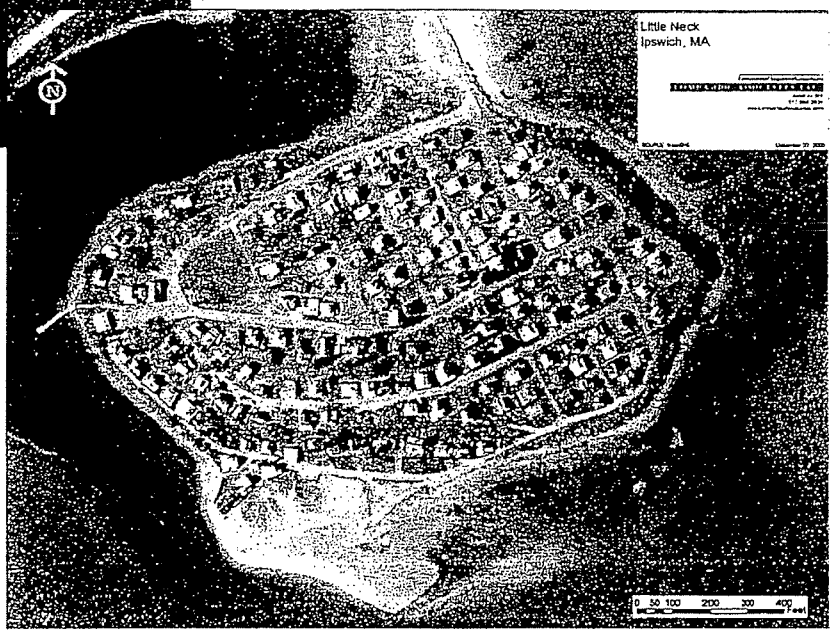
Master Plan & Program Management Report

Wastewater Management System
Little Neck, Ipswich, MA

August 11, 2005



Submitted to:
Feoffees of the Grammar School
c/o
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Submitted by:

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1. PROGRAM DESCRIPTION

The Feoffees of the Grammar School ("Feoffees") are under an administrative consent order ("ACO") with the Massachusetts Department of Environmental Protection ("MADEP") to correct inadequate wastewater management for the 167 houses on Feoffees' property on Little Neck in Ipswich, MA.

Little Neck contains 210 separate parcels on which there are a total of 167 homes. Of these, 143 are seasonal residences (April 1 to November 30). The remaining 24 are year-round residences. Additionally, there is a community center building.

1.1. Program Scope

The Scope of the near-term Little Neck wastewater project to comply with the ACO consists of wastewater collection from the 167 houses and Community Center, temporary storage and transfer to trucks for off-Little Neck disposal. Project Components include the following:

1. Sewer Collection System, with 2 pump stations
2. Holding Tank/Transfer Facilities/Building
3. Management Information System (MIS)
4. Wastewater Pumping Contract

1.2. Program Schedule

1.2.1 Near-term Implementation Schedule

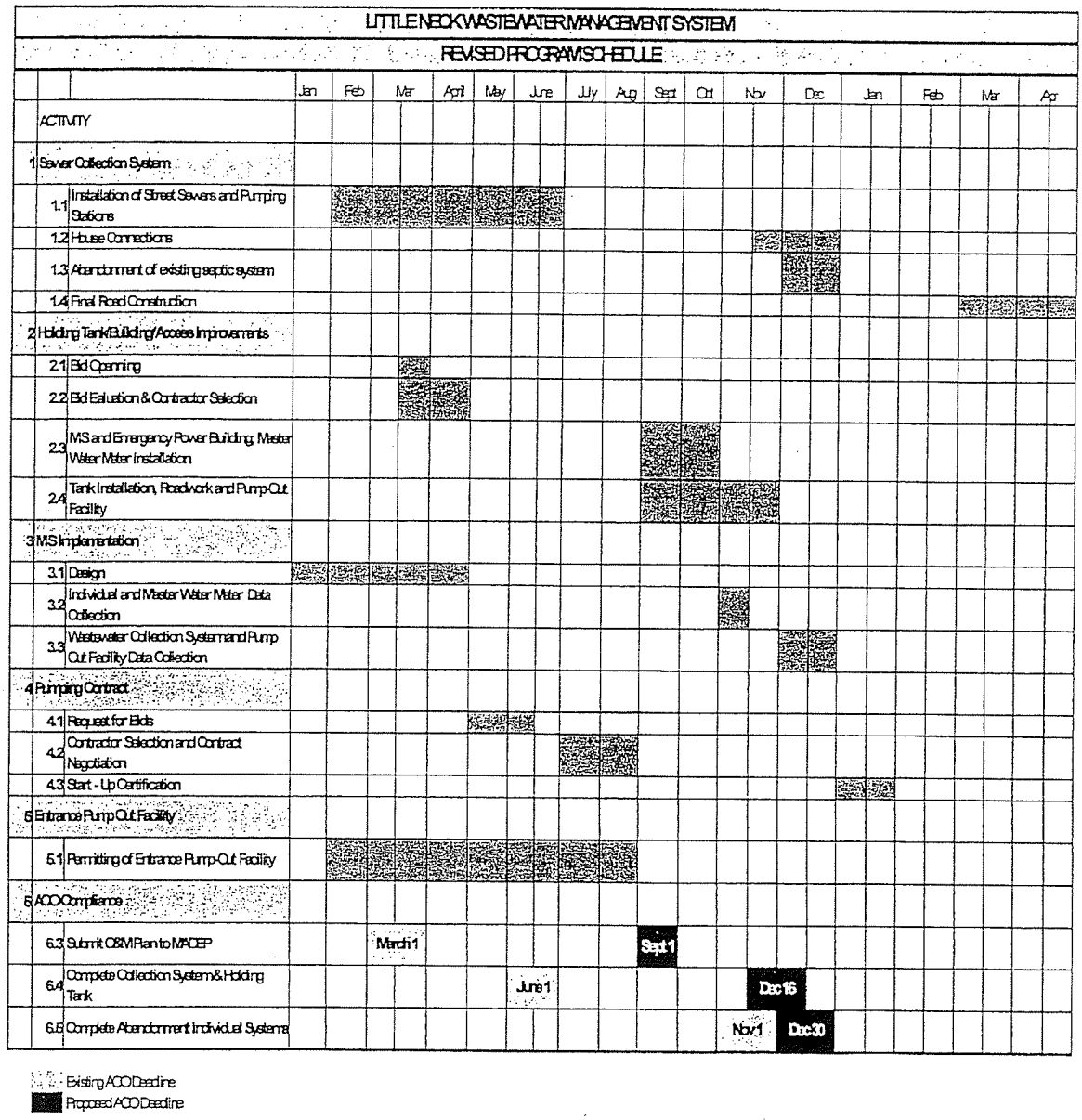
The Schedule for the collection system and holding tank project is being dictated by the ACO. The major milestones for the project from the ACO are presented in Table 1-1.

TABLE 1-1: PROJECT MILESTONES FROM ACO

Milestone	Due Date
System Design and MADEP Approval	Nov 30, 2004
Construction Start	Jan 2, 2005
O&M Plan Submission to MADEP	Mar 1, 2005
Construction of Main System Completed	June 1, 2005
All Home Connections Completed and current septic/cesspool systems abandoned	Nov 1, 2005

Due to construction implementation issues, the near-term Implementation Schedule for the project is now anticipated to be as presented in Table 1-2.

TABLE 1-2: NEAR-TERM PROJECT IMPLEMENTATION SCHEDULE



1.3. Program Budget Summary

The capital costs for the project components are outlined in Table 1-3.

TABLE 1-3: PROJECT BUDGET

Project Budget					
		Construction	*Aug-05*	*Jan-05*	*Sep-04*
Near Term	2.1	Collection System			$1,475,538
		Contract Agreement 1/20/05 & Issued CO (1-4)	$2,225,770	$2,122,594	
		Construction future change orders (5)	$35,000	$100,000	
		Quantity Changes (Road work, loaming, erosion control)	$275,000		$80,000
		Subtotal	*$2,535,770*	*$2,222,594*	*$1,555,538*
	2.2	Holding Tank Budget	$1,145,277	$830,000	$730,000
		Potential Holding Tank Change Orders and Contingency	$100,000		
	2.3	Entrance Transfer Station	$200,000	$200,000	
	2.4	Existing MIS Contract	$60,000	$60,000	
		MIS Additional Budget	$40,000	$40,000	
		Contingency (5%)	$204,052	$502,935	$632,764
		Construction Subtotal	*$4,285,000*	*$3,856,000*	*$2,918,000*
		Engineering			
		Original Agreement	$861,000	$861,000	$655,172
		Schedule Change Activities	$170,000		
		Additional Outside the Gate Activities	$80,000		
		Roads and Other Scope Changes	$131,000		
		Pump-out changes and Additional Construction Services	$210,000		
		Subtotal [1]	*$1,452,000*	*$861,000*	*$655,000*
		Construction & Engineering Total	***$5,737,000***	***$4,717,000***	***$3,573,000***
		Legal Fees Budget	$100,000	$100,000	$100,000
		Financing Budget	$200,000	$200,000	$200,000
		Program Contingency	$200,000	$300,000	$300,000
		Owner's Reserve			$242,227
		Subtotal	*$500,000*	*$600,000*	*$842,227*
		Capital Cost	**$6,237,000**	**$5,317,000**	**$4,416,000**
		Cost per Property	**$38,264**	**$32,620**	**$27,092**
	3.4	***1-Year O&M Prepayment*** [2]			
		Seasonal	*$229,000*	*$261,135*	*$300,300*
		Year round	*$59,000*	*$69,307*	*$84,000*
		Subtotal	*$288,000*	*$330,000*	*$384,000*
		NEAR-TERM TOTAL	**$6,525,000**	**$5,647,000**	**$4,799,227**
		Cost per Property	**$40,031**	**$34,644**	**$29,443**

[1] *Does NOT include $235,000 approved but on hold or allowance for revised Entrance pump-out facility location*

[2] *O&M Prepayment is required for cash-flow purposes*

Summarized as follows:

September 2004 Capital Cost	$4,416,000
Variance	$1,821,000
August 2005 Capital Cost	$6,237,000
1 year O&M Prepayment	$288,000
August 2005 Near-term Total	$6,525,000

with an analysis of the variance presented on Table 1-4 and as described below.

TABLE 1-4: AUGUST 1, 2005 CAPITAL COST VS. SEPTEMBER 2004 CAPITAL COST VARIANCE ANALYSIS

		Total Change*	Per Property Change*
1	Collection System Construction Costs	$785,000	$4,816
2	Roads and Erosion Control	$326,000	$2,000
3	Engineering		
	Outside Gate	$130,000	$798
	Schedule Change and Fast Track	$536,000	$3,288
4	Entrance Transfer Station	$200,000	$1,227
5	Holding Tank Construction Costs	$415,000	$2,546
6	Decreased Contingency	-$571,000	-$3,503
	Total	**$1,821,000**	**$11,172**

* Change does not include O&M prepayment

The construction cost variance is due to changes in design from the preliminary estimates and the restrictive site constraints. Grinder pumps and pressure sewers were eliminated from the system, but this forced the gravity sewer deeper in some locations and forced the pump stations deeper, increasing the cost. Relocating the holding tanks to the ballfield also increased the excavation and installation costs. The site constraints at these locations also appeared to increase the contract bids above the Engineer's estimates, accounting for some of the variance. The project's fast track nature, numerous requested design changes, and permitting application efforts for the "Outside the Gate" pumpout facility were the predominant causes of the increased engineering fees.

2. CAPITAL COMPONENTS

2.1. Collection System

The sewer system collects wastewater from 167 houses and the community center. The wastewater flows to the proposed Holding Tank either by gravity or via force main from the two pump stations. Pump Station No. 1 is located at the parking area on River Road and Pump Station No. 2 is located near the entrance to Little Neck on Plum Sound Road.

The collection system contract was signed January 20, 2005 with RJV Construction Corp. for $2,122,594. Changes in the project schedule (see Table 1-2) and the need for expanded road repairs and erosion control have led to significant increases in the cost of the collection system. The total estimated cost of the complete wastewater collection system is approximately $2,600,000.

2.2. Holding Tank & Transfer Facilities

Wastewater collected by the sewer system will be conveyed to a holding tank, where it will be pumped out and transported to a treatment facility. The design basis is three days of design wastewater flow plus contingency. Thus, based on the 2004 summer water use data, the Little Neck holding tank is sized at 120,000 gallons. The holding tank will be located to the Little Neck ballfield and the transfer facilities have been relocated to along Bay Road.

An Agreement with Waterline Industries for $1,145,277 was signed on July 6, 2005. Waterline Industries had difficulties providing Bonds, so they are providing a Letter of Credit in the amount of $500,000 in lieu of Bonds and crediting the project $54,000 for the cost of Bonds.

2.3. Outside Entrance Pump Out

The option for the Outside the Entrance Pump Out Facility has been rejected. The option just inside the entrance along Bay Road is being designed and will be incorporated into the Holding Tank contract by change order. The entrance sewage transfer station costs are budgeted at $200,000, solely as a placeholder amount.

2.4. MIS

A Management Information System (MIS) will be developed for the Little Neck wastewater management system. A schematic of the MIS is presented in Figure 2-1. The MIS will enable real-time flow and operations monitoring.

The MIS costs are budgeted at $57,948 for the existing contract and approximately a $42,000 allowance for additional desired program features.

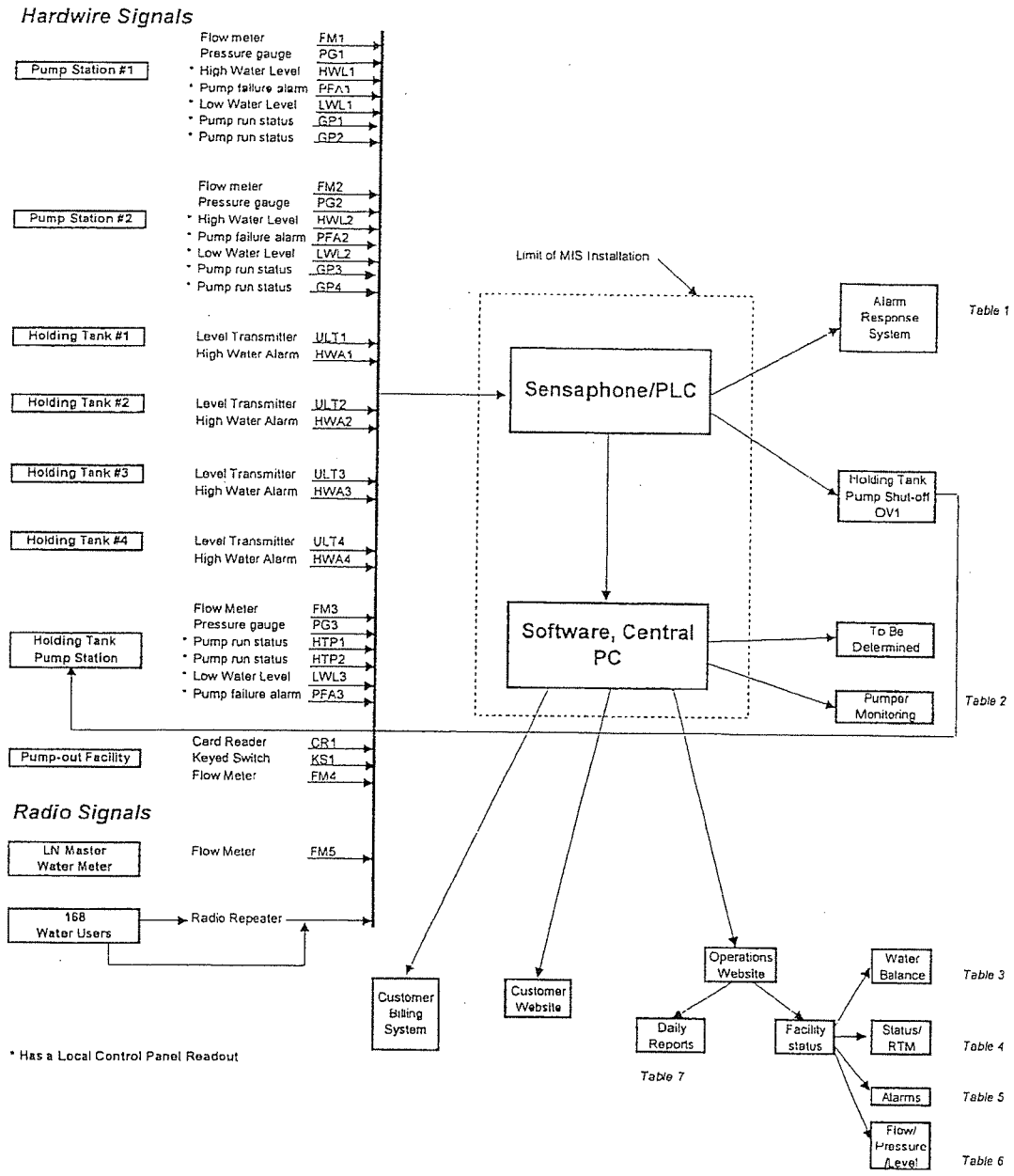


FIGURE 2-1: LITTLE NECK MIS SCHEMATIC

2.5. Pump Out Contract

D.F. Clark, Inc. submitted a price of $0.085 per gallon after the Town of Ipswich withdrew from consideration for providing the service. D.F. Clark has also submitted a price of $0.065 per gallon for transporting the wastewater to a potential receiving station on Jeffrey's Neck Road. Wastewater pumping and disposal costs will be based upon actual wastewater generation, which is assumed to equal 85 percent of water use for budgeting purposes. The estimated cost to pump will be $200,000 annually.

2.6. Disposal to Ipswich WWTP

There are two options for disposing to the Ipswich wastewater treatment plant. The first option is to truck the wastewater through town to the treatment plant. The second option is to truck the wastewater to a receiving station on Jeffrey's Neck Road and then pump from the station to the wastewater plant. The wastewater would have to be conveyed approximately 4,000 feet in a new force main from the receiving station to the treatment plant.

The Sewer Commission is interested in investigating the feasibility of the Sewer Commission (i.e. Town) installing the receiving station and force main to the treatment plant and should it be determined to be feasible, would submit a warrant for Spring 2006 Town Meeting for its construction. To avoid summer 2006 traffic issues requires the project efforts be initiated immediately. The Sewer Commission would look to the Feoffees to develop, design and receive construction bids for the project.

This option would be economically viable if the savings from travel time reduction were adequate to pay the "transport fee" the Town would need to receive to amortize its investment. The Sewer Commission indicated that the Feoffees would not be expected to bear the entire cost, however would need to receive a proposal to determine viability.

A brief analysis prepared by LAI for the Feoffees consideration shows that the savings from the pumping contract are comparable to the annual payment required to fund the receiving station and force main construction.

2.7. Long Term Solutions

Three potential long-term solutions have been identified for Little Neck wastewater management. They are as follows:

1. ***Connection to the Ipswich sewer system with untreated Little Neck wastewater.***
2. ***Construction of an on Little Neck WWTP and clean water connection to the Ipswich sewer system discharge pipe.***
3. ***Horizontal directional drilling (HDD) and connection to the Ipswich WWTP.***

3. O&M Components

3.1. Administration and Management

Billing and O&M activities are to be outsourced to the Town of Ipswich or a private sector contractor. It is estimated that annual administrative and system management costs will be $40,000.

3.2. Pump Station O&M

Pump station O&M costs are estimated at $5,000 per year.

3.3. Annual O&M User Charges

The annual O&M charges are presented in Table 3-1. They are comprised of:

1. Pump-out Contract
2. Pump station O&M
3. Administration and management
4. Contingency

TABLE 3-1: ESTIMATED ANNUAL CHARGES

Annual Charges	
1. Pumping	
April-Nov	$195,433
Jan-Mar, Dec	$21,659
Subtotal	**$217,092**
2. PS O&M	$5,000
3. Management	$40,000
4. Contingency (10%)	$26,209
Total	**$288,301**

It is estimated that annual user charges and revenue will be approximately:

Average Fee for Seasonal Home[1]	$ 1,636 x 140 users =	$229,018
Average Fee for Year-Round Home[2]	$ 2,578 x 23 users =	$59,283
		$288,301

1. April - Nov pumping, management, & PS O&M costs, contingency distributed to 163 users.
2. Total pumping costs distributed to 23 users & management & PS O&M costs, contingency distributed to 163 users.

APPENDIX A-1: MONTHLY STATUS REPORT

Status as of August 3, 2005

Item	Activity	Major Milestone Status	Issue to Discuss
1	Collection System	Major in-street construction completed May 27, 2005	
		House connections and septic tank abandonment to commence following construction of Holding Tank in late Fall	
		Final Road Paving May, 2006	
		As-built utility drawings are being compiled by LAI	
2	Holding Tank	Contract with Waterline Industries Signed July 6, 2005	
		Construction of Holding Tank facility and MIS building to begin September 6, 2005	
3	Entrance Pump Out Facility	Designing Alternate Layout near the Entrance to incorporate into change order to Holding Tank contract	
4	MIS	Contract with MIS progressing as scheduled	
5	Pump Out Contract	Proposal received from D.F. Clark, Inc.	Receiving Station Plan
6	Jeffreys Neck Road Receiving Station and Connection to Ipswich WWTP	Placed on hold	
7	Long Term Solution	Discussions with Trustees of Reservation and Town continuing	

APPENDIX A-2: QUANTITY UPDATE

ITEM #	DESCRIPTION	CONTRACT QTY		CONTRACT PRICE	CONTRACT TOTAL DOLLAR	TOTAL QUANTITY	TOTAL WORK EARNED	OVERRUN / UNDERRUN TO DATE	ESTIMATED QUANTITY	ESTIMATED TOTAL DOLLAR	WORK REMAINING	FINAL ESTIMATED OVERRUN / UNDERRUN
1	MOB/DEMOB (5%)	1	LS	$82,000.00	$82,000.00	0.75	$ 61,500.00	$ (20,500.00)	1	$82,000.00	$20,500.00	$0.00
2	EXC BELOW GRADE	500	CY	$0.01	$5.00	0.00	$ -	$ (5.00)	0	$0.00	$0.00	($5.00)
3	ROCK EXC	500	CY	$40.00	$20,000.00	64.35	$ 2,574.00	$ (17,426.00)	150	$6,000.00	$3,426.00	($14,574.00)
4	BANK RUN GRAVEL	200	CY	$12.00	$2,400.00	709.85	$ 8,518.20	$ 6,118.20	780	$9,360.00	$841.80	$6,960.00
5	COMMON FILL	200	CY	$12.00	$2,400.00	0.00	$ -	$ (2,400.00)	550	$6,600.00	$6,600.00	$4,200.00
6	SCREENED GRAVEL	200	CY	$20.00	$4,000.00	50.00	$ 1,000.00	$ (3,000.00)	75	$1,500.00	$500.00	($2,500.00)
7	CRUSHED STONE	200	CY	$20.00	$4,000.00	250.00	$ 5,000.00	$ 1,000.00	400	$8,000.00	$3,000.00	$4,000.00
8	DEWATERING	1,000	LF	$0.01	$10.00	350.00	$ 3.50	$ (6.50)	1,000	$10.00	$6.50	$0.00
9	SHEETING	2,000	SF	$0.01	$20.00	0.00	$ -	$ (20.00)	0	$0.00	$0.00	($20.00)
10A	TYPE A 8"GS	6,462	LF	$72.00	$465,264.00	6513.40	$ 468,964.80	$ 3,700.80	6,513	$468,964.80	$0.00	$3,700.80
10B	TYPE B 8" GS, 3" FM, 2-2" ELEC	910	LF	$150.00	$136,500.00	938.00	$ 140,700.00	$ 4,200.00	938	$140,700.00	$0.00	$4,200.00
10C	TYPE C 8" GS, 4" FM, 2" FM, 4-2" ELEC	560	LF	$225.00	$126,000.00	577.50	$ 129,937.50	$ 3,937.50	576	$129,937.50	$0.00	$3,937.50
10D	TYPE D 4" FM, 2" FM, 4-2" ELEC	210	LF	$160.00	$33,600.00	199.00	$ 31,840.00	$ (1,760.00)	199	$31,840.00	$0.00	($1,760.00)
10E	TYPE E 3" FM, 2-2" ELEC	215	LF	$85.00	$18,275.00	225.00	$ 19,125.00	$ 850.00	225	$19,125.00	$0.00	$850.00
10F	TYPE F 8" GS, 4" FM, 4-2" ELEC	100	LF	$200.00	$20,000.00	104.00	$ 20,800.00	$ 800.00	104	$20,800.00	$0.00	$800.00
11A	6" PVC HOUSE CONNECTION	6,200	LF	$35.00	$217,000.00	3016.20	$ 105,567.00	$ (111,433.00)	7,000	$245,000.00	$139,433.00	$28,000.00
11B	8"X6" PVC WYE OR TEE	169	EA	$75.00	$12,600.00	169.00	$ 12,675.00	$ 75.00	172	$12,900.00	$225.00	$300.00
11C	6" SEWER CHIMNEY	900	VF	$0.01	$9.00	114.80	$ 1.15	$ (7.85)	115	$1.15	$0.00	($7.85)
12A	4' DIA SMH	432	VF	$250.00	$108,000.00	479.33	$ 119,832.50	$ 11,832.50	479	$119,832.50	$0.00	$11,832.50
12B	5' DIA SMH	120	VF	$375.00	$45,000.00	60.94	$ 22,852.50	$ (22,147.50)	61	$22,852.50	$0.00	($22,147.50)
12C	SMH FRAME & COVER	55	EA	$425.00	$23,375.00	56.00	$ 23,800.00	$ 425.00	58	$24,650.00	$850.00	$1,275.00
12D	BOLTED MANHOLE FRAME & COVER	10	EA	$500.00	$5,000.00	10.00	$ 5,000.00	$ -	10	$5,000.00	$0.00	$0.00
12E	8" INSIDE DROP CONN	25	VF	$80.00	$2,000.00	31.73	$ 2,538.40	$ 538.40	32	$2,538.40	$0.00	$538.40
13A	GRAVEL BASE COURSE	3,350	SY	$10.00	$33,500.00	7863.28	$ 78,632.80	$ 45,132.80	8,500	$85,000.00	$6,367.20	$51,500.00
13B	BIT CONCRETE BINDER	6,700	SY	$16.00	$107,200.00	12448.20	$ 199,171.20	$ 91,971.20	12,500	$200,000.00	$828.80	$92,800.00
13C	BIT CONC SURFACE	11,750	SY	$5.30	$62,275.00	0.00	$ -	$ (62,275.00)	17,000	$90,100.00	$90,100.00	$37,225.00
13D	LEVELING COURSE	100	TON	$51.00	$4,500.00	0.00	$ -	$ (4,500.00)	100	$5,100.00	$5,100.00	$600.00
13E	FILTER FABRIC	500	SY	$1.50	$750.00	297.78	$ 446.67	$ (303.33)	450	$675.00	$228.33	($75.00)
14A	RELOCATION CROSS-DRAINS	5	EA	$500.00	$2,500.00	4.00	$ 2,000.00	$ (500.00)	4	$2,000.00	$0.00	($500.00)
14B	RELOCATE IN-SERVICE ELECTRIC	500	LF	$0.01	$5.00	0.00	$ -	$ (5.00)	0	$0.00	$0.00	($5.00)
14C	REMOVE OUT-OF-SERVICE ELECTRIC	500	LF	$0.01	$5.00	0.00	$ -	$ (5.00)	0	$0.00	$0.00	($5.00)
14D	RELOCATE IN-SERVICE WATER MAIN	500	LF	$45.00	$22,500.00	408.40	$ 18,378.00	$ (4,122.00)	408	$18,378.00	$0.00	($4,122.00)
14E	REMOVE OUT-OF-SERVICE WATER MAIN	500	LF	$0.01	$5.00	0.00	$ -	$ (5.00)	0	$0.00	$0.00	($5.00)
14F	RELOCATE IN-SERVICE CABLE/TEL	500	LF	$0.01	$5.00	0.00	$ -	$ (5.00)	0	$0.00	$0.00	($5.00)
14G	REMOVE OUT-OF-SERVICE CABLE/TEL	500	LF	$0.01	$5.00	0.00	$ -	$ (5.00)	0	$0.00	$0.00	($5.00)
14H	ABNDON EXIST SEPTIC TANKS	200	EA	$250.00	$50,000.00	0.00	$ -	$ (50,000.00)	200	$50,000.00	$50,000.00	$0.00
14I	CONCRETE ENCASEMENT	500	LF	$50.00	$25,000.00	0.00	$ -	$ (25,000.00)	100	$5,000.00	$5,000.00	($20,000.00)
15A	PUMPING STATION #1	1	LS	$140,000.00	$140,000.00	0.70	$ 98,000.00	$ (42,000.00)	1	$140,000.00	$42,000.00	$0.00
15B	PUMPING STATION #2	1	LS	$135,000.00	$135,000.00	0.70	$ 94,500.00	$ (40,500.00)	1	$135,000.00	$40,500.00	$0.00
15C	OVERFLOW TANK PS#1	1	EA	$92,000.00	$92,000.00	1.00	$ 92,000.00	$ -	1	$92,000.00	$0.00	$0.00
15D	OVERFLOW TANK PS#2	1	EA	$55,000.00	$55,000.00	1.00	$ 55,000.00	$ -	1	$55,000.00	$0.00	$0.00
16	LOAM & SEED	500	SY	$15.00	$7,500.00	3821.00	$ 57,315.00	$ 49,815.00	6,500	$97,500.00	$40,185.00	$90,000.00
17	TEST PIT	100	CY	$50.00	$5,000.00	231.94	$ 11,597.00	$ 6,597.00	232	$11,597.00	$0.00	$6,597.00
18	HAY BALES & SILT FENCE	2,000	LF	$5.00	$10,000.00	2000.00	$ 10,000.00	$ -	3,500	$17,500.00	$7,500.00	$7,500.00
19	ENGINEER FIELD OFFICE	1	LS	$6,000.00	$6,000.00	1.00	$ 6,000.00	$ -	1	$6,000.00	$0.00	$0.00
20	TEMP 1000 GALLON TANK	5	EA	$4,000.00	$20,000.00	0.00	$ -	$ (20,000.00)	0	$0.00	$0.00	($20,000.00)
21	TRENCH DAM	60	EA	$250.00	$15,000.00	59.00	$ 14,750.00	$ (250.00)	60	$15,000.00	$250.00	$0.00
22	CHANGE ORDER #1	1	EA	$33,100.00	$33,100.00	1.00	$ 33,100.00	$ -	1	$33,100.00	$0.00	$0.00
23	CHANGE ORDER #2	1	EA	$2,250.00	$2,250.00	0.00	$ -	$ (2,250.00)	1	$2,250.00	$2,250.00	$0.00
24	CHANGE ORDER #3	1	EA	$9,600.00	$9,600.00	1.00	$ 9,600.00	$ -	1	$9,600.00	$0.00	$0.00
25	CHANGE ORDER #4	1	EA	$69,011.56	$69,011.56	1.00	$ 69,011.56	$ -	1	$69,011.56	$0.00	$0.00
26	CHANGE ORDER #5 (EST.)	1	EA	$35,000.00		0.00	$ -	$ -	1	$35,000.00	$35,000.00	$0.00
				TOTAL	$2,225,769.56		$2,031,731.78	-$194,037.78		$2,532,423.41	$500,691.63	$271,653.85
				Percent of Contract Total Complete			91.3%					
				Percent of Estimated Total Complete			80.2%					
	Price changed under CO#3											
	Quantities changed under CO#1			Less 10% Value on Item 10			$ 76,840.23					
				Work Value Completed			$1,955,691.55					
				5% RETAINAGE			$111,288.48					
				Amount Due Contractor			$1,844,403.07	73%				
				Paid to Date (thru Payment #6)			$1,844,403.07					
				Net Amount Due for Completed Work			$0.00					

APPENDIX A-3: COLLECTION SYSTEM CHANGE ORDERS – RJV CONTRACT

CO#1

Item	Description	Costs
1	Sewer Modifications (Bid Schedule Change)	-$10,786
2	Recore MH 38 and delays	$7,000
3	Final Electrical Plan and Details	$22,000
4	Final Landscaping Plan and Details	$0
5	Show Electric handhold locations	$0
6	Force Main to C900	$700
7	Change Pump Stations piping from PVC to DI	$3,350
8	Remove Pressure Transducers	-$750
9	Add fax/printer for Field Office	$800
10	Revised House Connections	$0
	Total	**$22,314**

CO#2

Item	Description	Costs
1	Air Release Valves (2)	$2,250
	Total	**$2,250**

CO#3

Item	Description	Costs	
1	New Odor Control Blowers	-$400	
2	Road Repairs	$0	* Will treat
3	Schedule Change (mob/demob)	$10,000	as overruns
	Total	**$9,600**	

CO#4

Item	Description	Costs
1	Additional Conduit on Bay Rd	$16,700
2	Installing wires in spare conduits	$26,550
3	Ballfield restoration	$25,762
5	Pump Station #1 restoration	$0
	Total	**$69,011.56**

CO#5

Item	Description	Costs
1	Heat Tracing Spec	$0
2	Seven (7) Arborvitae trees	$1,000
3	Erosion Control	$18,900
4	Future changes	$15,000
	Total	**$34,900**