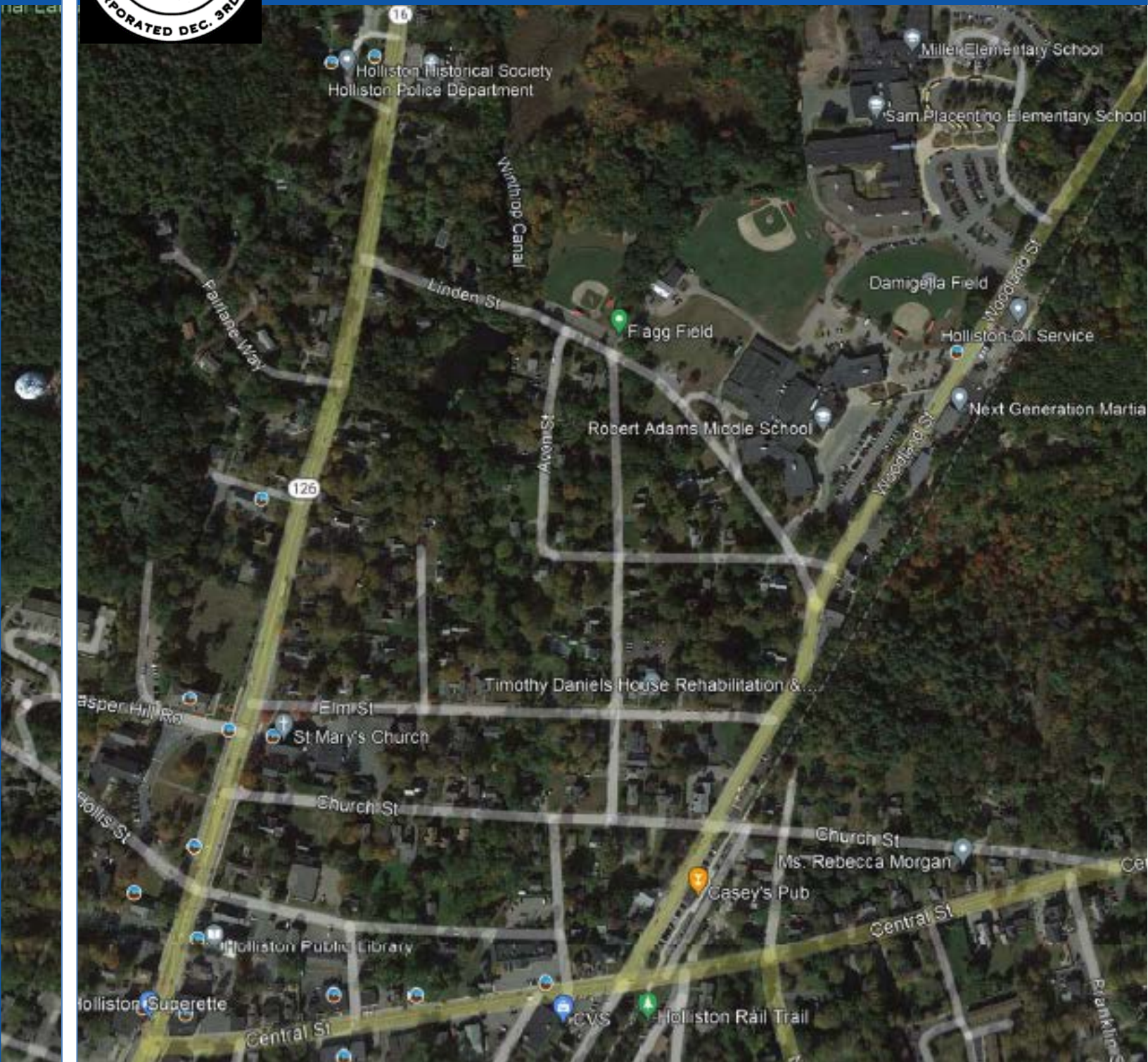


Holliston Wastewater Treatment Plant Modernization Immediate Modernization Recommendations



Submitted to:
Town of Holliston
703 Washington Street
Holliston, MA 01746

Environmental Engineers/Consultants

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September 23, 2022

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Authorization: The Town of Holliston retained Lombardo Associates, Inc. to perform Wastewater Treatment Plant Modernization And Downtown Sewer Connectivity Analysis. This Report presents the Immediate Modernization Recommendations for the Wastewater Treatment Plant. Additional Project Reports will be issued on:

- ✓ Capacity of the Wastewater System to process and discharge wastewater from the Downtown Sewer Area,
- ✓ Downtown Sewering Options
- ✓ Additional Modernization Recommendations,
 - Resulting from ongoing data treatment plant collection and analysis

1 INTRODUCTION

This Report addresses the immediate process modifications / improvements needed to:

1. Address essential facility modernizations for the 20+ year old Holliston Woodland Street School Complex Wastewater System and Wastewater Treatment Facility (WWTF)
2. Improve the ability of the existing treatment system to achieve permit compliance.

Figure 1-1 presents the process flow diagram of the complete Woodland School wastewater system and the details of the WWTF components.

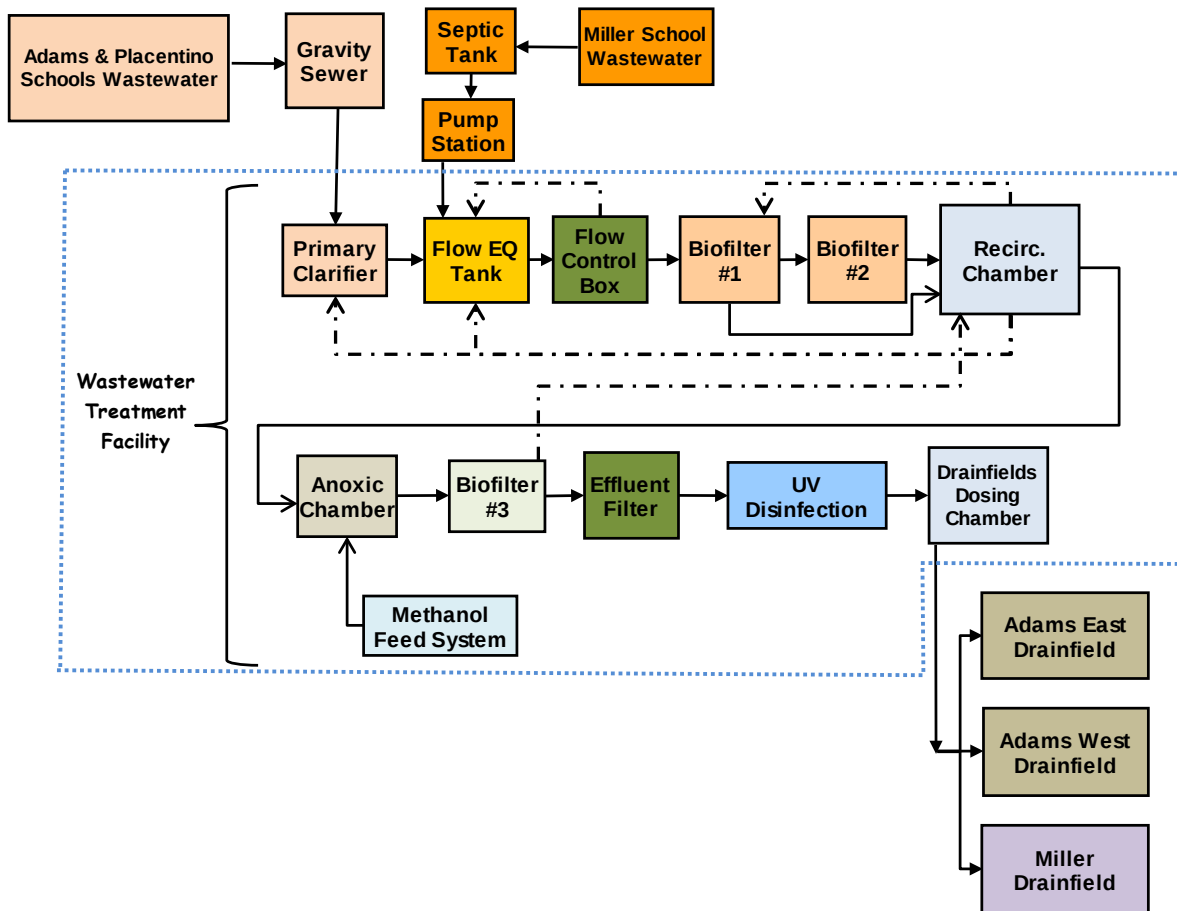


Figure 1-1 Holliston WWTP Process Flow Diagram

Figure 1-2 presents a WWTF plan view. Figure 1-3 illustrate flow direction of wastewater, recycle and air.

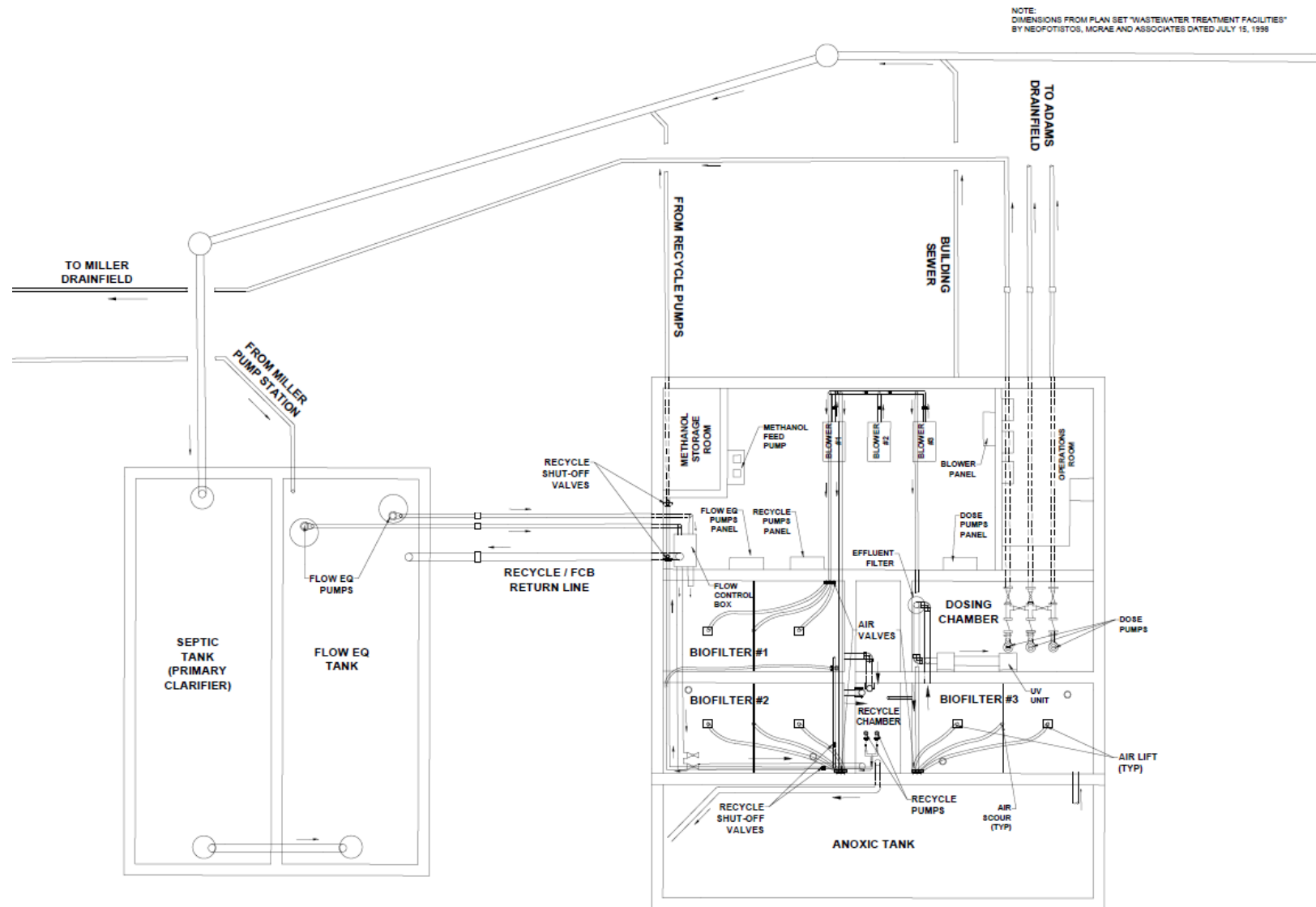
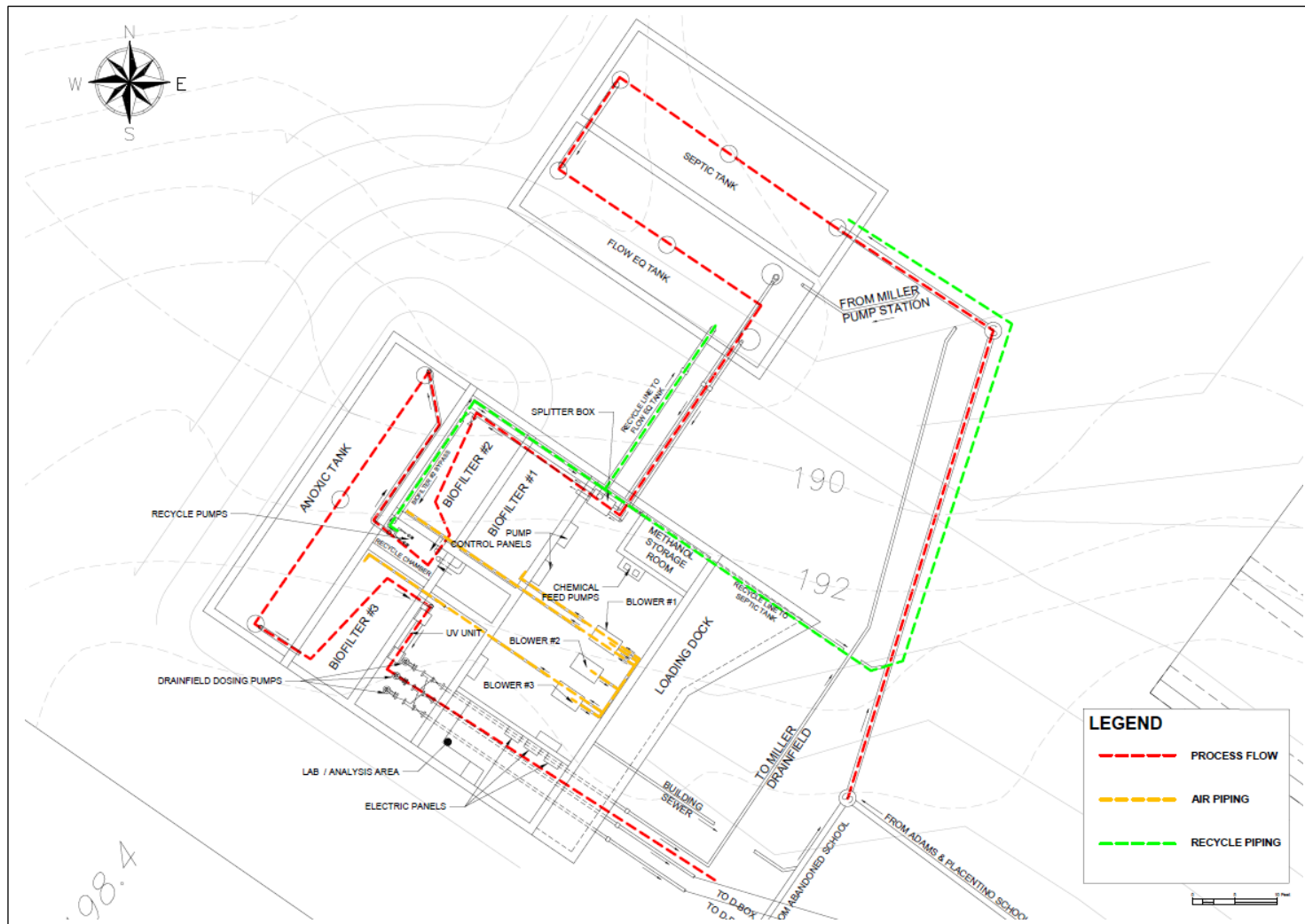


Figure 1-2 WWTF Plan View # 1



**Figure 1-3
WWTF Plan
View # 2**

2 IMMEDIATE MODERNAZATION RECOMMENDATIONS

A summary of the WWTF Immediate Improvement recommendations is presented on Table 2-1, with details presented on Table 2-2.

The proposed WWTF Immediate Improvement Recommendations Capital Cost budget is presented on Table 2-3. Capital cost line-item budgets are interdependent. Consequently, removing an item does not necessarily result in the same net total cost reduction.

Table 2-1 Immediate Modernization Recommendations

	Item	Solution
1	Influent Splitter Box Replacement	Replace Flow Splitter Box - with weir
2	Influent Flow Measurement	Add an ultrasonic level transducer to the Flow Control Box.
3	Alkalinity Feed System Addition	Add automatic feed system, feed based upon flow
4	Remote Monitoring and Control System	Budget Allowance
5	Process Piping Improvements	Extend 2 recycle lines to influent of Biofilter #1, permanent solution to series connection
6	Anoxic mixer / baffle wall	Mixing / settling improvements
7	Effluent Flow Measurement	Extend platform past UV unit, add weirbox + ultrasonic
8	Analytical Equipment for Process Performance Monitoring	Obtain new Benchtop Photometer, accessories and reagents to allow for benchtop ammonia, nitrate, pH and Alkalinity analyses
9	ISE Ammonia / Nitrate - ORP	Continuous performance monitoring
10	Composite Sampler	Permit Required
11	Miscellaneous Facility Cleaning/Painting	Sand blast and paint corroded areas
12	Spare Parts	
13	Intensive Process Data Collection	Weekly data collection to identify process adjustments / improvements for permit compliance

Table 2-2 Capital Cost Budgets – Equipment / Work Details

Item #	Item Description / List
1	Splitter Box Replacement
2	Influent Flow Measurement
3	Alk Feed Equip
3.1	Tank
3.2	Mixer
3.3	Pump
3.4	Level sensor
3.5	SCADA connection
4	Remote Monitoring & Control-SCADA
5	Process Piping Improvements
5.1	Series connect Biofilter #1 to Biofilter #2
5.2	Extend recycle line to inlet end of Biofilter #1
5.3	Extend recycle line from Biofilter #3 to inlet of Biofilter #1
6	Anoxic mixer / baffle wall
7	Effluent Flow Measurement
8	Analytical Equipment
8.1	Benchtop analyzer
8.2	Reagents
8.3	Misc. Equip.
9	ISE Ammonia / Nitrate - ORP
10	Composite Sampler
11	Miscellaneous Facility Cleaning/Painting
12	Spare Parts
12.1	Flow EQ pump
12.2	Recycle Pump
12.3	Dosing Pump
12.4	Anoxic Mixer
12.5	SCADA I/O Modules
12.6	Ultrasonics
12.7	Nitrate / Ammonia Analyzers cartridges
12.8	Air Valves
12.9	Collection System Pumps & Floats
12.91	Miscellaneous

Table 2-3 Capital Cost Budget & Basis

Construction Budget		Eng	Total
Equipment	Est. Total Construction Costs	Est. Design + CE + Start	Est. Capital Costs
Splitter Box	\$ 15,600	\$ 2,840	\$ 18,440
Ultrasonic Level Transducer	\$ 7,200	\$ 3,450	\$ 10,650
Alk	\$ 22,080	\$ 4,390	\$ 26,470
SCADA	\$ 107,000	\$ 26,400	\$133,400
Piping	\$ 13,200	\$ 6,640	\$ 19,840
Anox. Mixing	\$ 18,000	\$ 3,840	\$ 21,840
Effl Flow	\$ 30,000	\$ 6,930	\$ 36,930
Analytical Equip	\$ 8,160	\$ 3,400	\$ 11,560
Instruments	\$ 45,600	\$ 5,570	\$ 51,170
Sampler	\$ 12,000	\$ 2,550	\$ 14,550
Misc	\$ 48,000	\$ 8,840	\$ 56,840
Spare Parts	\$ 42,000	\$ 3,600	\$ 45,600
Process Data Collection	\$ 1,000	\$ 19,760	\$ 20,760
Subtotals	\$ 354,240	\$ 95,370	\$449,610