Appendix D—Construction Cost Estimates

Summary of CIP Costs
Prepared by Laura Rupper, 6/28/07

CIP	Location	Cost	% of Total
1	Kayak Park	$ 170,000	7%
2	Evans	$ 830,000	33%
3	Wade	$ 1,020,000	40%
4	Power Easement	$ 510,000	20%
	Total	$ 2,530,000	

This page is used to estimate the length and size of the system needed to collect and convey stormwater runoff to the proposed outfalls. Pipe diameters are estimates only. Pipe diameters have NOT been verified with a hydraulic model.

Outfall: The pipe required to convey flow from the west side of SR3 to North Bay
Conveyance Improvements: This includes capacity improvements to existing WSDOT ditches for conveyance of increased flows
This also includes the extention of a conveyance trunk line to the west. The trunk line has structures every 150-ft with stub outs 20' long in each direction for developers to connect.

	Outfall			Conveyance Improvements (LF)						
Location	HDPE (LF)	Conc. (LF)	Diam (in)	*Ditch	42-in	36-in	30-in	24-in	18-in	**Structure
Kayak	100	200	18	1450	0	0	0	0	0	2
Evans	100	250	42	1050	150	300	200	200	0	7
Wade	100	450	30	0	0	0	300	780	530	11
Power	100	700	36	3350	0	0	0	0	0	3

*Re-grade Existing Ditch for increased capacity
**Structures required where HDPE connects to Concrete, as needed to cross SR3, and every 150' where conveyance improvements

Evans / Conveyance Improvements:
650 LF trunk line along Lakeland Drive (reduces in size from 42-in to 30-in as it extends west)
200 LF 24-in laterals extending north and south from E Lakeland Drive in 20' lengths
1050 LF ditch improvements along E Wheelwright and E Sellegren Rd

Wade / Conveyance Improvements:
1250 LF trunk line along Wade (reduces in size from 30-in to 18-in as it extends west)
360 LF laterals extending north and south from Wade in 20' lengths (half 24-in, half 18-in diameter)

Preliminary Cost Opinion - CIP #1 New Outfall at Kayak Park

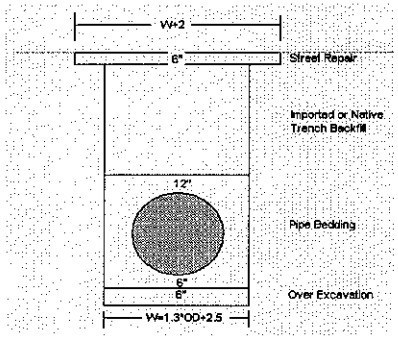
Project No.:30784
Client: Mason County
Date:6/29/2007

Item No.	Plan Quantity	Unit	Item Description	Unit Price	Estimated Cost
			GRADING		
1	135	TON	GRAVEL BORROW	$25	$3,375
2	150	CY	REGRADE EXISTING DITCH	$35	$5,250
			SURFACING		
3	50	TON	ASPHALT TREATED BASE	$145	$7,250
4	25	TON	PAVEMENT, ASPHALT CONCRETE CL B {QTY, <500}	$145	$3,625
			DRAINAGE		
5	100	LF	HDPE 18-INCH I.D. WATER SIDE IN TRENCH	$195	$19,500
6	200	LF	REINF. CONC. PIPE 18-INCH	$65	$13,000
7	1	EA	HDPE PIPE TERMINUS CONC. ANCHOR	$1,000	$1,000
8	2	EA	CATCH BASIN TYPE 2, 48-INCH	$5,000	$10,000
9	3,700	SF	SHORING OR EXTRA EXCAVATION CLASS B	$1.00	$3,700
				SUBTOTAL	$66,700
			EROSION & SEDIMENT CONTROL	5%	$3,335
			TRAFFIC CONTROL	8%	$5,336
			CONTINGENCY AND RIGHT OF WAY ACQUISITIONS (if needed)	30%	$20,010
				SUBTOTAL	$95,381
			MOBILIZATION	10%	$9,538
			CONSTRUCTION SUBTOTAL (Rounded)		$105,000
			STATE SALES TAX	8.3%	$8,715
			ENGINEERING/LEGAL/ADMIN	25%	$26,250
			CONSTRUCTION MANAGEMENT	20%	$21,000
			PERMITTING	5%	$5,250
			PROJECT SUBTOTAL (Rounded)		$166,300
2007 dollars			**TOTAL ESTIMATED PROJECT COST (Rounded)**		**$170,000**

Notes:

1. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.

Quantity Calcs
New Outfall at Kayak Park
18-Inch Outfall and ditch conveyance system



Pipe Excavation

	18-IN	36-in	30-in	24-in
pipe dia (ID)	1.5	3.0	2.5	2.0
pipe dia (OD) = 1.2*ID	1.8	3.6	3.0	2.4
trench width pipe = OD + 2'	3.8	5.6	5.0	4.4
street repair width = trench width + 2'	5.8	7.6	7.0	6.4
average depth to pipe invert	4.5	6.0	5.5	4.0
total trench depth	5.7	7.3	6.8	5.2
trench length	300	0	0	0
Pavement Disturance Width	8.2	5.8	5.8	5.8

	area SF	area SF	area SF	area SF	volume CF	volume CY	TON		
trench excavation	21.5	40.9	33.8	22.9	6,441	240			
pipe area (using OD)	2.5	10.2	7.1	4.5				add 10%	USE
pipe bedding	11.9	21.2	17.9	14.8	3,569	140			
trench backfill	5.1	6.7	6.3	1.3	1,539	60	120	132	135
shoring	3390	0	0	0				3,729	3,700

Pavement Repair	18-IN	36-in	30-in	24-in				
Pavement Disturbance Width	8.2	5.8	5.8	5.8				
Trench Length (no repair over HDPE)	200	0	0	0				
	SF	SF	SF	SF	SY		add 10%	USE
Removal	1640	0	0	0	183		201.30	200
	CF	CF	CF	CF	CY	Ton	add 10%	USE
HMA (2" thick)	273	0	0	0	10.12	21	23.10	25
ATB (4" thick)	547	0	0	0	20.25	42	46.20	50

Ditch Re-Grading	Lenth (ft)	Area (sf)	CY	add 10%	USE
(assumes 6" off WP for length of ditch)	1450	2.5	134.26	147.69	150.00

Preliminary Cost Opinion - CIP #2 New Outfall at Evans Street

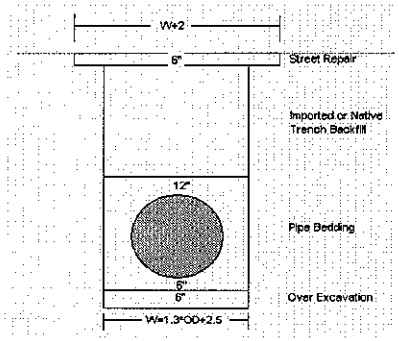
Project No.:30784
Client: Mason County
Date:6/29/2007

Item No.	Plan Quantity	Unit	Item Description	Unit Price	Estimated Cost
			GRADING		
1	550	TON	GRAVEL BORROW	$25	$13,750
2	110	CY	REGRADE EXISTING DITCH	$35	$3,850
			SURFACING		
3	200	TON	ASPHALT TREATED BASE	$145	$29,000
4	100	TON	PAVEMENT, ASPHALT CONCRETE CL B {QTY, <500}	$145	$14,500
			DRAINAGE		
5	100	LF	HDPE 42-INCH I.D. WATER SIDE IN TRENCH	$510	$51,000
6	400	LF	REINF. CONC. PIPE 42-INCH	$170	$68,000
7	300	LF	REINF. CONC. PIPE 36-INCH	$130	$39,000
8	200	LF	REINF. CONC. PIPE 30-INCH	$120	$24,000
9	200	LF	REINF. CONC. PIPE 24-INCH	$85	$17,000
10	1	EA	HDPE PIPE TERMINUS CONC. ANCHOR	$1,000	$1,000
11	3	EA	CATCH BASIN TYPE 2, 72-INCH	$8,000	$24,000
12	4	EA	CATCH BASIN TYPE 2, 60-INCH	$7,000	$28,000
13	18,800	SF	SHORING OR EXTRA EXCAVATION CLASS B	$1.00	$18,800
				SUBTOTAL	$331,900
			EROSION & SEDIMENT CONTROL	5%	$16,595
			TRAFFIC CONTROL	8%	$26,552
			CONTINGENCY AND RIGHT OF WAY ACQUISITIONS (if needed)	30%	$99,570
				SUBTOTAL	$474,617
			MOBILIZATION	10%	$47,462
			CONSTRUCTION SUBTOTAL (Rounded)		$522,100
			STATE SALES TAX	8.3%	$43,334
			ENGINEERING/LEGAL/ADMIN	25%	$130,525
			CONSTRUCTION MANAGEMENT	20%	$104,420
			PERMITTING	5%	$26,105
			PROJECT SUBTOTAL (Rounded)		$826,500
2007 dollars			**TOTAL ESTIMATED PROJECT COST (Rounded)**		**$830,000**

Notes:

1. The order-of-magnitude cost opinion has been prepared for guidance in project evaluation from the information available at the time of preparation and for the assumptions stated. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope and schedule, and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs for individual projects must be scrutinized prior to establishing the final project budgets.

Quantity Calcs
New Outfall at Evans Street
42-Inch Outfall and trunk line conveyance system



Pipe Excavation

	42-in	36-in	30-in	24-in
pipe dia (ID)	3.5	3.0	2.5	2.0
pipe dia (OD) = 1.2*ID	4.2	3.6	3.0	2.4
trench width pipe = OD + 2'	6.2	5.6	5.0	4.4
street repair width = trench width + 2'	8.2	7.6	7.0	6.4
average depth to pipe invert	6.5	6.0	5.5	4.0
total trench depth	7.9	7.3	6.8	5.2
trench length	500	300	200	200
Pavement Disturance Width	8.2	5.8	5.8	5.8

	area SF	area SF	area SF	area SF	volume CF	volume CY	TON		
trench excavation	48.7	40.9	33.8	22.9	47,925	1,780			
pipe area (using OD)	13.8	10.2	7.1	4.5				add 10%	USE
pipe bedding	24.6	21.2	17.9	14.8	25,207	940			
trench backfill	7.1	6.7	6.3	1.3	7,095	270	500	550	550
shoring	7850	4380	2700	2080				18,711	18,800

Pavement Repair	42-in	36-in	30-in	24-in				
Pavement Disturbance Width	8.2	5.8	5.8	5.8				
Trench Length (no repair over HDPE)	400	300	200	200				
	SF	SF	SF	SF	SY		add 10%	USE
Removal	3280	1740	1160	1160	816		897.60	900
	CF	CF	CF	CF	CY	Ton	add 10%	USE
HMA (2" thick)	547	290	193	193	45.31	93	102.30	100
ATB (4" thick)	1093	580	387	387	90.62	186	204.60	200

Ditch Re-Grading	Lenth (ft)	Area (sf)	CY		add 10%	USE
(assumes 6" off WP for length of ditch)	1050	2.5	97.22		106.94	110.00

Preliminary Cost Opinion - CIP #3 New Outfall at Wade Street

Project No.:30784
Client: Mason County
Date:6/29/2007

Item No.	Plan Quantity	Unit	Item Description	Unit Price	Estimated Cost
			GRADING		
1	700	TON	GRAVEL BORROW	$25	$17,500
			SURFACING		
2	340	TON	ASPHALT TREATED BASE	$145	$49,300
3	170	TON	PAVEMENT, ASPHALT CONCRETE CL B {QTY, <500}	$145	$24,650
			DRAINAGE		
4	100	LF	HDPE 30-INCH I.D. WATER SIDE IN TRENCH	$360	$36,000
5	750	LF	REINF. CONC. PIPE 30-INCH	$120	$90,000
6	780	LF	REINF. CONC. PIPE 24-INCH	$85	$66,300
7	530	LF	REINF. CONC. PIPE 18-INCH	$65	$34,450
8	1	EA	HDPE PIPE TERMINUS CONC. ANCHOR	$1,000	$1,000
9	5	EA	CATCH BASIN TYPE 2, 54-INCH	$6,000	$30,000
10	6	EA	CATCH BASIN TYPE 2, 48-INCH	$5,000	$30,000
11	28,150	SF	SHORING OR EXTRA EXCAVATION CLASS B	$1.00	$28,150
				SUBTOTAL	$407,350
			EROSION & SEDIMENT CONTROL	5%	$20,368
			TRAFFIC CONTROL	8%	$32,588
			CONTINGENCY AND RIGHT OF WAY ACQUISITIONS (if needed)	30%	$122,205
				SUBTOTAL	$582,511
			MOBILIZATION	10%	$58,251
			CONSTRUCTION SUBTOTAL (Rounded)		$640,800
			STATE SALES TAX	8.3%	$53,186
			ENGINEERING/LEGAL/ADMIN	25%	$160,200
			CONSTRUCTION MANAGEMENT	20%	$128,160
			PERMITTING	5%	$32,040
			PROJECT SUBTOTAL (Rounded)		$1,014,400
2007 dollars			**TOTAL ESTIMATED PROJECT COST (Rounded)**		**$1,020,000**

Notes:

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Preliminary Cost Opinion - CIP #4 New Outfall at the Tacoma Power Easement

Project No.:30784
Client: Mason County
Date:6/29/2007

Item No.	Plan Quantity	Unit	Item Description	Unit Price	Estimated Cost
			GRADING		
1	410	TON	GRAVEL BORROW	$25	$10,250
2	350	CY	REGRADE EXISTING DITCH	$35	$12,250
			SURFACING		
3	120	TON	ASPHALT TREATED BASE	$145	$17,400
4	60	TON	PAVEMENT, ASPHALT CONCRETE CL B {QTY, <500}	$145	$8,700
			DRAINAGE		
5	100	LF	HDPE 36-INCH I.D. WATER SIDE IN TRENCH	$390	$39,000
6	700	LF	REINF. CONC. PIPE 36-INCH	$130	$91,000
7	1	EA	HDPE PIPE TERMINUS CONC. ANCHOR	$1,000	$1,000
8	3	EA	CATCH BASIN TYPE 2, 60-INCH	$7,000	$21,000
9	1,300	SF	SHORING OR EXTRA EXCAVATION CLASS B	$1.00	$1,300
				SUBTOTAL	$201,900
			EROSION & SEDIMENT CONTROL	5%	$10,095
			TRAFFIC CONTROL	8%	$16,152
			CONTINGENCY AND RIGHT OF WAY ACQUISITIONS (if needed)	30%	$60,570
				SUBTOTAL	$288,717
			MOBILIZATION	10%	$28,872
			CONSTRUCTION SUBTOTAL (Rounded)		$317,600
			STATE SALES TAX	8.3%	$26,361
			ENGINEERING/LEGAL/ADMIN	25%	$79,400
			CONSTRUCTION MANAGEMENT	20%	$63,520
			PERMITTING	5%	$15,880
			PROJECT SUBTOTAL (Rounded)		$502,800
2007 dollars			**TOTAL ESTIMATED PROJECT COST (Rounded)**		**$510,000**

Notes:

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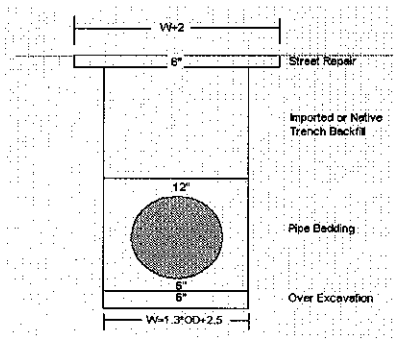
Quantity Calcs
New Outfall at Tacoma Power Easement
36-Inch Outfall and trunk line conveyance system



Pipe Excavation

	42-in	36-in	30-in	24-in
pipe dia (ID)	3.5	3.0	2.5	2.0
pipe dia (OD) = 1.2*ID	4.2	3.6	3.0	2.4
trench width pipe = OD + 2'	6.2	5.6	5.0	4.4
street repair width = trench width + 2'	8.2	7.6	7.0	6.4
average depth to pipe invert	6.5	6.0	5.5	4.0
total trench depth	7.9	7.3	6.8	5.2
trench length	0	800	0	0
Pavement Disturance Width	8.2	5.8	5.8	5.8

	area SF	area SF	area SF	area SF	volume CF	volume CY	TON		
trench excavation	48.7	40.9	33.8	22.9	32,704	1,220			
pipe area (using OD)	13.8	10.2	7.1	4.5				add 10%	USE
pipe bedding	24.6	21.2	17.9	14.8	16,949	630			
trench backfill	7.1	6.7	6.3	1.3	5,376	200	370	407	410
shoring	0	11680	0	0				12,848	1,300

Pavement Repair	42-in	36-in	30-in	24-in				
Pavement Disturbance Width	8.2	5.8	5.8	5.8				
Trench Length (no repair over HDPE)	0	700	0	0				
	SF	SF	SF	SF	SY		add 10%	USE
Removal	0	4060	0	0	452		497.20	500
	CF	CF	CF	CF	CY	Ton	add 10%	USE
HMA (2" thick)	0	677	0	0	25.06	52	57.20	60
ATB (4" thick)	0	1353	0	0	50.12	103	113.30	120

Ditch Re-Grading	Lenth (ft)	Area (sf)	CY	add 10%	USE
(assumes 6" off WP for length of ditch)	3350	2.5	310.19	341.20	350.00