

Mayor's Column  
October 1, 2018

Last Tuesday we had the third major rain event in as many weeks and clearly the most damaging affecting every corner of the Village including homes never before flooded.

As a result, many questions were directed to School and Village officials as to the whys and where fors.

The following are responses to the questions we could garner immediate answers after consultation with the project engineers and pump manufacturers.

Many other issues we continue to research and will answer in follow up columns. Please send any additional questions to my email at Mayor@vobny.com.

Responses are in narrative form but if you wish to see the background data that predicated the answers, you are welcome to come and review at Village Hall.

**Background - Midland Valley Drainage Basin**

In 2007, after \$22 million in damages to school property and the loss of multiple weeks of school and significant damage to Village residences, School and Village officials began exploring grant opportunities to avoid such catastrophic flood damage to our Village going forward. After years of applications and cost benefit analyses, we received a FEMA grant of \$5,770,000. However, the funds came our way only after another storm in 2011 which caused an additional \$6 million in damages to the school alone.

The school district could not be the grantee or lead agency of the FEMA grant by law so Village government led the project.

A multi-year plan was designed and fully vetted by FEMA, the Army Corps of Engineers, the New York State Department of Environmental Conservation, Westchester County and two regional engineering firms.

A five pump system was designed for the rainfall and river flow distribution based on the 2007 storm event of 7.52 inches in a 24 hour period - the equivalent

of a 50 year magnitude storm. The Village and School partnered to absorb the cost of two pumps and a new storm water force main with the School going out to a required bond vote for the additional pumps and corresponding increased level of mitigation.

### **Did the pumps work?**

School and Village officials met post storm with the pump manufacturer and project engineer at the pump site to determine their efficacy.

There was indeed a problem on pump one with the automatic nature of the trigger switch and float sensor. It is being remedied with new and redundant mechanisms.

Thankfully Mike Lee, the Bronxville School's Director of Facilities, received the alarm, was on site and started the pump manually causing no delays. Even if pump one had failed to activate, pump two would have engaged automatically.

### **Were the pumps worth it?**

Given \$30 million in damage, five feet peak water levels in our School in both the 2007 and 2011 events and multiple weeks of lost instruction, the pumps clearly meet the cost–benefit test based on just the past three storms in September when they activated.

During this past Tuesday's event, the pumps ran four hours straight as the flow of water in our Midland Basin pipes exceeded the level of both the 2007 and 2011 storms.

### **What will the additional pumps accomplish?**

There were periods during the storm event on 9/25 when the water was rising in the pump station chamber with both pumps running.

This indicated that storm water runoff was entering the system at a rate greater than the available pumping capacity resulting in more excess runoff in parking lots etc. In essence, two pumps mitigated a great deal of damage, but more were needed.

Additional pumps will provide further flood mitigation for storms similar to 9/25 as well as larger magnitude storm events that result in even higher river flows and longer periods of rainfall, resulting in potentially greater damage to school property.

### **What kind of storm was this past one? 25 year? 50 year?**

Data from the National Weather Service gaging systems that are used to analyze rainfall in the Bronx River Watershed is not yet available for the 9/25 event. As far as intensity, we do know that the maximum hourly rate change of rainfall was almost 100% higher during the 9/25 storm vs the 2007 Nor'easter which was the impetus for the system. The 9/25 maximum hourly and two hourly rate change of rainfall was even more than 100% greater than the 2011 storm. The damage from last week's storm was from the intensity not the duration.

### **Why did Meadow Avenue flood with two pumps working?**

The two pumps were clearly at capacity during the rain event and we have requested that the mitigation effects of a third and fourth pump be analyzed by the project engineers with focus on Meadow Avenue.

In the interim, we are re-clearing the drains on Meadow Avenue, as well as all the drains in the Midland Valley Drainage Basin. In the coming months, we will clean all 400 drainage basins throughout the Village. Lawn and tree debris, road gravel runoff and roof leaders emptying into the storm sewers are our constant clogging culprits.

We are also reviewing the size of the conveyance pipe on Meadow Avenue with the thought that the capacity may need to be increased and/or dry wells/retention tanks added in that area as well.

### **Did areas near Park Avenue/Sycamore Street flood more because of the pumping system? The artificial field? The removal of trees?**

Water from these neighborhoods is collected into the Midland Basin storm conveyance pipes which are 36" and 72" in size. The pumping system actually helped move the water downhill to the storage chambers below Hayes Field and

then removed uphill via a force main to the Bronx River at the outlet at the intersection of Palumbo Place and Gramatan Avenue where it was discharged.

The system as designed, “operates as a closed system with no release of collected runoff into adjacent soils and no groundwater entering the system.” In short, the new forcemain took water from the existing 36 and 72 inch pipes (via the pump) allowing them to capture additional runoff.

As to the permeability of Hayes Field, the School District is reaching out to the turf field designers for absorption data.

Ten trees along Midland Avenue were removed for the pumping station but were replaced by 20 new ones as well as additional landscaping.

### **Why did water cause damage by seeping up through basements?**

Given the rain levels of this summer followed by three major storm events in three weeks in September, the absorption rate of the soil was compromised. (The County sent us numerous advisories during even small wind events due to the fear of trees toppling due in the saturated soil.) When speaking with my colleagues in Tuckahoe and Eastchester, they relayed incidents of residents’ basements filling with water in some of their highest elevation neighborhoods – a never before occurrence.