

WESTERN WAKE PARTNERS

Report to the Policy Advisory Committee (PAC09-27)

Date: September 29, 2008
To: Western Wake Partners
From: Tim Bailey, P.E., Director of Engineering, Town of Cary
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Subject: Apex Water Main Extension to Beaver Creek Pump Station

Background:

The Beaver Creek Pump Station, which has been designed for a firm capacity of 40-MGD at Phase 1 operating conditions, will have a substantial potable water demand to maintain the proposed odor control and chemical dilution systems. At present, potable water service from the Town of Apex is not available at the proposed Beaver Creek Pump Station site. Two options have been investigated to provide the necessary potable water demand for the pump station.

Option #1: Construct Well and Hydropneumatic Tank

The first option for providing potable water at the Beaver Creek Pump Station is constructing a well. As a result of historically low well water yields in the geographic area where the Beaver Creek Pump Station will be located, peak water demand cannot be sustained in a manner to operate the pump station reliably. Therefore, a sizable hydropneumatic tank would be required to store potable water for peak demand periods. Even with a large hydropneumatic tank, well yields in the area where the Beaver Creek Pump Station will be located are subject to fluctuations. The estimated cost of the well, hydropneumatic tank and supporting systems has been estimated at approximately \$87K. Additionally, the well system would not support the installation of fire sprinkler systems required for the chemical storage building. As a result, the chemical feed for odor control would be limited to Bioxide only, which is a non-corrosive, non hazardous chemical. Bioxide, a proprietary chemical formulation consisting of calcium nitrate, is used for oxidizing reduced sulfur compounds that contribute to odor in raw wastewater conveyance systems. As a proprietary formulation, Bioxide costs more than non-proprietary chemicals such as ferrous sulfate or ferric chloride. Additionally, the use of Bioxide has the potential of adding supplemental nitrogen to the wastewater that must be removed in the treatment process. The ability to retain flexibility in utilizing multiple chemical formulations for odor control would prove beneficial in reducing long term operation costs. The only way to assure that multiple chemicals can be used in compliance with all hazardous environment regulations is to provide a fire sprinkler system connected to a reliable water supply. The well and hydropneumatic tank option would not support a fire sprinkler system.

Option #2: Construct Water Line Extension from Apex

The second option for providing potable water at the Beaver Creek Pump Station is constructing a municipal water line extension from Apex. The Apex water main extension would include approximately 5,700-linear feet of potable water pipeline construction along Olive Chapel Road. A potable water extension from Apex would meet all peak water demands at the Beaver Creek Pump Station site and negate the need for a hydropneumatic tank. The Apex municipal water system would support all necessary

fire sprinkler systems and thereby allow the use of multiple chemicals to help lower long term operating costs. The Town of Apex has reviewed the proposed water line extension and agreed to support waiving all acreage and capacity fees associated with providing potable water to the Beaver Creek Pump Station. The Apex Water System Master Plan requires a 12-inch diameter water trunk line along Olive Chapel Road, which is larger than required to meet the water demand for the Beaver Creek Pump Station. As a result, Apex has supported paying the cost difference of approximately \$100K through their offsite oversize reimbursement program. Additionally, Apex has agreed to acquire the easements for the water main in conjunction with acquiring easements for the power line to the Beaver Creek Pump Station. Compensatory costs required for water line easements would be borne by the Western Wake Partners and an allowance has been included in the cost table below for easement costs. In summary, the estimated cost to the Western Wake Partners for the water line extension is approximately \$315K for construction, \$55K for design services and \$100K for easement acquisition for a total estimated cost of \$470K. Oversizing costs are currently estimated at \$100K, which would be reimbursed by Apex, upon executing an oversize reimbursement agreement.

Cost Tabulation:

Option 1 and option 2 costs are outlined below. Assuming the oversize reimbursement and acreage/capacity fee waivers are approved by Apex, the estimated cost increase will be approximately \$483K to add the potable water main.

Option #1: Well and Hydropneumatic Tank \$ 87K

Option #2: Waterline Extension from Apex

Construction	\$315K
Design Services	\$ 55K
Oversize Allowance	\$100K
<u>Easement Acquisition Cost</u>	<u>\$100K</u>
Total	\$570K

Table 1: Cost Per Project Partner to Extend Apex Water Main to Beaver Creek Pump Station

	Apex	Cary	Morrisville	Total
Cost Share Percentages, BCPS	21.3%	69.0%	9.7%	100%
Base Water Main Construction	\$67,095.00	\$217,350.00	\$30,555.00	\$315,000.00
Design Services	\$11,715.00	\$37,950.00	\$5,335.00	\$55,000.00
Oversize Allowance	\$100,000.00	\$0.00	\$0.00	\$100,000.00
Easement Costs	\$21,300.00	\$69,000.00	\$9,700.00	\$100,000.00
Totals	\$200,110.00	\$324,300.00	\$45,590.00	\$570,000.00

The potable water main extension, although more costly than the well and tank option provides several advantages in comparison.

- 1) Safe and reliable water source for fire sprinkler systems and eye wash stations.
- 2) Allows flexibility in selection of chemical feeds.
- 3) Prevents the installation of additional water storage tanks.
- 4) Assures reliable supplement of nutrient feeds for biofiltration odor control.

Requested Action It is recommended that the Policy Advisory Committee approve the extension of potable water from Apex to the Beaver Creek Pump Station, contingent upon Apex's ability to waive capacity/acreage fees, provide the oversize reimbursement allowance as specified herein and acquire any necessary easements for the water line. It is further recommended that the PAC authorize the Lead Agency to execute any required oversize reimbursement agreements with Apex on behalf of the Western Wake Partners.