

PROJECT MEMORANDUM

ISLAND CENTER SEWER ALTERNATIVES ANALYSIS

Date: 3/20/2020

Project No.: 11739A.00

City of Bainbridge Island

Prepared By: Cayla Cook, EIT

Reviewed By: Anne Conklin, PE and Lara Kammereck, PE

Subject: General Sewer Plan Appendix G 2020 Cost Estimate Update

Purpose

The City of Bainbridge Island (City) has identified two areas for future City sewer service in the General Plan, July 2015. These areas include the western pocket, located near the intersection of Miller Road and New Brooklyn Road, and the eastern pocket, located at the intersection of Valley Road and Sunrise Drive. The purpose of this Technical Memorandum is to review and update sewer treatment and disposal option cost estimates described in the *Project Memorandum – Mid-Island Study Area Sewer Service Options – Draft* (Carollo, 2014). The Island Center Area is located in a portion of the western area.

Overview of Alternatives

Alternatives were previously identified which include conveyance of wastewater from the western and eastern pockets to the Winslow Wastewater Treatment Plant (WWTP) (Alternative 1), on-site treatment with community septic tanks with drainfields (Alternative 2), and on-site treatment with membrane bioreactors (MBRs) with percolation ponds for land disposal (Alternative 3). The previous costs and updated costs are shown below in Table 1.

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Table 1 Previous and Updated Cost Estimates

Alternative	Previous Cost Estimate ^(1,2)	Updated Cost Estimate ^(1,3)
Alternative 1 (Western)	\$2,000,000	\$5,290,000
Alternative 1 (Eastern)	\$2,000,000	\$5,290,000
Alternative 1 (Total)	\$4,000,000	\$10,570,000
Alternative 2 (Western)	\$10,340,000	\$8,930,000
Alternative 2 (Eastern)	\$1,010,000	\$1,690,000
Alternative 2 (Total)	\$11,350,000	\$10,610,000
Alternative 3 (Western)	\$4,580,000	\$8,990,000
Alternative 3 (Eastern)	\$2,770,000	\$5,200,000
Alternative 3 (Total)	\$7,340,000	\$14,180,000

Notes:

- (1) The cost estimates within this table are based on our perception of current conditions at the project location. This estimate reflects our professional opinion of accurate costs at this time and is subject to change as the project design matures. Carollo Engineers, Inc. has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. Carollo Engineers cannot and does not warrant or guarantee that proposals, bids or actual construction costs will not vary from the costs presented as shown.
- (2) All costs are shown in 2014 dollars.
- (3) All costs are shown in 2020 dollars.

Alternative Cost Estimate Updates

Unit costs were updated with more recently completed projects then converted to March 2020 values with the Engineering News Report (ENR) 20-City Index. The ENR 20-City Index for the previous estimate is 9800 while the current value is 11397.

Alternative 1: Conveyance to Winslow Collection System

Conveyance options utilize low pressure force mains (FM) to move wastewater approximately 11,500 linear feet (LF) to the Winslow WWTP. Additional costs incurred for treatment of the additional flow at the WWTP were not included in the estimate. Pump station feasibility was considered due to topography of the region, small size of the FM, and maintaining scouring velocity of no less than 2 feet per second. The pump station was assumed to meet Ecology requirements and include reliability and redundancy of service. Additional feasibility studies will be needed. Major cost changes are as follows:

- Force Main costs including excavation, backfill, labor, and hauling excavated material were updated
- Pump Station costs were updated to consider possible complexities such as design challenges, conveyance distances, and high water tables.

Alternative 2: Septic Tank with Drainfield

The septic tank option provides a large, community septic tank for both the eastern and western pockets. These septic systems will settle and disinfect wastewater flows; however, a community drainfield would be required for land disposal of the disinfected Class E effluent. The Washington Department of Health (DOH) details drainfield requirements in the Washington Administrative Code (WAC) 246-272B. Major cost changes are as follows:

- Land Acquisition costs per acre were updated with current property prices on Zillow.

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Alternative 3: Membrane Bioreactor (MBR) with Percolation Pond

Of the three alternatives, the MBR alternative utilizes the best available technology for treating wastewater with the ability to produce a Class A Reclaimed Water. WAC Reclaimed Water Standards specify additional percolation pond land requirements which increase the minimum site size. Major cost changes are as follows:

- Land Acquisition costs per acre were updated with current property prices on Zillow.
- Membrane Bioreactor (MBR) package plant unit costs were updated with a March 2020 Kubota quote for each pocket's average daily flow and peak hour flow
- Additional provisions were included for influent pumping and effluent disinfection.
- Electrical costs were considered as a 20% adder of the total direct costs

Prepared by:



Author Name: Cayla Rebecca Cook, MS, EIT

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City of Bainbridge Island
Framework Island Center Sewer Analysis



Capital Improvements Plan Summary

Method of Treatment or Conveyance		Previous Cost Estimate	Updated Cost Estimate
Alteratives and Associated Pocket			
Alt. 1 - Western	Conveyance to Winslow Collection System	\$2,000,000	\$5,280,000
Alt. 1 - Eastern	Conveyance to Winslow Collection System	\$2,000,000	\$5,280,000
Alt. 1 Total	Conveyance to Winslow Collection System	\$3,990,000	\$10,560,000
Alt. 2 - Western	Community Septic Tanks with Conventional Drainfields	\$10,340,000	\$8,930,000
Alt. 2 - Eastern	Community Septic Tanks with Conventional Drainfields	\$1,010,000	\$1,680,000
Alt. 2 Total	Community Septic Tanks with Conventional Drainfields	\$11,350,000	\$10,610,000
Alt. 3 - Western	MBR Package Plants with Percolation Ponds	\$4,580,000	\$8,980,000
Alt. 3 - Eastern	MBR Package Plants with Percolation Ponds	\$2,760,000	\$5,200,000
Alt. 3 Total	MBR Package Plants with Percolation Ponds	\$7,340,000	\$14,180,000

City of Bainbridge Island

ELEMENT: CONVEYANCE TO WINSLOW COLLECTION SYSTEM

Western Pocket

Description	Unit	2020 Estimate		
		Quantity	Unit Cost	Subtotal
4" Force Main from Western Pocket	LF	11,500	\$ 126	\$ 1,453,995
Mobilization/Demobilization	LS	1	\$ 79,203	\$ 79,203
Dewatering >=10'	LF	2,875	\$ 100	\$ 287,770
Traffic Control	LF	11,500	\$ 11	\$ 121,166
Connection to Winslow Collection System	EA	1	\$ 4,070	\$ 4,070
Pump Stations	EA	1	\$ 1,000,000	\$ 1,000,000
Direct Cost				\$ 2,946,204
Adjustment Factors				
Scope Contingency			30%	\$ 883,861
	Subtotal			\$ 3,830,065
General Conditions			10%	\$ 383,007
	Subtotal			\$ 4,213,072
Overhead & Profit			15%	\$ 631,961
	Subtotal			\$ 4,845,033
Tax			9%	\$ 436,053
Total Estimated Construction Cost				\$ 5,281,086

Eastern Pocket

Description	Unit	2020 Estimate		
		Quantity	Unit Cost	Subtotal
4" Force Main from Eastern Pocket	LF	11,500	\$ 126	\$ 1,453,995
Mobilization/Demobilization	LS	1	\$ 79,203	\$ 79,203
Dewatering >=10'	LF	2,875	\$ 100	\$ 287,770
Traffic Control	LF	11,500	\$ 11	\$ 121,166
Connection to Winslow Collection System	EA	1	\$ 4,070	\$ 4,070
Pump Stations	EA	1	\$ 1,000,000	\$ 1,000,000
Direct Cost				\$ 2,946,204
Adjustment Factors				
Scope Contingency			30%	\$ 883,861
	Subtotal			\$ 3,830,065
General Conditions			10%	\$ 383,007
	Subtotal			\$ 4,213,072
Overhead & Profit			15%	\$ 631,961
	Subtotal			\$ 4,845,033
Tax			9%	\$ 436,053
Total Estimated Construction Cost				\$ 5,281,086

City of Bainbridge Island

ELEMENT: COMMUNITY SEPTIC TANK AND DRAINFIELD

Western Pocket

Description	Unit	2020 Estimate		
		Quantity	Unit Cost	Subtotal
Land Acquisition	AC	6	\$ 247,619	\$ 1,387,736
Septic Tank Excavation	CY	-	\$ -	\$ -
Septic Tank	gal	61,000	\$ 7	\$ 425,643
Site Work - Clear and Grub	AC	6	\$ 544	\$ 3,051
Site Work - Grading	SF	244,125	\$ 2	\$ 469,098
Site Work - Electrical	EA	1	\$ 58,148	\$ 58,148
Drainfield Excavation	CY	48,825	\$ 2	\$ 118,157
Haul Excavated Materials	CY	-	\$ -	\$ -
6" Schedule 80 Perforated PVC	LF	25,200	\$ 25	\$ 630,000
Monitoring Stations	EA	168	\$ 97	\$ 16,375
Gravel Backfill	CY	16,275	\$ 92	\$ 1,495,673
Pressure Distribution System	LS	6	\$ 62,659	\$ 375,955
Direct Cost				\$ 4,979,835
Adjustment Factors				
Scope Contingency			30%	\$ 1,493,951
	Subtotal			\$ 6,473,786
General Conditions			10%	\$ 647,379
	Subtotal			\$ 7,121,164
Overhead & Profit			15%	\$ 1,068,175
	Subtotal			\$ 8,189,339
Tax			9%	\$ 737,040
Total Estimated Construction Cost				\$ 8,926,379

Eastern Pocket

Description	Unit	2020 Estimate		
		Quantity	Unit Cost	Subtotal
Land Acquisition	AC	1.11	\$ 247,619	\$ 273,923
Septic Tank Excavation	CY	-	\$ -	\$ -
Septic Tank	gal	8,000	\$ 7	\$ 55,822
Site Work - Clear and Grub	AC	1	\$ 544	\$ 602
Site Work - Grading	SF	48,188	\$ 2	\$ 92,595
Site Work - Electrical	EA	1	\$ 58,148	\$ 58,148
Drainfield Excavation	CY	9,638	\$ 2	\$ 23,323
Haul Excavated Materials	CY	-	\$ -	\$ -
6" Schedule 80 Perforated PVC	LF	4,200	\$ 25	\$ 105,000
Monitoring Stations	EA	28	\$ 97	\$ 2,729
Gravel Backfill	CY	3,212.50	\$ 92	\$ 295,229
Pressure Distribution System	LS	0.5	\$ 62,659	\$ 31,330
Direct Cost				\$ 938,700
Adjustment Factors				
Scope Contingency			30%	\$ 281,610
	Subtotal			\$ 1,220,311
General Conditions			10%	\$ 122,031
	Subtotal			\$ 1,342,342
Overhead & Profit			15%	\$ 201,351
	Subtotal			\$ 1,543,693
Tax			9%	\$ 138,932
Total Estimated Construction Cost				\$ 1,682,625

City of Bainbridge Island

ELEMENT: MEMBRANE BIOREACTOR/PERCOLATION POND

Western Pocket

Description	Unit	2020 Estimate		
		Quantity	Unit Cost	Subtotal
Land Acquisition	AC	4.3	\$ 247,619	\$ 1,064,762
Site Work - Clear, Grub, Grading, Utilities	AC	4.3	\$ 11,628	\$ 50,000
Site Work - Electrical	EA	1	\$ 835,186	\$ 835,186
Influent Pumping	EA	1	\$ 453,554	\$ 453,554
MBR Packaged Plant	EA	1	\$ 1,813,500	\$ 1,813,500
Flow Equalization/Solids Storage	EA	1	\$ 215,647	\$ 215,647
Site Facilities	EA	1	\$ 348,888	\$ 348,888
Standby Generator	EA	1	\$ 209,333	\$ 209,333
Pond Excavation	CY	3,868	\$ 2	\$ 9,360
Emergency Pond Excavation	CY	500	\$ 2	\$ 1,210
Emergency Pond Liner	SF	1,500	\$ 1	\$ 1,580
Monitoring Stations	EA	8	\$ 1,012	\$ 8,094
Direct Cost				\$ 5,011,113
Adjustment Factors				
Scope Contingency			30%	\$ 1,503,334
	Subtotal			\$ 6,514,447
General Conditions			10%	\$ 651,445
	Subtotal			\$ 7,165,892
Overhead & Profit			15%	\$ 1,074,884
	Subtotal			\$ 8,240,776
Tax			9%	\$ 741,670
Total Estimated Construction Cost				\$ 8,982,446

Eastern Pocket

Description	Unit	2020 Estimate		
		Quantity	Unit Cost	Subtotal
Land Acquisition	AC	4.3	\$ 247,619	\$ 1,064,762
Site Work - Clear, Grub, Grading, Utilities	AC	4.3	\$ 11,628	\$ 50,000
Site Work - Electrical	EA	1	\$ 483,097	\$ 483,097
Influent Pumping	EA	1	\$ 453,554	\$ 453,554
MBR Packaged Plant	EA	1	\$ 508,300	\$ 508,300
Solids Storage	EA	-	\$ -	\$ -
Site Facilities	EA	1	\$ 116,296	\$ 116,296
Standby Generator	EA	1	\$ 209,333	\$ 209,333
Pond Excavation	CY	763	\$ 2	\$ 1,848
Emergency Pond Excavation	CY	500	\$ 2	\$ 1,210
Emergency Pond Liner	SF	1,500	\$ 1	\$ 2,089
Monitoring Stations	EA	8	\$ 1,012	\$ 8,094
Direct Cost				\$ 2,898,582
Adjustment Factors				
Scope Contingency			30%	\$ 869,575
	Subtotal			\$ 3,768,157
General Conditions			10%	\$ 376,816
	Subtotal			\$ 4,144,972
Overhead & Profit			15%	\$ 621,746
	Subtotal			\$ 4,766,718
Tax			9%	\$ 429,005
Total Estimated Construction Cost				\$ 5,195,723

City of Bainbridge Island

ELEMENT: CONVEYANCE TO WINSLOW COLLECTION SYSTEM

Western Pocket

Description	Unit	2014 Estimate			2020 Estimate		
		Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
4" Force Main from Western Pocket	LF	11,500	\$ 70	\$ 805,000	11,500	\$ 126	\$ 1,453,995
Mobilization/Demobilization	LS	-		\$ -	1	\$ 79,203	\$ 79,203
Dewatering >=10'	LF	-		\$ -	2,875	\$ 100	\$ 287,770
Traffic Control	LF	-		\$ -	11,500	\$ 11	\$ 121,166
Connection to Winslow Collection System	EA	1	\$ 3,500	\$ 3,500	1	\$ 4,070	\$ 4,070
Pump Stations	EA	1	\$ 400,000	\$ 400,000	1	\$ 1,000,000	\$ 1,000,000
Direct Cost				\$ 1,208,500	\$ 2,946,204		
Adjustment Factors							
Scope Contingency			30%	\$ 362,550		30%	\$ 883,861
	Subtotal			\$ 1,571,050			\$ 3,830,065
General Conditions						10%	\$ 383,007
	Subtotal						\$ 4,213,072
Overhead & Profit			27%	\$ 424,184		15%	\$ 631,961
	Subtotal			\$ 1,995,234			\$ 4,845,033
Tax						9%	\$ 436,053
Total Estimated Construction Cost				\$ 1,995,234	\$ 5,281,086		

Eastern Pocket

Description	Unit	2014 Estimate			2020 Estimate		
		Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
4" Force Main from Eastern Pocket	LF	11,500	\$ 70	\$ 805,000	11,500	\$ 126	\$ 1,453,995
Mobilization/Demobilization	LS	-		\$ -	1	\$ 79,203	\$ 79,203
Dewatering >=10'	LF	-		\$ -	2,875	\$ 100	\$ 287,770
Traffic Control	LF	-		\$ -	11,500	\$ 11	\$ 121,166
Connection to Winslow Collection System	EA	1	\$ 3,500	\$ 3,500	1	\$ 4,070	\$ 4,070
Pump Stations	EA	1	\$ 400,000	\$ 400,000	1	\$ 1,000,000	\$ 1,000,000
Direct Cost				\$ 1,208,500	\$ 2,946,204		
Adjustment Factors							
Scope Contingency			30%	\$ 362,550		30%	\$ 883,861
	Subtotal			\$ 1,571,050			\$ 3,830,065
General Conditions						10%	\$ 383,007
	Subtotal						\$ 4,213,072
Overhead & Profit			27%	\$ 424,184		15%	\$ 631,961
	Subtotal			\$ 1,995,234			\$ 4,845,033
Tax						9%	\$ 436,053
Total Estimated Construction Cost				\$ 1,995,234	\$ 5,281,086		

City of Bainbridge Island

ELEMENT: COMMUNITY SEPTIC TANK AND DRAINFIELD

Western Pocket			2014 Estimate			2020 Estimate		
Description	Unit	Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal	
Land Acquisition	AC	24	\$ 100,000	\$ 2,400,000	6	\$ 247,619	\$ 1,387,736	
Septic Tank Excavation	CY	1,200	\$ 12	\$ 14,368	-	\$ -	\$ -	
Septic Tank	gal	40,000	\$ 6	\$ 240,000	61,000	\$ 7	\$ 425,643	
Site Work - Clear and Grub	AC	24	\$ 468	\$ 11,236	6	\$ 544	\$ 3,051	
Site Work - Grading	SF	350,000	\$ 2	\$ 578,302	244,125	\$ 2	\$ 469,098	
Site Work - Electrical	EA	1	\$ 50,000	\$ 50,000	1	\$ 58,148	\$ 58,148	
Drainfield Excavation	CY	16,800	\$ 12	\$ 201,148	48,825	\$ 2	\$ 118,157	
Haul Excavated Materials	CY	18,000	\$ 24	\$ 431,032	-	\$ -	\$ -	
6" Schedule 80 Perforated PVC	LF	40,000	\$ 17	\$ 670,495	25,200	\$ 25	\$ 630,000	
Monitoring Stations	EA	168	\$ 84	\$ 14,080	168	\$ 97	\$ 16,375	
Gravel Backfill	CY	16,800	\$ 79	\$ 1,327,580	16,275	\$ 92	\$ 1,495,673	
Pressure Distribution System	LS	6	\$ 54,000	\$ 324,000	6	\$ 62,659	\$ 375,955	
Direct Cost				\$ 6,262,240			\$ 4,979,835	
Adjustment Factors								
Scope Contingency			30%	\$ 1,878,672		30%	\$ 1,493,951	
	Subtotal			\$ 8,140,913			\$ 6,473,786	
General Conditions						10%	\$ 647,379	
	Subtotal						\$ 7,121,164	
Overhead & Profit			27%	\$ 2,198,046		15%	\$ 1,068,175	
	Subtotal			\$ 10,338,959			\$ 8,189,339	
Tax						9%	\$ 737,040	
Total Estimated Construction Cost				\$ 10,338,959			\$ 8,926,379	

Eastern Pocket			2014 Estimate			2020 Estimate		
Description	Unit	Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal	
Land Acquisition	AC	2.00	\$ 100,000	\$ 200,000	1.11	\$ 247,619	\$ 273,923	
Septic Tank Excavation	CY	650	\$ 12	\$ 7,783	-	\$ -	\$ -	
Septic Tank	gal	8,000	\$ 6	\$ 48,000	8,000	\$ 7	\$ 55,822	
Site Work - Clear and Grub	AC	2	\$ 468	\$ 936	1	\$ 544	\$ 602	
Site Work - Grading	SF	25,000	\$ 2	\$ 41,307	48,188	\$ 2	\$ 92,595	
Site Work - Electrical	EA	1	\$ 50,000	\$ 50,000	1	\$ 58,148	\$ 58,148	
Drainfield Excavation	CY	1,400	\$ 12	\$ 16,762	9,638	\$ 2	\$ 23,323	
Haul Excavated Materials	CY	2,050	\$ 24	\$ 49,090	-	\$ -	\$ -	
6" Schedule 80 Perforated PVC	LF	3,300	\$ 17	\$ 55,316	4,200	\$ 25	\$ 105,000	
Monitoring Stations	EA	28	\$ 84	\$ 2,347	28	\$ 97	\$ 2,729	
Gravel Backfill	CY	1,400.00	\$ 79	\$ 110,632	3,212.50	\$ 92	\$ 295,229	
Pressure Distribution System	LS	0.5	\$ 54,000	\$ 27,000	0.5	\$ 62,659	\$ 31,330	
Direct Cost				\$ 609,173			\$ 938,700	
Adjustment Factors								
Scope Contingency			30%	\$ 182,752		30%	\$ 281,610	
	Subtotal			\$ 791,924			\$ 1,220,311	
General Conditions						10%	\$ 122,031	
	Subtotal						\$ 1,342,342	
Overhead & Profit			27%	\$ 213,820		15%	\$ 201,351	
	Subtotal			\$ 1,005,744			\$ 1,543,693	
Tax						9%	\$ 138,932	
Total Estimated Construction Cost				\$ 1,005,744			\$ 1,682,625	

City of Bainbridge Island

ELEMENT: MEMBRANE BIOREACTOR/PERCOLATION POND

Western Pocket

Description	Unit	2014 Estimate			2020 Estimate		
		Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
Land Acquisition	AC	1.5	\$ 100,000	\$ 150,000	4.3	\$ 247,619	\$ 1,064,762
Site Work - Clear, Grub, Grading, Utilities	AC	1.5	\$ 468	\$ 702	4.3	\$ 11,628	\$ 50,000
Site Work - Electrical	EA	1	\$ 50,000	\$ 50,000	1	\$ 835,186	\$ 835,186
Influent Pumping	EA	1	\$ 390,000	\$ 390,000	1	\$ 453,554	\$ 453,554
MBR Packaged Plant	EA	1	\$ 1,500,000	\$ 1,500,000	1	\$ 1,813,500	\$ 1,813,500
Flow Equalization/Solids Storage	EA	1	\$ 100,000	\$ 100,000	1	\$ 215,647	\$ 215,647
Site Facilities	EA	1	\$ 300,000	\$ 300,000	1	\$ 348,888	\$ 348,888
Standby Generator	EA	1	\$ 180,000	\$ 180,000	1	\$ 209,333	\$ 209,333
Pond Excavation	CY	7,300	\$ 12	\$ 87,404	3,868	\$ 2	\$ 9,360
Emergency Pond Excavation	CY	500	\$ 12	\$ 5,987	500	\$ 2	\$ 1,210
Emergency Pond Liner	SF	1,500	\$ 1	\$ 1,796	1,500	\$ 1	\$ 1,580
Monitoring Stations	EA	8	\$ 870	\$ 6,960	8	\$ 1,012	\$ 8,094
Direct Cost				\$ 2,772,849	\$ 5,011,113		
Adjustment Factors							
Scope Contingency			30%	\$ 831,855		30%	\$ 1,503,334
	Subtotal			\$ 3,604,703			\$ 6,514,447
General Conditions						10%	\$ 651,445
	Subtotal						\$ 7,165,892
Overhead & Profit			27%	\$ 973,270		15%	\$ 1,074,884
	Subtotal			\$ 4,577,973			\$ 8,240,776
Tax						9%	\$ 741,670
Total Estimated Construction Cost				\$ 4,577,973	\$ 8,982,446		

Eastern Pocket

Description	Unit	2014 Estimate			2020 Estimate		
		Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
Land Acquisition	AC	0.5	\$ 100,000	\$ 50,000	4.3	\$ 247,619	\$ 1,064,762
Site Work - Clear, Grub, Grading, Utilities	AC	0.5	\$ 468	\$ 234	4.3	\$ 11,628	\$ 50,000
Site Work - Electrical	EA	1	\$ 50,000	\$ 50,000	1	\$ 483,097	\$ 483,097
Influent Pumping	EA	1	\$ 390,000	\$ 390,000	1	\$ 453,554	\$ 453,554
MBR Packaged Plant	EA	1	\$ 750,000	\$ 750,000	1	\$ 508,300	\$ 508,300
Solids Storage	EA	1	\$ 50,000	\$ 50,000	-	\$ -	\$ -
Site Facilities	EA	1	\$ 100,000	\$ 100,000	1	\$ 116,296	\$ 116,296
Standby Generator	EA	1	\$ 180,000	\$ 180,000	1	\$ 209,333	\$ 209,333
Pond Excavation	CY	7,300	\$ 12	\$ 87,404	763	\$ 2	\$ 1,848
Emergency Pond Excavation	CY	500	\$ 12	\$ 5,987	500	\$ 2	\$ 1,210
Emergency Pond Liner	SF	1,500	\$ 1	\$ 1,796	1,500	\$ 1	\$ 2,089
Monitoring Stations	EA	8	\$ 870	\$ 6,960	8	\$ 1,012	\$ 8,094
Direct Cost				\$ 1,672,380	\$ 2,898,582		
Adjustment Factors							
Scope Contingency			30%	\$ 501,714		30%	\$ 869,575
	Subtotal			\$ 2,174,095			\$ 3,768,157
General Conditions						10%	\$ 376,816
	Subtotal						\$ 4,144,972
Overhead & Profit			27%	\$ 587,006		15%	\$ 621,746
	Subtotal			\$ 2,761,100			\$ 4,766,718
Tax						9%	\$ 429,005
Total Estimated Construction Cost				\$ 2,761,100	\$ 5,195,723		