2022 Delaware Aqueduct Shutdown
A Question of Safety

Garth Pettinger – Trout Unlimited

RFAC - March 23, 2022

The Issue:

According to their FEIS, it appears that NYCDEP intends to use the current FFMP and its CSSO voids, to control releases and voids during the Delaware Aqueduct shutdown.

The inability to divert water (523mgd, 10-year daily average) from the upper Delaware reservoirs during the Aqueduct shutdown, combined with inflows that will typically exceed their release capacities (except for Cannonsville), will result in rapidly filling reservoirs.

Using the FFMP will result in the rapid depletion of the initial CSSO voids; followed by full and/or spilling reservoirs for the majority of the shutdown period, with no flood mitigation voids.

The concerns of Local Residents:

From the point of view of residents and communities below the dams; when a storm is forecast, the first thing they do is look at the levels in the reservoirs.

If the reservoirs are full, they consider moving everything out of their basements to the first or second floor; and for some, potentially abandoning their homes for a couple of days; not to mention the concerns of Town Supervisors.

However, if there's a 15% void in the reservoirs, which would provide at least a 3-4 day attenuation of spilling from a potential storm surge; they can breathe a sigh of relief, as the likelihood of imminent flooding would be greatly reduced.

The solution is to provide, and maintain, voids:

The Conditional Seasonal Storage Objective (CSSO) contained in the Flexible Flow Management Plan (FFMP), provides for such flood mitigation voids; however, significantly larger initial draw-downs will be required to be made in Pepacton and Neversink reservoirs, in order to maintain flood mitigation voids through the Aqueduct shutdown period.

For Pepacton and the Neversink, inflows during the Aqueduct shutdown will typically exceed the release capacity of the reservoirs, which will cause the reservoir levels to continually rise. This excess inflow will need to be addressed, as part of the initial draw-down quantity.

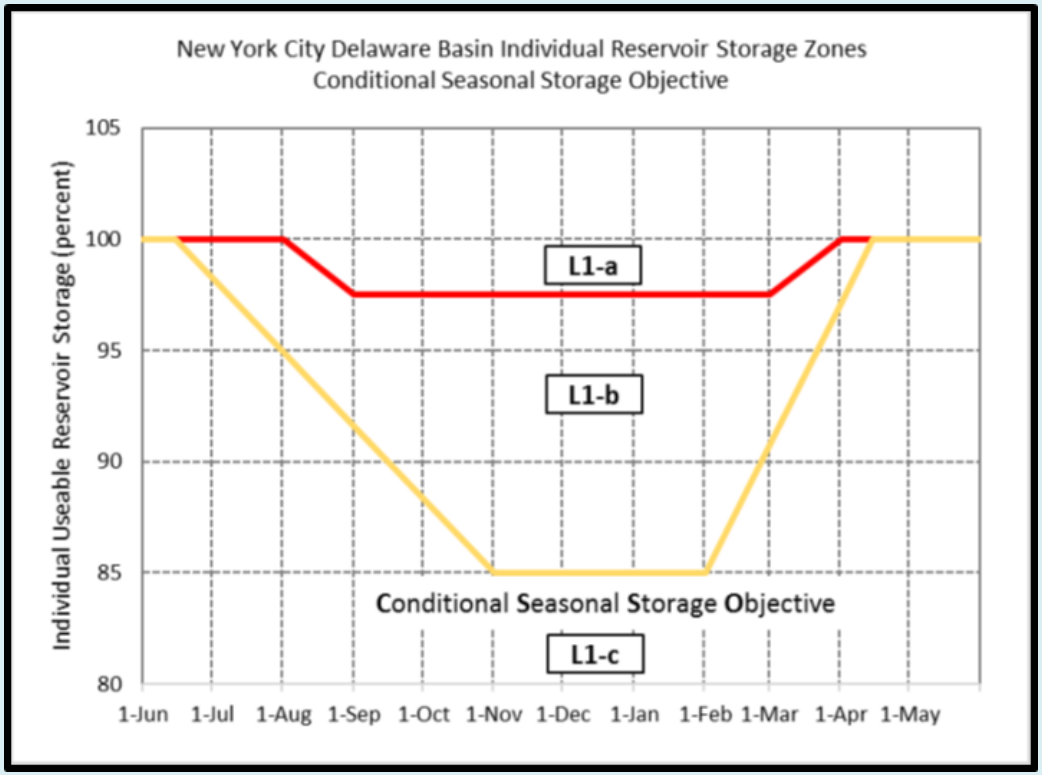
So how far should the reservoirs be drawn-down?

How far should the Pepacton and Neversink reservoirs need to be drawn-down to provide, and sustain, flood mitigation voids through the shutdown period?

Draw-down Estimate:
A 15% storm surge void; plus the expected quantity of inflow in excess of the release capacity of the reservoir (Oct-Mar); and a 3% contingency.

	Pepacton	**Neversink**
Storm surge void	15%	15%
Excess Inflow	7%	36%
contingency	3%	3%
Total	**25**%	**54**%

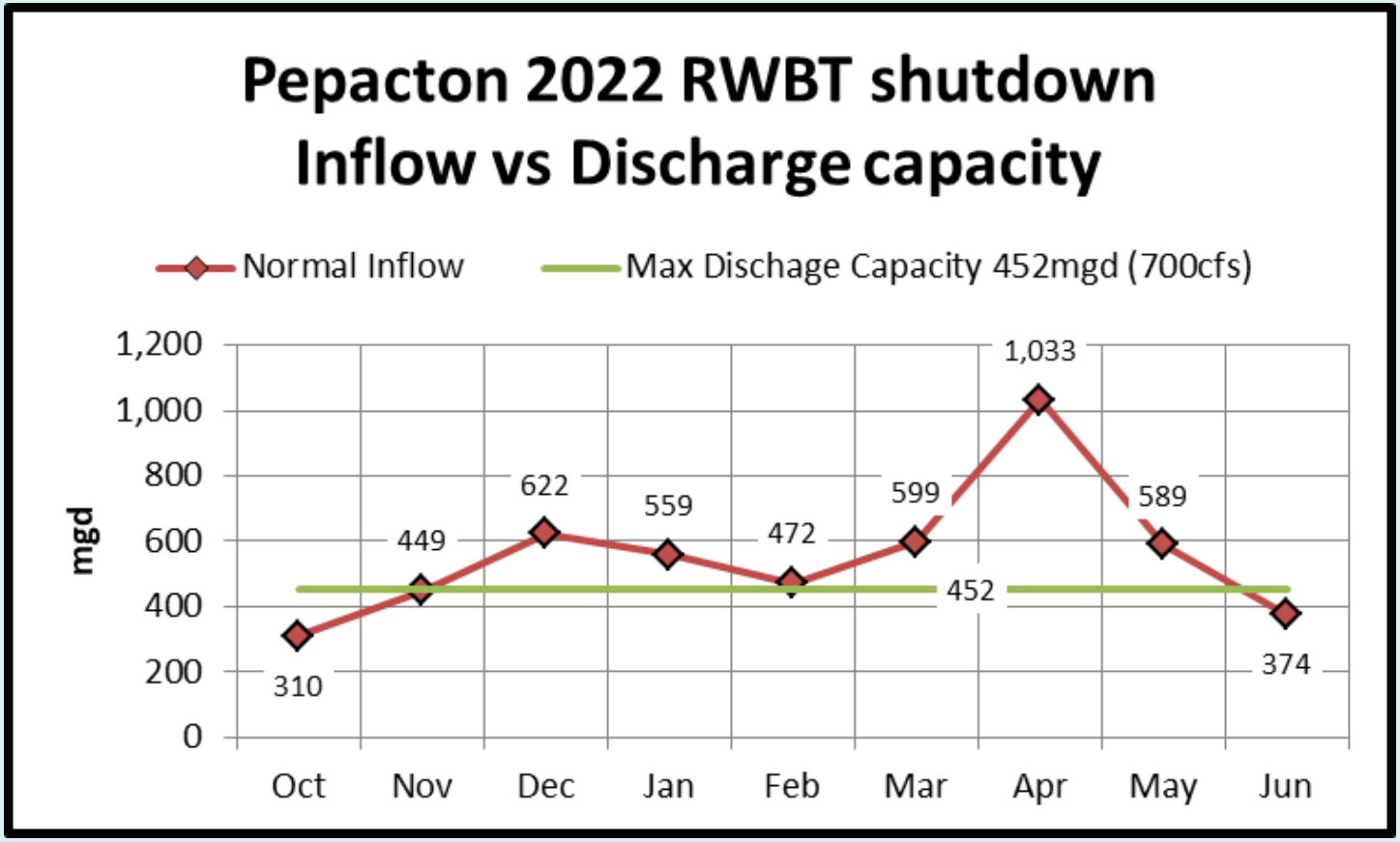
Adjusting for the Snow-Pack effect



Normally, 50% of the water equivalent of the snow pack would be added to the reservoir level, to determine the appropriate release rate.

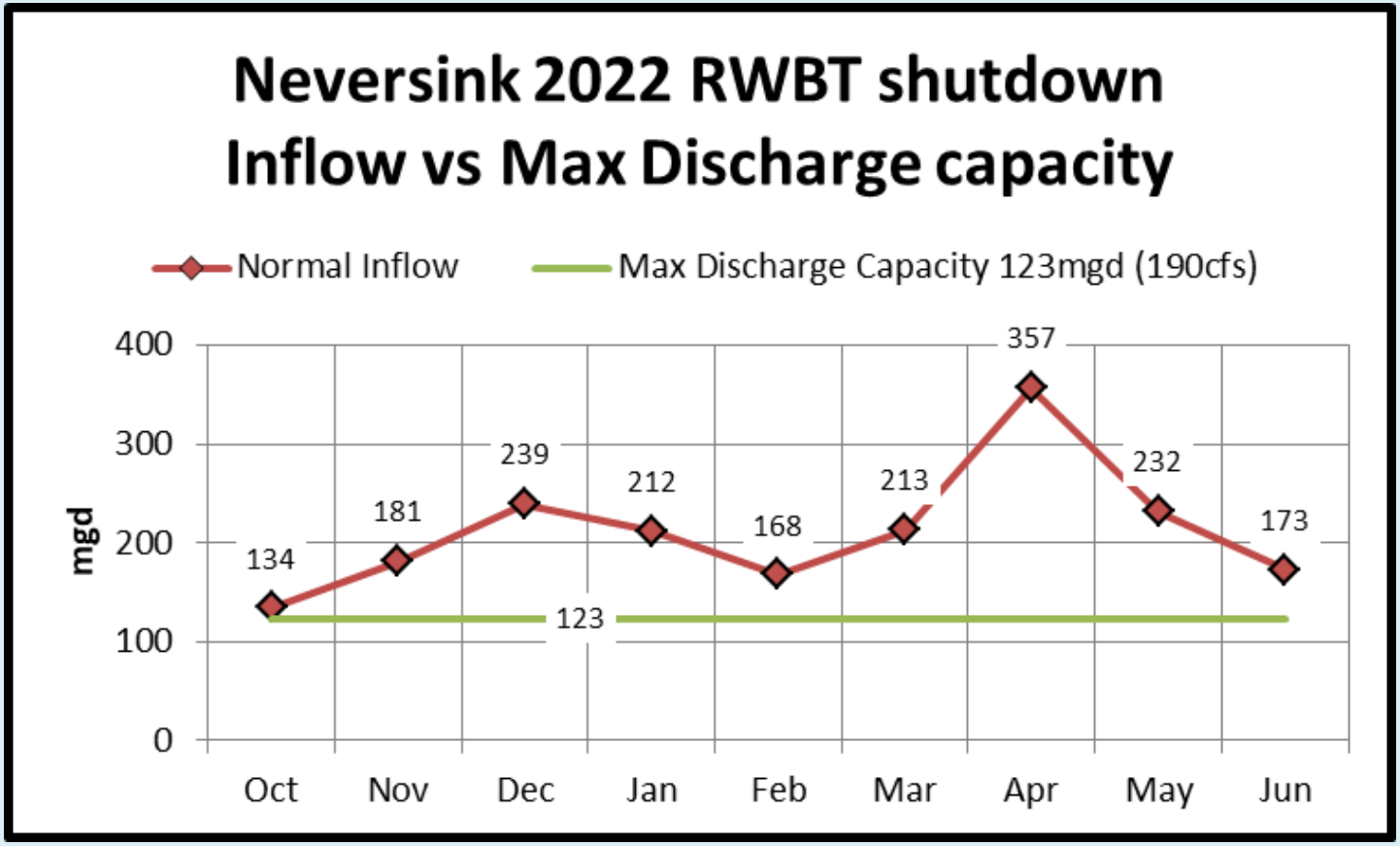
For the shutdown, the key would be to maintain a 15% void until Mar-31; to provide an equivalent level of protection.

Excess Inflow vs Discharge capacity = 25% draw-down



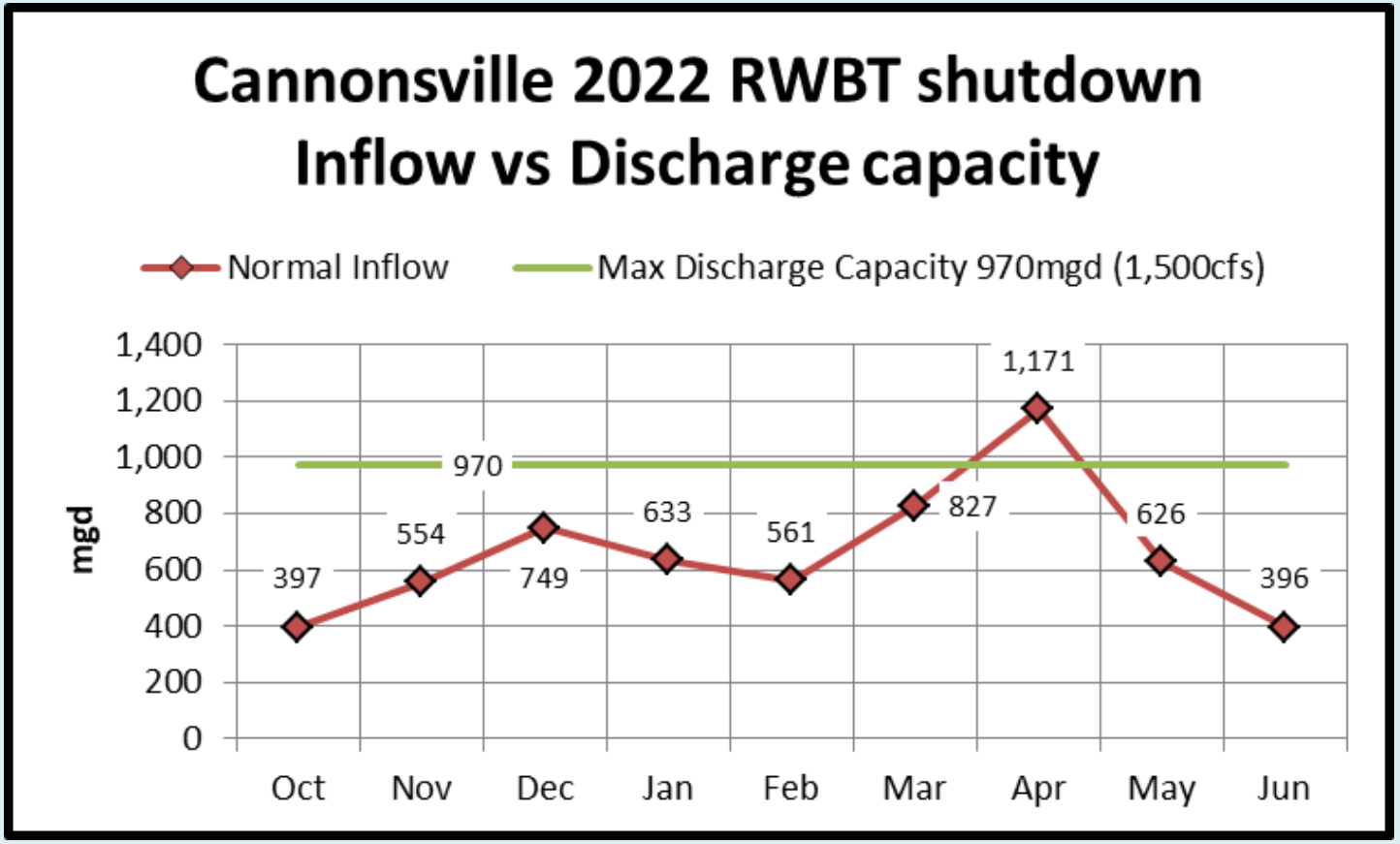
Inflows would typically exceed the maximum discharge capacity of Pepacton, in 6 of the 8 months of the potential outage.

Excess Inflow vs Discharge capacity = 54% draw-down



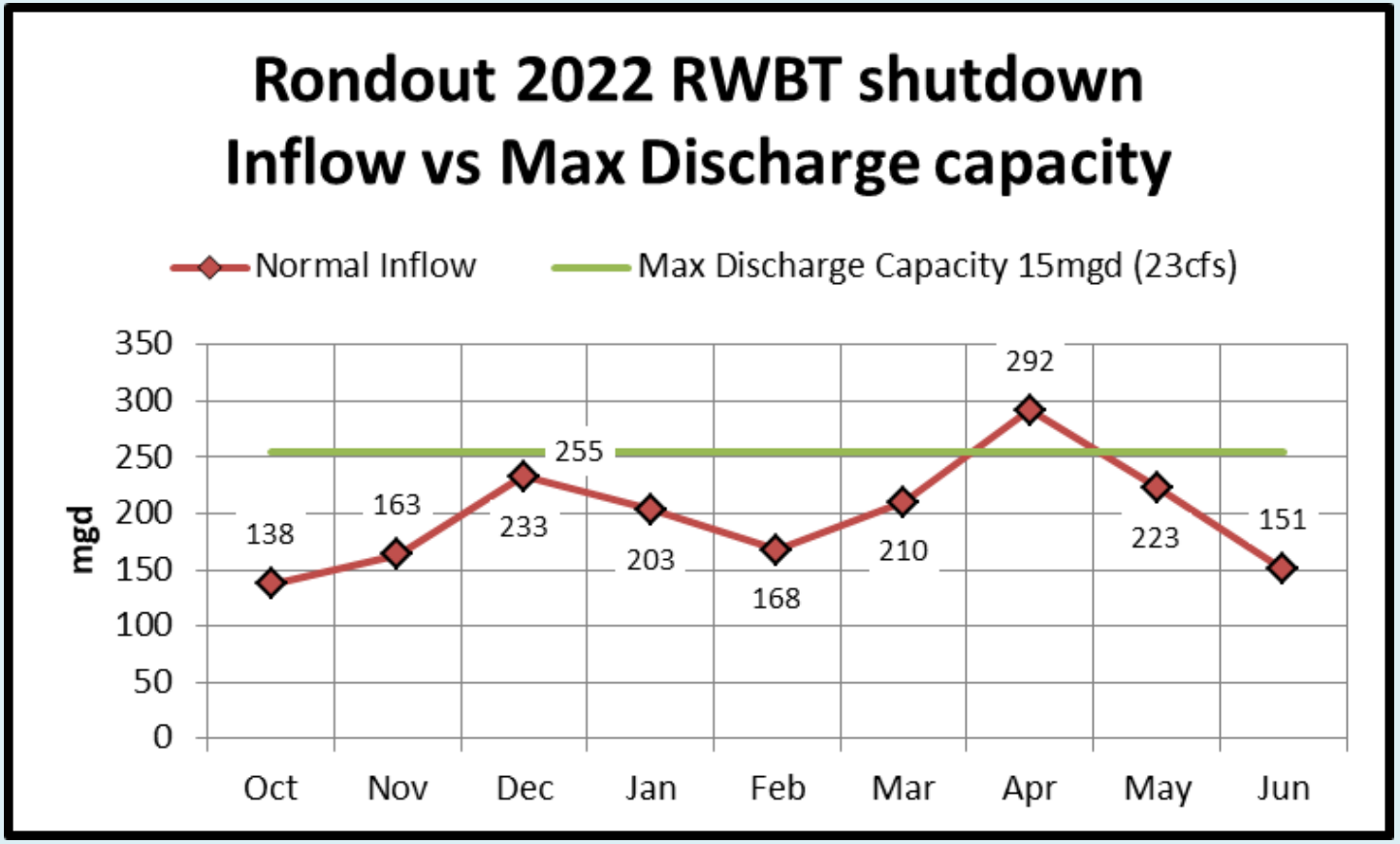
Inflows would typically exceed the maximum discharge capacity of the Neversink, throughout the 8 months of the potential outage.

Inflow vs Discharge capacity = maintain a 15% void



Inflows would typically remain well below the maximum discharge capacity of Cannonsville, in 7 of the 8 months of the potential outage.

Inflow vs Discharge + Siphons = maintain a 15% void



Inflows would typically remain below the maximum discharge capacity of Rondout, in 7 of the 8 months of the potential outage.

High release rates:

Releases from Pepacton and Neversink reservoirs – even with appropriate draw-downs, would need to be kept at the maximum release capacity of the reservoirs (700cfs and 190cfs respectively) from day one of the shutdown, in order to maintain flood mitigation voids during the overall shutdown period.

Even Cannonsville would need to release approximately 1,000cfs each day, to maintain a 15% void.

Applying these release rates would conflict with the FFMP, and therefore would require a special temporary Delaware Aqueduct Shutdown water management program to be put in place, for the duration of the pre-shutdown, and shutdown periods.

Other concerns:

In addition: while the FEIS indicates that in the event of a drought, the Aqueduct shutdown would be deferred until 2023; there is no equivalent plan for a wet-year, in the event that the required draw-downs and voids become unattainable.

Also, there do not appear to be any plans for Public Safety meetings & PR releases, to advise/caution the public regarding the elevated release rates, that will be experienced throughout the fall and winter months (Oct-Mar) of the shutdown:

- Rondout Creek (160 to 240mgd vs 15mgd normal)
- Cannonsville (1,000cfs vs 150cfs normal)
- Pepacton (700cfs vs 80cfs normal)
- Neversink (190cfs vs 60cfs normal)

What can be done?

The necessary actions to be taken to address the above safety concerns, are relatively simple:

- Draw-down Pepacton and Neversink (by Oct-1) to the required levels necessary to provide, and sustain, flood mitigation voids throughout the shutdown period.
- Maintain a 15% void in Cannonsville; and the equivalent in Rondout.
- Develop a temporary Delaware Aqueduct Shutdown water management plan, that will allow for the higher water releases that will be necessary to be made to provide, and maintain, the flood mitigation voids.

What can be done? CONTINUED

- Develop a deferral plan for a wet-year, in the event the required draw-downs and voids become unattainable.

- Develop a plan for Public Safety meetings & PR releases, to advise/caution the public regarding the elevated release rates, that will be experienced throughout the Aqueduct shutdown.

What can YOU do?

The ASK - for action by the public, and the Decree Parties:

- We request your help in persuading NYCDEP to take appropriate action, to mitigate the increased risk of flooding that will be initiated by the shutdown of the Delaware Aqueduct.

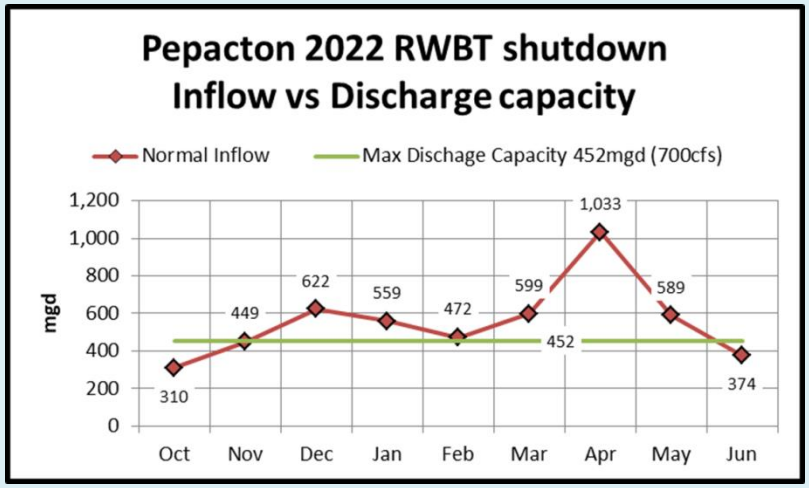
What can YOU do?

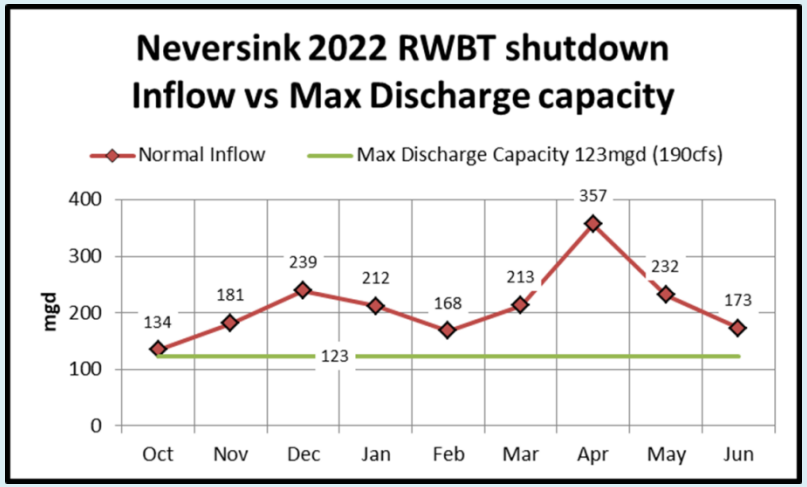
The ASK - for action by the public, and the Decree Parties:

- We request your help in persuading NYCDEP to take appropriate action, to mitigate the increased risk of flooding that will be initiated by the shutdown of the Delaware Aqueduct.

- Upon completion of the Delaware Aqueduct repairs, the most desired result for all of us - is to be in a position to say to NYCDEP and the Decree parties, “well done”.

QUESTIONS ?





What can YOU do?

The ASK - for action by the public, and the Decree Parties:

- We request your help in persuading NYCDEP to take appropriate action, to mitigate the increased risk of flooding that will be initiated by the shutdown of the Delaware Aqueduct.

So how far should the reservoirs be drawn-down?

How far should the Pepacton and Neversink reservoirs need to be drawn-down to provide, and sustain, flood mitigation voids through the shutdown period?

Draw-down Estimate:
A 15% storm surge void; plus the expected quantity of inflow in excess of the release capacity of the reservoir (Oct-Mar); and a 3% contingency.

	Pepacton	**Neversink**
Storm surge void	15%	15%
Excess Inflow	7%	36%
contingency	3%	3%
Total	**25%**	**54%**

A Question of Safety 6