

Appendix E

COST DATA

APPENDIX E-1
SOUTH MAGNOLIA CSO FACILITY
PRELIMINARY COST ESTIMATE
DECEMBER 2010

Project:	King County CSO				
Subject:	Magnolia Alternative 1F1				
By :	ALS				
Date :	1-Dec-10				
<i>Rectangular Storage Tank and Gravity Sewer</i>					
Capital Cost Estimate					
Item	Description	Quantity	Unit	Unit cost, \$	Cost, \$
DIVISION 1 - GENERAL REQUIREMENTS					
	Mobilization	1	LS	\$604,554	\$604,554
	Temporary Traffic Control	1	LS	\$302,277	\$302,277
	Temporary Erosion & Sediment Control	1	LS	\$151,139	\$151,139
DIVISION 2 - SITE WORK					
	Equipment Mobilization	1	EA	25000	\$25,000
	ACP Removal				
	Storage Tank	0	SY	\$20	\$0
	Odor Control Building	0	SY	\$20	\$0
	Diversion Structure	100	SY	\$20	\$2,000
	Clearing & Grubbing	1	AC	12,000	\$15,120
	Excavation				
	Storage Tank	38,000	BCY	\$15	\$570,000
	Diversion Structure	405	BCY	\$25	\$10,125
	Haul/Disposal - Tank	47,500	LCY	\$32	\$1,520,000
	Shoring				
	Storage Tank	36,180	SF	\$42	\$1,534,032
	Diversion Structure	1,944	SF	\$42	\$82,426
	Dewatering	1	LS	\$1,000,000	\$1,000,000
	Carbon Treatment, contaminated water	1	LS	\$250,000	\$250,000
	Backfill	5,037	BCY	\$15	\$75,556
	24" HDD Gravity Sewer	2,700	LF	\$700	\$1,890,000
	24" Fusible PVC	2,700	LF	\$100	\$270,000
	Fusion Machine	2	WK	\$6,000	\$12,000
	Jack and Bore Launch Pit	1	LS	\$100,000	\$100,000
	Jack and Bore Receiving Pit	1	LS	\$50,000	\$50,000
	Boring and Jacking	250	LF	\$500	\$125,000
	Install 10" FM to connection	500	LF	\$200	\$100,000
	Pipe Bedding	67	CY	\$18	\$1,200
	12" Compacted Gravel Fill - Tank	1,972	CY	\$20	\$39,443
	8" waterline, DIP to Seattle Water	500	LF	\$120	\$60,000
	SPU meter charge	1	LS	\$10,000	\$10,000
	48" MH (14' to 16' deep)	1	EA	\$6,500	\$6,500
	Imported Backfill/Compaction	889	CY	\$20	\$17,778
	23rd Ave. W. AC Surface Restoration and site paving	46,200	SF	\$4	\$166,320
	Fuel tank for Generator	1	LS	\$12,000	\$12,000
	Staging Area Restoration, 6" gravel	1,574	CY	\$12	\$18,889
	Landscaping and misc. street restoration	1	LS	\$100,000	\$100,000

APPENDIX E-1
SOUTH MAGNOLIA CSO FACILITY
PRELIMINARY COST ESTIMATE
DECEMBER 2010

Project:	King County CSO				
Subject:	Magnolia Alternative 1F1				
By :	ALS				
Date :	1-Dec-10				
<i>Rectangular Storage Tank and Gravity Sewer</i>					
Capital Cost Estimate					
Item	Description	Quantity	Unit	Unit cost, \$	Cost, \$
DIVISION 3 - CONCRETE					
	Diversion Structure				
	Base Slab	8	CY	\$300	\$2,400
	Walls	27	CY	\$500	\$13,500
	Top Slab	8	CY	\$800	\$6,400
	Core Drill - 30" Dia, 2' wall	1	EA	\$2,000	\$2,000
	Storage Tank				
	Auger Piles - 18" Diameter, 20 ft. long	12,000	LF	\$60	\$720,000
	Base Slab	2,900	CY	\$500	\$1,450,000
	External Walls	2,000	CY	\$500	\$1,000,000
	Internal Walls	850	CY	\$500	\$425,000
	Top Elevated Slab	1,422	CY	\$800	\$1,137,600
	Miscellaneous fill/appurtenances	20	CY	\$500	\$10,000
	Crane Rental	350	HR	\$1,500	\$525,000
	Crane Crew	350	HR	\$240	\$84,000
	Odor Control and Electrical Bldg				
	Strip Footings	31	CY	\$300	\$9,333
	Foundation Walls	16	CY	\$400	\$6,222
	Slab on Grade	167	CY	\$326	\$54,333
DIVISION 4 - MASONRY					
	Odor Control Bldg				
	12" CMU Walls; Full grouted, 12-ft high, slab on grade	3,920	SF	\$38	\$148,960
DIVISION 5 - METALS					
	Odor Control Bldg				
	Metal Decking	4,500	SF	\$6	\$27,000
	Roof Joists, 8-ft OC Fabricated Steel	24,000	LB	\$3	\$64,800
	Miscellaneous Plates/Shapes	15,000	LB	\$3	\$45,000
	Metal Roof	4,500	SF	\$6	\$28,125
	Hatches	14	EA	\$10,000	\$140,000
DIVISIONS 7 & 8 - ARCHITECTURAL					
	Roofing, doors, windows, finishes, etc	1	LS	\$12,000	\$12,000

APPENDIX E-1
SOUTH MAGNOLIA CSO FACILITY
PRELIMINARY COST ESTIMATE
DECEMBER 2010

Project:	King County CSO				
Subject:	Magnolia Alternative 1F1				
By :	ALS				
Date :	1-Dec-10				
Rectangular Storage Tank and Gravity Sewer					
Capital Cost Estimate					
Item	Description	Quantity	Unit	Unit cost, \$	Cost, \$
DIVISION 15 - MECHANICAL					
	Storage Tank				
	Tipping Bucket	6	LS	\$75,000	\$450,000
	Inlet gate	1	LS	\$16,000	\$16,000
	Drain Gates	6	LS	\$10,000	\$60,000
	Pumps	3	LS	\$5,000	\$15,000
	Miscellaneous Mechanical	1	LS	\$31,800	\$31,800
	Diversion Structure				
	Isolation Gate	1	EA	\$16,000	\$16,000
	Level Sensor	1	EA	\$5,000	\$5,000
	Odor Control/Electrical/Generator Bldg				
	Heating, Ventilating, Plumbing	1	EA	\$65,000	\$65,000
	Odor Control Equipment				
	Scrubber, Fan, ducting	1	LS	\$150,000	\$150,000
DIVISION 16 - ELECTRICAL					
	Electrical				
	Site Electrical supply	1	LS	\$50,000	\$50,000
	Electrical	1	LS	\$100,000	\$100,000
	Standby Generator	1	LS	\$80,000	\$80,000
	Telemetry	1	LS	\$100,000	\$100,000
	<i>Subtotal</i>				\$16,171,832
	Escalation to time of construction	14.60%			\$2,361,087
	Total estimated construction cost				\$18,532,919
	Contingency	30%			\$5,559,876
	Engineering Design	15%			\$2,779,938
	Construction Management	15%			\$2,779,938
	Sales Tax	9.5%			\$2,288,816
	Total Estimated Capital Cost				\$31,941,000

WTD Business Case Evaluation Results

Magnolia CSO Life Cycle Cost

WTD Borrowing Cost as Discount Rate (1)

Scenario Alternatives	Lifetime	Initial Capital Outlay	Total Project Life Costs (2)	Total Project Life Benefits	Net Project Life Costs	Average Project Annual Cost	Annual Costs over(under) Status quo
"Alt 1F.1"	35	\$34,070,000	\$37,960,395	\$0	\$37,960,395	\$1,696,797	\$1,696,797

Budget Office Discount Rate (3)

Scenario Alternatives	Lifetime	Initial Capital Outlay	Total Project Life Costs (2)	Total Project Life Benefits	Net Project Life Costs	Average Project Annual Cost	Annual Costs over(under) Status quo
"Alt 1F.1"	35	\$34,070,000	\$34,871,182	\$0	\$34,871,182	\$1,558,712	\$1,558,712

First Year of Construction

2014

Additional inflation rate > 3% 1.00%

Notes:

- (1) WTD Discount rate based on recent WTD borrowing costs net of 3% annual inflation. 2.73%
 - (2) Costs include risk and uncertainty, if estimated. 7.00%
 - (3) Discount rate net of inflation, per the King County Budget Office.
- The option with the largest net equivalent annualized cost is the financially preferred option.

APPENDIX E-2
SOUTH MAGNOLIA CSO FACILITY
LIFE CYCLE COSTS
DECEMBER 2010

Describe Alternate 1F.1:-->	Rectangular Storage Out of Basin
Brief Title, 20 characters or less:	" "
"Alt 1F.1"	" "
Lifetime (in years)-->	35 Please provide See instructions below
First year of O&M costs -->	2016 the appropriate
Electricity Supplier (SCL or PSE) -->	SCL information in the
Indicate "Plant" or "Off-Site" -->	Off-Site shaded areas

All projects costs through		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Current year (from Results summary sheet)																				
Total Benefits (from below)		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital and O&M		\$14,930,000	\$12,760,000	\$6,560,865	\$182,673	\$184,500	\$186,345	\$188,208	\$190,090	\$191,991	\$193,911	\$195,850	\$197,809	\$199,787	\$201,785	\$203,803	\$205,841	\$207,899	\$209,978	\$212,078
Debt-related and O&M		\$965,958	\$1,492,919	\$1,831,364	\$1,705,573	\$1,707,400	\$1,709,245	\$1,711,108	\$1,712,990	\$1,714,891	\$1,716,811	\$1,718,750	\$1,720,709	\$1,722,687	\$1,724,685	\$1,726,703	\$1,728,741	\$1,730,799	\$1,732,878	\$1,734,978
Risk (from below)		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Uncertainty (from below)		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital outlays		\$14,930,000	\$12,760,000	\$6,380,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debt issuance		\$298,600	\$255,200	\$127,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debt service		\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358
			\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361
				\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181
				\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Energy use		\$0	\$0	\$556	\$562	\$568	\$573	\$579	\$585	\$591	\$597	\$603	\$609	\$615	\$621	\$627	\$633	\$640	\$646	\$653
Natural Gas		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
therms		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity		\$0	\$0	\$556	\$562	\$568	\$573	\$579	\$585	\$591	\$597	\$603	\$609	\$615	\$621	\$627	\$633	\$640	\$646	\$653
Electricity Use kwh		0	0	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167
Demand kW or kVa		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Chemical spending		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sodium hypochlorite required in gal.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bisulfide required in gal.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other chemical costs - enter \$		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Materials and Supplies		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Costs		\$0	\$0	\$72,000	\$72,720	\$73,447	\$74,182	\$74,923	\$75,673	\$76,429	\$77,194	\$77,966	\$78,745	\$79,533	\$80,328	\$81,131	\$81,943	\$82,762	\$83,590	\$84,426
Labor		\$0	\$0	\$108,308	\$109,391	\$110,485	\$111,590	\$112,706	\$113,833	\$114,971	\$116,121	\$117,282	\$118,455	\$119,640	\$120,836	\$122,044	\$123,265	\$124,497	\$125,742	\$127,000
Labor Hours		2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6

APPENDIX E-2
SOUTH MAGNOLIA CSO FACILITY
LIFE CYCLE COSTS
DECEMBER 2010

Describe Alternate 1F.1:-->
 Brief Title, 20 characters or less:
 "Alt 1F.1"
 Lifetime (in years)-->
 First year of O&M costs ---->
 Electricity Supplier (SCL or PSE) ---->
 Indicate "Plant" or "Off-Site" ---->

Current year (from Results summary sheet)	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Total Benefits (from below)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital and O&M	\$214,199	\$216,341	\$218,504	\$220,689	\$222,896	\$225,125	\$227,376	\$229,650	\$231,947	\$234,266	\$236,609	\$238,975	\$241,364	\$243,778	\$246,216	\$248,678	\$251,165
Debt-related and O&M	\$1,737,099	\$1,739,241	\$1,741,404	\$1,743,589	\$1,745,796	\$1,748,025	\$1,750,276	\$1,752,550	\$1,754,846	\$1,757,166	\$1,759,508	\$1,761,875	\$1,764,264	\$1,766,678	\$1,769,116	\$1,771,578	\$1,106,706
Risk (from below)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Uncertainty (from below)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital outlays	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debt issuance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debt service	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358	\$667,358
	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361	\$570,361
	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181	\$285,181
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Energy use	\$659	\$666	\$672	\$679	\$686	\$693	\$700	\$707	\$714	\$721	\$728	\$735	\$743	\$750	\$758	\$765	\$773
Natural Gas	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
therms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	\$659	\$666	\$672	\$679	\$686	\$693	\$700	\$707	\$714	\$721	\$728	\$735	\$743	\$750	\$758	\$765	\$773
Electricity Use kwh	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167	8167
Demand kW or kVa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Chemical spending	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sodium hypochlorite required in gal.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bisulfide required in gal.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other chemical costs - enter \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Materials and Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Costs	\$85,270	\$86,123	\$86,984	\$87,854	\$88,732	\$89,620	\$90,516	\$91,421	\$92,335	\$93,258	\$94,191	\$95,133	\$96,084	\$97,045	\$98,016	\$98,996	\$99,986
Labor	\$128,270	\$129,552	\$130,848	\$132,156	\$133,478	\$134,813	\$136,161	\$137,523	\$138,898	\$140,287	\$141,690	\$143,106	\$144,538	\$145,983	\$147,443	\$148,917	\$150,406
Labor Hours	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6	2016.6

