge leverman (\$319), and dredge deckhand (\$304) working 1-8 hr day with crane operations (8 hr x \$34/hr = 35 \$272) per each machine, or \$2,302/ea.
- Dredge operations include rental (\$3,320.89/day), operations (10 hours/day) (1 ea @ 8 hr/day x \$319/8hr-day = \$319), dredge deckhand (1 ea @ 8 hr/day x \$304/8hr-day = \$304), 36 dredge oiler (1 ea @ 8 hr/day x \$305/8hr-day = \$305) for a total of \$4,248.89/dredge/day for 145 cy/hr at 10 hr/day \$2.93/cy.
- 37 Pipe rerouting includes a dredge mate and a general laborer working each shift to move pipe (1 shift/day x (\$307/shift + \$255/shift) = \$562/day) plus a skiff (\$150/dav) for a total of \$712/dav
- Anchor dozers (2 dozers ea dredge x \$3,900/month + 2 ea x 4 hr operating/day x \$16/hr x 22 days/month + 1 dozer operators x \$307/8-hr day x 22 days/month) \$17,370/ 38 dredge/month.
- 39 Roughly 1.5 the volume of ASB sludge is generated as water through the hydraulic dredging process because of low solids content
- 1 MGD 40
- 41 \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64 gal/hr @ 100 gpm = 1.067e-4 gal/gal
- 42 MP&E rental at \$2,000/month per each; maintenance mechanic at \$400/10-hr day; each pump operates at \$5/hr or \$100/day; assume 2 mechanics to cover 20 hr/day x \$400/day plus \$100/day operating cost for a total of \$900/day;
- 43 Based on average annual Bellingham rainfall of 36 inches over area of ASB

Table B8 Alternative 3 - Phase 2

Whatcom Waterway Remediation

Estimated Costs

ALTERNATIVE 3 - Phase 2 Capping in Areas 2A, 2B, 2C, 3A, 3B Dredge Areas 2A, 2B, 2C, 3A and 3B

					Cost				
				Unit Cost	Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.85%			\$121,762	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4.888.80	\$4.889	\$121,70Z	4
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		3
1.6	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
1.7	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
1.8	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.9	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.1	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.11	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.12	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2	Dredging							\$6,214,519	1
2.1	Dredge contaminated sediments (Areas 2A, 2B, 2C, 3A & 3B)	DAY	112	\$9,225.00	1.0185	\$9,395.66	\$1,050,881	ψ0,21 4,313	7,8
2.1	Overdredge contaminated sediments	DAT	28	\$5,500.00	1.0185	\$5,601.75	\$157,943		22,23
2.2	Transportation of contaminated sediments to ASB	DAT	140	\$14,400.00	1.0185	\$14,666.40	\$2,053,922		16
2.4	Placement of contaminated sediments in ASB	DAY	140	\$12,494.00	1.0185	\$12,725.14	\$1,782,063		17
2.5	Rainwater from lagoon	CCF	39,200	\$2.21	1.0185	\$2.25	\$88,236		2,27
2.6	Dredge Supernatant	CCF	30,803	\$2.21	1.0185	\$2.25	\$69,334		2
2.7	Pump Rental	MONTH	5	\$2,000.00	1.0185	\$2,037.00	\$10,356		2, 25, 26
2.8	Pump Operation	DAYS	140	\$900.00	1.0185	\$916.65	\$128,370		26
2.9	Floodlights	MONTH	6	\$16,000.00	1.0185	\$16,296.00	\$103,733		10
2.10	Construction office	MONTH	6	\$76,717.00	1.0185	\$78,136.26	\$497,382		11
2.11	Water Quality Monitoring	MONTH	6	42,000	1.0185	\$42,777.00	\$272,300		24
-	· ·								
3	Capping							\$2,876,830	1
3.1	Capping sand procurement and delivery (Areas 2A, 2B, 2C, 3A,		110,584	\$15.00	1.0185	\$15.28	\$1,689,451		3
3.2	Front-end loader for loading barges	MONTH	4	\$15,780.00	1.0185	\$16,071.93	\$62,143		2
3.3	Transport capping sand to placement locations	DAY	85	\$4,500.00	1.0185	\$4,583.25	\$389,873		14
3.4	Sand cap placement	CY	110,584	\$6.50	1.0185	\$6.62	\$732,095		4
3.5	Bathymetric Survey (50 ft center to center, single beam sonar)	Acre	64	\$50.00	1.0185	\$50.93	\$3,267		4
	Demokilization							¢70.000	4
4.1	Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	\$70,633	1 4
		EA	2			\$1,527.75			4
4.2	Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$1,500.00 \$3,000.00	1.0185 1.0185	\$1,527.75	\$3,056 \$9,167		4
4.3	Barge-mounted backhoe, 5-cy bucket	EA	3	\$40,000.00	1.0185	\$40,740.00	\$9,167		4
4.4	Front-end loader	EA	2	\$40,000.00 \$100.00	1.0185	\$101.85	\$204		3
4.5	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
4.0	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
4.8	Barge, flat-deck, 2,000-ton capacity	EA	2	\$600.00	1.0185	\$611.10	\$1,222		4
4.9	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
4.10	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
4.11	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$9,283,743	1
	Design, Engineering & Permitting		12%					\$1,114,049	4
	Construction management and monitoring		7%					\$649,862	4
	Long-term environmental monitoring	incl	luded in Yea	nr 1					
	Sales Taxes		8.4%					\$779,834	
	TOTAL Cost Excluding Construction Contingency							\$11,827,489	
	Contingency @		30%					\$2,785,123	4
	•								
	Total*							\$14,612,612	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1
- 2 Supplier quote.
- RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham. 3
- Professional judgment based on previous projects. 4
- 7 Dredge contaminated sediment: 1700 cy/hr x 20 hr/day = 3,400 cy/20-hr day
- Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day. 8
- 10 Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day.
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month. Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) 11
- = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- Assume two 2,000-ton barge and one tug to bring capping sand to waterway. Cost each combination for rental (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in 14 operations cost.
- Assume two 6,000-ton barges available per dredge to transport contaminated sediment to CAD, two tugs alternate to rotate barges between loading at 16
- Assume two option barges available per dredge to transport containinated sectiment to CAP, two togs alternate to totale barges between robuing at waterway and unloading at CAD. Rental (2 ea x \$2000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day for a total of \$14,400/day. Labor included in operations costs. Assume contaminated and uncontaminated sediment transfer to CAD by combination of 2 cranes (2 -20 hr) offloading over the CAD into smaller barges inside the CAD, and front-end loader and dozer to dump the material. Rental (\$1,250 * 2 /day crane + \$350/day loader + \$1,000/ dozer+\$853*4 /day 400T barge) at 17 \$7,262/day and operations (\$39 x40 hr/day crane+\$15/hr x 20 hr/day loader + \$39/hr x 20hr/day dozer) at \$2,640/day and labor (3 ea x \$432/ea/10-hr shift x 2 shifts/day) at \$2,592/day for a total of \$12,494/day.
- 22 Overdredge sediment production rate: 1400 cy/20-hr day
- Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 20 hr 23 or \$4,000/day totals \$5500/day.
- 24 \$1500/day, 28 days/month
- 25 Assumes 30% of volume dredged is water given up and that settlement time in ASB is sufficient to allow management as stormwater
- MP&E rental at \$2,000/month per each; maintenance mechanic at \$400/10-hr day; each pump operates at \$5/hr or \$100/day; assume 2 mechanics to cover 20 hr/day x \$400/day plus \$100/day operating cost for a total of \$900/day; 26
- Based on average annual Bellingham rainfall of 36 inches over area of ASB 27

 Table B9
 Alternative 3 - Phase 3

 Whatcom Waterway Remediation
 Estimated Costs

ALTERNATIVE 3 - Phase 3

Dredge Areas 1A, 1B and 1C Cap Areas 5B, 6B, 6C

Cost

				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
	· · · · · ·				1.85%				
<u>1</u> 1.1	Mobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	\$121,762	1 4
1.1	Tug, bow, diesel, 900-hp	EA	2	\$4,800.00	1.0185	\$4,888.80	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		3
1.6	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
1.7	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
1.8	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.9	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.1	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.11	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.12	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2	Dredging							\$4,359,488	1
2.1	Dredge uncontaminated sediments (Areas 1A & 1B)	DAY	73	\$5,725.00	1.0185	\$5,830.91	\$426,683		6,8
2.2	Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3)	DAY	47	\$5,725.00	1.0185	\$5,830.91	\$272,085		7,8
2.3	Overdredge of contaminated sediments (Areas 1C1, 1C2 & 1)		28	\$3,500.00	1.0185	\$3,564.75	\$100,502		22,23
2.5	Transportation of contaminated and uncontaminated sedimen		148	\$10,000.00	1.0185	\$10,185.00	\$1,507,704		16
2.6	Placement of contaminated and uncontaminated sediments Rainwater from lagoon	DAY CCF	148 39,200	\$8,280.00 \$2.21	1.0185	\$8,433.18 \$2.25	\$1,248,379 \$88,236		17 2,27
2.5	Dredge Supernatant	CCF	18,100	\$2.21	1.0185	\$2.25	\$40,742		2,27
2.0	Pump Rental	MONTH	7	\$2,000.00	1.0185	\$2,037.00	\$13,706		2, 25, 26
2.8	Pump Operation	DAYS	148	\$900.00	1.0185	\$916.65	\$135,693		26
2.8	Construction office	MONTH	7	\$76,717.00	1.0185	\$78,136.26	\$525,757		11
2.9	Water Quality Monitoring	MONTH	7	42,000	1.0185	\$42,777.00	\$287,834		24
•	O-main a							¢4 500 457	
3.1	Capping Capping sand procurement and delivery (Areas 5B, 6B, and 6	CY	61,466	\$15.00	1.0185	\$15.28	\$939,050	\$1,599,157	1 3
3.2	Front-end loader for loading barges	MONTH	2	\$15,780.00	1.0185	\$16,071.93	\$34,541		2
3.3	Transport capping sand to placement locations	DAY	47	\$4,500.00	1.0185	\$4,583.25	\$216,704		14
3.4	Sand cap placement	CY	61,466	\$6.50	1.0185	\$6.62	\$406,922		4
3.7	Bathymetric Survey (50 ft center to center, single beam sonar	Acre	38	\$50.00	1.0185	\$50.93	\$1,940		4
4	Demobilization							\$70,633	1
4.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889		4
4.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
4.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
4.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
4.5	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		3
4.6	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
4.7	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
4.8	Barge, flat-deck, 2,000-ton capacity	EA	2	\$600.00	1.0185	\$611.10 \$1,527.75	\$1,222		4
4.9	Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	EA EA	2	\$1,500.00 \$100.00	1.0185	\$1,527.75	\$3,056 \$102		3
4.10	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
-	Under Deels Werk (Adden den 11)		,					\$000 00F	
5	Under-Dock Work (Addendum 1)	LS	1	591,659	1.0185	\$602,604.69	\$602,605	\$602,605	
	Subtotal							\$6,753,644	1
	Design, Engineering & Permitting		12%					\$810,437	4
	Construction management and monitoring	-	7%					\$472,755	4
	Long-term environmental monitoring	inc	luded in Yea	ar 1					-
	Sales Taxes		8.4%					\$567,306	
	TOTAL Cost Excluding Construction Contingency							\$8,604,142	
	Contingency @		30%					\$2,026,093	4
	Total*							\$10,630,236	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs. Notes

12

14

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)
- 2 Supplier quote.
- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.
- 4 Professional judgment based on previous projects.
- 6 Dredge uncontaminated sediment: 1500 cy/hr x 10 hr/day x 1 = 1,500 cy/10-hr day
- 7
- Dredge contaminated sediment: 1500 cy/hr x 10 hr/day x 1 = 1,500 cy/10-hr day Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 10 hr or \$3,500/day totals \$5,725/day. 8
- Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month 11 = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month
 - x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
 - Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). Assume two 2,000-ton barge and one tug to bring capping sand to waterway. Cost each combination for rental
- (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost. Assume two 6,000-ton barges available to transport contaminated and uncontaminated sediment to CAD, two tugs alternate to rotate barges 16
- between loading at waterway and unloading at CAD. Rental (2 ea x \$2,000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea x \$220/hr x 10 hr tug) at \$4,400/day for a total of \$10,000/day. Labor included in operations costs.
- 17 Assume contaminated and uncontaminated sediment transfer to CAD by combination of 2 cranes (2 x 10-hr) offloading over the CAD into smaller barges inside the CAD, and front-end loader and dozer to dump the material. Rental (\$1,250 * 2 /day cr
 - \$5,556/day and operations (\$39 x 10 hr/day crane x 2 + \$15/hr x 20 hr/day loader + \$39/hr x 20/day x 20hr/day dozer) at \$1,860/day and labor (2 ea x \$432/ea/10-hr shift x 1 shifts/day) at \$864/day for a total of \$8,280/day.
- 22 Overdredge sediment production rate: 700 cy/10-hr day
- Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of 23
- \$200/hr (equipment and personnel) x 10 hr or \$2,000/day totals \$3500/day.
- 24 \$1500/day, 28 days/month
- Assumes 30% of volume dredged is water given up and that settlement time in ASB is sufficient to allow management as stormwater 25
- 26 MP&E rental at \$2,000/month per each; maintenance mechanic at \$400/10-hr day; each pump operates at \$5/hr or \$100/day;
- assume 2 mechanics to cover 20 hr/day x \$400/day plus \$100/day operating cost for a total of \$900/day;
- 27 Based on average annual Bellingham rainfall of 36 inches over area of ASB

Table B10 Alternative 3 - Phase 4

Whatcom Waterway Remediation

Estimated Costs

ALTERNATIVE 3 - Phase 4

Add soil cap to ASB

ltem	Description	Unit	Quantity	Unit Cost (2004)	Cost Escalator 2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%				
1	Mobilization							\$52,707	1
1.1	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.2	Roller, vibrating	EA	2	\$100.00	1.0185	\$101.85	\$204		4
1.3	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,5
1.4	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2	Place Fill Soils							\$1,399,588	1
2.1	Fill Soil Procurement and Delivery (5 feet)	CY	135,733	\$8.00	1.0185	\$8.15	\$1,105,955		6
2.2	Fill Soil Placement and Compaction	CY	161,333	\$1.25	1.0185	\$1.27	\$205,398		7
2.3	Rainwater from lagoon	CCF	39,200	\$2.21	1.0185	\$2.25	\$88,236		2,8
3	Demobilization							\$1,782	1
3.1	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
3.2	Roller, vibrating	EA	2	\$100.00	1.0185	\$101.85	\$204		4
3.2		EA		\$1,450,00	1.0185	\$1,476.83	\$1,477		3,5

Subtotal		\$1,454,078	1
Design, Engineering & Permitting	12%	\$174,489	4
Construction management and monitoring	7%	\$101,785	4
Long-term environmental monitoring	included in Year 1	NA	
Sales Taxes	8.4%	\$122,143	
TOTAL Cost Excluding Construction Conting	jency	\$1,852,495	
Contingency @	30%	\$436,223	4
Total*		\$2,288,719	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes

2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1

2 3 Supplier quote.

RSMeans *Heavy Construction Cost Data 2004* with cost index of 110% for Bellingham.

Professional judgment based on previous projects. 4

Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). 5

6 Assume general fill delivered at \$8/CY, re-use of materials removed from berm

Assume Soil placed by bulldozer (\$1000/day) and 2 vibrating rollers (\$750/day each) at 2,000 CY/day for a total of \$1.25/CY 7

8 Based on average annual Bellingham rainfall of 36 inches over area of ASB

Table B11 Alternative 4 - Phase 1 Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 4 - Phase 1 Capping in Areas 1C3, 2C, 5B, 6B, 6C and 8

I				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	(2004-2005)	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.85%			\$119,012	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	ψ113,012	4
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5	Front-end loader	EA	5	\$100.00	1.0185	\$101.85	\$509		3
1.6	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
1.7	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
1.8	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.9	Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056 \$102		4 3
1.1	Construction office setup	EA	1	\$100.00 \$1,450.00	1.0185 1.0185	\$101.85 \$1,476.83	\$1,477		3,12
1.12	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
				1 /		* *			
2	Construct Dredge Spoil Offload Facility at GP							\$667,769	
2.1	Track Installation - 100-lb rail, steel ties in concrete, incl fasteners and plates	FT	2,000	\$224.00	1.0185	\$228.14	\$456,288		24
2.1	Track Switch Installation	EA	2,000	\$28,820.00	1.0185	\$29,353.17	\$58,706		24
2.3	Sediment Stockpile Construction	LS	1	\$75,000.00	1.0185	\$76,387.50	\$76,388		4
2.4	Stormwater Upgrades	LS	1	\$75,000.00	1.0185	\$76,387.50	\$76,388		4
	Dredging	B (1) (-	AF 707 00		AF 065 5 4	A 400	\$1,306,055	1
3.1	Dredge uncontaminated sediments	DAY	73	\$5,725.00	1.0185	\$5,830.91	\$426,683	1	6,8
2.0	Desides contacticated and incents	DAV	25	RE 705 00				duction total from	
3.2	Dredge contaminated sediments	DAY	35	\$5,725.00	1.0185 1 production d	\$5,830.91	\$204,158 5 170 cv/br prov	duction total from	7,8 the dredge
3.3	Overdredge contaminated sediments	DAY	23	\$3,500.00	1.0185	\$3,564.75	\$80,602	duction total from	22,23
5.5	overdredge contaminated sediments	DAT	25	ψ3,300.00		redge, 10-hr day		uction rate	22,20
3.4	Construction office	MONTH	5	\$76,717.00	1.0185	\$78,136.26	\$384,249	action rate	11
3.5	Water Quality Monitoring	MONTH	5	\$42,000.00	1.0185	\$42,777.00	\$210,364		26
4 4.1	Offloading and On-shore Management Barge rental, 400 ton, 30 ft x 90 ft	DAY	66	\$283.00	1.0185	\$288.24	\$18,982	\$1,360,029	1 31
4.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY	66	\$238.00	1.0185	\$242.40	\$15,964		32
4.3	24-inch HDPE Pipe Installation	LF	200	\$65.00	1.0185	\$66.20	\$13,241		33
4.4	Water Filtration Unit, handle up to 300 gpm	MONTH	3	\$20,000.00	1.0185	\$20,370.00	\$61,110		37,38
4.5	Chitosan for Filtration, 1% solution	GAL	371	\$11.00	1.0185	\$11.20	\$4,156		39
4.6	Water Treatment Unit Operator, full-time	DAY	66	\$500.00	1.0185	\$509.25	\$33,537		4
4.7	Transport sediment to offload facility	DAY	58	\$9,200.00	1.0185	\$9,370.20	\$539,946		16
4.8	Offload Sediments to Stockpile	CY	79,050	\$5.73	1.0185	\$5.84	\$461,468		40
4.9	Transport to Railcar or Large Stockpile	CY	79,050	\$0.86	1.0185	\$0.88	\$69,240		27
4.10	Load into Railcars	CY	79,050	\$0.63	1.0185	\$0.65	\$50,991		34
4.11 4.12	Yard Locomotive Assorted Water Management	DAY MONTH	58 3	\$516.00 \$20,000.00	1.0185 1.0185	\$525.55 \$20,370.00	\$30,284 \$61,110		35 4
4.1Z	Assorted Water Management	WONTH	3	\$20,000.00	1.0105	\$20,370.00	φ01,110		4
5	Landfill Disposal							\$3,610,966	1
5.1	Railcar transport to and tipping at Roosevelt, WA	TON	118,574	\$29.90	1.0185	\$30.45	\$3,610,966		2, 36
	Capping	01/	000 754	¢45.00	4 0405	¢45.00	¢4,000,500	\$6,699,802	1
6.1	Capping sand procurement and delivery (Areas 1C1, 1C2, 2A, 2B, 3B, 5B, 6B, 6C, and 8)	CY	263,754	\$15.00	1.0185	\$15.28	\$4,029,503	aterway and one	3 for ASP)
6.2	Front-end loader for loading barges	MONTH	9	\$15,780.00	1.0185	\$16,071.93	\$148,218	aterway and one	2
6.3	Transport capping sand to placement locations	DAY	91	\$4.500.00	1.0185	\$4,583.25	\$418,019		14
0.0		Ditti	01	φ4,000.00	assumes barge		φ+10,010		14
6.4	Sand cap placement	CY	263,754	\$6.50	1.0185	\$6.62	\$1,746,118		4
	· · · · ·	-		•				aterway and one	
6.5	Conveyor system for ASB	MONTH	5	\$3,222.00	1.0185	\$3,281.61	\$16,659		2,20
	Fourt and loader for converse	MONT		MAE 700 00	assumes conv		¢04 500		^
6.6	Front-end loader for conveyor Conveyor rerouting	MONTH	5	\$15,780.00	1.0185	\$16,071.93	\$81,588		2
		DAY MONTH	112 5	\$712.00 \$32,921.00	1.0185 1.0185	\$725.17 \$33,530.04	\$80,989 \$170,214		4,18 4,19
6.7			5						
6.7 6.8	Bulldozer anchors		167	\$50.00	1.0185	\$50.93	\$8,495		4
6.7		Acre	167	\$50.00	1.0185	\$50.93	\$8,495		4
6.7 6.8 6.9	Bulldozer anchors	Acre						\$591,659	4
6.7 6.8 6.9 7a	Bulldozer anchors Bathymetric Survey (50 ft center to center, single beam sonar)		167 1 1	\$50.00 591,659 522,926	1.0185 1.0185 1.0000	\$50.93 591,659 \$522,925.70	\$8,495 \$591,659 \$522,926	\$591,659 \$522,926	4
6.7 6.8 6.9 7a	Bulldozer anchors Bathymetric Survey (50 ft center to center, single beam sonar) Under Dock Work	Acre LS	1	591,659	1.0185	591,659	\$591,659		4
6.7 6.8 6.9 7a 7b 8	Bulldozer anchors Bathymetric Survey (50 ft center to center, single beam sonar) Under Dock Work Log Pond Shoreline Enhancements (Addendum 1) Transportation	Acre LS LS	1 1	591,659 522,926	1.0185 1.0000	591,659 \$522,925.70	\$591,659 \$522,926		1
6.7 6.8 6.9 7a 7b	Bulldozer anchors Bathymetric Survey (50 ft center to center, single beam sonar) Under Dock Work Log Pond Shoreline Enhancements (Addendum 1)	Acre LS	1	591,659	1.0185	591,659	\$591,659	\$522,926	
6.7 6.8 6.9 7a 7b 8 8.1	Bulldozer anchors Bathymetric Survey (50 ft center to center, single beam sonar) Under Dock Work Log Pond Shoreline Enhancements (Addendum 1) Transportation Barge uncontaminated sediment to Rosario PSDDA Site	Acre LS LS	1 1	591,659 522,926	1.0185 1.0000	591,659 \$522,925.70	\$591,659 \$522,926	\$522,926 \$1,073,228	1 16
6.7 6.8 6.9 7a 7b 8 8.1	Bulldozer anchors Bathymetric Survey (50 ft center to center, single beam sonar) Under Dock Work Log Pond Shoreline Enhancements (Addendum 1) Transportation	Acre LS LS	1 1	591,659 522,926	1.0185 1.0000	591,659 \$522,925.70	\$591,659 \$522,926	\$522,926	1

Table B11 Alternative 4 - Phase 1

Whatcom Waterway Remediation

Estimated Costs

ALTERNATIVE 4 - Phase 1 Capping in Areas 1C3, 2C, 5B, 6B, 6C and 8

				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	(2004-2005)	Unit Cost	Item Cost	Total Cost	Notes
					1.85%				
10	Demobilization							\$30,199	1
10.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889		4
10.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
10.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
10.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$3,000.00	1.0185	\$3,055.50	\$3,056		4
10.5	Front-end loader	EA	5	\$100.00	1.0185	\$101.85	\$509		3
10.6	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
10.7	Barge, flat deck, 400 ton capacity	EA	2	\$300.00	1.0185	\$305.55	\$611		4
10.8	Barge, flat-deck, 2,000-ton capacity	EA	2	\$600.00	1.0185	\$611.10	\$1,222		4
10.9	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
10.10	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
10.11	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
	0.1000							*** ***	

Subtotal

\$16,076,669	1
--------------	---

\$21 121 677

Design, Engineering & Permitting	12%	\$1,929,200 4
Construction management and monitoring	7%	\$1,125,367 4
Long-term environmental monitoring	LS	\$640,000 4
Sales Taxes	8.4%	\$1,350,440

TOTAL Cost Excluding Construction Contingency

Total*		\$25,944,678	1
Contingency @	30%	\$4,823,001	4

Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

- 2005 dollars, based on escalating 2004 unit costs by 1,85% (RS Means Construction Cost Increase)
- 2 Supplier quote.
- RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham. 3
- Professional judgment based on previous projects. Dredge uncontaminated sediment: 170 cy/hr x 10 hr/day x 1 = 1,700 cy/10-hr day 4
- 6
- Dredge contaminated sediment: 170 cy/hr x 10 hr/day x 1 = 1,700 cy/10-hr day
- Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 10 hr or \$3,500/day totals \$5,725/day. 8 11
- Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month
- x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month) = \$12,030/month) for a total of \$76,717/month. Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- 12 Assume two 2,000-ton barges and one tug to bring capping sand to waterway. Cost each combination for rental 14
- (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost.
- Assume two 6,000-ton barges available to transport contaminated sediment to offload facility, one tug to alternate to rotate barges between loading at 16 waterway and unloading. Rental (2 ea x \$2000/ea/day barges + 1 ea x \$800/day tug) at \$4,800/day plus operations (1 ea
- x \$220/h x 20 hr tug) at \$4,400/day for a total of \$9,200/day. Labor included in operations costs. Pipe rerouting includes a dredge mate and a general laborer working each shift to move pipe (1 shift/day x (\$307/shift + \$255/shift) = \$562/day) 18 plus a skiff (\$150/day) for a total of \$712/day.
- Anchor dozers (2 dozers ea dredge x 11 months x \$3,900/month + 2 ea x 219 days x 4 hr operating/day x \$16/hr + 1 dozer operators x 219 days x \$307/8-hr day = \$181,065/ dredge) for 2 dredges per month (2 x \$181,065 / 11 months) is \$32,921/month. 19
- Conveyor sand from staging area over the ASB berm to barge: assume 3 ea (rental @ \$1,000/ea/month, operations at \$0.42/ea/hr x 8 hr/day x 22 days/month) 20
- at \$1,074/ea/month, or for 3 at total of \$3,222/month.
- 22 Overdredge sediment production rate: 700 cv/10-hr day
- 23 Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 10 hr or \$2,000/day totals \$3500/day.
- Need ~2000 feet trackage to complete loop (40 CYD/car, each car 65 ft long, 1500 feet already available), Costs 05650-700-1020 Assume 2 needed. Costs from 05650-700-2200, plus cost index of 110% for Bellingham 24
- 25
- 26 \$1500/day, 28 days/month
- Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/trip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus \$40/hour operator each) @3400 CY for 20 hours = \$0.85/CY 27
- Costs from 01590-800-0010, assumes 7 day/week operation 31
- Costs from 01590-400-4400, assumes 7 day/week operation Costs from 02510-760-0900
- 32 33
- 34 Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift
- 35 Costs from 01590-500-7000
- Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal 36
- Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent 37
- 38 Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm
- \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64gal/hr*10 hr*58 shifts = 371 gallons Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift 39
- 40

Talbe B12 Alternative 5 - Phase 1 Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 5 - Phase 1

Capping in Areas 2A, 2B, 2C, 3B Dredge Areas 1C1, 1C2, 1C3, 2A, 2B, 2C, 3B Estimate assumes that ASB berm sands reused as capping material.

-			I I	Unit Cost	Cost Escalator		1		
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
		•••••	,	. ,	1.85%				
1	Mobilization				110070			\$114,428	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	2	4,800	1.0185	\$4,888.80	\$9,778		4
1.2	Tug, bow, diesel, 900-hp	EA	1	1,500	1.0185	\$1,527.75	\$1,528		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	3,000	1.0185	\$3,055.50	\$3,056		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	40,000	1.0185	\$40,740.00	\$40,740		2
1.5	Front-end loader	EA	3	100	1.0185	\$101.85	\$306		3
1.6	Tug, push, diesel, 500-hp	EA	1	2,000	1.0185	\$2,037.00	\$2,037		4
1.7	Barge, flat-deck, 2,000-ton capacity	EA	2	700	1.0185	\$712.95	\$1,426		4
1.8	Barge, flat-deck, 6,000-ton capacity	EA	2	1,500	1.0185	\$1,527.75	\$3,056		4
1.9	Dozer, diesel, crawler, 100-hp	EA	1	100	1.0185	\$101.85	\$102		3
1.10	Construction office setup	EA	1	1,450	1.0185	\$1,476.83	\$1,477		3,12
1.11	Nonscheduled contract costs	EA	1	50,000	1.0185	\$50,925.00	\$50,925		4
				,					
2	Construct Dredge Spoil Offload Facility							\$547,159	
2.1	Track Installation - 100-lb rail, steel ties in concrete, incl fasteners and plates	FT	1,600	224	1.0185	\$228.14	\$365,030.40		28
2.2	Track Switch Installation	EA	1	28,820	1.0185	\$29,353.17	\$29,353.17		29
2.3	Sediment Stockpile Construction	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
2.4	Stormwater Upgrades	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
				,		. ,			
3	Dredging - Waterway							\$1,005,818	1
3.1	Dredge contaminated sediments (Areas 2A, 2B, 3B, 1C)	DAY	39	5,725	1.0185	\$5,830.91	\$226,745		7,8
3.2	Overdredge contaminated sediments	DAY	12	3,500	1.0185	\$3,564.75	\$41,220		18,19
3.3	Floodlights	MONTH	5	16,000	1.0185	\$16,296.00	\$87,633		10
3.4	Construction office	MONTH	5	76,717	1.0185	\$78,136.26	\$420,183		11
3.5	Water Quality Monitoring	MONTH	5	42,000	1.0185	\$42,777.00	\$230,036		21
4	Offloading and On-shore Management							\$1,156,817	
4.1	Barge rental, 400 ton, 30 ft x 90 ft	DAY	58	283	1.0185	\$288.24	\$16,618.85		31
4.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY	58	238	1.0185	\$242.40	\$13,976.28		32
4.3	24-inch HDPE Pipe Installation	LF	200	65	1.0185	\$66.20	\$13,240.50		33
4.4	Water Filtration Unit, handle up to 300 gpm	MONTH	3	20000	1.0185	\$20,370.00	\$61,110.00		24, 37
4.5	Chitosan for Filtration, 1% solution	GAL	371	11	1.0185	\$11.20	\$4,156.50		25
4.6	Water Treatment Unit Operator, full-time	DAY	58	500	1.0185	\$509.25	\$29,361.93		4
4.7	Transport sediment to offload facility	DAY	50	7,000	1.0185	\$7,129.50	\$359,683.66		16
4.8	Offload Sediments to Stockpile	CY	77,602	5.73	1.0185	\$5.84	\$453,016.00		26
4.9	Transport to Railcar or Large Stockpile	CY	77,602	0.86	1.0185	\$0.88	\$67,972.16		27
4.10	Load into Railcars	CY	77,602	0.63	1.0185	\$0.65	\$50,057.02		34
4.11	Yard Locomotive	DAY	50	516	1.0185	\$525.55	\$26,513.82		35
4.12	Assorted Water Management	MONTH	3	20,000	1.0185	\$20,370.00	\$61,110.00		4
5	Capping							\$616,471	1
5.1	Barge delivery from ASB to placement point	DAY	57	4,100	1.0185	\$4,175.85	\$238,447		13,14, 23
5.2	Sand cap placement by small dredge	CY	57,101	7	1.0185	\$6.62	\$378,025		4
5.3	Bathymetric Survey (50 ft center to center, single beam sonar)	Acre	51	50	1.0185	\$50.93	\$2,592		4,30
6	Disposal							\$3,544,827	1
6.1	Railcar transport to and tipping at Roosevelt, WA	TON	116,403	30	1.0185	\$30.45	\$3,544,827		2, 36
-					-		-	-	

Talbe B12 Alternative 5 - Phase 1

Whatcom Waterway Remediation

Estimated Costs

ALTERNATIVE 5 - Phase 1

Capping in Areas 2A, 2B, 2C, 3B Dredge Areas 1C1, 1C2, 1C3, 2A, 2B, 2C, 3B Estimate assumes that ASB berm sands reused as capping material.

			1	Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%				
7a	Under Dock Work	LS	1	591,659	1.0185	\$602,604.69	\$602,605	\$602,605	
7b	Log Pond Shoreline Enhancements (Addendum 1)	LS	1	362,877	1.0000	\$362,877.35	\$362,877	\$362,877	
8	Demobilization							\$63,300	1
8.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	2	4,800	1.0185	\$4,888.80	\$9,778		4
8.2	Tug, bow, diesel, 900-hp	EA	1	1,500	1.0185	\$1,527.75	\$1,528		4
8.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	3,000	1.0185	\$3,055.50	\$3,056		4
8.4	Barge-mounted backhoe, 5-cy bucket	EA	1	40,000	1.0185	\$40,740.00	\$40,740		
8.5	Front-end loader	EA	3	100	1.0185	\$101.85	\$306		3
8.6	Tug, push, diesel, 500-hp	EA	1	2,000	1.0185	\$2,037.00	\$2,037		4
8.7	Barge, flat-deck, 2,000-ton capacity	EA	2	600	1.0185	\$611.10	\$1,222		4
8.8	Barge, flat-deck, 6,000-ton capacity	EA	2	1,500	1.0185	\$1,527.75	\$3,056		4
8.9	Dozer, diesel, crawler, 100-hp	EA	1	100	1.0185	\$101.85	\$102		3
8.10	Construction office teardown	EA	1	1,450	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$8,014,302	1
	Design, Engineering & Permitting (Year 1 and 3)		12%					\$961,716	4
	Construction management and monitoring		7%					\$561,001	4
	Long-term environmental monitoring		LS					\$640,000	4
	Sales Taxes		8.4%					\$673,201	
	TOTAL Cost Excluding Construction Contingency							\$10,850,220	
	Contingency @		30%					\$2,404,291	4
	Total* (including contingency)							\$13,254,511	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Talbe B12 Alternative 5 - Phase 1 Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 5 - Phase 1

Capping in Areas 2A, 2B, 2C, 3B Dredge Areas 1C1, 1C2, 1C3, 2A, 2B, 2C, 3B Estimate assumes that ASB berm sands reused as capping material.

				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%				

- 1 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)
- 2 Supplier quote.
- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham, escalated per note 1.
- 4 Professional judgment based on previous projects.
- 7 Dredge contaminated sediment: 170 cy/hr x 20 hr/day = 3,400 cy/20-hr day
- 8 Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 10 hr or \$3,500/day totals \$5,725/day.
- 10 Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day. \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- 13 Capping sand transport to site by barge at 2,000 ton/trip/1.5 ton/cy = 1,300 cy/trip; assume trip takes 1/2 hr; unload 1,300 cy @ 100 cy/hr in 13hr
- 14 Assume two 2,000-ton barge and one tug combinations. Cost each combination for rental (\$800/day barge + \$500/day tug) at \$2,100/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,100/day. Labor included in operations cost.
- 16 Assume two 6,000-ton barges available to transport contaminated sediment to offload facility, one tug to alternate to rotate barges between loading at waterway and unloading. Rental (2 ea x \$2000/ea/day barges + 1 ea x \$800/day tug) at \$4,800/day plus operations (1 ea x \$220/hr x 10 hr tug) at \$2,200/day for a total of \$7,000/day. Labor included in operations costs.
- 18 Overdredge contaminated sediment production rate: 1,400 cy/20-hr day
- 19 Overdredge contaminated sediment: backhoe dredge at \$1,500/day plus operating costs of \$200/hr (equipment and personnel) x 10 hr or \$2,000/day totals \$3,500/day.
- 21 \$1500/day, 28 days/month
- 23 Assumes that costs of excavation from ASB, transport to barge loading site, and loading of barge included in ASB cost estimate
- Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm
- 25 \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64 gal/hr*10 hr*58 shifts = 371 gallons
- Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/trip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus \$40/hour operator each) @3400
- 27 CY for 20 hours = \$0.85/CY
- 28 Need ~1600 feet trackage to finish loop track for loading (40 CYD/car, each car 65 ft long), Costs 05650-700-1020
- 29 Assume 1 needed. Costs from 05650-700-2200, plus cost index of 110% for Bellingham
- 30 Assumes 4 surveys of work area
- 31 Costs from 01590-800-0010, assumes 7 day/week operation
- 32 Costs from 01590-400-4400, assumes 7 day/week operation
- 33 Costs from 02510-760-0900
- 34 Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift
- 35 Costs from 01590-500-7000
- 36 Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal
- 37 Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent

Table B13 Alternative 5 - Phase 2

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 5 - Phase 2 Removal within the ASB Dredge Area 8

ltem	Description	Unit	Quantity	Unit Cost	Item Cost	Total Cost	Notes
				•		•	
1	ASB Dredging (See ASB - Construction Subtotal)	LS	1	\$21,602,915	\$21,602,915	\$21,602,915	
	Subtotal					\$21,602,915	
	Design, Engineering & Permitting		LS			\$1,850,000	
	Construction management and monitoring		7%			\$1,512,204	
	Sales Taxes		8.4%			\$1,814,645	
	TOTAL Cost Excluding Construction Contingency					\$26,779,764	
	Contingency @		30%			\$6,480,875	
	Total*					\$33,260,639	

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and litigation costs. property owner agreements, and owner agreements, and litigation costs.

Notes 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)

Table B14 Alternative 5 - Phase 3

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 5 - Phase 3

Capping in Areas 5B, 6B, 6C, 2C Dredge Areas 1A, 1B

Estimate assumes that ASB berm sands can be reused as capping material.

ltem	Description	Unit	Quantity	Unit Cost (2004)	(2004-2005)	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.85%			\$70.531	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	4,800	1.0185	\$4,888.80	\$4,889	ψ <i>1</i> 0,331	4
1.2	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	3,000	1.0185	\$3,055.50	\$3,056		4
1.3	Tug, bow, diesel, 900-hp	EA	1	1,500	1.0185	\$1,527.75	\$1,528		4
1.4	Tug, push, diesel, 500-hp	EA	2	2,000	1.0185	\$2,037.00	\$4,074		4
1.5	Barge, flat-deck, 2,000-ton capacity	EA	2	700	1.0185	\$712.95	\$1,426		4
1.6	Barge, flat-deck or split-hull, 6,000-ton capacity	EA	2	1,500	1.0185	\$1,527.75	\$3,056		4
1.7	Dozer, diesel, crawler, 100-hp	EA	1	100	1.0185	\$101.85	\$102		3
1.8	Construction office setup	EA	1	1,450	1.0185	\$1,476.83	\$1,477		3,12
1.9	Nonscheduled contract costs	EA	1	50,000	1.0185	\$50,925.00	\$50,925		4
2	Dredging - Waterway							\$687,826	1
2.1	Dredge uncontaminated sediments (Areas 1A & 1B)	DAY	37	9,225	1.0185	\$9,395.66	\$343,768	****,*=*	6,8
2.2	Floodlights	MONTH	4	16,000	1.0185	\$16,296.00	\$59,373		10
2.3	Construction office	MONTH	4	76,717	1.0185	\$78,136.26	\$284,684		11
4	Capping							\$1,753,059	1
4.1	Barge movement from loading area to capping area	DAY	73	10,600	1.0185	\$10,796.10	\$785,038	••,•••,•••	13,14
4.2	Sand cap placement by small dredge	CY	145,430	7	1.0185	\$6.62	\$962,783		4
4.3	Bathymetric Survey (50 ft center to center, single beam	Acre	103	50	1.0185	\$50.93	\$5,237		4
5	sonar) Transportation						v • , - • ·	¢536.644	1
5.1	Barge uncontaminated sediment to Rosario PSDDA Site	DAY	37	14,400	1.0185	\$14,666.40	\$536,614	\$536,614	16
5.1	Darge uncontaminated sediment to Rosano 1 SDDA Site	DAT	57	14,400	1.0105	\$14,000.40	ψ 3 30,014		10
6	Disposal							\$95,025	1
6.1	PSDDA Disposal Fee	TON	186,599	1	1.0185	\$0.51	\$95,025		
7	Demobilization							\$19,402	1
7.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	4,800	1.0185	\$4,888.80	\$4,889	\$10,40L	4
7.2	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	3,000	1.0185	\$3,055.50	\$3,056		4
7.3	Tug, bow, diesel, 900-hp	EA	1	1,500	1.0185	\$1,527.75	\$1,528		4
7.4	Tug, push, diesel, 500-hp	EA	2	2,000	1.0185	\$2,037.00	\$4,074		4
7.5	Barge, flat-deck, 2,000-ton capacity	EA	2	600	1.0185	\$611.10	\$1,222		4
7.6	Barge, flat-deck, 6,000-ton capacity	EA	2	1,500	1.0185	\$1,527.75	\$3,056		4
7.7	Dozer, diesel, crawler, 100-hp	EA	1	100	1.0185	\$101.85	\$102		3
7.8	Construction office teardown	EA	1	1,450	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$3,162,457	1
	Design, Engineering & Permitting		12%					\$379,495	4
	Construction management and monitoring		7%					\$221,372	4
	Long Term Environmental Monitoring	inc	luded in yea	ar 1				NA	
	Sales Taxes		8.4%					\$265,646	
	TOTAL Cost Excluding Construction Contingency							\$4,028,971	
	Contingency @		30%					\$948,737	4
	Total*							\$4,977,708	1
* Notes	Exclusions include land costs for staging area, mitigation, leg	gal costs as	sociated wit	th deed resti	ictions and property	/ owner agreen	nents, and litig	ation costs.	

- 1 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)
- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.
- 4 Professional judgment based on previous projects.
- 6 Dredge and overdredge uncontaminated sediment: 3,400 cy/20-hr day
- 8 Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day.
- 10 Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day.
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).

13 Capping sand transport to site by barge at 2,000 ton/trip/1.5 ton/cy = 1,300 cy/trip; assume trip takes 1/2 hr; unload 1,300 cy @ 100 cy/hr in 13 hr

- 14 Assume two 2,000-ton barge and one tug combinations to bring capping sand to waterway. Cost each combination for rental (\$800/day (\$800/day barge + \$500/day tug) at \$2,100/day plus operations (\$200/hr x 20 hr tug) at \$4,000/day for a total of \$6,100/day. Labor included in operations cost.
- Assume two 6,000-ton barges available to transport uncontaminated sediment to PSDDA site, two tugs alternate to rotate barges between loading at waterway and unloading at habitat berm sites. Rental (2 ea x \$2000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea x \$2200/hr x 20 hr tug) at \$8,800/day for a total of \$14,400/day. Labor included in operations costs.

Table B15 Alternative 6 - Phase 1 Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 6 - Phase 1

Capping in Areas 2A, 2B, 2C, 3B Dredge Areas 1C1, 1C2, 1C3, 2A, 2B, 2C, 3B Estimate assumes that ASB berm sands can be reused as capping material.

				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
	Mahilization				1.85%			\$446 ACE	4
<u>1</u> 1.1	Mobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	2	4,800	1.0185	\$4,888.80	\$9.778	\$116,465	<u> </u>
1.1	Tug, bow, diesel, 900-hp	EA	1	1,500	1.0185	\$1,527.75	\$1,528		4 4
1.2	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	3,000	1.0185	\$3,055.50	\$3,056		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	40,000	1.0185	\$40,740.00	\$40,740		2
1.5	Front-end loader	EA	3	100	1.0185	\$101.85	\$306		3
1.6	Tug, push, diesel, 500-hp	EA	2	2,000	1.0185	\$2,037.00	\$4,074		4
1.7	Barge, flat-deck, 2,000-ton capacity	EA	2	700	1.0185	\$712.95	\$1,426		4
1.8	Barge, flat-deck, 6,000-ton capacity	EA	2	1,500	1.0185	\$1,527.75	\$3,056		4
1.9	Dozer, diesel, crawler, 100-hp	EA	1	100	1.0185	\$101.85	\$102		3
1.10	Construction office setup	EA	1	1,450	1.0185	\$1,476.83	\$1,477		3,12
1.11	Nonscheduled contract costs	EA	1	50,000	1.0185	\$50,925.00	\$50,925		4
2	Construct Dredge Spoil Offload Facility							\$547,159	
2.1	Track Installation - 100-lb rail, steel ties in concrete, incl fasteners and plates	FT	1,600	224	1.0185	\$228.14	\$365,030.40		28
2.2	Track Switch Installation	EA	1	28,820	1.0185	\$29,353.17	\$29,353.17		29
2.3	Sediment Stockpile Construction	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
2.4	Stormwater Upgrades	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
•	Deside in Materia							¢000 000	4
3.1	Dredging - Waterway Dredge contaminated sediments (Areas 2A, 2B, 3B, 1C)	DAY	30	9,225	1.0185	\$9,395.66	\$283,299	\$806,289	1 7,8
3.1	Overdredge contaminated sediments	DAT	20	<u>9,225</u> 5,500	1.0185	\$5,601.75	\$203,299 \$111,362		18,19
3.3	Floodlights	MONTH	3	16,000	1.0185	\$16,296.00	\$48,888		10,19
3.4	Construction office	MONTH	3	76,717	1.0185	\$78,136.26	\$234,409		10
3.5	Water Quality Monitoring	MONTH	3	42,000	1.0185	\$42,777.00	\$128,331		21
0.0		MONTH	0	42,000	1.0100	φ-12,777.00	ψ120,001		21
4	Offloading and On-shore Management							\$1,682,497	
4.1	Barge rental, 400 ton, 30 ft x 90 ft	DAY	57	283	1.0185	\$288.24	\$16,481.16		31
4.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY	57	238	1.0185	\$242.40	\$13,860.48		32
4.3	24-inch HDPE Pipe Installation	LF	200	65	1.0185	\$66.20	\$13,240.50		33
4.4	Water Filtration Unit, handle up to 300 gpm	MONTH	3	20000	1.0185	\$20,370.00	\$61,110.00		24, 37
4.5	Chitosan for Filtration, 1% solution	GAL	540	11	1.0185	\$11.20	\$6,049.89		25
4.6	Water Treatment Unit Operator, full-time	DAY	57	500	1.0185	\$509.25	\$29,118.66		4
4.7	Transport sediment to offload facility	DAY	50	9,200	1.0185	\$9,370.20	\$468,810.35		16
4.8	Offload Sediments to Stockpile	CY	134,049	5.73	1.0185	\$5.84	\$782,538.93		26
4.9	Transport to Railcar or Large Stockpile	CY	134,049	0.86	1.0185	\$0.88	\$117,414.97		27
4.10	Load into Railcars	CY	134,049	0.63	1.0185	\$0.65	\$86,468.39		34
4.11	Yard Locomotive	DAY	50	516	1.0185	\$525.55	\$26,294.15		35
4.12	Assorted Water Management	MONTH	3	20,000	1.0185	\$20,370.00	\$61,110.00		4
-	0-mains							\$000 CTC	4
5	Capping	01/	04 504	7	4.0405	¢c.co	¢000.070	\$208,676	1
<u>5.1</u> 5.2	Sand cap placement by small dredge Bathymetric Survey (50 ft center to center, single beam sonar)	CY Acre	31,521 30	7 50	<u>1.0185</u> 1.0185	\$6.62 \$50.93	\$208,676 \$1,516		4 4,30
ე.2	Dainymetric Survey (SU it center to center, Single Deam Sonar)	Acie	30	50	1.0100	φ00.93	01C,1¢		4,30

Table B15 Alternative 6 - Phase 1 Whatcom Waterway Remediation Estimated Costs

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ALTERNATIVE 6 - Phase 1

Capping in Areas 2A, 2B, 2C, 3B Dredge Areas 1C1, 1C2, 1C3, 2A, 2B, 2C, 3B Estimate assumes that ASB berm sands can be reused as capping material.

				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%			* * /** ***	
6	Disposal	TON	004.074		4 0 4 0 5	\$ \$\$\$ 45	A O 400 007	\$6,123,327	1
6.1	Railcar transport to and tipping at Roosevelt, WA	TON	201,074	30	1.0185	\$30.45	\$6,123,327		2, 36
7a	Under-Dock Work	LS	1	591,659	1.0185	\$602,604.69	\$602,605	\$602,605	
7b	Log Pond Shoreline Enhancements (See Addendum 1)	LS	1	362,877	1.0000	\$362,877.35	\$362,877	\$362,877	
•	Demokiller							¢05 007	
8 8.1	Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	2	4,800	1.0185	\$4,888.80	\$9,778	\$65,337	1 4
8.2	Tug, bow, diesel, 900-hp	EA	1	1,500	1.0185	\$1,527.75	\$1,528		4
8.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	1	3,000	1.0185	\$3.055.50	\$3,056		4
8.4	Barge-mounted backhoe, 5-cy bucket	EA	1	40,000	1.0185	\$40,740.00	\$40,740		- 4
8.5	Front-end loader	EA	3	100	1.0185	\$101.85	\$306		3
8.6	Tug, push, diesel, 500-hp	EA	2	2,000	1.0185	\$2,037.00	\$4,074		4
8.7	Barge, flat-deck, 2,000-ton capacity	EA	2	600	1.0185	\$611.10	\$1,222		4
8.8	Barge, flat-deck, 6,000-ton capacity	EA	2	1,500	1.0185	\$1,527.75	\$3,056		4
8.9	Dozer, diesel, crawler, 100-hp	EA	1	100	1.0185	\$101.85	\$102		3
8.10	Construction office teardown	EA	1	1,450	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$10,515,233	1
	Design, Engineering & Permitting		12%					\$1,261,828	4
	Construction management and monitoring		7%					\$736,066	4
	Long-term environmental monitoring		LS					\$640,000	4
	Sales Taxes		8.4%					\$883,280	
	TOTAL Cost Excluding Construction Contingency							\$14,036,407	
	Contingency @		30%					\$3,154,570	4
	Total* (including contingency)							\$17,190,977	1

Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Table B15 Alternative 6 - Phase 1 Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 6 - Phase 1

Capping in Areas 2A, 2B, 2C, 3B Dredge Areas 1C1, 1C2, 1C3, 2A, 2B, 2C, 3B Estimate assumes that ASB berm sands can be reused as capping material.

				Unit Cost	Cost Escalator				1
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%				

- 2 Supplier quote.
- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham, escalated per note 1.
- 4 Professional judgment based on previous projects.
- 7 Dredge contaminated sediment: 170 cy/hr x 20 hr/day = 3,400 cy/20-hr day
- 8 Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day.
- 10 Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day. \$1.000/month + (30 days/month x \$100/day) = \$4.000/month/ea x 4 ea = \$16.000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 day/month = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- 16 Assume two 6,000-ton barges available to transport contaminated sediment to offload facility, one tug to alternate to rotate barges between loading at waterway and unloading. Rental (2 ea x \$2000/ea/day barges + 1 ea x \$800/day tug) at \$4,800/day plus operations (1 ea x \$220/hr x 20 hr tug) at \$4,400/day for a total of \$9,200/day. Labor included in operations costs.
- 18 Overdredge contaminated sediment production rate: 1,400 cy/20-hr day
- 19 Overdredge contaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 20 hr or \$4,000/day totals \$5500/day.
- 21 \$1500/day, 28 days/month
- 23 Assumes that costs of excavation from ASB, transport to barge loading site, and loading of barge included in ASB cost estimate
- 24 Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm
- 25 \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64gal/hr*10 hr*84 shifts = 540 gallons
- 26 Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/trip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus
- 27 \$40/hour operator each) @3400 CY for 20 hours = \$0.85/CY
- 28 Need ~1600 feet trackage to finish loop track for loading (40 CYD/car, each car 65 ft long), Costs 05650-700-1020
- 29 Assume 1 needed. Costs from 05650-700-2200, plus cost index of 110% for Bellingham
- 30 Assumes 4 surveys of work area
- 31 Costs from 01590-800-0010, assumes 7 day/week operation
- 32 Costs from 01590-400-4400, assumes 7 day/week operation
- 33 Costs from 02510-760-0900
- 34 Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift
- 35 Costs from 01590-500-7000
- 36 Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal
- 37 Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent

^{1 2005} dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)

Table B16 Alternative 6 - Phase 2

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 6 - Phase 2 Removal within the ASB Dredge Area 8

ltem	Description	Unit	Quantity	Unit Cost	Item Cost	Total Cost	Notes
1	ASB Dredging (See ASB - Construction Subtotal)	LS	1	\$21,602,915	\$21,602,915	\$21,602,915	
	Subtotal					\$21,602,915	
	Design, Engineering & Permitting		LS			\$1,850,000	
	Construction management and monitoring		7%			\$1,512,204	
	Sales Taxes		8.4%			\$1,814,645	
	TOTAL Cost Excluding Construction Contingency					\$26,779,764	
	Contingency @		30%			\$6,480,875	
	Total*					\$33,260,639	

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)

Table B17 Alternative 6 - Phase 3

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 6 - Phase 3

Capping in Areas 5B, 6B, 6C, 2C Dredge Areas 1A, 1B

Estimate assumes that ASB berm sands can be reused as capping material.

			Unit Cost	Cost Escalation				
Description	Unit	Quantity	(2004)	(2004-2005)	Unit Cost	Item Cost	Total Cost	Notes
Mabilization				1.85%			¢70 524	4
	F A		4.000	4.0405	¢4.000.00	¢4.000	\$70,551	1
								4
			,					4
								4
								4
								4
								4
		-						3
								3,12
Nonscheduled contract costs	EA	1	50,000	1.0185	\$50,925.00	\$50,925		4
Dredging - Waterway							\$721,497	1
Dredge uncontaminated sediments (Areas 1A & 1B)	DAY	37	9,225	1.0185	\$9,395.66	\$343,768		6,8
Floodlights	MONTH	4	16,000	1.0185	\$16,296.00	\$65,184		10
Construction office	MONTH	4	76,717	1.0185	\$78,136.26	\$312,545		11
Capping							\$968,020	1
Sand cap placement by small dredge	CY	145,430	7	1.0185	\$6.62	\$962,783		4
	Acre	103	50	1.0185	\$50.93	\$5,237		4
Transportation							\$536 614	1
		37	14 400	1 0185	\$14 666 40	\$536 614	\$550,014	16
Barge uncontaminated sediment to Rosano FSDDA Site	DAT	31	14,400	1.0105	\$14,000.40	φ 330,014		10
Disposal							\$95,025	1
PSDDA Disposal Fee	TON	186,599	0.50	1.0185	\$0.51	\$95,025		
Demobilization							\$19.402	1
	FΔ	1	4 800	1 0185	\$4,888,80	\$4 889	ψ1 3, 402	4
			1					4
								4
								4
								4
								4
								3
								3,12
Construction onice teardown	EA	I	1,450	1.0165	\$1,470.03	φ1,477		3,12
Subtotal							\$2,411,090	1
Design, Engineering & Permitting		12%					\$289,331	4
Construction management and monitoring		7%					\$168,776	4
	inc	luded in yea	r 1				NA	
Sales Taxes		8.4%					\$202,532	
TOTAL Cost Excluding Construction Contingency							\$3,071,729	
Contingency @		30%					\$723,327	4
	Mobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Tug, bow, diesel, 900-hp Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck or split-hull, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office setup Nonscheduled contract costs Dredge uncontaminated sediments (Areas 1A & 1B) Floodlights Construction office Capping Sand cap placement by small dredge Bathymetric Survey (50 ft center to center, single beam son: Transportation Barge-mounted derrick crane, 100-ton, 7-cy bucket Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, d	Mobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket EA Barge-mounted derrick crane, 40-ton, 4-cy bucket EA Tug, pow, diesel, 900-hp EA Tug, push, diesel, 500-hp EA Barge, flat-deck, 2,000-ton capacity EA Dazer, diesel, crawler, 100-hp EA Construction office setup EA Nonscheduled contract costs EA Dredging - Waterway Dredge uncontaminated sediments (Areas 1A & 1B) DAY Floodlights MONTH Construction office MONTH Construction office MONTH Construction office MONTH Construction office MONTH Capping Sand cap placement by small dredge CY Bathymetric Survey (50 ft center to center, single beam son: Acre Acre Transportation Barge-mounted derrick crane, 100-ton, 7-cy bucket DAY Disposal P PSDDA Disposal Fee TON Pemobilization EA Barge, flat-deck, 2,000-ton capacity EA Barge, flat-deck, 6,000-ton capacity EA Barge,	Mobilization Barge-mounted derick crane, 40-ton, 4-cy bucket EA 1 Tug, pow, diesel, 900-hp EA 1 Tug, push, diesel, 500-hp EA 2 Barge, flat-deck, 2,000-ton capacity EA 2 Darge, flat-deck, 2,000-ton capacity EA 2 Darge, flat-deck, 2,000-ton capacity EA 2 Dozer, diesel, crawler, 100-hp EA 1 Construction office setup EA 1 Nonscheduled contract costs EA 1 Dredge uncontaminated sediments (Areas 1A & 1B) DAY 37 Floodlights MONTH 4 Construction office MONTH 4 Construction office MONTH 4 Construction office MONTH 4 Construction office MONTH 4 Capping Sand cap placement by small dredge CY 145,430 Bathymetric Survey (50 ft center to center, single beam son. Acre 103 Transportation Barge-mounted derick crane, 100-ton, 7-cy bucket EA 1 Barge-mounted derick crane, 40-ton, 4-cy bucket EA<	Mobilization Barge-mounted derrick crane, 40-ton, 7-cy bucket EA 1 4,800 Barge-mounted derrick crane, 40-ton, 4-cy bucket EA 1 3,000 Tug, bow, diesel, 900-hp EA 1 1,500 Tug, push, diesel, 500-hp EA 2 2,000 Barge, flat-deck, 2,000-ton capacity EA 2 700 Dozer, diesel, crawler, 100-hp EA 1 1,450 Construction office setup EA 1 1,450 Nonscheduled contract costs EA 1 1,450 Construction office setup EA 1 1,450 Construction office MONTH 4 16,000 Disposal P P PDA bis	Mobilization 1.85% Barge-mounted derrick crane, 100-ton, 7-cy bucket EA 1 4,800 1.0185 Barge-mounted derrick crane, 40-ton, 4-cy bucket EA 1 3.000 1.0185 Tug, bow, diesel, 900-hp EA 2 2,000 1.0185 Tug, push, diesel, 500-hp EA 2 2,000 1.0185 Barge, flat-deck, 2,000-ton capacity EA 2 1.0185 Dozer, diesel, orawler, 100-ton capacity EA 1 1.00 1.0185 Construction office setup EA 1 1.450 1.0185 Nonscheduled contract costs EA 1 1.6000 1.0185 Predge uncontaminated sediments (Areas 1A & 1B) DAY 37 9.225 1.0185 Floodlights MONTH 4 16.000 1.0185 Capping Sand cap placement by small dredge CY 145,430 7 1.0185 Barge-mounted motinated sediment to Rosario PSDDA Site DAY 37 1.4,400 1.0185 Disposal Pee	Mobilization 1.85% Barge-mounted derrick crane, 100-ton, 7-cy bucket EA 1 4,800 1.0185 \$\$4,888.80 Barge-mounted derrick crane, 40-ton, 4-cy bucket EA 1 3,000 1.0185 \$\$1,527.75 Tug, bow, diesel, 500-hp EA 2 2,000 1.0185 \$\$1,527.75 Darge, flat-deck, 2,000-ton capacity EA 2 700 1.0185 \$\$1,527.75 Darge, flat-deck, 2,000-ton capacity EA 2 1.000 1.0185 \$\$1,527.75 Docar, diesel, crawler, 100-hp EA 1 1.450 1.0185 \$\$101.85 Construction office setup EA 1 1.450 1.0185 \$\$101.85 Construction office setup EA 1 1.6000 1.0185 \$\$10.252.00 Dredging - Waterway Dredge uncontaminated sediments (Areas 1A & 18) DAY 37 9.225 1.0185 \$\$16,296.00 Construction office MONTH 4 16,000 1.0185 \$\$6.62 Bathymetric Survey (50 it center to center, single beam son.	Mobilization 1.85% Barge-mounted derrick crane, 100-ton, 7-cy bucket EA 1 4,800 1.0185 \$4,888.00 \$4,889 Barge-mounted derrick crane, 40-ton, 4-cy bucket EA 1 3,000 1.0185 \$3,055.50 \$3,056 Tug, bow, dissel, 900-hp EA 1 5,000 1.0185 \$1,527.75 \$1,528 Tug, bow, dissel, 2,000-ton capacity EA 2 700 1.0185 \$1,527.75 \$3,056.50 \$5,025 Dozer, dissel, crawler, 100-hp EA 1 1.00185 \$1,527.75 \$3,056.50 \$50,925 Dredging - Waterway EA 1 1.001 1.0185 \$1,476.83 \$1,477.83 \$1,476.83 \$1,477.85 \$3,056.90 \$50,925.05 \$50,925.00 \$50,925.00	Abbilization 185% \$70,531 Barge-mounted derick crane, 40-ton, 7-cy bucket EA 1 4.800 1.0186 \$4.888.80 \$4.889 Barge-mounted derick crane, 40-ton, 4-cy bucket EA 1 3.000 1.0186 \$1.527.75 \$1.528 Tug, box, desel, 500-hp EA 1 1.000 1.0186 \$2.037.00 \$4.074 Barge, flat-deck or spil-hull, 6,000-ton capacity EA 2 7000 1.0186 \$1.527.75 \$3.066 Dozer, diesel, 700-hp EA 1 1.000 1.0186 \$1.02.775 \$3.066 Dozer, diesel, contract costs EA 1 1.400 1.0185 \$1.02 Construction office setup EA 1 1.400 1.0185 \$3.07.76 Floodiights MONTH 4 16.000 1.0185 \$3.47.76 \$3.33.766 Floodiights MONTH 4 16.001 1.0185 \$3.12.545 \$3.12.545 Stand cap lacement by small dredge CY 145.430 7 1.0185 <td< td=""></td<>

Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes

1 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)

3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.

4 Professional judgment based on previous projects.

6 Dredge and overdredge uncontaminated sediment: 3,400 cy/20-hr day

8 Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day.

Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day.

1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.

11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.

x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). (\$800/day barge + \$500/day tug) at \$2,100/day plus operations (\$200/hr x 20 hr tug) at \$4,000/day for a total of \$6,100/day. Labor included in operations cost.

16 Assume two 6,000-ton barges available to transport uncontaminated sediment to PSDDA site, two tugs alternate to rotate barges between loading at waterway and unloading at habitat berm sites. Rental (2 ea x \$2000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day for a total of \$14,400/day. Labor included in operations costs.

Table B18 Alternative 7 - Phase 1

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 7 - Phase 1 Capping in Areas 2A, 2B, 2C, 3A, 3B Dredge Areas 2A, 2B, 2C, 3A and 3B

				Unit Cost	Cost Escalator				
tem	Description	Unit	Quantity	(2004)	2004-2005 1.85%	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.03%			\$116,262	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	+,	4
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5	Front-end loader	EA	4	\$100.00	1.0185	\$101.85	\$407		3
1.6	Tug, push, diesel, 500-hp	EA	2	\$2,000.00	1.0185	\$2,037.00	\$4,074		4
1.7	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.8	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.9	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.1	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
.11	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2	Construct Dredge Spoil Offload Facility							\$547,159	
	Track Installation - 100-lb rail, steel ties in concrete, incl fasteners and					A AAA <i>I I</i>	6 005 000 /0		
2.1	plates	FT	1,600	224	1.0185	\$228.14	\$365,030.40		25
2.2	Track Switch Installation	EA	1	28,820	1.0185	\$29,353.17	\$29,353.17		26
2.3	Sediment Stockpile Construction	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
2.4	Stormwater Upgrades	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
	Des dels s							***	
3	Dredging	DAV	440	* 0.005.00	1 0105	\$0.005.00	\$4 050 004	\$2,082,239	1
3.1	Dredge contaminated sediments (Areas 2A, 2B, 2C, 3A & 3B)	DAY	112	\$9,225.00	1.0185	\$9,395.66	\$1,050,881		7,8
3.2	Overdredge contaminated sodiments	DAY		\$5,500.00	nr days, 170 cy/h 1.0185	\$5,601.75	\$157,943		22,2
0.∠	Overdredge contaminated sediments	DAT	28	a0,000.00			\$157,943 /s, 50 cy/yr produ	ction rate	22,2
3.3	Floodlights	MONTH	6	\$16,000.00	1 articulated dr 1.0185	\$16,296.00	s, 50 cy/yr produ \$103,733	GIUITIALE	10
3.3 3.4	Construction office	MONTH	6	\$76,717.00	1.0185	\$78,136.26	\$497,382		11
	Water Quality Monitoring	MONTH	6	42,000	1.0185	\$42,777.00	\$272,300		24
	Water Quarty Monitoring		0	42,000	1.0105	ψ+2,111.00	ψ212,500		24
4	Offloading and On-shore Management							\$4,943,249	
.1	Barge rental, 400 ton, 30 ft x 90 ft	DAY	160	283	1.0185	\$288.24	\$46,131.74	ψ 1 ,010,210	28
.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY	160	238	1.0185	\$242.40	\$38,796.30		29
.3	24-inch HDPE Pipe Installation	LF	200	65	1.0185	\$66.20	\$13,240.50		30
.4	Water Filtration Unit, handle up to 300 gpm	MONTH	7	20000	1.0185	\$20,370.00	\$142,590.00		27, 3
.5	Chitosan for Filtration, 1% solution	GAL	1792	11	1.0185	\$11.20	\$20,076.67		32
.6	Water Treatment Unit Operator, full-time	DAY	160	500	1.0185	\$509.25	\$81,504.84		4
.7	Transport sediment to offload facility	DAY	140	9,200	1.0185	\$9,370.20	\$1,312,227.91		16
.8	Offload Sediments to Stockpile	CY	417,534	5.73	1.0185	\$5.84	\$2,437,439.57		33
.9	Transport to Railcar or Large Stockpile	CY	417,534	0.86	1.0185	\$0.88	\$365,722.25		34
.10	Load into Railcars	CY	417,534	0.63	1.0185	\$0.65	\$269,330.34		35
.11	Yard Locomotive	DAY	140	516	1.0185	\$525.55	\$73,598.87		36
.12	Assorted Water Management	MONTH	7	20,000	1.0185	\$20,370.00	\$142,590.00		4
5	Capping							\$1,867,232	1
i.1	Capping sand procurement and delivery (Areas 2A, 2B, 2C, 3A, 3B)	CY	65,584	\$15.00	1.0185	\$15.28	\$1,001,963		3, 38
					1 unit, 10-hr da				
			2	\$15,780.00	1.0185	\$16,071.93	\$36,855		2, 39
	Front-end loader for loading barges	MONTH							
.3	Transport capping sand to placement locations	DAY	85	\$4,500.00	1.0185	\$4,583.25	\$389,873		
.3 .4	Transport capping sand to placement locations Sand cap placement	DAY CY	85 65,584	\$6.50	1.0185 1.0185	\$4,583.25 \$6.62	\$434,184		4
.3 .4	Transport capping sand to placement locations	DAY	85		1.0185 1.0185 1.0185	\$4,583.25			4
.3 .4 .5	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar)	DAY CY Acre	85 65,584 86	\$6.50 \$50.00	1.0185 1.0185 1.0185 three events	\$4,583.25 \$6.62 \$50.93	\$434,184 \$4,356		4
5.3 5.4 5.5	Transport capping sand to placement locations Sand cap placement	DAY CY	85 65,584	\$6.50	1.0185 1.0185 1.0185	\$4,583.25 \$6.62	\$434,184	\$362,877	4
5.3 5.4 5.5 6	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1)	DAY CY Acre	85 65,584 86	\$6.50 \$50.00	1.0185 1.0185 1.0185 three events	\$4,583.25 \$6.62 \$50.93	\$434,184 \$4,356		4 4,40
5.3 5.4 5.5 6 7	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal	DAY CY Acre LS	85 65,584 86 1	\$6.50 \$50.00 362,877	1.0185 1.0185 1.0185 three events 1.000	\$4,583.25 \$6.62 \$50.93 \$362,877	\$434,184 \$4,356 \$362,877	\$362,877 \$19,072,841	4,40
.3 .4 .5 6 7	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1)	DAY CY Acre	85 65,584 86	\$6.50 \$50.00	1.0185 1.0185 1.0185 three events	\$4,583.25 \$6.62 \$50.93	\$434,184 \$4,356		4 4,40
6 6 7 1	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA	DAY CY Acre LS	85 65,584 86 1	\$6.50 \$50.00 362,877	1.0185 1.0185 1.0185 three events 1.000	\$4,583.25 \$6.62 \$50.93 \$362,877	\$434,184 \$4,356 \$362,877	\$19,072,841	4 4,40 1 2, 3
.3 .4 .5 6 7 .1 8	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization	DAY CY Acre LS TON	85 65,584 86 1 626,301	\$6.50 \$50.00 362,877 30	1.0185 1.0185 1.0185 three events 1.000 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45	\$434,184 \$4,356 \$362,877 \$19,072,841		4 4,40 1 2, 3
.3 .4 .5 6 7 .1 8 .1	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	DAY CY Acre LS TON EA	85 65,584 86 1 626,301	\$6.50 \$50.00 362,877 30 \$4,800.00	1.0185 1.0185 1.0185 three events 1.000 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889	\$19,072,841	4 4,40 1 2,3 1 4
.3 .4 .5 6 7 .1 .1 .2	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp	DAY CY Acre LS TON EA EA	85 65,584 86 1 626,301 1 2	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056	\$19,072,841	4 4,41 1 2,3 1 4 4
6 7 7 8 8 1 1 2 3 3	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket	DAY CY Acre LS TON EA EA EA	85 65,584 86 1 626,301 1 2 2	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111	\$19,072,841	4 4,40 1 2,3 1 4 4 4
.3 .4 .5 6 7 .1 .1 .2 .3 .4	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket	DAY CY Acre LS TON EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$3,055.50	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056	\$19,072,841	$\begin{array}{r} 4\\ 4,44\\ \hline \\ 1\\ 2,3\\ \hline \\ 1\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\end{array}$
.3 .4 .5 6 7 .1 .2 .3 .4 .5	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derck crane, 40-ton, 4-cy bucket Front-end loader	DAY CY Acre LS TON EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00	1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$3,055.50	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407	\$19,072,841	4 4,40 1 2,3 1 4 4 4 4 4 3
.3 .4 .5 6 7 .1 .2 .3 .4 .5 .6	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp	DAY CY Acre LS TON EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$2,000.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$3,055.50 \$101.85 \$2,037.00	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074	\$19,072,841	4 4,4(1 2,3 1 4 4 4 4 4 4 4 3 4
.3 .4 .5 6 7 .1 .2 .3 .4 .5 .6 .7	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity	DAY CY Acre LS TON EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2 2 2 2 2	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$3,000.00 \$2,000.00 \$600.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$1,055.50 \$1,055.50 \$1,01.85 \$2,037.00 \$611.10	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$407 \$4,074 \$1,222	\$19,072,841	4 4,4(1 2,3 1 4 4 4 4 4 4 4 4 4 4
.3 .4 .5 6 7 .1 .2 .3 .4 .5 .6 .7 .8	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity	DAY CY Acre LS TON EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2 1 4 2 2 2 2	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$4,000.00 \$100.00 \$1,500.00 \$4,500.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056	\$19,072,841	$ \begin{array}{r} 4 \\ 4,40 \\ 1 \\ 2,3 \\ 1 \\ 4 \\ 5 \\ $
.3 .4 .5 6 7 .1 .1 .2 .3 .4 .5 .6 .7 .8 .9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 2 1 4 4 2 2 1 1	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841	4 4,44 1 2,3 1 4 4 4 4 4 4 4 4 4 3
i.3 i.4 i.5 6 7 1 8 i.1 i.2 i.3 i.4 i.5 i.6 i.7 i.8 i.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown	DAY CY Acre LS TON EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2 1 4 2 2 2 2	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$4,000.00 \$100.00 \$1,500.00 \$4,500.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056	\$19,072,841 \$27,449	$ \begin{array}{r} 4 \\ 4,40 \\ \hline 1 \\ 2,3 \\ 1 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 3 \\ 3,12 \\ 3,12 \\ \end{array} $
i.3 i.4 i.5 6 7 1 8 i.1 i.2 i.3 i.4 i.5 i.6 i.7 i.8 i.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 2 1 4 4 2 2 1 1	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841	$ \begin{array}{r} 4 \\ 4,40 \\ 1 \\ 2,3 \\ 1 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 4 \\ 4 \\ 3 \\ 5 \\ $
5.3 5.4 5.5 6 7 7 7.1 8 8 3.1 3.2 3.3 3.4 3.5 5.6 6 3.7 3.8 3.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 2 1 4 4 2 2 1 1	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449	$ \begin{array}{r} 4 \\ 4,40 \\ \hline 1 \\ 2,3 \\ 1 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 3 \\ 3,12 \\ 3,12 \\ \end{array} $
5.3 5.4 5.5 6 7 7.1 8 8 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Pront-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 2 1 4 4 2 2 2 1 1 1 1	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449 \$29,019,307	4 4,4(1 2,3 1 4 4 4 4 4 4 3 3,1: 2 ,3 1 1 1
5.3 5.4 5.5 6 7 7 7.1 8 8 3.1 3.2 3.3 3.4 3.5 5.6 6 3.7 3.8 3.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, rawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2 2 1 4 2 2 2 1 1 1 9%	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449 \$27,449 \$29,019,307 \$2,611,738	4 4,4(1 2,3 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 1 3 3,12 1 1 4
i.3 i.4 i.5 6 7 1 8 i.1 i.2 i.3 i.4 i.5 i.6 i.7 i.8 i.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2 1 4 2 2 1 1 2 2 1 1 9% 7%	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449 \$27,449 \$29,019,307 \$2,611,738 \$2,031,352	44444 12,33 1 44444 4444 4444 4444 1 33,1: 1
5.3 5.4 5.5 6 7 7.1 8 8 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 000-ton capacity Barge, flat-deck, 0,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 4 2 2 2 1 1 1 9% 7% LS	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449 \$20,019,307 \$2,611,738 \$2,031,352 \$640,000	4 4,4(1 2,3 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 1 3 3,12 1 1 4
5.3 5.4 5.5 6 7 7 7.1 8 8 3.1 3.2 3.3 3.4 3.5 5.6 6 3.7 3.8 3.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 000-ton capacity Barge, flat-deck, 0,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 4 2 2 2 1 1 1 9% 7% LS	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449 \$20,019,307 \$2,611,738 \$2,031,352 \$640,000	4 4,4(1 2,3 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 1 3 3,12 1 1 4
5.2 5.3 5.4 5.5 6 7 7.1 8 8 8.1 3.2 3.3 3.4 3.5 3.6 3.7 3.7 3.8 3.9 .10	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring Sales Taxes	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2 1 1 2 2 1 1 1 9% 7% LS	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449 \$27,449 \$27,449 \$27,449 \$27,449 \$27,449 \$27,449 \$20,019,307 \$2,611,738 \$2,031,352 \$640,000 \$2,437,622	4 4,4(1 2,3 2,3 1 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 1 3,3,12 1 1 4
5.3 5.4 5.5 6 7 7.1 8 8 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9	Transport capping sand to placement locations Sand cap placement Bathymetric Survey (50 ft center to center, single beam sonar) Log Pond Shoreline Enhancements (Addendum 1) Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring Sales Taxes	DAY CY Acre LS TON EA EA EA EA EA EA EA EA EA	85 65,584 86 1 626,301 1 2 2 1 4 2 2 1 1 2 2 1 1 1 9% 7% LS	\$6.50 \$50.00 362,877 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00	1.0185 1.0185 1.0185 three events 1.000 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$4,583.25 \$6.62 \$50.93 \$362,877 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75 \$101.85	\$434,184 \$4,356 \$362,877 \$19,072,841 \$4,889 \$3,056 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$19,072,841 \$27,449 \$27,449 \$27,449 \$27,449 \$27,449 \$27,449 \$27,449 \$20,019,307 \$2,611,738 \$2,031,352 \$640,000 \$2,437,622	44444 12,33 1 44444 4444 4444 4444 1 33,1: 1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes

1 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)

Supplier quote. 2

- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.
- Professional judgment based on previous projects. Dredge contaminated sediment: 1700 cy/hr x 20 hr/day = 3,400 cy/20-hr day 4
- 7
- Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day.
- Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day 10
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 days/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 days/month x 2 ea = \$30,900/month), 1-superintendent (\$76,717/month), 2-clerks (\$146/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month. 11
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- Assume two 2,000-ton barge and one tug to bring capping sand to waterway. Cost each combination for rental 14 (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost.
- Assume two 6,000-ton barges available per dredge to transport contaminated sediment to offload, one tugs alternate to rotate barges between loading at waterway and unloading at offload site. Rental (2 ea x \$2000/ea/day barges + 1 ea x \$800/day tug) at \$4,800/day plus operations (1 ea 16 x \$220/hr x 20 hr tug) at \$4,400/day for a total of \$9,200/day. Labor included in operations costs.
- 22 Overdredge sediment production rate: 1400 cy/20-hr day
- 23 Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 20 hr or \$4,000/day totals \$5500/day.
- \$1500/day, 28 days/month 24
- Need ~1600 feet trackage to finish loop track for loading (40 CYD/car, each car 65 ft long), Costs 05650-700-1020 25
- 26 Assume 1 needed. Costs from 05650-700-2200, plus cost index of 110% for Bellingham
- 27 Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm
- Costs from 01590-800-0010, assumes 7 day/week operation 28
- 29 Costs from 01590-400-4400, assumes 7 day/week operation
- Costs from 02510-760-0900 30
- 31 Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent
- \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64gal/hr*10 hr*280 shifts = 1792 gallons 32 33 Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift
- Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/trip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus \$40/hour 34 operator each) @3400 CY for 20 hours = \$0.85/CY
- Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift 35
- Costs from 01590-500-7000 36
- Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal 37
- 38 Assumes 45,000 CYD available from ASB, rest must be purchased
- Assumes that costs of excavation from ASB, transport to barge loading site, and loading of barge included in ASB cost estimate for sands from ASB 39
- 40 Assumes 4 surveys of work area

Table B19 Alternative 7 - Phase 2

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 7 - Phase 2 Removal within the ASB Dredge Area 8

ltem	Description	Unit	Quantity	Unit Cost	Item Cost	Total Cost	Notes
1	ASB Dredging (See ASB - Construction Subtotal)	LS	1	\$21,602,915	\$21,602,915	\$21,602,915	
	Subtotal					\$21,602,915	
	Design, Engineering & Permitting Construction management and monitoring Sales Taxes		LS 7% 8.4%			\$1,850,000 \$1,512,204 \$1,814,645	
	TOTAL Cost Excluding Construction Contingency					\$26,779,764	
	Contingency @		30%			\$6,480,875	
	Total*					\$33,260,639	

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)

Table B20 Alternative 7 - Phase 3

Whatcom Waterway Remediation

Estimated Costs

ALTERNATIVE 7 - Phase 3 Dredge Areas 1A, 1B and 1C Cap Areas 5B, 6B, 6C

						Cap Areas 5B,	00,00		
ltem	Description	Unit	Quantity	Unit Cost (2004)	Cost Escalator 2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%			6 444400	
<u>1</u> 1.1	Mobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	\$114,428	1
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5	Front-end loader	EA	2	\$100.00	1.0185	\$101.85	\$204		3
1.6	Tug, push, diesel, 500-hp	EA	2	\$2,000.00	1.0185	\$2,037.00	\$4,074		4
1.7	Barge, flat-deck, 2,000-ton capacity	EA	4	\$700.00	1.0185	\$712.95	\$2,852		4
1.8	Barge, flat-deck, 6,000-ton capacity	EA	0	\$1,500.00	1.0185	\$1,527.75	\$0		4
1.9	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.10	Construction office setup	EA EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.11	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2	Dredging							\$1,008,559	1
2.1	Dredge uncontaminated sediments (Areas 1A & 1B)	DAY	37	\$5,725.00	1.0185	\$5,830.91	\$213,341	¥1,000,000	6,8
	(I from the dredge		-,-
2.2	Dredge contaminated sediments (Areas 1C1, 1C2 & 1C3)	DAY	47	\$5,725.00	1.0185	\$5,830.91	\$272,085		7,8
			1 productio	n dredge, 10-hr o	days, 150 cy/hi	r production total	I from the dredge		
2.3	Overdredge contaminated sediments (Areas 1C1, 1C2 & 1C3)	DAY	13	5,500	1.0185	\$5,601.75	\$75,059		18,19
2.4	Floodlights	MONTH	4	\$16,000.00	1.0185	\$16,296.00	\$61,666		10
2.5	Construction office	MONTH	4	\$76,717.00	1.0185	\$78,136.26	\$295,676		11
2.6	Water Quality Monitoring	MONTH	2	42,000	1.0185	\$42,777.00	\$90,731		24
3	Offloading and On-shore Management				4.0	\$007 T	A10 7	\$1,485,336	
3.1	Barge rental, 400 ton, 30 ft x 90 ft	DAY	69	283	1.0185	\$288.24	\$19,785.07		31
3.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY LF	69 200	238 65	1.0185	\$242.40	\$16,639.03		32 33
3.3	24-inch HDPE Pipe Installation Water Filtration Unit, handle up to 300 gpm	MONTH	200	20000	1.0185	\$66.20 \$20,370.00	\$13,240.50 \$61,110.00		25, 3
3.4 3.5	Chitosan for Filtration, 1% solution	GAL	371	11	1.0185	\$11.20	\$4,156.50		25, 3
3.6	Water Treatment Unit Operator, full-time	DAY	69	500	1.0185	\$509.25	\$34,955.95		4
3.0	Transport sediment to offload facility	DAT	60	9,200	1.0185	\$9,370.20	\$562,790.72		16
3.8	Offload Sediments to Stockpile	CY	92,406	5.73	1.0185	\$5.84	\$539,437.27		27
3.9	Transport to Railcar or Large Stockpile	CY	92,406	0.86	1.0185	\$0.88	\$80,939.12		28
3.10	Load into Railcars	CY	92,406	0.63	1.0185	\$0.65	\$59,606.33		34
3.11	Yard Locomotive	DAY	60	516	1.0185	\$525.55	\$31,565.22		35
3.12	Assorted Water Management	MONTH	3	20,000	1.0185	\$20,370.00	\$61,110.00		4
4	Capping							\$626,212	1
4.1	Transport capping sand to placement locations	DAY	47	\$4,500.00	1.0185	\$4,583.25	\$216,704		14
4.2	Sand cap placement	CY	61,466	\$6.50	1.0185	\$6.62	\$406,922		4
4.3	Bathymetric Survey (50 ft center to center, single beam sonar)	Acre	51	Sand from ASB \$50.00	1.0185	\$50.93	\$2,587		4, 30
-	T erren entetten							*500 04 4	
5 .1	Transportation Barge uncontaminated sediment to Rosario PSDDA Site	DAY	37	14,400	1.0185	\$14,666.40	\$536,614	\$536,614	1
			-				• • • • • •		
6	Disposal	TON	400 500		4 0405	*0 -1	* 05 005	\$4,316,095	1
6.1	PSDDA Disposal Fee	TON TON	186,599 138,609	1 29.9	1.0185 1.0185	\$0.51 \$30.45	\$95,025 \$4,221,069		2.26
6.2	Railcar transport to and tipping at Roosevelt, WA	TON	138,609	29.9	1.0185	\$30.45	\$4,221,069		2, 36
7	Under Dock Work	LS	1	591,659	1.0185	\$602,604.69	\$602,605	\$602,605	
8	Demobilization							\$63,096	1
3.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889		4
3.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
3.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
8.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
8.5	Front-end loader Tug, push, diesel, 500-hp	EA EA	2	\$100.00 \$2,000.00	1.0185	\$101.85 \$2,037.00	\$204 \$4,074		3
3.6 3.7	Barge, flat-deck, 2,000-ton capacity	EA	4	\$2,000.00	1.0185	\$2,037.00 \$611.10	\$2,444		4
3.8	Barge, flat-deck, 6,000-ton capacity	EA	0	\$1,500.00	1.0185	\$1,527.75	\$0		4
3.9	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
.10	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$8,752,945	1
			00/						
	Design, Engineering & Permitting		9%					\$787,765	4
	Construction management and monitoring Long-term environmental monitoring	in - l	7% luded in Ye	or 1				\$612,706	4
	Sales Taxes		uded in Ye 8.4%	cii I				NA \$735,247	
	TOTAL Cost Excluding Construction Contingency							\$10,888,663	
	Contingency @		30%					\$2,625,883	4
	Total*							\$13,514,547	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

ALTERNATIVE 7 - Phase 3 Dredge Areas 1A, 1B and 1C Cap Areas 5B, 6B, 6C

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1
- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham
- Professional judgment based on previous projects. 4
- 6 Dredge uncontaminated sediment: 1500 cy/hr x 10 hr/day x 1 = 1,500 cy/10-hr day 7
- Dredge contaminated sediment: 1500 cy/hr x 10 hr/day x 1 = 1,500 cy/10-hr day Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 10 hr or \$3,500/day totals \$5,725/day. 8
- Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day. 10
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760, 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). 12
- Assume two 2,000-ton barge and one tug to bring capping sand to waterway. Cost each combination for rental (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost.
- Assume two 6,000-ton barges available to transport uncontaminated sediment to PSDDA site, two tugs alternate to rotate barges between loading at waterway and unloading at habitat berm sites. Rental (2 ea x \$2000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea 15 x \$220/hr x 20 hr tug) at \$8,800/day for a total of \$14,400/day. Labor included in operations costs.
- 16 Assume two 2,000-ton barges available to transport contaminated sediment to offload, two tugs alternate to rotate barges between loading at waterway and unloading at CAD. Rental (2 ea x \$1000/ea/day barges + 2 ea x \$800/day tug) at \$3,600/day plus operations (2 ea x \$220/hr x 10 hr tug) at \$4,400/day for a total of \$8,000/day. Labor included in operations costs.
- Pipe rerouting includes a dredge mate and a general laborer working each shift to move pipe (1 shift/day x (\$307/shift + \$255/shift) = \$562/day) 18 plus a skiff (\$150/day) for a total of \$712/day.
- Anchor dozers (2 dozers ea dredge x 11 months x \$3,900/month + 2 ea x 219 days x 4 hr operating/day x \$16/hr + 1 dozer operators x 219 days 19 x \$307/8-hr day = \$181,065/ dredge) for 2 dredges per month (2 x \$181,065 / 11 months) is \$32,921/month
- 24 \$1500/day, 28 days/month
- 25
- Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64gal/hr*10 hr*58 shifts = 371 gallons 26
- Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift 27
- Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/trip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus 28 \$40/hour operator each) @3400 CY for 20 hours = \$0.85/CY
- 30 Assumes 4 surveys of work area
- 31 Costs from 01590-800-0010, assumes 7 day/week operation
- 32 Costs from 01590-400-4400, assumes 7 day/week operation
- 33 Costs from 02510-760-0900 34 Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift
- 35 Costs from 01590-500-7000
- Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal 36
- 37 Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent

Table B21 Alternative 8 - Phase 1

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 8 - Phase 1 Capping in Areas 2A, 2B, 2C, 3A, 3B Dredge Areas 2A, 2B, 2C, 3A, 3B

					-		-		
				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	2004-2005	Unit Cost	Item Cost	Total Cost	Notes
nem	Description	onit	quantity	(2001)	1.85%	0111 0051	Rein Gest	Total Cost	110100
1	Mobilization							\$127,771	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	2	\$4,800.00	1.0185	\$4,888.80	\$9,778		4
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5	Front-end loader	EA	4	\$100.00	1.0185	\$101.85	\$407		3
1.6	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
1.7	Barge, flat-deck, 2,000-ton capacity	EA EA	2	\$700.00 \$1,500.00	1.0185	\$712.95	\$1,426		4 4
1.8	Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	EA	3	\$1,500.00	1.0185	\$1,527.75 \$101.85	\$4,583 \$102		3
1.5	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.11	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
							***,*=*		
2	Construct Dredge Spoil Offload Facility							\$547,159	
2.1	Track Installation - 100-lb rail, steel ties in concrete, incl fasteners and	o FT	1,600	224	1.0185	\$228.14	\$365,030.40		25
2.2	Track Switch Installation	EA	1	28,820	1.0185	\$29,353.17	\$29,353.17		26
2.3	Sediment Stockpile Construction	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
2.4	Stormwater Upgrades	LS	1	75,000	1.0185	\$76,387.50	\$76,388		4
•	Desidelar							***	
3	Dredging	DAV	440	¢0.005.00	4.0405	\$0.205.CC	£4.400.570	\$2,201,525	1
3.1	Dredge contaminated sediments (Areas 2A, 2B, 2C, 3A & 3B)	DAY	119 1 productio	\$9,225.00 n dredges, 20-h	1.0185 r days 170 cy/b	\$9,395.66	\$1,122,576		7,8
3.2	Overdredge contaminated sediments	DAY	28	\$5,500.00	1.0185	\$5,601.75	\$157,943		22,23
0.2				d dredge, 10-hr			ψιση,στο		£2,20
3.3	Floodlights	MONTH		\$16,000.00	1.0185	\$16,296.00	\$109,386		10
3.4	Construction office	MONTH	7	\$76,717.00	1.0185	\$78,136.26	\$524,484		11
3.5	Water Quality Monitoring	MONTH	7	42,000	1.0185	\$42,777.00	\$287,137		24
4	Offloading and On-shore Management	_				Ac	A.c:	\$5,276,686	
4.1	Barge rental, 400 ton, 30 ft x 90 ft	DAY	169	283	1.0185	\$288.24	\$48,645.37		28
4.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY	169	238	1.0185	\$242.40	\$40,910.24		29
4.3	24-inch HDPE Pipe Installation	LF	200	65	1.0185	\$66.20	\$13,240.50		30
4.4	Water Filtration Unit, handle up to 300 gpm	MONTH	8	20000	1.0185	\$20,370.00	\$162,960.00		27, 31
4.5	Chitosan for Filtration, 1% solution	GAL	1869	11	1.0185	\$11.20	\$20,939.34		32
4.6	Water Treatment Unit Operator, full-time	DAY	169	500	1.0185	\$509.25	\$85,945.87		4
4.7	Transport sediment to offload facility	DAY CY	148	9,200 5.73	1.0185	\$9,370.20 \$5.84	\$1,383,728.58		16 33
4.8	Offload Sediments to Stockpile	CY	445,699 445,699	0.86	1.0185	\$0.88	\$2,601,856.95		33
4.9	Transport to Railcar or Large Stockpile	CY		0.86	1.0185		\$390,392.03		34
4.10	Load into Railcars Yard Locomotive	DAY	445,699 148	516	1.0185	\$0.65 \$525.55	\$287,498.01 \$77,609.12		35
4.11	Assorted Water Management	MONTH		20,000	1.0185	\$20,370.00	\$162,960.00		4
4.12	Assoned water Management		0	20,000	1.0165	φ20,370.00	\$162,960.00		4
5	Capping							\$1,867,232	1
5.1	Capping sand procurement and delivery (Areas 2A, 2B, 2C, 3A, 3B)	CY	65,584	\$15.00	1.0185	\$15.28	\$1,001,963	••••••	3, 38
-				1 unit, 10-hr da	ys, high produc				· · · · · · · · · · · · · · · · · · ·
5.3	Front-end loader for loading barges	MONTH	2	\$15,780.00	1.0185	\$16,071.93	\$36,855		2, 39
5.4	Transport capping sand to placement locations	DAY	85	\$4,500.00	1.0185	\$4,583.25	\$389,873		14
5.5	Sand cap placement	CY	65,584	\$6.50	1.0185	\$6.62	\$434,184		4
5.6	Bathymetric Survey (50 ft center to center, single beam sonar)	Acre	86	\$50.00	1.0185	\$50.93	\$4,356		4,40
				three events					
6	Log Pond Shoreline Enhancements (Addendum 1)	LS	1	\$ 362,877	1.0000	\$362,877	\$362,877	\$362,877	
_									
7	Disposal	TON	000 540	00	4 0405	* 00.45	\$00.050.000	\$20,359,398	1
7.1	Railcar transport to and tipping at Roosevelt, WA	TON	668,548	30	1.0185	\$30.45	\$20,359,398		2, 37
8	Demobilization							\$38,958	1
8.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	2	\$4,800.00	1.0185	\$4,888.80	\$9,778	400,900	4
8.1	Tug, bow, diesel, 900-hp	EA	2	\$4,800.00	1.0185	\$1,527.75	\$3,056		4
8.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$9,167		4
8.3	Barge-mounted backhoe, 5-cy bucket	EA	3	\$3,000.00	1.0185	\$3,055.50	\$3,056		4
8.5	Front-end loader	EA	4	\$100.00	1.0185	\$101.85	\$407		3
8.6	Tug, push, diesel, 500-hp	EA	3	\$2,000.00	1.0185	\$2,037.00	\$6,111		4
8.7	Barge, flat-deck, 2,000-ton capacity	EA	2	\$600.00	1.0185	\$611.10	\$1,222		4
8.8	Barge, flat-deck, 6,000-ton capacity	EA	3	\$1,500.00	1.0185	\$1,527.75	\$4,583		4
8.9	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
8.10	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$30,781,606	1
								AD 5	
	Design, Engineering & Permitting		12%					\$3,693,793	4
	Construction management and monitoring		7%					\$2,154,712	4
	Long-term environmental monitoring		LS					\$640,000	
	Sales Taxes		8.4%					\$2,585,655	
	TOTAL Cost Excluding Construction Contingency							\$39,855,765	
	TO THE OVAL EXCluding Construction Contingency							ψ00,000,700	
	Contingency @		30%					\$9,234,482	4
	······································		5570					+-,_0.,+0L	
	Total*							\$49,090,247	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)
- 2 Supplier quote.
- RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham. 3
- Professional judgment based on previous projects. 4
- 7 Dredge contaminated sediment: 1700 cy/hr x 20 hr/day = 3,400 cy/20-hr day
- Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day. 8
- 10 Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). 12
- 14
- Assume two 2,000-ton barge and one tug to bring capping sand to waterway. Cost each combination for rental (\$1000/day barge + \$500/day tug) at \$2,500/day plus operations (\$200/hr x 10 hr tug) at \$2,000/day for a total of \$4,500/day. Labor included in operations cost. Assume two 6,000-ton barges available per dredge to transport contaminated sediment to offload, one tugs alternate to rotate barges between loading at 16
 - waterway and unloading at offload site. Rental (2 ea x \$2000/ea/day barges + 1 ea x \$800/day tug) at \$4,800/day plus operations (1 ea
- x \$220/hr x 20 hr tug) at \$4,400/day for a total of \$9,200/day. Labor included in operations costs. 22 Overdredge sediment production rate: 1400 cv/20-hr dav
- 23 Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 20 hr or \$4,000/day totals \$5500/day.
- 24 \$1500/day, 28 days/month
- Need ~2000 feet trackage to finish loop track for loading (40 CYD/car, each car 65 ft long), Costs 05650-700-1020 25
- Assume 3 needed. Costs from 05650-700-2200, plus cost index of 110% for Bellingham 26
- Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm 27
- 28 Costs from 01590-800-0010, assumes 7 day/week operation
- 29 Costs from 01590-400-4400, assumes 7 day/week operation
- Costs from 02510-760-0900 30
- Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent 31
- 32 \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64gal/hr*10 hr*292 shifts = 1869 gallons Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift 33
- Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/hrip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus \$40/hour 34 operator each) @3400 CY for 20 hours = \$0.85/CY
- Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift 35
- 36 Costs from 01590-500-7000
- 37 Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal
- Assumes 45,000 CYD available from ASB, rest must be purchased 38
- 39 Assumes that costs of excavation from ASB, transport to barge loading site, and loading of barge included in ASB cost estimate for sands from ASB
- Assumes 4 surveys of work area 40

Table B22 Alternative 8 - Phase 2 Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 8 - Phase 2

Estima	ted Costs					Dredge Areas 5	A, 5B, 6A, 6B, 60	C, 1C	
Item	Description	Unit	Quantity	Unit Cost (2004)	Cost Escalator 2004-2005 1.85%	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.85%			\$121,151	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	2	\$4,800.00	1.0185	\$4,888.80	\$9,778		4
1.2	Tug, bow, diesel, 900-hp	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5 1.6	Front-end loader Tug, push, diesel, 500-hp	EA EA	4	\$100.00 \$2,000.00	1.0185 1.0185	\$101.85 \$2,037.00	\$407 \$4,074		3
1.0	Barge, flat-deck, 2,000-ton capacity	EA	2	\$700.00	1.0185	\$712.95	\$1,426		4
1.8	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.9	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
1.1	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.11	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2	Dredging							\$3,290,241	1
2.1	Dredge contaminated sediments using production (Areas 5A, 5B, 6A,	DAY	131	\$9,225.00	1.0185	\$9,395.66	\$1,233,483	<i>40,200,211</i>	7,8
	6B, 6C, 1C)				1 production dr	edges, 20-hr day	/s, 170 cy/hr prod	uction	
2.2	_ Dredge contaminated sediments using fixed-arm dredge (areas 5A, 5B,	DAY	105	\$5,500.00	1.0185	\$5,601.75	\$585,786		22,23
	6A, 6B, 6C overdredge)						s, 50 cy/yr produc	tion rate	
2.3	Floodlights	MONTH	11	\$16,000.00	1.0185	\$16,296.00	\$174,704		10
2.4 2.5	Construction office Water Quality Monitoring	MONTH MONTH	<u>11</u> 11	\$76,717.00 42,000	1.0185	\$78,136.26 \$42,777.00	\$837,671 \$458,597		11 24
2.5	Water Quality Wohltoning	WONTH	11	42,000	1.0185	\$42,111.00	\$430,397		24
4	Offloading and On-shore Management							\$7,526,462	
4.1	Barge rental, 400 ton, 30 ft x 90 ft	DAY	270	283	1.0185	\$288.24	\$77,693.19		28
4.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY LF	270 200	238 65	1.0185 1.0185	\$242.40 \$66.20	\$65,339.15 \$13,240.50		29 30
4.3 4.4	24-inch HDPE Pipe Installation Water Filtration Unit, handle up to 300 gpm	MONTH	12	20000	1.0185	\$20,370.00	\$244,440.00		27, 31
4.4	Chitosan for Filtration, 1% solution	GAL	1869	11	1.0185	\$11.20	\$20,939.34		32
4.6	Water Treatment Unit Operator, full-time	DAY	270	500	1.0185	\$509.25	\$137,267.12		4
4.7	Transport sediment to offload facility	DAY	236	9,200	1.0185	\$9,370.20	\$2,210,000.62		16
4.8	Offload Sediments to Stockpile	CY	596,460	5.73	1.0185	\$5.84	\$3,481,957.40		33
4.9	Transport to Railcar or Large Stockpile	CY	596,460	0.86	1.0185	\$0.88	\$522,445.48		34
4.10	Load into Railcars	CY	596,460	0.63	1.0185	\$0.65	\$384,746.67		35
4.11	Yard Locomotive	DAY	236	516	1.0185	\$525.55	\$123,952.21		36
4.12	Assorted Water Management	MONTH	12	20,000	1.0185	\$20,370.00	\$244,440.00		4
5	Disposal							\$27,246,139	1
5.1	Railcar transport to and tipping at Roosevelt, WA	TON	894,690	30	1.0185	\$30.45	\$27,246,139		2, 37
6	Under Dock Work	LS	1	591,659	1.0185	\$602,604.69	\$602,605	\$602,605	
	Shael Book Work	20		001,000	1.0100	φ002,004.00	4002,000	<i>\\</i> 002,000	
7	Demobilization			6 4,000,00	4 0 4 0 5	* 4 000 00	* 0 77 0	\$32,337	1
7.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp	EA EA	2	\$4,800.00 \$1,500.00	1.0185	\$4,888.80 \$1,527.75	\$9,778 \$3,056		4
7.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
7.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$3,000.00	1.0185	\$3,055.50	\$3,056		4
7.5	Front-end loader	EA	4	\$100.00	1.0185	\$101.85	\$407		3
7.6	Tug, push, diesel, 500-hp	EA	2	\$2,000.00	1.0185	\$2,037.00	\$4,074		4
7.7	Barge, flat-deck, 2,000-ton capacity	EA	2	\$600.00	1.0185	\$611.10	\$1,222		4
7.8	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
7.9	Dozer, diesel, crawler, 100-hp	EA	1	\$100.00	1.0185	\$101.85	\$102		3
7.10	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
	Subtotal							\$38,818,935	1
	Design, Engineering & Permitting		12%					\$4,658,272	4
	Construction management and monitoring		7%		_			\$2,717,325	4
	Long-term environmental monitoring	inci	luded in Yea	nr 1				NA	
	Sales Taxes		8.4%					\$3,260,791	
	TOTAL Cost Excluding Construction Contingency							\$49,455,323	
	Contingency @		30%					\$11,645,680	4
	Total*							\$61,101,003	1

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

ALTERNATIVE 8 - Phase 2 Dredge Areas 5A, 5B, 6A, 6B, 6C, 1C

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1
- 2 Supplier quote

- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.
- 4 Professional judgment based on previous projects
- Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day. 10
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month.
- 11 Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). 16
- Assume two 6,000-ton barges available per dredge to transport contaminated sediment to offload, one tugs alternate to rotate barges between loading at waterway and unloading at offload site. Rental (2 ea x \$2000/ea/day barges + 1 ea x \$800/day tug) at \$4,800/day plus operations (1 ea x \$220/hr x 20 hr tug) at \$4,400/day for a total of \$9,200/day. Labor included in operations costs.
- 22 Overdredge sediment production rate: 1400 cy/20-hr day
- Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 20 hr or \$4,000/day totals \$5500/day. 23
- \$1500/day, 28 days/month 24
- 27 Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm
- 28 Costs from 01590-800-0010, assumes 7 day/week operation
- 29 Costs from 01590-400-4400, assumes 7 day/week operation
- Costs from 02510-760-0900 30
- Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent 31
- 32 \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64gal/hr*10 hr*292 shifts = 1869 gallons
- Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/trip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus \$40/hour oper 33 34 @3400 CY for 20 hours = \$0.85/CY
- Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift 35
- Costs from 01590-500-7000 36
- 37 Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal

Table B23 Alternative 8 - Phase 3

Whatcom Waterway Remediation

ALTERNATIVE 8 - Phase 3

tem	Description	Unit	Quantity	Unit Cost (2004)	Cost Escalator 2004-2005	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.85%			\$114,734	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889	••••	4
1.2	Tug, bow, diesel, 900-hp	EA	1	\$1,500.00	1.0185	\$1,527.75	\$1,528		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	2	\$3,000.00	1.0185	\$3,055.50	\$6,111		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	1	\$40,000.00	1.0185	\$40,740.00	\$40,740		4
1.5	Front-end loader	EA	4	\$100.00	1.0185	\$101.85	\$407		3
1.6	Tug, push, diesel, 500-hp	EA	2	\$2,000.00	1.0185	\$2,037.00	\$4,074		4
1.7 1.8	Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity	EA EA	2	\$700.00 \$1,500.00	1.0185 1.0185	\$712.95 \$1,527.75	\$1,426 \$3,056		4
1.0	Dozer, diesel, crawler, 100-hp	EA	1	\$1,500.00	1.0185	\$1,527.75	\$102		3
1.1	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.11	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4
2	Dredging							\$1,771,916	1
2.1	Dredge contaminated sediments using production (Area 7)	DAY	78	\$9,225.00	1.0185	\$9,395.66	\$729,546		7,8
	Decides contenting to decide outs using fixed over decides (7 supplies decide)	DAV	47	¢5 500 00			ys, 170 cy/hr proc	duction	00.00
2.2	Dredge contaminated sediments using fixed-arm dredge (7 overdredge)	DAY	47	\$5,500.00	1.0185	\$5,601.75	\$264,083 s, 50 cy/yr produc	tion rate	22,23
2.3	Floodlights	MONTH	6	\$16,000.00	1.0185	\$16,296.00	\$92,435	lion rate	10
2.4	Construction office	MONTH	6	\$76,717.00	1.0185	\$78,136.26	\$443,210		11
2.5	Water Quality Monitoring	MONTH	6	42,000	1.0185	\$42,777.00	\$242,643		24
	· ·								
3	Offloading and On-shore Management							\$4,090,174	
3.1	Barge rental, 400 ton, 30 ft x 90 ft	DAY	143	283	1.0185	\$288.24	\$41,107.30		28
3.2	Centrifugal Gas Pump, 6-inch, 90 MGPH	DAY	143	238	1.0185	\$242.40	\$34,570.80		29
3.3	24-inch HDPE Pipe Installation	LF	200	65	1.0185	\$66.20	\$13,240.50		30
3.4 3.5	Water Filtration Unit, handle up to 300 gpm Chitosan for Filtration, 1% solution	MONTH GAL	6 1869	20000	1.0185	\$20,370.00 \$11.20	\$122,220.00 \$20,939.34		27, 3
3.6	Water Treatment Unit Operator, full-time	DAY	143	500	1.0185	\$509.25	\$72,627.73		32 4
3.7	Transport sediment to offload facility	DAY	125	9,200	1.0185	\$9,370.20	\$1,169,306.47		16
3.8	Offload Sediments to Stockpile	CY	330,000	5.73	1.0185	\$5.84	\$1,926,441.83		33
3.9	Transport to Railcar or Large Stockpile	CY	330,000	0.86	1.0185	\$0.88	\$289,050.30		34
									-04
3.10	Load into Railcars	CY	330,000	0.63	1.0185	\$0.65	\$212,866.50		35
3.10 3.11	Yard Locomotive	DAY	125	516	1.0185 1.0185	\$0.65 \$525.55	\$212,866.50 \$65,582.84		35 36
					1.0185	\$0.65	\$212,866.50		35
3.10 3.11 3.12 4	Yard Locomotive Assorted Water Management Disposal	DAY MONTH	125 6	516 20,000	1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00	\$212,866.50 \$65,582.84 \$122,220.00	\$15,074,309	35 36 4
3.10 3.11 3.12 4	Yard Locomotive Assorted Water Management	DAY	125	516	1.0185 1.0185	\$0.65 \$525.55	\$212,866.50 \$65,582.84	\$15,074,309	35 36
3.10 3.11 3.12 4 4.1	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA	DAY MONTH	125 6	516 20,000	1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00	\$212,866.50 \$65,582.84 \$122,220.00		35 36 4 1 2, 37
3.10 3.11 3.12 4 4.1 5	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization	DAY MONTH TON	125 6 495,000	516 20,000 30	1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309	\$15,074,309 \$25,921	35 36 4 1 2, 3 1
3.10 3.11 3.12 4 4.1 5.1	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket	DAY MONTH TON EA	125 6	516 20,000 30 \$4,800.00	1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889		35 36 4 1 2, 37 1 4
3.10 3.11 3.12 4 4.1 5 5.1 5.2	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization	DAY MONTH TON	125 6 495,000 1	516 20,000 30 \$4,800.00 \$1,500.00	1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309		35 36 4 1 2, 37
3.10 3.11 3.12 4 4.1 5.1 5.2 5.3	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp	DAY MONTH TON EA EA	125 6 495,000 1 1	516 20,000 30 \$4,800.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528		35 36 4 1 2, 37 1 4 4
3.10 3.11 3.12 4 4.1 5.1 5.2 5.3 5.4 5.5	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader	DAY MONTH TON EA EA EA EA EA	125 6 495,000 1 1 2 1 4	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$3,000.00 \$100.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$3,055.50 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407		35 36 4 1 2, 3 1 4 4 4 4 4 3
3.10 3.11 3.12 4.1 5.1 5.2 5.3 5.4 5.5 5.6	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp	DAY MONTH TON EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$3,000.00 \$100.00 \$2,000.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074		35 36 4 1 2, 3 1 4 4 4 4 4 4 3 4
3.10 3.11 3.12 4.1 5.1 5.2 5.3 5.4 5.5 5.6 5.6 5.7	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity	DAY MONTH TON EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 2	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$3,000.00 \$1,00.00 \$2,000.00 \$600.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$225.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$3,055.50 \$101.85 \$2,037.00 \$611.10	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$15,074,309 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222		35 36 4 1 2,37 1 4 4 4 4 4 3 3 4 4
3.10 3.11 3.12 4.1 5.1 5.2 5.3 5.4 5.5 5.5 5.6 5.7 5.8	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity	DAY MONTH TON EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 2	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$600.00 \$1,500.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$4,074 \$1,222 \$3,056		35 36 4 1 2,3 1 4 4 4 4 4 4 4 4 4 4 4
4 4 4 5 5 5 5 5 5 5 5 5 5	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	DAY MONTH TON EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 2 1	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$2,000.00 \$2,000.00 \$1,500.00 \$10.00 \$100.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102		35 36 4 1 2, 3 1 4 4 4 4 4 4 4 4 4 4 3 3
3.10 3.11 3.12 4.1 5.1 5.2 5.3 5.4 5.5 5.6 5.7	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity	DAY MONTH TON EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 2	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$600.00 \$1,500.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$3,055.50 \$101.85 \$2,037.00 \$611.10 \$1,527.75	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$4,074 \$1,222 \$3,056		35 36 4 1 2, 3 1 4 4 4 4 4 4 4 4 4 4 4 3 3
3.10 3.11 3.12 4.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp	DAY MONTH TON EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 2 1	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$2,000.00 \$2,000.00 \$1,500.00 \$10.00 \$100.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102		35 36 4 1 2, 37 1 4 4 4 4 4 4 4 4 4 4 4 3 3
3.10 3.11 3.12 4.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Decer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting	DAY MONTH TON EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 4 2 2 2 2 1 1 1 1 12%	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$2,000.00 \$2,000.00 \$1,500.00 \$10.00 \$100.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$25,921 \$21,077,054 \$2,529,246	35 36 4 1 1 2, 3 1 4 4 4 4 4 4 4 3 3,12 3,12 3
3.10 3.11 3.12 4.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring	DAY MONTH TON EA EA EA EA EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 4 2 2 2 1 1 1 1 1 2 7%	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00 \$14,500.00 \$1,450.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$25,921 \$21,077,054 \$2,529,246 \$1,475,334	35 36 4 1 2,3 1 4 4 4 4 4 4 4 4 3 3,12
3.10 3.11 3.12 4.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring	DAY MONTH TON EA EA EA EA EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 1 1 2 1 1 1 1 2 2 1 1 1 1	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00 \$14,500.00 \$1,450.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$25,921 \$21,077,054 \$2,529,246 \$1,475,394 NA	$ \begin{array}{r} 35 \\ 36 \\ 4 \\ 1 \\ 2, 3 \\ 1 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 3 \\ 3,12 \\ 1 \\ 1 \\ 4 4 4 \\ $
3.10 3.11 3.12 4.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 2,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring	DAY MONTH TON EA EA EA EA EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 4 2 2 2 1 1 1 1 1 2 7%	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00 \$14,500.00 \$1,450.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$25,921 \$21,077,054 \$2,529,246 \$1,475,334	$ \begin{array}{r} 35 \\ 36 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 3 \\ 3,12 \\ 1 \\ 4 \\$
3.10 3.11 3.12 4.1 5.1 5.2 5.3 5.4 5.5 5.6 5.5 5.6 5.7 5.8 5.9	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Dozer, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring	DAY MONTH TON EA EA EA EA EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 1 1 2 1 1 1 1 2 2 1 1 1 1	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00 \$14,500.00 \$1,450.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$25,921 \$21,077,054 \$2,529,246 \$1,475,394 NA	$ \begin{array}{r} 35 \\ 36 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 3 \\ 3,12 \\ 1 \\ 4 \\$
4 4 4 5 5 5 5 5 5 5 5 5 5	Yard Locomotive Assorted Water Management Disposal Railcar transport to and tipping at Roosevelt, WA Demobilization Barge-mounted derrick crane, 100-ton, 7-cy bucket Tug, bow, diesel, 900-hp Barge-mounted derrick crane, 40-ton, 4-cy bucket Barge-mounted backhoe, 5-cy bucket Front-end loader Tug, push, diesel, 500-hp Barge, flat-deck, 2,000-ton capacity Barge, flat-deck, 6,000-ton capacity Decort, diesel, crawler, 100-hp Construction office teardown Subtotal Design, Engineering & Permitting Construction management and monitoring Long-term environmental monitoring Sales Taxes	DAY MONTH TON EA EA EA EA EA EA EA EA EA EA EA EA EA	125 6 495,000 1 1 2 1 4 2 2 1 1 2 1 1 1 1 2 2 1 1 1 1	516 20,000 30 \$4,800.00 \$1,500.00 \$3,000.00 \$100.00 \$100.00 \$100.00 \$100.00 \$14,500.00 \$1,450.00	1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185 1.0185	\$0.65 \$525.55 \$20,370.00 \$30.45 \$4,888.80 \$1,527.75 \$3,055.50 \$101.85 \$2,037.00 \$111.85 \$2,037.00 \$11.10 \$1,527.75 \$101.85	\$212,866.50 \$65,582.84 \$122,220.00 \$15,074,309 \$4,889 \$1,528 \$6,111 \$3,056 \$407 \$4,074 \$1,222 \$3,056 \$102	\$25,921 \$21,077,054 \$2,529,246 \$1,475,394 NA \$1,770,473	355 36 4 1 2,3 1 1 4 4 4 4 4 4 4 4 4 4 4 3 3,1; 1 1 4

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

ALTERNATIVE 8 - Phase 3

Dredge Area 7

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1
- 2 Supplier quote.

- 3 RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham.
- 4 Professional judgment based on previous projects
- Dredge contaminated sediment: $1700 \text{ cy/hr} \times 20 \text{ hr/day} = 3,400 \text{ cy/20-hr day}$ 7
- Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 20 hr or \$7,000/day totals \$9,225/day. 8
- Floodlights, trailer mounted with generator, 2-1,000 watt lights, rental @ \$1,000/month, operation @ \$100/day. 10
- \$1,000/month + (30 days/month x \$100/day) = \$4,000/month/ea x 4 ea = \$16,000/month. Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month) 11 = \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
- 12 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).
- 16 Assume two 6,000-ton barges available per dredge to transport contaminated sediment to offload, one tugs alternate to rotate barges between loading at waterway and unloading at offload site. Rental (2 ea x \$2000/ea/day barges + 1 ea x \$800/day tug) at \$4,800/day plus operations (1 ea
- x \$220/hr x 20 hr tug) at \$4,400/day for a total of \$9,200/day. Labor included in operations costs.
- 22 Overdredge sediment production rate: 1400 cy/20-hr day
- 23 Overdredge contaminated and uncontaminated sediment: backhoe dredge at \$1500/day plus operating costs of \$200/hr (equipment and personnel) x 20 hr or \$4,000/day totals \$5500/day.
- \$1500/day, 28 days/month 24
- Assume 20% moisture from one day production equals amount of water to be treated. Avg 1,500 cy/ shift * 0.2 * 27 cf/cy * 7.5 g/cf = 121,500 gpd = 84 gpm, say 100 gpm 27
- 28 Costs from 01590-800-0010, assumes 7 day/week operation
- 29 Costs from 01590-400-4400, assumes 7 day/week operation
- Costs from 02510-760-0900 30
- Filtration unit includes sand filters, pumps and controls. Requires 3-phase power to run the unit. Costs from Rain for Rent 31
- \$3,000 for a tote of chitosan, 275 gallons at 1% solution. Per vendor, dosage rate is 0.64 gal/hr at 100 gpm, consumption = 0.64 gal/hr*10 hr*292 shifts = 1869 gallons 32
- Assumes crane rental at \$2000/day, plus \$200/hr for operating cost, \$439 per 10 hour shift for operation, 2 10-hour shifts/day at avg 1200 CY / shift Assume offload at 170 CY/hr, need to move 1000 feet. At 5 CY/trip, 170 CY/hour is 2 min/trip. Use 2 loaders, allow 4 min/trip. Loaders (\$350/day rent, plus \$15/hr operate, plus \$40/hour 33
- 34 operator each) @3400 CY for 20 hours = \$0.85/CY
- 35 Assume 1 loader, operating 2 10-hour shifts/day, loading an average of 1200 CYD/sediment/shift
- 36 Costs from 01590-500-7000
- 37 Mechanically dredged sediments assumed to be 1.5 tons/in-situ cubic yard at disposal

Table B24 Alternative 8 - Phase 4a

Whatcom Waterway Remediation

Estimated Costs

ALTERNATIVE 8 - Phase 4a Dredge Areas 1A, 1B

ltem	Description	Unit	Quantity	Unit Cost (2004)	Cost Escalator 2004-2005	Unit Cost	Item Cost	Total Cost	Notes
					1.85%				
1	Mobilization							\$61,874	1
1.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889		4
1.2	Tug, bow, diesel, 900-hp	EA	1	\$1,500.00	1.0185	\$1,527.75	\$1,528		4
1.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	0	\$3,000.00	1.0185	\$3,055.50	\$0		4
1.4	Barge-mounted backhoe, 5-cy bucket	EA	0	\$40,000.00	1.0185	\$40,740.00	\$0		4
1.5	Front-end loader	EA	0	\$100.00	1.0185	\$101.85	\$0		3
1.6	Tug, push, diesel, 500-hp	EA	0	\$2,000.00	1.0185	\$2,037.00	\$0		4
1.7	Barge, flat-deck, 2,000-ton capacity	EA	0	\$700.00	1.0185	\$712.95	\$0		4
1.8	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
1.9	Dozer, diesel, crawler, 100-hp	EA	0	\$100.00	1.0185	\$101.85	\$0		3
1.1	Construction office setup	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12
1.11	Nonscheduled contract costs	EA	1	\$50,000.00	1.0185	\$50,925.00	\$50,925		4

2	Dredging							\$828,862	1
2.1	Dredge uncontaminated sediments (Areas 1A & 1B)	DAY	73	\$5,725.00	1.0185	\$5,830.91	\$426,683		6,8
	•		1 production	n dredge, 10-hr o	lays, 150 cy/h	nr production tota	I from the dredge)	
2.2	Construction office	MONTH	3	\$76,717.00	1.0185	\$78,136.26	\$259,895		11
2.3	Water Quality Monitoring	MONTH	3	42,000	1.0185	\$42,777.00	\$142,284		24
3	Transportation							\$1,073,228	1
3.1	Barge uncontaminated sediment to Rosario PSDDA Site	DAY	73	14,400	1.0185	\$14,666.40	\$1,073,228		15
4	Disposal							\$95,025	1
4.1	PSDDA Disposal Fee	TON	186,599	1	1.0185	\$0.51	\$95,025		
5	Demobilization							\$10,949	1
5.1	Barge-mounted derrick crane, 100-ton, 7-cy bucket	EA	1	\$4,800.00	1.0185	\$4,888.80	\$4,889		4
5.2	Tug, bow, diesel, 900-hp	EA	1	\$1,500.00	1.0185	\$1,527.75	\$1,528		4
5.3	Barge-mounted derrick crane, 40-ton, 4-cy bucket	EA	0	\$3,000.00	1.0185	\$3,055.50	\$0		4
5.4	Barge-mounted backhoe, 5-cy bucket	EA	0	\$40,000.00	1.0185	\$40,740.00	\$0		4
5.5	Front-end loader	EA	0	\$100.00	1.0185	\$101.85	\$0		3
5.6	Tug, push, diesel, 500-hp	EA	0	\$2,000.00	1.0185	\$2,037.00	\$0		4
5.7	Barge, flat-deck, 2,000-ton capacity	EA	0	\$600.00	1.0185	\$611.10	\$0		4
5.8	Barge, flat-deck, 6,000-ton capacity	EA	2	\$1,500.00	1.0185	\$1,527.75	\$3,056		4
5.9	Dozer, diesel, crawler, 100-hp	EA	0	\$100.00	1.0185	\$101.85	\$0		3
5.10	Construction office teardown	EA	1	\$1,450.00	1.0185	\$1,476.83	\$1,477		3,12

Subtotal		\$2,069,938	1
Design, Engineering & Permitting	12%	\$248,393	4
Construction management and monitoring	7%	\$144,896	4
Long-term environmental monitoring	included in Year 1	NA	
Sales Taxes	8.4%	\$173,875	
TOTAL Cost Excluding Construction Contingency	\$2,637,100		

Contingency @	30%	\$620,981	4

Total*

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes

- 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase) 1
- 2 Supplier quote.
- RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham. 3

4 Professional judgment based on previous projects.

- Dredge uncontaminated sediment: 1500 cy/hr x 10 hr/day x 1 = 1,500 cy/10-hr day 6
- Big (100-ton) dredge at \$2,225/day plus operating costs of \$350/hr (equipment and personnel) x 10 hr or \$3,500/day totals \$5,725/day. 8
- Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$787/10-hr shift x 30 days/month 11 \$23,610/month), 2-foremen (\$515/ea/10-hr shift x 30 day/month x 2 ea = \$30,900/month), 2-clerks (\$146/ea/10-hr shift x 30 day/month x 2 ea = \$8,760), 1-timekeeper (\$401/ea/10-hr shift x 30 days/month = \$12,030/month) for a total of \$76,717/month.
 Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106).

Assume two 6,000-ton barges available to transport uncontaminated sediment to PSDDA site, two tugs alternate to rotate barges between loading at waterway and unloading at habitat berm sites. Rental (2 ea x \$2000/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$200/ea/day barges + 2 ea x \$800/day tug) at \$5,600/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$200/ea/day barges + 2 ea x \$800/ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$200/ea/day barges + 2 ea x \$800/ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$220/hr x 20 hr tug) at \$8,800/day plus operations (2 ea x \$200/ea/day barges + 2 ea x \$800/ea x \$220/hr x 20 hr tug) at \$8,800/ea x \$200/ea/day barges + 2 ea x \$800/ea x \$200/ea x \$200/ea/day barges + 2 ea x \$800/ea x \$200/ea x \$ 15

24 \$1500/day, 28 days/month

\$3,258,082

1

Table B25 Alternative 8 - Phase 4b

Whatcom Waterway Remediation Estimated Costs

ALTERNATIVE 8 - Year 4 Removal within the ASB Dredge Area 8

ltem	Description	Unit	Quantity	Unit Cost	Item Cost	Total Cost	Notes
						• • • • • • • • • • •	
1	ASB Dredging (See ASB - Construction Subtotal)	LS	1	\$21,602,915	\$21,602,915	\$21,602,915	
	Subtotal					\$21,602,915	
	Design, Engineering & Permitting		LS			\$1,850,000	
	Construction management and monitoring		7%			\$1,512,204	
	Sales Taxes		8.4%			\$1,814,645	
	TOTAL Cost Excluding Construction Contingency					\$26,779,764	
	Contingency @		30%			\$6,480,875	
	Total*					\$33,260,639	

* Exclusions include land costs for staging area, mitigation, legal costs associated with deed restrictions and property owner agreements, and litigation costs.

Notes 2005 dollars, based on escalating 2004 unit costs by 1.85% (RS Means Construction Cost Increase)

Table B26 ASB Estimate

Whatcom Waterway - ASB Remediation (Area 8) Estimated Costs

				Unit Cost	Cost Escalator				
Item	Description	Unit	Quantity	(2004)	(2004-2005)	Unit Cost	Item Cost	Total Cost	Notes
1	Mobilization				1.85%			\$95,759	1
1.1	Hydraulic Dredge	EA	2	3,260	1.0185	\$3,320.31	\$6,641	\$55,155	4
1.2	Pumping equipment	EA	3	100	1.0185	\$101.85	\$306		2
1.3	Bulldozer	EA	4	100	1.0185	\$101.85	\$407		2
<u>1.4</u> 1.5	Crane Front-end loader	EA EA	1 4	250 100	1.0185 1.0185	\$254.63 \$101.85	\$255 \$407		3
1.6	Excavator	EA	2	100	1.0185	\$101.85	\$204		2
1.7	Conveyor system	EA	1	200	1.0185	\$203.70	\$204		2
1.8	Pipe	EA	3	100	1.0185	\$101.85	\$306		3
1.9	Dewatering centrifuge	EA	2	27,000	1.0185	\$27,499.50	\$54,999		2
1.10	Construction office setup Equipment vard preparation	EA EA	1	1,450 30,000	1.0185	\$1,476.83 \$30,555.00	\$1,477 \$30,555		3,12
		273	•	00,000		400,000.00	400,000	AA AAA 407	
2.1	Site Preparation Demo sheet pile weir	DAY	27	5,000	1.0185	\$5,092.50	\$137,498	\$3,802,107	1 3
2.1	Demo sneet pile weil Demo aerators	EA	2,023	25	1.0185	\$25.58	\$51,758		2,3,15
2.3	Layout 18" pipeline to dewatering facility	LF	1,300	47	1.0185	\$48.01	\$62,416		3
2.4	Layout 12" pipeline to dredge	LF	2,000	23	1.0185	\$23.66	\$47,320		3
2.5	Pump setup	EA	3	200	1.0185	\$203.70	\$611		4
2.6	Pump lagoon to elev. +3' Pump rental	DAY MONTH	39 7	900 6,000	1.0185 1.0185	\$916.65 \$6,111.00	\$35,749 \$41,546		2,6 2, 27
2.7	Setup dredges using truck crane	EA	2	2,302	1.0185	\$6,111.00	\$41,546		2, 27
2.9	Construct gravel ramps	CY	1,200	23	1.0185	\$23.43	\$28,111		4
2.10	Remove top of berm to +16 and inside of berms to +10	CY	48,000	4	1.0185	\$4.07	\$195,552		2, 24
2.11	Transport removed material to load/stockpile site	CY	48,000	3	1.0185	\$3.06	\$146,664		22, 24
2.12	Load onto barge or stockpile	CY	48,000	1	1.0185	\$0.63	\$30,148		23, 24
2.13	Pile driving equipment and labor, including setup Steel sheet piling (to be salvaged)	DAY SF	180 180,000	6,473 10	1.0185 1.0185	\$6,593.04 \$10.19	\$1,186,746 \$1,833,300		3
		01	100,000	10	1.0100	φ10.10	φ1,000,000		0
3	Sludge Removal	01/	378.000	0	4 0405	CO 04	©005 404	\$1,485,818	1
3.1	Hydraulic Dredging Pipe rerouting	CY DAY	130	2 712	1.0185 1.0185	\$2.34 \$725.17	\$885,484 \$94,522		4,8 4,10
3.3	Bulldozer anchors	MONTH	7	32,921	1.0185	\$33,530.04	\$227,954		2,7,9
3.4	Construction office	MONTH	7	40,128	1.0185	\$40,870.37	\$277,857		3,7,11
4	Sludge Dewatering							\$3,785,869	1
4.1	Centrifuge chemicals	CY	378,000	6	1.0185	\$5.94	\$2,244,509	43,703,003	2
4.2	Centrifuge processing	CY	378,000	4	1.0185	\$3.92	\$1,482,223		2
4.3	Rent Clarifier	MONTH	6	3,000	1.0185	\$3,055.50	\$18,103		4
4.4	Operate Clarifier	MONTH	6	6,800	1.0185	\$6,925.80	\$41,034		4
5	Sludge Handling/Transfer							\$114,665	1
5.1	Conveyor system	MONTH	6	3,222	1.0185	\$3,281.61	\$19,443		2,16
5.2	Front-end loader	MONTH	6	15,780	1.0185	\$16,071.93	\$95,222		2
6	Sludge Transportation & Disposal							\$6,166,829	1
6.1	2-20' boxes (30 ton/box) railcars to Roosevelt	TON	202,502	30	1.0185	\$30.45	\$6,166,829		2, 25
7	Debris Transportation & Disposal							\$99,218	1
7.1	Truck debris to county landfill	TON	2,645	27	1.0185	\$27.33	\$72,278		3,13,14,17
7.2	Debris disposal	TON	2,645	10	1.0185	\$10.19	\$26,939		2,14,17
8	Demolition							\$58,055	1
8.1	Outfall outlet structure	EA	1	27,000	1.0185	\$27,499.50	\$27,500		4
8.2	Plug outfall under breakwater	EA	1	30,000	1.0185	\$30,555.00	\$30,555		4
9	Sediment Transportation & Disposal					A	A / = 0	\$2,330,154	1
9.1	Excavate sediment down to elevations -15' to -16'	CY	38,444	4	1.0185	\$4.07	\$156,623		2
9.2 9.3	Truck roundtrip 20' boxes from lagoon to railcars Toplift boxes to railcars, then empty onto truck	CY CY	38,444 38,444	2	1.0185 1.0185	\$2.17 \$8.69	\$83,402 \$333,998		19,21 19,20
9.4	2-20' boxes (30 ton/box) railcars to Roosevelt	TON	57,667	30	1.0185	\$30.45	\$1,756,132		2, 26
			,	-			,		
10	Discharge to POTW	<u> </u>	70.0		4	***	00 0	\$1,088,364	1
10.1	From +3' to "dry" Rainwater from lagoon	CCF CCF	70,865 50,000	14 2	1.0185	\$13.77	\$975,820 \$112,544		2,18 2
10.2	· ·	UUF	50,000	2	1.0185	\$2.25	\$112,544		۷
	Remove Materials from Berm for Waterway Use	<u> </u>	170 000		4.0107	6 4 - -	0000 TO 0	\$1,897,805	0.01
11.1	Excavate Materials Transport to barge loading site	CY CY	170,000	4	1.0185	\$4.07	\$692,580 \$510,435		2, 24
<u>11.2</u> 11.3	Stockpile or Load onto barge	CY	170,000	<u> </u>	1.0185 1.0185	\$3.06 \$0.63	\$519,435 \$106,773		22, 24 23, 24
11.4	Barge movement from loading area to capping area	DAY	85	6,100	1.0185	\$6,212.85	\$528,092		29,30
11.5	Site Controls	LS	1	50,000	1.0185	\$50,925.00	\$50,925		

Table B26 ASB Estimate

Whatcom Waterway - ASB Remediation (Area 8)

Estimated Costs

12	Demobilization							\$678,274	1
12.1	Pile extraction equipment and labor	DAY	120	5,000	1.0185	\$5,092.50	\$611,100		3
12.2	Excavator	LS	1	300	1.0185	\$305.55	\$306		2
12.3	Pile driving equipment	LS	1	25,000	1.0185	\$25,462.50	\$25,463		3
12.4	Hydraulic Dredge	EA	2	4,902	1.0185	\$4,992.69	\$9,985		4
12.5	Bulldozer	EA	4	100	1.0185	\$101.85	\$407		2
12.6	Crane	EA	1	250	1.0185	\$254.63	\$255		3
12.7	Front-end loader	EA	2	100	1.0185	\$101.85	\$204		2
12.8	Conveyor system	LS	1	200	1.0185	\$203.70	\$204		2
12.9	Pumping equipment	EA	3	100	1.0185	\$101.85	\$306		2
12.10	Dewatering centrifuge	EA	1	25,000	1.0185	\$25,462.50	\$25,463		2
12.11	Construction office teardown	EA	1	4,500	1.0185	\$4,583.25	\$4,583		3,12
	Subtotal							\$21,602,915	1
	Engineering & Permitting		LS					\$1,850,000	4
	Construction management and Monitoring		7%					\$1,512,204	4, 28
	Sales Tax		8.4%					\$1,814,645	4
	TOTAL Cost Excluding Construction Contingency							\$26,779,764	

Contingency	30%	\$6,480,875
Total		\$33,260,639

Notes

- 2005 dollars, based on escalating 2004 unit costs by 1,85% (RS Means Construction Cost Increase)
- 2 Supplier quote.
- RSMeans Heavy Construction Cost Data 2004 with cost index of 110% for Bellingham. 3
- 4 Professional judgment.
- Dredge setup includes truck crane (\$1,100), crane operator (\$307), dredge leverman (\$319), and dredge deckhand (\$304) working 1-8 hr day 5 with crane operations (8 hr x \$34/hr = \$272) per each machine, or \$2,302/ea.
- 6 Assume water volume =~ 145,500,000gal; assume 6" pump operating 20hr/day at 1,600gpm pumps ~1,900,000gal/day, allow 77 days or 3 months. MP&E rental at \$2,000/month per each; maintenance mechanic at \$400/10-hr day; each pump operates at \$5/hr or \$100/day; assume 2 mechanics to cover 20 hr/day x \$400/day plus \$100/day operating cost for a total of \$900/day;
- assume two pumps operating full time requires 39 days to pump down, third pump on standby, alternate pumps daily; 378,000 cy of sludge to remove; 2 dredges at 145 cy/hr x 10 hr/day x 20 day/month = 58,000 cy/month, so allow 7 months.
- 8
- Dredge operations include rental (\$3,32.89/day), operations (10 hours/day)
- (1 ea @ 8 hr/day @ 219 days x \$319/8hr-day = \$69,861), dredge deckhand (1 ea @ 8 hr/day @ 219 days x \$304/8hr-day = \$66,576), dredge oiler (1 ea @ 8 hr/day @ 219 days x \$305/8hr-day = \$66,795) for a total of \$772,632/dredge x 2 ea = \$1,545,264/350,000 cy is \$4.42/cy. Anchor dozers (2 dozers ea dredge x 11 months x \$3,900/month + 2 ea x 219 days x 4 hr operating/day x \$16/hr + 1 dozer operators x 219 days
- 9 x \$307/8-hr day = \$181,065/ dredge) for 2 dredges per month (2 x \$181,065 / 11 months) is \$32,921/month.
- Pipe rerouting includes a dredge mate and a general laborer working each shift to move pipe (1 shift/day x (\$307/shift + \$255/shift) = \$562/day) 10 plus a skiff (\$150/day) for a total of \$712/day.
- Construction office includes rental (\$350/month), utilities and equipment (\$630/month), 1-superintendent (\$572/8-hr shift x 22 days/month) 11 = \$12,584/month), 2-foremen (\$374/ea/8-hr shift x 22 day/month x 2 ea = \$16,456/month), 2-clerks (\$106/ea/8-hr shift x 22 day/month x 2 ea = \$4,664), 1-timekeeper (\$292/ea/8-hr shift x 22 days/month = \$6,424/month) for a total of \$40,128/month.
- Office setup or teardown includes 1-day time for 1-superintendent (\$572), 1- foreman (\$374) 1-timekeeper (\$292), 2-clerks (2 x \$106). 12
- Debris disposal assumes 4 trips to the landfill per day: truck (rental @ \$300/day, operation cost @ \$22/hr x 8 hr/day = \$176/day, and driver @ \$155/day), 13 front-end loader (rental @ \$167/day, operation @ \$176/day, operator @ \$314/day) for a total of \$1,288/day; assuming 4-round trips per day at 12 ton/trip = \$26 83/ton
- 14 Demolition debris assumes 600 ton of wood piling, 50 ton of concrete anchors, 25 ton of plastic aerators and rope, 2,000 tons of asphalt, 20 tons of plastic pipe, 30 tons of aluminum pipe, 10 tons of miscellaneous debris. A total of 2,135 tons of demolition debris.
- 15 Assume team of 1 foreman (\$48/hr) and 4 laborers (\$32/hr) pulling 6 aerators and ancillary equipment per hour, working from powered barge (\$500/Day): Foreman at \$48/hr x 8 hr/day = \$384

Labor at \$32/hr x 4 ea x 8 hr/day = \$1,024

Barge at \$500/day = \$500

Total = \$1,908/day, and at 6 aerators/hr x 8 hr/day = 48 ea/day

\$1,908/day divided by 48 ea/day = \$39.75/ea.

- 16 Conveyor cake from dewatering facility to railcars: assume 3 ea (rental @ \$1,000/ea/month, operations at \$0.42/ea/hr x 8 hr/day x 22 days/month) at \$1,074/ea/month, or for 3 at total of \$3,222/month.
- Outlet structure debris assume 30' dia x 1' thick x 50' high x 155 pcf + ramp of 4' wide x 1' thick x 60' long x 155 pcf = 388 ton; outfall pipe under 17 berm assume 5' dia x 6" thick x 200' long x 155 pcf = 122 ton; total of 510 ton of debris.
- Assume 53,000,000 gal to pump (from +3' to "dry") to POTW. This is ~71,000 ccf x \$2.21/ccf = \$156,900. Assume monthly average of 18 6.25 lb BOD/1,000 lb of effluent, and monthly average of 5.0 lb TSS/1,000 lb of effluent.
- Assume each truck hauls 20 cy (30 ton)/trip, with 6 trucks making 10 trips/day yields 1,200 cy/day. 19
- Toplift rental and operation at \$1,600/day and ILWU gang labor [(\$8,636/day) at total of \$10,236/day, or \$10,236/day//1,200 cv/day is \$8,53/cv. 20
- Truck rental and operation (\$270/ea/day x 6 ea) at \$1,620/day and labor [(\$155/day x 6 ea) at \$930/day for total of \$2,550/day, or \$2.13/cy. 21
- Assumes 6 trucks at 10 trips ea/day at \$75/hr for 1200 cy/day = \$3/cy 22
- Assumes loader at \$250/day rental, operator at \$334/day, and operating cost at \$22/hr. For 8 hours days, 1200 cy/day = \$0.62/cy 23
- Assumes that all types of berm materials moved at same rates 24
- formula based on .177 in-situ wet density x .908 total tons/total CY = .161 tons solid/ total CY
- 25 then multiply by total CY to get total solids, and make up total tonnage based on 30% by weight solids (i.e. divide by 0.3)
- Assumes 1.5 T sediment shipped In-situ CY excavated 26
- 27 3 pumps * 39 days each = 4 months + 2 months for final dewatering = 6 months
- Assumes design & permitting are conducted jointly with the Whatcom Waterway cleanup work and with the design & permitting of future ASB marina. Higher costs for independe 28 work
- Capping sand transport to site by barge at 2,000 ton/trip/1.5 ton/cy = 1,300 cy/trip; assume trip takes 1/2 hr; unload 1,300 cy @ 100 cy/hr in 13 hr 29
- Assume two 2,000-ton barge and one tug combinations to bring capping sand to waterway. Cost each combination for rental (\$800/day 30 (\$800/day barge + \$500/day tug) at \$2,100/day plus operations (\$200/hr x 20 hr tug) at \$4,000/day for a total of \$6,100/day. Labor included in operations cost.

4 1

Appendix B – Addendum 1 Whatcom Waterway Remediation -- Log Pond Shoreline Enhancements Estimated Costs

REMEDIAL COST ELEMENTS	COSTS ASSUMING ASB MATERIAL REUSE								COSTS ASSUMING NO ASB MATERIAL REUSE							
	Quantity L	Jnits	Uni	t Cost	Pro	obable Cos	ts		Quantity	Units	Ur	it Cost	Pro	obable Cos	sts	
REMEDIAL CONSTRUCTION COSTS																
Mobilization, Demobilization, Non-Scheduled Contract Demolition	10 %	6	\$	329,889	\$	32,989			1	10 %	\$	475,387	\$	47,539		
Removal of pilings, debris Beach Stabilization & Enhancement Western Groin (Armor Stone)	1 ti	otal est.	\$	15,000	\$	15,000				1 total est.	\$	15,000	\$	15,000		
Material Placement	2,400 c	by:	\$	7	\$	16,800			2 40	00 cyd	\$	7	\$	16.800		
Material Purchase & Delivery	3.600 t		\$	- '	\$	-				0 ton	\$	23		82.800		
Eastern Groin (Armor Stone)	-,		Ŧ		+				-,		Ŧ		Ŧ	,		
Material Placement	533 c	yd	\$	7	\$	3,731			53	33 cyd	\$	7	\$	3,731		
Material Purchase & Delivery	800 t	on	\$	-	\$	-			80	00 ton	\$	23	\$	18,389		
Central Groin (Armor Stone)																
Material Placement	770 c	;yd	\$	7	\$	5,390			77	70 cyd	\$	7	\$	5,390		
Material Purchase & Delivery	1,155 t	on	\$	3	\$	3,465			1,15	55 ton	\$	23	\$	26,565		
Type 1 Material (Fine Gravel Mix)																
Material Placement	5,247 c	;yd	\$	7	\$	36,729			5,24	17 cyd	\$	7		36,729		
Material Purchase & Delivery	7,871 t	on	\$	18	\$	141,669			7,87	71 ton	\$	18	\$	141,669		
Type 2 Material (Coarse Gravel Mix)																
Material Placement	2,911 c	;yd	\$	7	\$	20,377			2,91	l1 cyd	\$		\$	20,377		
Material Purchase & Delivery	4,367 t	on	\$	18	\$	78,597			4,36	67 ton	\$	18	\$	78,597		
Type 3 Material (Stone)																
Material Placement	707 c	;yd	\$	7	\$	4,949			70)7 cyd	\$		\$	4,949		
Material Purchase & Delivery	1,061 t	on	\$	3	\$	3,182			1,06	61 ton	\$	23	\$	24,392		
	CONSTRUCTION SUBTOTAL						\$	362,877	CONSTRUCTION SUBTOTAL					\$	522,926	
ENGINEERING & REGULATORY							\$	157,209							\$	208,905
Design, Permitting (12%)	12% c	of Construction	on C	osts	\$	43,545	•	- ,	12	% of Constru	uction	Costs	\$	62.751	•	
Construction Management & Monitoring (7%)		of Construction			\$	43,545				% of Constru			\$	62.751		
Additional Bathymetric Monitoring Events			\$	20,000		40,000				2 total est.	\$	20,000		40,000		
WSST (8.3%)		of Construction		,	\$	30,119			8.3	% of Constru		,	\$	43,403		
TOTAL EXCLUDING CONTINGENCY							\$	520,087							\$	731,831
CONTINGENCY (30%)							\$	156,026							\$	219,549
TOTAL INCLUDING CONTINGENCY							\$	676,113							\$	951,380

Notes:

Costs for design and permitting assume that the work is completed as part of the design & permitting of the Whatcom Waterway site final remedial action.