

# **Wissahickon Valley Watershed Association**

## **Information and Position Summary**

### ***Potential closure of North Wales Water Authority Wastewater Treatment Plant and routing of flow to Upper Gwynedd Wastewater Treatment Plant***

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#### **Introduction**

The purpose of this Information and Position Summary is to outline key technical information and deliver a set of recommendations designed to help fulfill WVWA's mission to advocate for habitat protection and improved water quality. This Information and Position Summary was prepared by WVWA Staff and members of WVWA's Water Resources Committee (WRC). As such, these recommendations are advisory in nature and intended for consideration by the WVWA Board of Trustees. Inasmuch as this is an advisory document, it is hoped that this information and these recommendations will be useful to others with relevant regulatory and political decision-making authority and responsibility. In fact, the recommendations contained in this Summary are offered in an effort to help identify solutions that could be beneficial to all parties, and most especially to the hydrology and ecology of the Upper Wissahickon Watershed.

#### **Hydrology & Ecology of the Upper Wissahickon Creek**

North Wales Water Authority (NWWA) operates a Wastewater Treatment Plant (WWTP) within the Borough of North Wales at a location adjacent to Upper Gwynedd Township Park. The NWWA WWTP discharges an average of 430,000 gallons per day (gpd) of treated effluent to a small unnamed tributary, which flows approximately 1,500 feet before joining the Wissahickon Creek (Figure 1). This unnamed tributary joins the Wissahickon Creek in its headwaters, approximately 2,000 feet downstream from the point where base flow first appears to persist through summer (near the PECO power line easement). Base flow in this upper portion of the Wissahickon Creek is supported by the regulated discharge from stormwater retention basins on Merck property (daytime discharge only, NPDES permitted). There is no base flow in the dry stream channel above the Merck stormwater discharge. Flow from the NWWA WWTP appears to account for approximately 65% of the total flow in this headwater reach of the Wissahickon Creek.

From the confluence of unnamed tributary contributing flow from the NWWA WWTP, to the Upper Gwynedd sewage treatment plant discharge, is a distance of approximately 6,500 feet. Consequently, the flow contributed by the NWWA WWTP is very important to maintaining the hydrology of the upper portion of the Wissahickon Creek. During the summer months, the average flow from the North Wales sewage treatment plant is, in fact, crucial to maintaining stream flow in more than a mile of the Upper Wissahickon Creek. Thus, based on the need to maintain sufficient base flow (water quantity), the Upper Wissahickon depends quite heavily on the contribution from the NWWA WWTP

discharge. It is not surprising then, that the WVWA has serious concerns about the potential closure of the NWWA WWTP and concurrent routing of flow to the Upper Gwynedd Wastewater Treatment Plant. Simply in terms of maintaining stream flow, this downstream diversion could have substantial negative effect on stream biology (i.e., diversity and abundance of aquatic organisms) due to reduced base flow.

Of course, potential closing of the NWWA WWTP and piping the untreated flow to the Upper Gwynedd Wastewater Treatment Plant is proposed in an effort to improve water *quality* conditions in the Upper Wissahickon. This proposal has evolved in response to concerns about inadequate wastewater treatment at the NWWA WWTP. This is summarized in a background document titled *Information Regarding the North Wales Water Authority Wastewater Treatment Plant and Wissahickon Creek* (WVWA WRC draft dated July 8, 2010). Without getting into the details, suffice to say that assertions that the NWWA WWTP has discharged inadequately treated wastewater (occasionally if not regularly) appear to have some basis in fact. Thus, it is possible that the poor quality of the NWWA WWTP discharge is having a negative effect on the ecology of the stream.

### **The Challenge: Water Quantity and Quality**

The situation described above presents a bit of a conundrum; how to provide sufficient volume of surface water to maintain adequate base flow in the Upper Wissahickon Creek during the dry season (summer), while ensuring that the quality of this water is sufficient (consistently good) to support a diverse and abundant biotic community. This conundrum presents a significant challenge, but it is one that can be met through creative collaboration. In fact, it is a challenge that really must be met to achieve the objectives of the various interested parties. Because there are public entities involved, these objectives are not limited to environmental improvements, but also include consideration of fiscal/budgeting issues and public utility rates. While those sorts of issues are certainly important, they are not the primary focus of this Information and Position Summary. Nonetheless, we are optimistic that they can be resolved. And, as indicated in the recommendations below, we are optimistic about opportunities to expand/restore infiltration capacity and sustain sufficient base flow conditions in the Upper Wissahickon Creek.

### **The Solution: Flow Replacement Options**

The Wissahickon Valley Watershed Association will be pleased to see the improvements in water quality that are expected from the closure of the NWWA Sewage Treatment Plant (STP) and the treatment of their sewage by the Upper Gwynedd WWTP. We remain, however, concerned about the resultant loss of flow for over a mile of the Wissahickon. This flow will occur in the uppermost reach of the Creek that has continuous flow, and we believe that this loss will be felt not only in the area of concern, but downstream.

Therefore, we would like to suggest a series of remedies for this problem. We feel that if we replace as much of the flow as possible, in conjunction with the high quality water

that will be coming out of the Upper Gwynedd plant, the Wissahickon will be improved well beyond its present state. We will list the possible improvements below. We are not asking that all these things be done, necessarily; some combination of them would likely be sufficient to replace the loss in flow.

It's worth noting that the implementation of some of these remedies will have multiple benefits, one of which is to help reduce the very flashy nature of the Wissahickon Creek. This would also help reduce flooding in downstream communities that have been repeatedly and significantly impacted by flooding. Another benefit would be to restore and re-establish base flow in the upper reaches of the Creek, essentially creating new stream habitat in areas that presently go dry during periods of low precipitation.

1. The Montgomery Mall sits at the headwaters of the "south fork" of the Wissahickon headwaters. Its parking lots drain partly to the Neshaminy and partly to the Wissahickon. By retrofitting the detention basin in the northwest corner of the mall property, in tandem with resurfacing the parking lot with pervious paving, the Wissahickon could see an enhancement of flow at its beginning. Montgomery Township has expressed an interest in this concept as fulfillment of their TMDL requirements.

The "north fork" of the headwaters wells up in Montgomery Township open space between Route 309 and Knapp Road, which might provide additional opportunities for flow enhancement.

2. WVWA proposes the construction of a series of stormwater wetlands along the Creek. These structures would capture the stormwater as it moves towards the Creek, and then allow that water to seep back into the groundwater layer, thus replenishing stream flow during dry times. WVWA has protected much of the land near the Creek, and we would be happy to see this work happen in our riparian buffer areas. There are several prime locations right in the area of concern. At a recent meeting, two municipalities expressed an interest in funding this concept as fulfillment of their TMDL requirements.

3. WVWA proposes the construction of infiltration galleries on the site of the NWWA plant. These galleries would accept water collected from existing stormwater systems and infiltrate these waters back down to the groundwater layer, where they would ultimately flow down to the Creek and provide a steady recharge of cold clean water to the Creek.

4. NWWA could conduct intensive inflow and infiltration (I & I) work. According to Mr. Robert Bender, Executive Director of NWWA, the North Wales WWTP experiences a spike in volume amounting to 200,000-300,000 gallons per day after a rain event. If we could capture even a third of that and send it to the infiltration galleries, it would go a long way towards replacing the lost flow.

5. A portion of the effluent from the Upper Gwynedd WWTP could be pumped back upstream to the old NWWA discharge point and allowed to enter the Wissahickon there.

6. Water could be pumped from a nearby well and released directly into the Wissahickon to replace the lost flow. WVWA feels that with an investment in solar panels or windmills, this water could be provided at little cost. Alternately, this water could be released to the infiltration galleries noted above, pumped from NWWA's nearby Well 21. The STP site has ample room for solar panel installation.

7. As things stand, a good portion of the flow in the Creek comes from a stormwater system flowing to a basin owned and managed by Merck & Co. They release that water on a daily 12-hour cycle, and where it enters the Creek is where flow becomes constant in the Creek. There are also some springs in that area that contribute some amount of flow. By enhancing the function of that basin and changing the flow regime to a 24-hour basis, we could provide significant flow to the Creek in a fairly natural and inexpensive manner. WVWA acknowledges that going to a 24/7 regime might impose constraints on Merck that may be unacceptable to them, but all water sources must be evaluated.

8. WVWA proposes retrofitting selected stormwater basins in the area to retain stormwater long enough for it to infiltrate into the groundwater that, again, would provide replacement for the lost flow. The Philadelphia Water Department recently completed an inventory of basins in the watershed and prioritized them in terms of which ones need work. With this in hand and with sufficient funding, these basins could be a significant source of flow. WVWA is in discussions with some of the municipalities in the area about doing this work as part of their TMDL requirements, and this approach could provide that funding.

9. Recharge basins or stormwater wetlands could be constructed just east of Sumneytown Pike to capture the runoff from the Genuardi's parking lot on the north side of the Creek and from the small industrial park on the south side. Merck has another facility adjacent to that park which could provide some additional flow.

The Watershed Association has no wish to be an obstruction to the planned regionalization of the local sewage treatment system. Our only agenda is to work with local, state and business partners to replace the flow that would be lost as a result of that project. We feel that a combination of some or all of these concepts could at the least replace enough of the flow to maintain that reach of the Wissahickon Creek. With a serious effort, backed by the DEP and our other partners, we could conceivably achieve more flow after the interconnection than is presently reaching the Creek. This project could well end up being a model for other regions to emulate. A viable stream ecosystem, with clean, plentiful water providing all the physical and aesthetic benefits that would accrue would be our reward for making that effort.