

**APPENDIX C**

**I-70 SEDIMENT CONTROL ACTION PLAN**

**BLACK GORE CREEK COST ESTIMATE – 2002**

# I-70 Sediment Control Action Plan Black Gore Creek

## Cost Estimate - 2002

Colorado Dept. of Transportation

Cost Estimate - 2002						
Cost Estimate Summary Capital Improvements						
Black Gore Creek						
Item	Description	Unit	Quantity	Cost Option 1	Cost Option 2	Page
1	Sediment Basins					
	Option 1: Large and Small Off-Template Basins	EACH	122	\$ 3,050,000.00		3 to 5
	Below Grade Traps	EACH	83	\$ 1,160,340.00		
	Option 2: Below Grade Traps	EACH	253		\$ 3,536,940.00	
2	Valley Pan & Type 7 Guardrail	Miles	7.355	\$ 3,462,345.66	\$ 3,462,345.66	6,7
3	Inlets	EACH	30	\$ 161,890.24	\$ 161,890.24	8
4	Knee Wall	Miles	9.295	\$ 3,517,826.51	\$ 3,517,826.51	9
5	Pipe Rundowns & Energy Dissipaters	LF	3250	\$ 325,000.00	\$ 325,000.00	10
6	Snow Storage Zone	TON	3775.2	\$ 247,517.60	\$ 247,517.60	11
7	Retaining Walls Under Bridges	LS	24	\$ 660,000.00	\$ 660,000.00	12
	Cost Breakdown					13,14
8	Traffic Control 10%	LS	1	\$ 1,258,492.00	\$ 1,191,152.00	
9	Incidentals 20%	LS	1	\$ 2,516,984.00	\$ 2,382,304.00	
10	Inflation - 10% Year	LS	1	\$ 1,258,492.00	\$ 1,191,152.00	
11	Preliminary Eng - 5%	LS	1	\$ 629,246.00	\$ 595,576.00	
12	CE Costs - 17.5%	LS	1	\$ 2,202,361.00	\$ 2,084,516.00	
	<b>Total</b>		<b>Total</b>	<b>\$ 20,450,495.01</b>	<b>\$ 19,356,220.01</b>	

**Sediment Basins - Black Gore Creek**

Labeled from East to West

Assuming 15,000 tons/year average sand application

Double volume estimate applied from Polk Creek to Vail Pass (4.5 miles)

80% trap efficiency

Assume large basins constructed at 150cy capacity and small basins at 60cy capacity

Assume below grade traps at 59cy capacity each (8W x 50L x 4D)

Assume the Bgrade traps cost \$13,890 per Unit - see analysis page

Milepoint	Lane	Dist. (miles)	Dist. (feet)	Treatment	No. Units	Dist. Upstream from MP	Volume Gen-erated	Volume Cap-tured	Safety Margin	Cost per Unit	Estimated Cost
189.55-189.8	WB	0.25	1320	Large Basin	2		280	240	0.86	25000	\$ 50,000.00
	WBoptiona	0.25	1320	BgradeTraps	6	300	280	283	1.01	\$ 13,890.00	\$ 83,340.00
189.75-189.85	EB	0.10	528	Large Basin	1		112	120	1.07	25000	\$ 25,000.00
189.5-189.75	EB	0.25	1320	BgradeTraps	4	200	280	189	0.67	\$ 13,890.00	\$ 55,560.00
	EB	0.25	1320	Large Basin	1		280	120	0.43	25000	\$ 25,000.00
189.4-189.55	WB	0.15	792	Small Basin	3		168	144	0.86	25000	\$ 75,000.00
	WBoptiona	0.15	792	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
189.3-189.35	WB	0.05	264	Shed Basin	1		56	48	0.86	25000	\$ 25,000.00
189.2-189.3	WB	0.10	528	Large Basin	1		112	120	1.07	25000	\$ 25,000.00
189.2-189.35	WB	0.15	792	Large Basin	1		168	120	0.71	25000	\$ 25,000.00
189.05-189.2	WB	0.15	792	Large Basin	2		168	240	1.43	25000	\$ 50,000.00
189.05-189.3	EB	0.25	1320	Large Basin	2		280	240	0.86	25000	\$ 50,000.00
	EBoptional	0.25	1320	BgradeTraps	6	300	280	283	1.01	\$ 13,890.00	\$ 83,340.00
188.65-189.0	WB	0.35	1848	Large Basin	3		392	360	0.92	25000	\$ 75,000.00
	WBoptiona	0.35	1848	BgradeTraps	9	450	392	425	1.08	\$ 13,890.00	\$ 125,010.00
	EB	0.35	1848	Large Basin	1		392	120	0.31	25000	\$ 25,000.00
	EB	0.35	1848	BgradeTraps	6	300	392	283	0.72	58000	\$ 348,000.00
188.35-188.65	WB	0.35	1848	Large Basin	3		392	360	0.92	25000	\$ 75,000.00
	WBoptiona	0.35	1848	BgradeTraps	9	450	392	425	1.08	\$ 13,890.00	\$ 125,010.00
188.4-188.65	EB	0.25	1320	Large Basin	2		280	240	0.86	25000	\$ 50,000.00
	EBoptional	0.25	1320	BgradeTraps	6	300	280	283	1.01	\$ 13,890.00	\$ 83,340.00
188.0-188.3	WB	0.30	1584	Large Basin	2		336	240	0.71	25000	\$ 50,000.00
	WBoptiona	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
188.1-188.4	EB	0.30	1584	Large Basin	3		336	360	1.07	25000	\$ 75,000.00
	EBoptional	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
187.8-188.0	WB	0.20	1056	BgradeTraps	5	250	224	236	1.05	\$ 13,890.00	\$ 69,450.00
187.8-188.4	EB	0.30	1584	Large Basin	1		336	120	0.36	25000	\$ 25,000.00
	EB	0.30	1584	BgradeTraps	5	250	336	236	0.70	13890	\$ 69,450.00
										\$ 13,890.00	
187.45-187.6	WB	0.35	1848	Large Basin	1		392	120	0.31	25000	\$ 25,000.00
	EB	0.35	1848	BgradeTraps	6	300	392	283	0.72	\$ 13,890.00	\$ 83,340.00
187.6-187.8	EB	0.20	1056	Large Basin	1		224	120	0.54	25000	\$ 25,000.00
	EB	0.20	1056	BgradeTraps	3	150	224	142	0.63	\$ 13,890.00	\$ 41,670.00
187.35-187.45	WB	0.10	528	Large Basin	1		112	120	1.07	25000	\$ 25,000.00
	WBoptiona	0.15	792	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
187.3-187.6	EB	0.30	1584	Large Basin	3		336	360	1.07	25000	\$ 75,000.00
187.0-187.3	WB	0.30	1584	Large Basin	3		336	360	1.07	25000	\$ 75,000.00
	WBoptiona	0.30	1584	BgradeTraps	7	350	336	330	0.98	\$ 13,890.00	\$ 97,230.00
	EB	0.30	1584	Large Basin	1		336	120	0.36	25000	\$ 25,000.00
	EB	0.30	1584	BgradeTraps	5	250	336	236	0.70	\$ 13,890.00	\$ 69,450.00
186.7-187.0	WB	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
	EB	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
186.4-186.7	WB	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
	EB	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
186.1-186.4	WB	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
Super to WB	EB	0.30	1584	Large Basin	2		336	240	0.71	25000	\$ 50,000.00
	EBoptional	0.30	1584	BgradeTraps	5	250	336	236	0.70	\$ 13,890.00	\$ 69,450.00
185.9-186.1	WB	0.20	1056	Large Basin	2		224	240	1.07	25000	\$ 50,000.00
	WBoptiona	0.20	1056	BgradeTraps	5	250	224	236	1.05	\$ 13,890.00	\$ 69,450.00
185.95-186.1	EB	0.15	792	Large Basin	1		168	120	0.71	25000	\$ 25,000.00
Super to WB	EBoptional	0.15	792	BgradeTraps	2	100	168	94	0.56	\$ 13,890.00	\$ 27,780.00
185.85-185.95	EB	0.10	528	Large Basin	1		112	120	1.07	25000	\$ 25,000.00
185.8-185.85	EB	0.05	264	Small Basin	1		56	48	0.86	25000	\$ 25,000.00

185.6-185.9	WB	0.30	1584	Large Basin	3		336	360	1.07	25000	\$ 75,000.00
	WBoptiona	0.30	1584	BgradeTraps	8	400	336	378	1.12	58000	\$ 464,000.00
185.6-185.8	EB	0.20	1056	Small Basin	1		224	48	0.21	25000	\$ 25,000.00
	EB	0.20	1056	BgradeTraps	4	200	224	189	0.84	\$ 13,890.00	\$ 55,560.00
185.3-185.6	WB	0.30	1584	Large Basin	3		336	360	1.07	25000	\$ 75,000.00
	WBoptiona	0.30	1584	BgradeTraps	8	400	336	378	1.12	\$ 13,890.00	\$ 111,120.00
185.4-185.6	EB	0.20	1056	BgradeTraps	5	250	224	236	1.05	\$ 13,890.00	\$ 69,450.00
184.9-185.2	WB	0.30	1584	Large Basin	2		168	240	1.43	25000	\$ 50,000.00
	WBoptiona	0.30	1584	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
	EB	0.30	1584	Small Basin	4		168	192	1.14	25000	\$ 100,000.00
	EBoptional	0.30	1584	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
184.75-184.8	WB	0.05	264	Small Basin	1		28	48	1.71	25000	\$ 25,000.00
	WBoptiona	0.05	264	BgradeTraps	1	50	28	47	1.69	\$ 13,890.00	\$ 13,890.00
184.55-184.75	WB	0.20	1056	Small Basin	3		112	144	1.29	25000	\$ 75,000.00
	WBoptiona	0.20	1056	BgradeTraps	3	150	112	142	1.26	\$ 13,890.00	\$ 41,670.00
184.45-184.55	WB	0.10	528	Small Basin	2		56	96	1.71	25000	\$ 50,000.00
	WBoptiona	0.10	528	BgradeTraps	2	100	56	94	1.69	\$ 13,890.00	\$ 27,780.00
184.6-184.8	EB	0.20	1056	Small Basin	3		112	144	1.29	25000	\$ 75,000.00
	EBoptional	0.20	1056	BgradeTraps	3	150	112	142	1.26	\$ 13,890.00	\$ 41,670.00
184.45-184.6	EB	0.15	792	Small Basin	2		84	96	1.14	25000	\$ 50,000.00
	EBoptional	0.15	792	BgradeTraps	2	100	84	94	1.12	\$ 13,890.00	\$ 27,780.00
184.2-184.3	WB	0.10	528	Small Basin	2		56	96	1.71	25000	\$ 50,000.00
	WBoptiona	0.10	528	BgradeTraps	2	100	56	94	1.69	\$ 13,890.00	\$ 27,780.00
184.1-184.3	EB	0.20	1056	Small Basin	3		112	144	1.29	25000	\$ 75,000.00
	EBoptional	0.20	1056	BgradeTraps	3	150	112	142	1.26	\$ 13,890.00	\$ 41,670.00
183.6-183.9	WB	0.30	1584	Small Basin	4		168	192	1.14	25000	\$ 100,000.00
	WBoptiona	0.30	1584	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
183.8-183.9	EB	0.10	528	Small Basin	2		56	96	1.71	25000	\$ 50,000.00
	EBoptional	0.10	528	BgradeTraps	2	100	56	94	1.69	\$ 13,890.00	\$ 27,780.00
183.65-183.8	EB	0.15	792	Small Basin	2		84	96	1.14	25000	\$ 50,000.00
	EBoptional	0.15	792	BgradeTraps	2	100	84	94	1.12	\$ 13,890.00	\$ 27,780.00
183.35-183.6	WB	0.25	1320	Small Basin	3		140	144	1.03	25000	\$ 75,000.00
	WBoptiona	0.25	1320	BgradeTraps	3	150	140	142	1.01	\$ 13,890.00	\$ 41,670.00
183.5-183.65	EB	0.15	792	Small Basin	2		84	96	1.14	\$ 25,000.00	\$ 50,000.00
	EBoptional	0.15	792	BgradeTraps	2	100	84	94	1.12	\$ 13,890.00	\$ 27,780.00
183.25-183.5	EB	0.25	1320	Small Basin	3		140	144	1.03	25000	\$ 75,000.00
	EBoptional	0.25	1320	BgradeTraps	3	150	140	142	1.01	\$ 13,890.00	\$ 41,670.00
182.95-183.35	WB	0.40	2112	Large Basin	2		224	240	1.07	25000	\$ 50,000.00
	WBoptiona	0.40	2112	BgradeTraps	5	250	224	236	1.05	\$ 13,890.00	\$ 69,450.00
183.05-183.25	EB	0.20	1056	Small Basin	2		112	96	0.86	25000	\$ 50,000.00
	EBoptional	0.20	1056	BgradeTraps	2	100	112	94	0.84	\$ 13,890.00	\$ 27,780.00
182.8-183.0	EB	0.20	1056	Small Basin	3		112	144	1.29	25000	\$ 75,000.00
	EBoptional	0.20	1056	BgradeTraps	3	150	112	142	1.26	\$ 13,890.00	\$ 41,670.00
182.5-182.8	EB	0.30	1584	Small Basin	4		168	192	1.14	25000	\$ 100,000.00
	EBoptional	0.30	1584	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
182.15-182.4	WB	0.25	1320	Small Basin	3		140	144	1.03	25000	\$ 75,000.00
	WBoptiona	0.25	1320	BgradeTraps	3	150	140	142	1.01	\$ 13,890.00	\$ 41,670.00
182.3-182.4	EB	0.10	528	Small Basin	2		56	96	1.71	25000	\$ 50,000.00
	EBoptional	0.10	528	BgradeTraps	2	100	56	94	1.69	\$ 13,890.00	\$ 27,780.00
182.0-182.15	WB	0.15	792	Small Basin	2		84	96	1.14	25000	\$ 50,000.00
	WBoptiona	0.15	792	BgradeTraps	2	100	84	94	1.12	\$ 13,890.00	\$ 27,780.00
182.0-182.3	EB	0.30	1584	Small Basin	4		168	192	1.14	25000	\$ 100,000.00
	EBoptional	0.30	1584	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
181.25-181.5	WB	0.25	1320	Small Basin	3		140	144	1.03	25000	\$ 75,000.00
	WBoptiona	0.25	1320	BgradeTraps	3	150	140	142	1.01	\$ 13,890.00	\$ 41,670.00
181.0-181.25	WB	0.25	1320	Small Basin	3		140	144	1.03	25000	\$ 75,000.00
	WBoptiona	0.25	1320	BgradeTraps	3	150	140	142	1.01	\$ 13,890.00	\$ 41,670.00
180.2-180.5	WB	0.30	1584	Small Basin	4		168	192	1.14	25000	\$ 100,000.00
	WBoptiona	0.30	1584	BgradeTraps	4	200	168	189	1.12	\$ 13,890.00	\$ 55,560.00
				Large Basins sum		51				Option 1	Option 2
				Optional Bgrade Traps sum		170				\$1,275,000	(Bgrade)
				Bgrade Traps sum		83				\$2,376,600	
				Small Basins sum		71				\$1,160,340	\$1,160,340
										\$1,775,000	
						375	sum			\$4,210,340	\$3,536,940

**Valley Pan Drain and Type 7 Barrier - Fill Slopes**

Description - Fill Side Areas

The shoulder in these areas will have a concrete V-pan with Asphalt to the existing road edge of oil.  
8 ft Valley Pan with HBP paved shoulder to the Type 7 barrier at the top of slope

10 FT SHOULDER  
Type 7 (CA)\* LF Average  
\$ 39.49 BID

GUTTER TYPE 2 (8FT)\* LF \$ 35.00

HBP width 8 ft with 5 inch depth LF \$ 14.67

SUM = LF \$89

\* CDOT 2000 Cost Data Book

Sheet No.	Start Approximate Mile Post	End Approximate Mile Post	Location Description	Quantity	Unit	Unit Cost	Estimated Cost
1	189.65	189.85	EB	1056	LF	\$89	\$94,149.44
1	189.25	189.65	EB	2112	LF	\$89	\$188,298.88
2	189.05	189.26	EB	1082	LF	\$89	\$96,503.18
2	188.80	189.05	EB	1320	LF	\$89	\$117,686.80
2	188.45	188.80	EB	1848	LF	\$89	\$164,761.52
3	188.20	188.45	EB	1320	LF	\$89	\$117,686.80
3 to 4	187.50	188.20	EB	3696	LF	\$89	\$329,523.04
4	187.30	187.50	EB	1056	LF	\$89	\$94,149.44
4	187.00	187.30	EB	1584	LF	\$89	\$141,224.16
4 to 5	186.10	187.00	EB	4752	LF	\$89	\$423,672.48
5	185.85	186.10	EB	1320	LF	\$89	\$117,686.80
6 to 7	184.90	185.20	EB	1584	LF	\$89	\$141,224.16
7	184.45	184.80	EB	1848	LF	\$89	\$164,761.52
10 to 11	182.00	182.50	EB	2640	LF	\$89	\$235,373.60
1	189.75	189.85	WB	528	LF	\$89	\$47,074.72
2	189.05	189.15	WB	528	LF	\$89	\$47,074.72
6	185.35	185.40	WB	264	LF	\$89	\$23,537.36
7	184.95	185.00	WB	264	LF	\$89	\$23,537.36
7	184.45	184.55	WB	528	LF	\$89	\$47,074.72
7 TO 8	184.20	184.30	WB	528	LF	\$89	\$47,074.72
8 TO 10	182.50	184.20	WB	8976	LF	\$89	\$800,270.24
			<b>SUM =</b>	<b>7,355</b>			<b>\$3,462,345.66</b>

<b>Inlets</b>									
Slotted drain pipes will tie into inlet structures.									
Slotted Drain pipe inlet Cost from Berthoud Pass Phase II - 1997 @ \$390/Meter See Cost Breakdown									
No.	Sheet No.	Approximate Mile Post	Location Description	Quantity	Unit	Unit Cost	Estimated Cost		
	All		Replace Existing inlets	30	EA	\$ 5,000.00	\$ 150,000.00		
			18 inch Slotted pipe inlets - 20 LF/inlet	600	LF	\$ 19.82	\$ 11,890.24		
						Total	\$ 161,890.24		

**PAVED SHOULDER AND KNEE WALL AND VALLEY PAN - CUT SLOPES**

Prices from 2000 Berthoud Pass Phase 4 - NH 0403-031  
 609 Curb and Gutter Type 2 Section B (Special) (Approx. 18 in)  
 609 Gutter Type 2 Special (Approx. 10ft width)  
 605 150 mm Perforated Underdrain  
 403 HBP- 8 FT OF HBP

RUN	Sheet No.	Start Approximat Mile Post	End Approximate Mile Post	Location Description	Quantity	Unit	Unit Cost	Unit Cost	Unit	Unit Cost
1	1	189.75	189.40	WB	1874.4	LF	\$ 71.68	\$		\$ 134,354.86
3	2 TO 3	189.05	188.35	WB	3696	LF	\$ 71.68	\$		\$ 264,925.07
4	3	189.30	187.85	WB	7656	LF	\$ 71.68	\$		\$ 548,773.37
5	4	187.78	187.35	WB	2270.4	LF	\$ 71.68	\$		\$ 162,739.69
6	4	187.32	187.00	WB	1689.6	LF	\$ 71.68	\$		\$ 121,108.60
7	5	187.00	186.15	WB	4488	LF	\$ 71.68	\$		\$ 321,694.73
8	5 TO 6	186.10	185.45	WB	3432	LF	\$ 71.68	\$		\$ 246,001.85
9	6	185.85	185.40	EB	2376	LF	\$ 71.68	\$		\$ 170,308.98
10	6 TO 7	185.21	185.00	WB	1108.8	LF	\$ 71.68	\$		\$ 79,477.52
11	7	184.81	184.60	WB	1108.8	LF	\$ 71.68	\$		\$ 79,477.52
12	7 TO 9	184.32	183.10	EB	6441.6	LF	\$ 71.68	\$		\$ 461,726.56
13	9 TO 10	183.00	182.47	EB	2798.4	LF	\$ 71.68	\$		\$ 200,586.13
14	10	182.30	182.40	EB	-528	LF	\$ 71.68	\$		\$ (37,846.44)
15	10 TO 11	182.45	182.15	WB	1584	LF	\$ 71.68	\$		\$ 113,539.32
16	11	182.10	181.99	WB	580.8	LF	\$ 71.68	\$		\$ 41,631.08
17	11 TO 12	181.81	180.20	WB	8500.8	LF	\$ 71.68	\$		\$ 609,327.67
				Total Length	9.295		total	\$		\$ 3,517,826.51

sum

72



RETAINING WALL BENEATH BRIDGES					
	Estimated cost for one wall	=	\$ 30,000.00		
	LOCATIONS	UNIT	UNIT COST	QUANTITY	COST
1	Polk Creek	LS	30,000	2	\$ 60,000.00
2	Polk Creek		30,000	2	\$ 60,000.00
3	Polk Creek		30,000	2	\$ 60,000.00
4	Polk Creek		30,000	2	\$ 60,000.00
5	Miller Creek		30,000	2	\$ 60,000.00
6	Miller Creek		30,000	2	\$ 60,000.00
7	Miller Creek		30,000	2	\$ 60,000.00
8	Miller Creek		30,000	2	\$ 60,000.00
9	Black Gore Creek		30,000	2	\$ 60,000.00
10	Black Gore Creek		30,000	2	\$ 60,000.00
11	Black Gore Creek		30,000	2	\$ 60,000.00
12	Black Gore Creek		30,000	0	\$ -
13	Timber Creek		30,000	0	\$ -
14	Timber Creek		30,000	0	\$ -
15	Timber Creek		30,000	0	\$ -
16	Timber Creek		30,000	0	\$ -
				TOTAL	\$ 660,000.00

Pipe Rundown							
PIPE	Sheet No.	Approximat Mile Post	Location Description	Quantity	Unit	Unit Cost	Estimated Cost
			Various Locations	3250	LF	100	\$ 325,000.00
	ALL		total length	3250		SUM=	\$ 325,000.00

Snow Storage Zone										
RUN	Sheet No.	Start Approximate Mile Post	End Approximate Mile Post	EB/WB	Approximate Width FT	Location Description	Quantity	Unit	Unit Cost	Estimated Cost
	2	189.05	189.25	EB	15	4 inch HBP	387	Tons	62	\$ 24,006.40
	2	188.80	189.05	EB	15	4 inch HBP	484	Tons	63	\$ 30,492.00
	3	188.20	188.45	EB	15	4 inch HBP	484	Tons	64	\$ 30,976.00
	4	187.30	187.50	EB	15	4 inch HBP	387	Tons	65	\$ 25,168.00
	4 TO 5	186.15	186.80	EB	15	4 inch HBP	1258	Tons	65	\$ 81,796.00
	9	183.10	183.60	EB	15	4 inch HBP	968	Tons	66	\$ 63,888.00
	9	182.90	183.20	WB	15	4 inch HBP	581	Tons	67	\$ 38,913.60
	10	182.60	182.90	EB	15	4 inch HBP	581	Tons	65	\$ 37,752.00
						Total Tons	3775		total	\$ 247,517.60

Cost Breakdown								
Estimate Information Source	Description	UNIT	QUANTITY	UNIT/COST	COST			
From Project 11350	Sediment Pond - Earthen type							
Straight Creek Overlay	Survey	LS	1	\$ 3,000.00	\$3,000			
1997	Embankment	CY	1200	\$ 10.00	\$12,000			
	Uncl. - X	CY	900		\$0			
	Dozing	HR	16	\$ 110.00	\$1,760			
	Inlet Special	EA	1	\$ 5,000.00	\$5,000			
	18" Culvert	LF	50	\$ 50.00	\$2,500			
	Rip Rap	CY	5	\$ 105.00	\$525			
				SUM	\$24,785	per pond		
	<u>Wes Traps</u>							
	Conc. Slope and Ditch	SY	363	\$ 210.00	\$76,230			
	Conc. Sealer	SY	2320	\$ 4.30	\$9,976			
	Guardrail Type 4 - CIP	LF	1160	\$ 82.00	\$95,120			
	Guardrail Type 4 Precast	LF	330	\$ 32.00	\$10,560			
				SUM	\$191,886	per LF =	\$165.42	
From Project 11944	<u>Berthoud Type Basin</u>							
2 Miles West Berthoud Falls- West	Str. Excavation	M3	178	\$ 18.16	\$3,232.48			
1999-2002	Backfill	M3	35	\$ 32.40	\$1,134.00			
	Concrete Class D - Wall	M3	48	\$ 879.00	\$42,192.00			
	Reinforcing Steel	KG	5445	\$ 2.16	\$11,761.20			
				SUM	\$58,319.68	per pond		
From Project 12154	<u>Knee Wall</u>							
SH 40 West of Berthoud Pass PH 4	Curb and Gutter Section B (special)	LF	787	15.24	11993.88			
2000				Sum	11993.88	per LF =	\$ 15.24	
From Project 11627	Concrete Sediment Basin 2 Basins in series approximately 120 M = 360 LF & 80M = 240 LF							
SH 40 Berthoud Pass PH 3	Embankment (CIP)	M3	42	0	\$ -			
1998	Uncl. Ex.	M3	1980	28	\$ 55,440.00			
	Rip/Rap (12")	M3	6	50	\$ 300.00			
	Concrete (Class D)	M3	360	330	\$ 118,800.00			
	Reinforcing Steel	KG	9318	2.2	\$ 20,499.60			
	Type C inlet	ea	2	4500	\$ 9,000.00			
	18" Culvert	M	44	140	\$ 6,160.00			
				SUM =	\$ 210,199.60	for 2		
					\$ 105,099.80	each		
					\$ 350.33	LF		
Calculations for Below Grade Traps		Width	Length	Depth	Bottom	2-Sides	2-Sides	
		FT	FT	FT	SF	SF	SF	
	Concrete Class D *includes rebar	8	50	4	400	400	64	
	Excavation	8	50	4				
	Outlet Pipe		10					
	Grates							
		Unit	Total	Cost	Cost			
				\$				
		CY	16	473	7568			
		CY	59	5.57	330.0740741			
		LF	10	100	1000			
		EA	5	1000	5000			
	*CDOT 2000 Cost Data Book							
				SUM	13898.07407			