



## TOWN OF NORTH SALEM

Delancey Hall  
266 Titicus Road  
North Salem, N.Y. 10560

Office of the Supervisor

September 7, 2021

Supervisor Tony Hay  
Town of Southeast  
1360 Route 22  
Brewster, NY 10509

Dear Supervisor Hay,

You requested some information from us about the drainage from Peach Lake in heavy rain events. I have put together several pages outlining the issues we have. I have included YouTube videos that we have taken recently and one from a couple of years ago which show some of the water level concerns.

The issue outlined over time;

1. NYC dug Peach Lake Brook, the outflow for Peach Lake, in 1876/77 to take drinking water from Peach Lake. This had the affect of severly reducing the level of water in the lake (picture later).
2. In the late 1890's a dam was placed in the outlet (near the current sewer treatment plant) to reset the water to its historical level.
3. Approximately 30+/- year ago the lake seemed to have issues under heavy rain and would take significant time to drain. It seemed to coincide with the pipe placement under Cobb Road although at the time we have no idea that work was done. At about the same time it was noticed that the late 1890's dam was now under water.
4. Other work has been done since



Figure 1 Recent flooding at Pietsch Coop at the southern end of Peach Lake due to Storm Ida on 9/1/21. Warren Lucas, Senator Harckham and Pietsch Coop President Jim Bohren. Southeast received a \$125,000 grant from the Senator to be put towards addressing the Cobb Road drainage issue.

then in looking to improve the water drainage. In 2018 the Peach Lake Brook was cleaned of fallen vegetation to make sure the flow was maximized. In 2019 a new beaver dam was removed from the stream with DEC approval.

5. There are other items we are considering but the biggest issue we believe is the drainage under Cobb Road. This drainage limits the outflow to about 10,000 gallons per minute. North Salem has been requesting that Southeast look into this since about 2014. Our request to Southeast was that the current pipe be removed and a wider and lower conveyance be put in which will allow the lake to attain its historical level and also drain faster in severe rain events. The existing 1890's dam can then be used during conditions to better control the level of the lake.
6. To support Southeast in this the Town of North Salem sent a letter requesting support from our State Senator Peter Harckham for the Town of Southeast's request for a grant to ameliorate the removal of the pipe under Cobb Road and the flooding issue we and some Southeast constituents have. Southeast was recently awarded \$125,000 from Senator Harckham.

The picture above is from September 1, 2021 showing the impact of Tropical Storm Ida to the low lying Pietsch Coop residences in North Salem which is about 1.75 miles south of Cobb Road. About 15 homes are subject to flooding based on the severity of any individual storm. In the Town of Southeast a number of homes along Peach Lake Brook in Starr Ridge Manor also have property flooding issues.

Peach Lake Brook leaves Peach Lake in the Town of Southeast and flows into the East Branch Reservoir. The brook is basically the same elevation over its 3/4 of a mile length from the northern end of the lake to Cobb Road. The brook is also perfectly straight and does not "meander" through the swamp, not because it is running downhill but rather, because it was dug by the NYC Waterworks in 1876 and

deepened in 1877 to a depth of about 10 feet so the city could use Peach Lake water as a drinking source.



**Figure "Peach Ponds" dated 1884. A picture of the South end of Peach Lake. To the right is the Lakeside Field Club, beyond that to the left is Pietsch Garden Coop. The building foundation of the barn, east of Lake Side Field Club is at that location and inundated with water. This was after the digging of Peach Lake Brook and lowering of the lake level by NYC.**

The lake height was reset to its historical level and controlled after NYC finished using its water by a small concrete dam built by Charles Bloomer, near the current sewer treatment plant in the late 1890's. By 1913 the home sites were starting to get developed at the then set level.

Quite a number of years ago, the Town of Southeast put a new pipe under Cobb Road, the pipe was not sized properly for the volume of water that had to exit the lake during heavy rain events. This was likely done without realizing that it was the only exit for all of the water entering the lake. All 850 acres of the storm basin of Peach

Lake must flow through the 30 inch "D" shaped pipe to exit the lake. Just one inch of water in the Lake's stormwater basin equals 23 million gallons and when things are saturated a majority of that water flows into the lake. One inch of rain in the stormwater basin can raise the lake 3.5 inches and the water now takes days to exit the lake due to Cobb Road pipe.



Figure 2 Existing pipe under Cobb Road

A second issue is that the upstream bottom of the "D" shaped pipe under Cobb Road is also about 8 inches higher than the bottom of the stream effectively creating an 8 inch dam which has the effect of keeping the lake higher. The 1890's small cement dam on Peach Lake Brook (near the sewage treatment plant) has been perpetually under water due to the height of the water in the book almost certainly because of the Cobb Road drainage pipe height.

The Putnam County Land Trust's Cedar Swamp Preserve has been inundated with water and the walking trails have not been usable for many many years due to the height of the water in the swamp. Along with keeping the water higher in the swamp the pipe is not large enough to handle a major rain event.

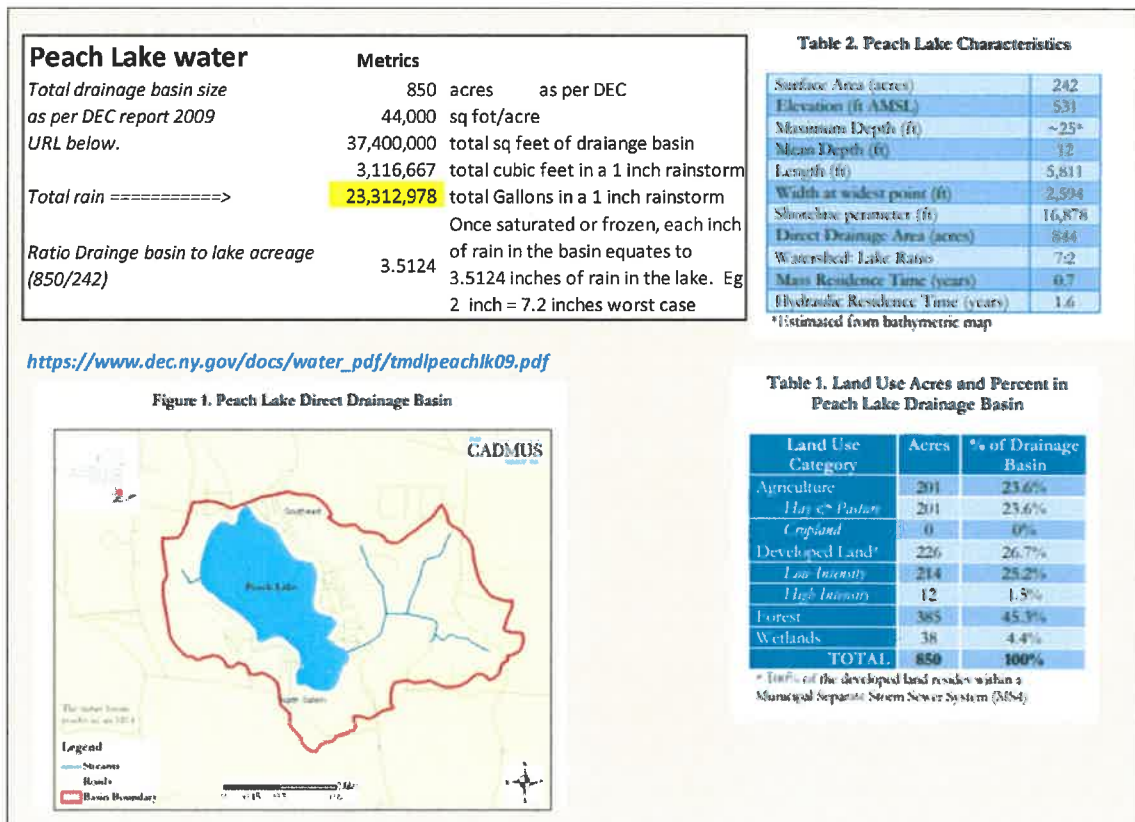


Figure 3 Rain volumes and also information about Peach Lake drainage basin, the later from the 2009 Camdus Report done by the NYS DEC [https://www.dec.ny.gov/docs/water\\_pdf/tmdlpeachlk09.pdf](https://www.dec.ny.gov/docs/water_pdf/tmdlpeachlk09.pdf)

**Pipe Flow.** While there are characteristic differences, a 30 inch "D" shaped pipe is equivalent to a 20.5 inch round pipe in terms of capacity. Both have about 350 square inches of area. With the approximate 1-12 slope, the rate of flow is about 10,500 gallons per minute (see sheet below) as per <https://www.prinsco.com/resources/drainage-calculator-by-pipe-size>.

The pictures below are from a YouTube video <https://youtu.be/ycEtxHLeLPI> showing the effects of the pipe on the brook under Cobb during Ida. A second short video is here; <https://youtu.be/xbi7bUf9goE>. The left picture is the flow of the water after exiting the pipe, the right picture is the ponding of the water above the pipe waiting to get through. The video was taken last week a day after tropical storm Ida and the water was up over the top of the pipe. There is also an older YouTube video showing Peach Lake levels when the water is impeded; <https://youtu.be/UgCFMux2ejQ>



The left picture shows the water exiting the pipe, the right picture shows the water ponding against Cobb Road before entering the pipe with little or no turbulence. The water was over the channel banks as can be seen in the video. This was taken the morning after Tropical Storm Ida, 9/1/2021.

Enter the Diameter of the pipe (inches):

Enter the Grade (%):  %

(see below)

	Q, Flow <sup>?</sup>			Velocity <sup>?</sup>
	c.f.s.	g.p.m.	acre - in./24 hrs.	ft./sec.
Single-Wall	21.100	9470.3	502.21	9.21
Dual-Wall	35.189	15793.9	837.56	15.36

Figure 4 A pitch of 1 inch in 12inches is 4.76% which was used in the calculation. The pitch is estimated and may actually be less. The "D" shaped pipe's area is equivalent to a 20.5 inch circular pipe. The pipe under Cobb Road is a single walled pipe which has a ribbed pattern on the inside causing turbulent flow. The inside of the Cobb Road pipe as shown later in pictures and video has severe turbulent flow as the pipe is rusted through and the pipes outlet is improperly fit onto the pipe.

One inch of rain in Peach Lake 242 acres is 6.143 million gallons of water ( this is on inch just on the surface of the lake and not in the entire stormwater basin). At 9,470 gallons per minute (GPM), one inch of rainwater will take 11 hours to exit the lake. The water however was significantly higher than 1 inch, estimates are about 8-10 additional inches of water was in the lake during Tropical Storm Ida on 9/1/21. The fact that Ida had rains over a 24 hour period and the water had time to exit over that period meant it was not as bad as other storms with high inches of rain falling per hour such as Isaias.

On June 24th 2019 the interior of the pipe was videotaped by North Salem. There are multiple sections of the corrugated pipe with hole where it has rusted through. The outlet of the pipe is also not the correct size and water can easily get around it. There are examples below. The video is at <https://youtu.be/Xs9bldTbMPE>



Figure 5 Picture of rusted out areas of the pipe under Cobb Road. There are numerous. The video is available on YouTube at <https://youtu.be/Xs9bldTbMPE> (the picture should be rotated... up is the direction of water flow).



**Figure 6** The outlet does not fit the pipe properly causing far more turbulent flow and reducing the pipes discharge/flow capacity. The video is available on YouTube at <https://youtu.be/Xs9bldTbMPE> .

### **Effect on Sewer system and pumps**

The area around the lake is serviced by the Peach Lake Sewer district run jointly by Southeast and North Salem. The Pietsch Coop sewer line along Cottage Lane is run through a number of manholes which collect sewage from 32 homes. Two of the manholes were under water for several days during Tropical Storm Ida and previous severe storms. Special work was done last year after Isaias raising the tops of the manholes (and the section of the parking lot they are in) by several inches higher to keep them above any flood waters and at the time we also made sure the tops were sealed against rain water, however, when the lake level rises in a bad storm the manholes are covered with 8 inches or more of water and the infiltration of lake water into the sewer system is unstoppable and significant and the pumps run for the majority of each day attempting to send the 'sewage' to the plant. As can be seen in this report from last week the pumps ran for almost 1,100 minutes of the 1,440 minutes in a day or 76% of the day trying to keep ahead of the lake water infiltrating the system. In previous storms this burned out pumps which we were unable to fix as there was no way to access them under the lake water until the levels subsided.

## Daily Runtime Report

Peach Lake WWTP (NY)  
2 September 2021

Site Name	-Runtime -		Starts	Average (minutes/start)
	Minutes	Gallons		
Cottage Lane:				
Pump 1	0.0	-	0	-
Pump 2	1,000.8	-	29	34.5
Pump 3	97.4	-	2	48.7
Pump 4	0.0	-	0	-
Multiple	97.4			

Figure 7 Mission Runtime Report from the Peach Lake Sewer District showing the amount of minutes the pumps ran in one 24 hours period.

## Daily Runtime Report

Peach Lake WWTP (NY)  
31 August 2021

Site Name	-Runtime -		Starts	Average (minutes/start)
	Minutes	Gallons		
Cottage Lane				
Pump 1	0.0	-	0	-
Pump 2	230.9	-	28	8.2
Pump 3	0.0	-	0	-
Pump 4	0.0	-	0	-

Figure 8 Normal the pump runs about 4 hours a day or about 240 minutes as can be seen on the August 31st report. On September 2nd the volume was about 1,100 minutes.

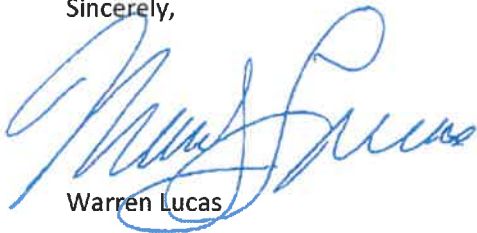


Figure 9 Picture of recent flooding in area with the sewer manholes. Picture taken by Senator Harckham's staff.

Lastly with regards to the existing bridge, if the Town decides to create a bridge over the stream 20 feet or more in size the NYS DEC will be involved which will greatly increase its price. The Town of North Salem rebuilt its town bridge on Valeria Circle which spanned a DEC trout stream. While the situations are different we would expect Southeast to be able to construct a bridge less than 20 feet long which would meet or exceed any constraint the Town of North Salem would have. The Town of North Salem originally borrowed \$200,000 for the bridge work in 2015 but did not spend the entire amount. The bridge abutments were completely rebuilt and the decking came in prefabricated. You can also use prefabricated supports which we looked at but did not use. Please have your engineer talk to Jim Hahn at Hahn Engineering. Any help he can provide we would be happy to support.

If there is any meeting I can attend to support you in this discussion please do not hesitate to ask. Thank you for your continued help in alleviating this problem.

Sincerely,



Warren Lucas

Supervisor, Town of North Salem



Figure 10 The bridge abutments were finished and the prefabricated decking was installed using a Town excavator which reduced the cost to the contractor, Contech.



Figure 11 A unit like this can also be used, prefabricated/ prestressed concrete. We looked at this as an option.