

Alaimo Group

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January 12, 2016

Mr. D. Scott Carew, Township Manager
Township of Moorestown
111 West 2nd Street
Moorestown, New Jersey 08057

Re: Township of Moorestown
Kings Highway Water Treatment Plant
Design
Our File No. A-730-059-000

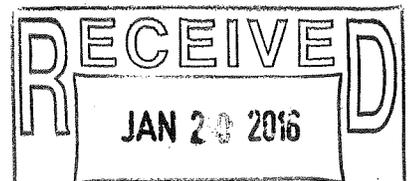
Dear Scott:

The Alaimo Group report submitted in May 2015, which evaluated the condition of the Kings Highway Water Treatment Plant, was based on a limited number of site visits and review of available plans and design information. The engineering alternatives considered in the report were developed around preliminary design information received from major equipment manufacturers. Following the Township's authorization to proceed with design work in accordance with the recommended upgrade (Alternative 1), we requested additional design information from the manufacturer of the existing filter equipment, whose equipment would be an integral component of the treatment process. We also performed a number of site visits to assess in more detail the condition of structures and equipment identified for rehabilitation and reuse in the selected alternative.

As a result of the additional design requirements received from the equipment manufacturer and further assessment of the condition of the existing facilities, several issues with the selected alternative became apparent that would result in additional time and costs during both design and construction. Firstly, from a capacity standpoint the existing backwash pumping station and elevated backwash water storage tank were initially considered suitable for rehabilitation and reuse. However, the additional information provided by the filter manufacturer indicates that the quantity of backwash water required for the proposed rehabilitated rapid sand filters is almost twice the quantity that can be supplied by the existing facilities. Therefore, additional backwash water storage and pumping capacity would be required.

- Consulting Engineers -

Civil • Structural • Mechanical • Electrical • Environmental • Planning



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MANAGER'S OFFICE

Secondly, as additional visits to the plant were made and new information was obtained regarding the condition and operational limitations of existing facilities, our opinion of the viability and cost effectiveness of reusing the existing facilities, in particular the sand filters has changed. The viability of Alternative 1 was contingent on the reuse of the existing filter building and concrete filter tanks. As the deteriorated condition of these structures and lack of useful design information became known, it was evident that reuse of the filter tanks and building as an overall strategy would result in significant additions to the scope of work and cost of Alternative 1. The recent information obtained from the filter manufacturer indicates that major modifications to the concrete filter tanks will be required to install new filter equipment. Due to the age and deterioration of the concrete and reinforcing, it is our opinion that these modifications will result in significant increases in the estimated construction cost. It is also probable that during construction structural defects in the filter tanks will be discovered that may necessitate a redesign and change order resulting in an increase in the construction cost and contract completion time. Accordingly, we are recommending an alternative based on minimal reuse of existing facilities.

The recommended alternative combines elements of both Alternatives 1 and 2 outlined in the May 2015 Plant Evaluation Report. The core treatment process will consist of two (2) aerators, two (2) solids contact clarifiers, and five (5) vertical pressure filters with greensand media. The installation of clarification will significantly reduce the size and cost of the pressure filters as compared to the filtration without clarification approach (Alternative 2) considered in the report. Clarification further minimizes backwash water requirements and the size of related equipment such as backwash water supply tanks, and backwash supply, return, and recycling pumps. The new aeration, clarification and filtration equipment can be constructed in an area of the site that is largely unused, thus allowing the majority of the proposed improvements to be constructed while keeping the existing plant in operation.

Based on the additional information obtained from the existing filter manufacturer and a more comprehensive review/inspection of the existing filter tanks it is our opinion that the estimated construction cost for Alternative 1 (Revised) would now be \$7,310,000. In comparison, the estimated construction cost for Alternative 2 (Revised) is \$6,240,000. Copies of the construction cost estimates for Alternatives 1 and 2, as revised are attached. The fee for design, permitting and bid services will remain the same as previously proposed, \$690,000.

Please note that the above cost estimates and proposed scope of work only includes the demolition required to construct the new facilities. However, the bid proposal will include an item for demolition of the structures to be abandoned, which can be included or deducted from the contract based on the bid prices received.

So as not to delay the project schedule Alaimo Group is proceeding with the preparation of bid documents for Alternative 2 (Revised) as described above. As previously indicated, we anticipate advertising the project for bids in the early spring, and receiving bids and awarding the contract in May or June.

Mr. D. Scott Carew

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January 12, 2016

Should you have any questions regarding the above recommendations and proceeding with the revised project scope of work, please contact me.

Very truly yours,

ALAIMO GROUP



L. Russell Trice, P.E.
Senior Associate

LRT/das

cc: Thomas J. Merchel, Chief Financial Officer,
Kenneth H. Ewers, Public Works Director, Township of Moorestown
Bill Butler, Utility Supervisor, Township of Moorestown
Richard A. Alaimo, P.E., President, Alaimo Group
Miles Powell, Senior Associate, Alaimo Group
Jonathan Reuther, P.E., Senior Project Engineer, Alaimo Group

**Moorestown Township
Kings Highway WTP Alternative 1 (Revised)
Project Cost Estimate**

Item	Description	Qty.	Unit Cost.	Cost	
1	Mobilization	1	LS	\$120,000.00	\$120,000.00
2	Temporary Soil Erosion & Sediment Control	1	LS	\$10,000.00	\$10,000.00
3	Demolition & pipe abandonment	1	LS	\$260,000.00	\$260,000.00
4	Misc. site work & restoration	1	LS	\$50,000.00	\$50,000.00
5	Yard Piping	1	LS	\$324,000.00	\$324,000.00
6	Well Modifications	1	LS	\$153,000.00	\$153,000.00
7	Chemical Feed & Handling Systems	1	LS	\$263,000.00	\$263,000.00
8	Filter System Rehabilitation	1	LS	\$883,000.00	\$883,000.00
9	Clarifiers	1	LS	\$1,576,000.00	\$1,576,000.00
10	Backwash Holding Tank (New 250k gal.)	1	LS	\$400,000.00	\$400,000.00
11	Backwash Recycle Pump Station Rehabilitation	1	LS	\$72,000.00	\$72,000.00
12	Aerators	1	LS	\$215,000.00	\$215,000.00
13	Concrete Clearwell Expansion (110k gal.)	1	LS	\$200,000.00	\$200,000.00
14	Additional High Service Pump Installation	1	LS	\$75,000.00	\$75,000.00
15	Backwash Supply and Waste Pumps	1	LS	\$395,000.00	\$395,000.00
16	Filter Building Repairs/Modifications	1	LS	\$100,000.00	\$100,000.00
17	Control Building	625	SF	\$400.00	\$250,000.00
18	Misc. Instrumentation & Control	1	LS	\$118,000.00	\$118,000.00
19	500kW Diesel Genset with ATS	1	LS	\$205,000.00	\$205,000.00
20	Electrical Work	1	LS	\$418,000.00	\$418,000.00
	Estimated Construction Cost				\$6,090,000.00
	Construction Contingencies - 20%				\$1,220,000.00
	Total Estimated Construction Cost				\$7,310,000.00
	Design, Permitting, Bid Documents				\$690,000.00
	Construction Administration				\$730,000.00
	Total Estimated Project Cost				\$8,730,000.00

**Moorestown Township
Kings Highway WTP Alternative 2 (Revised)
Project Cost Estimate**

Item	Description	Qty.	Unit Cost.	Cost	
1	Mobilization	1	LS	\$120,000.00	\$120,000.00
2	Temporary Soil Erosion & Sediment Control	1	LS	\$10,000.00	\$10,000.00
3	Demolition & pipe abandonment	1	LS	\$115,000.00	\$115,000.00
4	Misc. site work & restoration	1	LS	\$82,000.00	\$82,000.00
5	Yard Piping	1	LS	\$265,000.00	\$265,000.00
6	Well Modifications	1	LS	\$158,000.00	\$158,000.00
7	Chemical Feed & Handling Systems	1	LS	\$256,000.00	\$256,000.00
8	Pressure Filter System, Face Piping and Controls	1	LS	\$704,000.00	\$704,000.00
9	Clarifiers	1	LS	\$1,581,000.00	\$1,581,000.00
10	Backwash Recycle Tank Modifications	1	LS	\$148,000.00	\$148,000.00
11	Backwash Recycle Pump Station Rehabilitation	1	LS	\$55,000.00	\$55,000.00
12	Aerators	1	LS	\$178,000.00	\$178,000.00
13	High Service / Filter Pumps	1	LS	\$182,000.00	\$182,000.00
14	Repair / Modify Exg. HS Pump for Backwash Use	1	LS	\$58,000.00	\$58,000.00
15	Filter Building	2180	SF	\$210.00	\$457,800.00
16	Misc. Instrumentation & Control	1	LS	\$132,000.00	\$132,000.00
17	350kW Diesel Genset with ATS	1	LS	\$185,000.00	\$185,000.00
18	Electrical Work	1	LS	\$505,000.00	\$505,000.00
				Estimated Construction Cost	\$5,200,000.00
				Construction Contingencies - 20%	\$1,040,000.00
				Total Estimated Construction Cost	\$6,240,000.00
				Design, Permitting, Bid Documents	\$690,000.00
				Construction Administration	\$620,000.00
				Total Estimated Project Cost	\$7,550,000.00