



## MEMORANDUM

**TO:** Anthony J. Ruggiero, M.P.A.  
**FROM:** Thomas P. Cusack  
**SUBJECT:** Water Supply Update  
**DATE:** January 9, 2020

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### I Bottleneck

WSP completed a preliminary hydraulic modeling analysis of the raw water piping system from the Cargill Reservoir to the treatment plant. Generally speaking, the model indicated that the existing raw water transmission mains in the area of the “bottleneck” (area of Well 1 and Well 2) appear to be adequately sized and the transmission mains are not the limiting factor affecting the flow of raw water through the “bottleneck” area. The evaluation indicated that the well pumps in Well 1 and Well 2 are undersized with respect to their pressure capability. WSP is recommending both wells be converted from vertical turbine pumps to submersible well pumps.

### II Well 2

WSP completed a flow test for the portion of the raw water main from the Cargill Reservoir to the treatment plant that included evaluating the flow conditions at Well 1 and Well 2. Based on the results of the flow test and the hydraulic model, WSP determined the design parameters to allow for specifying the proposed well pump for Well 2. The design parameters were provided to a pump vendor and a new well pump was selected for installation. WSP is in the process of preparing bid specifications for pump purchase and installation. Once the new pump is installed, the well will be pumped to waste to further develop the well and reduce the turbidity in the well to below the drinking water standard.

### III Well 1

As part of conducting the flow test for Well 2, it was identified that the pump in Well 1 was underperforming. The existing pump is rated for a capacity of 800 gallons per minute; however, the maximum capacity observed during the flow test was 565 gallons per minute. To evaluate this pump, it will need to be pulled from the well and inspected. If possible and cost effective, the pump should be repaired. If repair of the pump cannot be technically or economically justified, it will need to be replaced. The flow test that was conducted will allow for determining the design parameters for Well 1 which will allow WSP to specify a new pump, if needed. Please note that the yield of Well 1 is 400 gallons per minute; therefore, the pump is significantly oversized with respect to pumping capacity.

### IV Well 3

A third well was located by WSP at the well field in 2017. There were no records on this well. A T.V. camera inspection determined this 8-inch diameter well was 253 ft in depth. The City authorized an extended pumping test on Well 3 in October 2019 to determine the yield of the well and potential water quality issues (turbidity). The test determined a safe yield of 235 gpm. The discharge from the well



during the pump test was clear and the turbidity was below drinking water standards. WSP recommend deepening the well from 253 feet to 450 to 550 feet (similar to the depth of Wells 1 and 2) to hopefully encounter deepening water bearing fracture to increase the yield from 235 gpm to 400 gpm. We are preparing an NYSDEC wetland disturbance permit to allowing deepening of the well and connection of the well to the City water-supply system. This source is proposed to augment the City's existing water supply. Assuming a yield of 235 to 400 gpm for Well 3 this would provide surplus water of 338,400 gpd to 576,000 gpd. WSP feels the higher yield estimate can likely be achieved.

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