

Rockland County Drought Update

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Water Task Force Meeting
September 22, 2016

Regulatory Overview

- ▶ Article V of the Rockland County Sanitary Code
 - ▶ Gives the Rockland County Commissioner of Health the authority to declare water supply emergencies and enforce mandatory water use restrictions.
 - ▶ Establishes limits/triggers related to rainfall and storage that are used to base declaration decisions.
 - ▶ Specifies 5 stages of drought/emergency levels that have their own triggers and water use requirements.
 - ▶ Specifies water use restrictions that are enforceable once declared.
 - ▶ Gives flexibility to the Commissioner in both the timing of declaration and conditions on requirements.

Five Stages of Drought

- ▶ **Stage 1 - Drought Watch (in effect 8/24/16 to present)**
- ▶ **Stage 2 - Drought Alert (in effect 7/21/16 to 8/24/16)**

NOTE: Stages 1 through 2 target reductions in water usage and cutting out non-essential outdoor watering. These restrictions try to avoid loss of property/investments from community. Stages 4 through 5 are more serious situations where virtually all outdoor watering is required to stop to reduce demands and is less sensitive to financial impact.

- ▶ **Stage 3 - Drought Warning**
- ▶ **Stage 4 - Drought Emergency**
- ▶ **Stage 5 - Severe Drought Emergency**

Drought Triggers

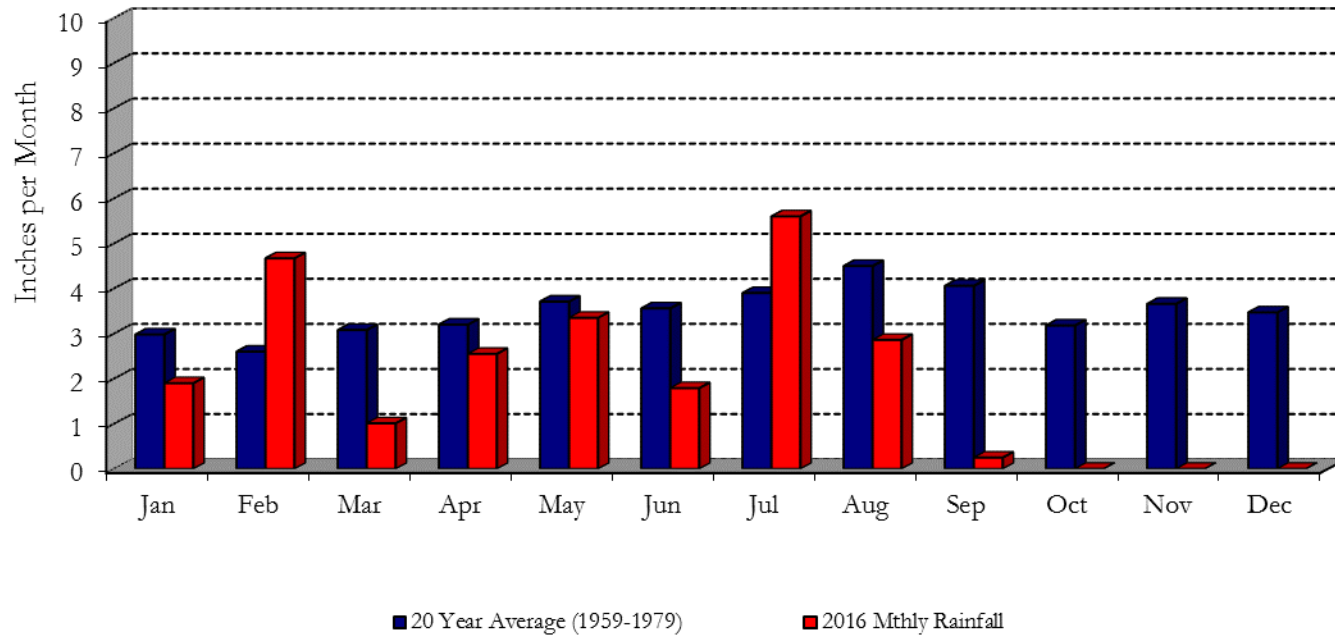
- ▶ DOH Staff closely watch 3 indicators to evaluate the status of the counties water supply. The data needed are provided via routine reporting from Suez NY.
 - ▶ Rainfall data from a gauge at Lake Deforest.
 - ▶ Water storage levels in Lake Deforest.
 - ▶ **Water storage levels for augmentation of Ramapo River**
 - ▶ Potake Pond, in Sloatsburg, is used to augment flow in the Ramapo River.
 - ▶ Ramapo Valley Well Field usage is limited base on stream flow. Flow measured by USGS gauge downstream of well field and production limits enforced by NYSDEC.
 - ▶ If flow in Ramapo River drops below 8 mgd the well field must be shut down.
 - ▶ (Maybe move these to slide after review each drought trigger)

Rainfall Triggers

Rainfall Totals by Drought Stage (thru 8/16)

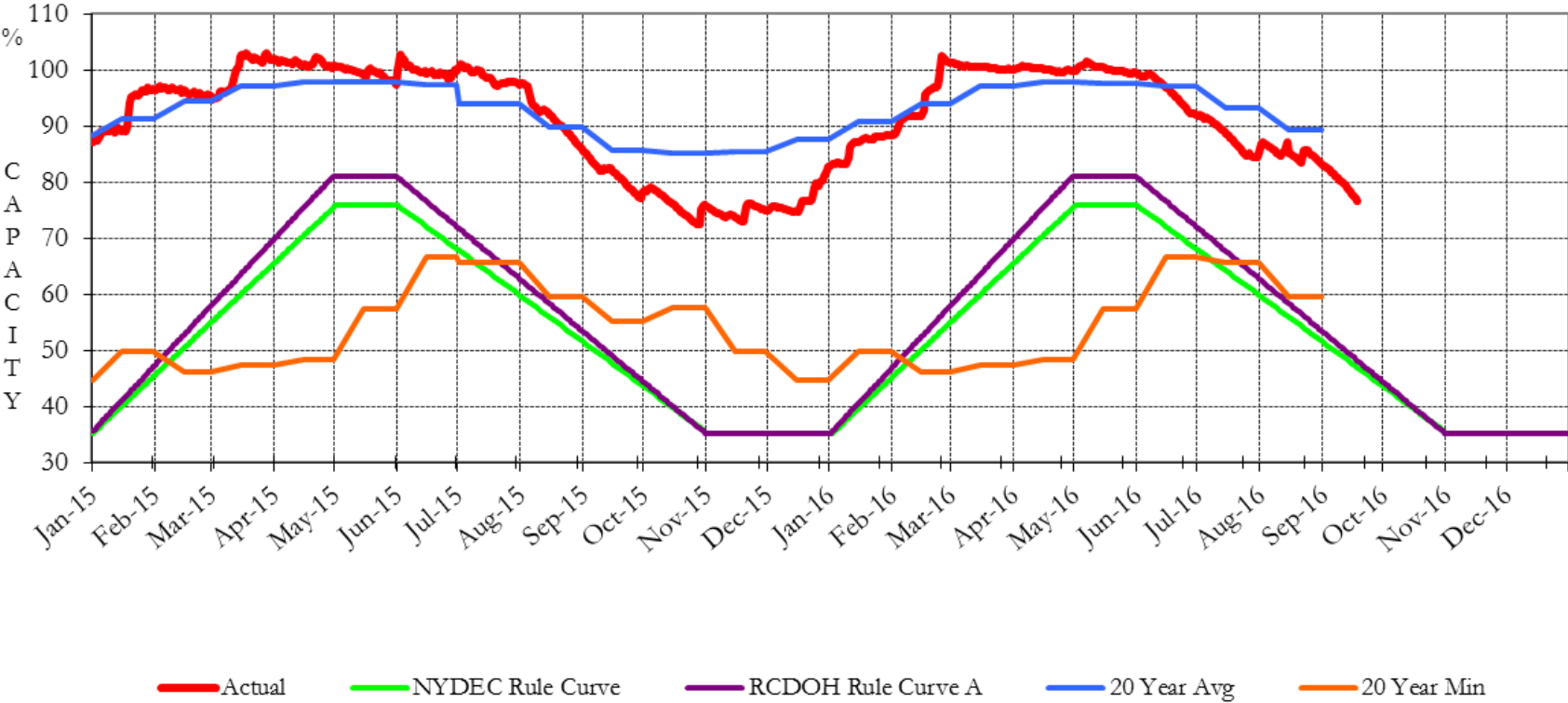
Inches	20 Year Avg	Current	% Below Avg	Trigger - %
2 Month Total (Stage I)	8.40	8.46	-0.7	> 40
3 Month Total (Stage II)	11.96	10.25	14.3	> 40
4 Month Total (Stage III)	15.67	13.60	13.2	> 40
6 Month Total (Stage IV)	21.95	17.16	21.8	> 40
12 Month Total (Stage V)	41.90	36.76	12.3	> 35

12 Month Precipitation @ Lake DeForest Plant



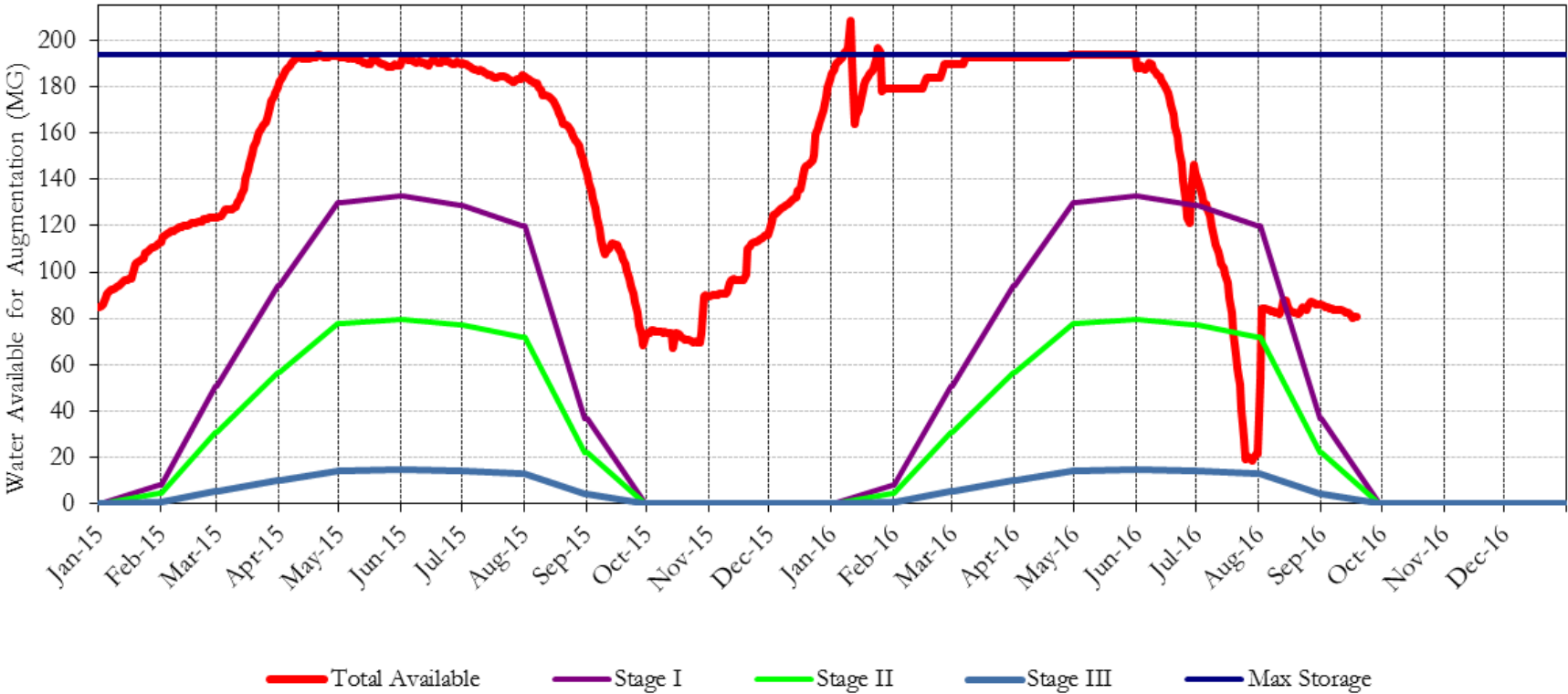
Lake Deforest Storage Triggers

2015 - 2016 DeForest Lake Reservoir Storage



Ramapo Augmentation Storage Trigger

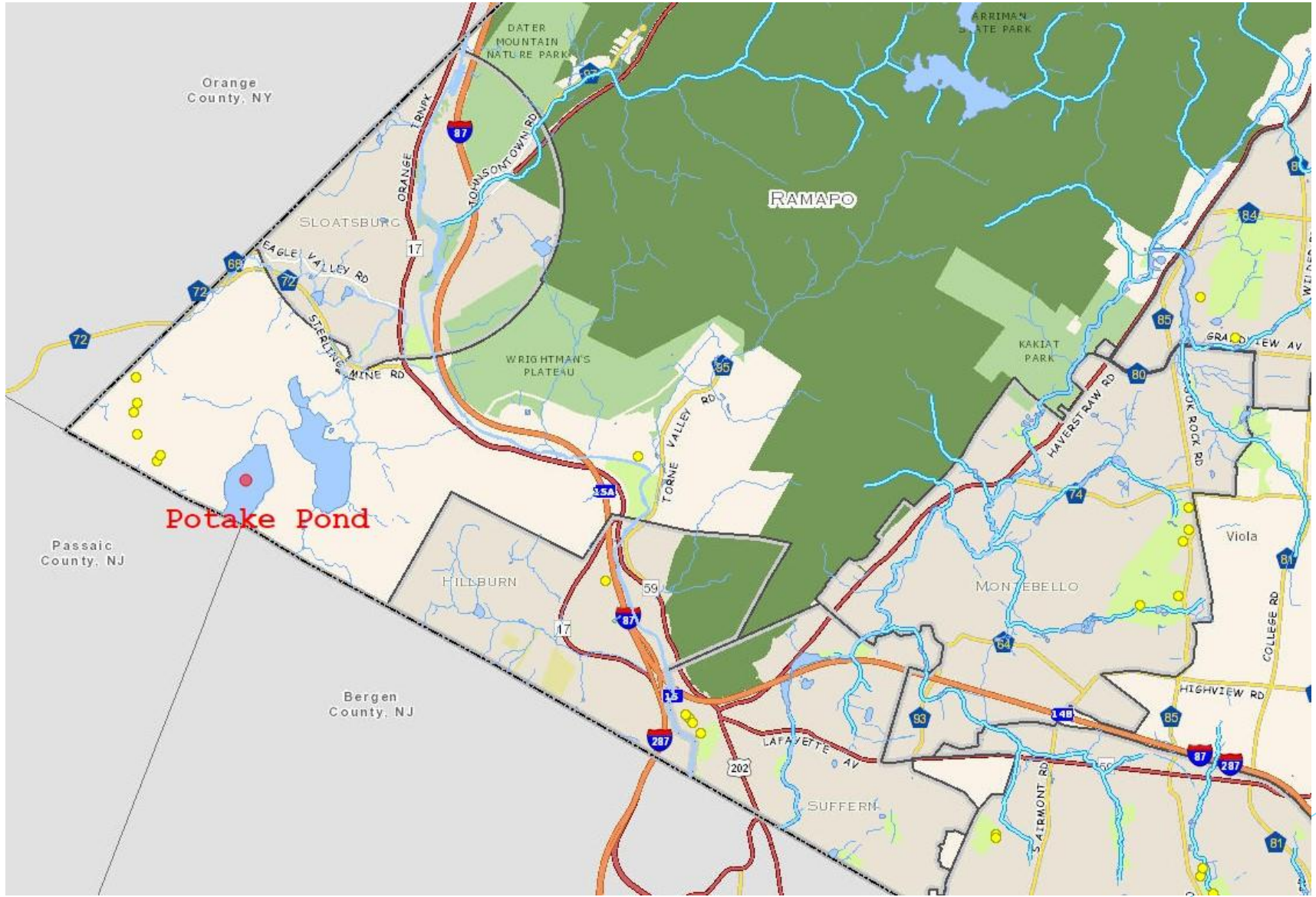
2015-2016 Ramapo River Augmentation Supply



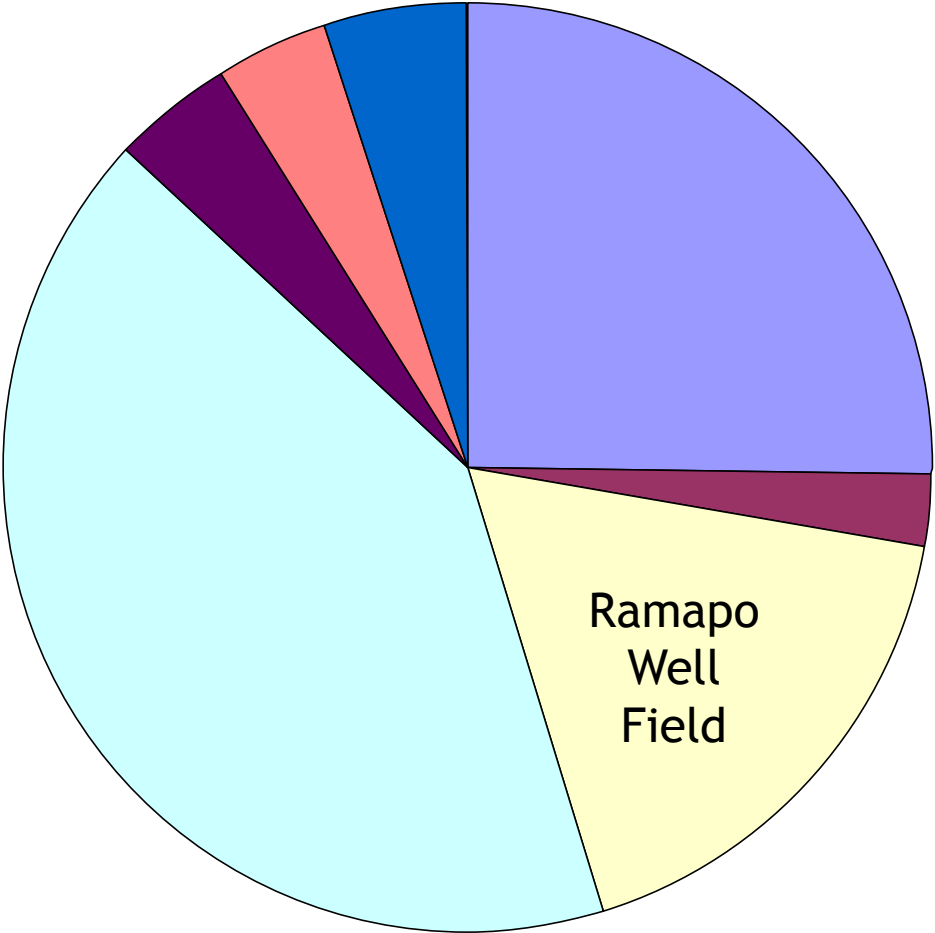
Ramapo Augmentation Storage

- ▶ Potake Pond, in Sloatsburg area, is used to augment flow in the Ramapo River.
- ▶ Usage regulated by NYSDEC. Controls on minimum levels in WSA.
- ▶ Ramapo Valley Well Field usage is limited base on stream flow. Flow measured by USGS gauge downstream of well field and production limits enforced by NYSDEC.
- ▶ If flow in Ramapo River drops below 8 mgd the well field must be shut down.
- ▶ There are other PIP waters that can be used, but at discretion of PIP.





Rockland's Drinking Water Supply



Estimated Annual Average Supply

- UWNY - Deforest
- UWNY - Letchworth
- UWNY - Ramapo Vally Wells
- UWNY - System Wells
- Nyack Water
- Suffern Water
- Private/Small Public Wells

Suez NY Supply Capacity

Source of Supply	Annual Average Capacity (mgd)	Maximum Day Capacity (mgd)
System Wells	16.49	25.03
<i>Ramapo Well Field</i>	7	4
Lake DeForest WTP	10	20
Letchworth WTP	1	3
Subtotal	34.49	52.03

Seasonal Month Capacity?

Concerns and Response

Concerns

- ▶ Loss of Potake Storage >> Loss of Ramapo Well Field >> Unable to meet peak demands and/or sustained seasonal average demand
- ▶ Potential water outages, low water pressure, lack of water for fire protection
- ▶ Recognized that mandatory restrictions would likely not slow down or stop the potential loss of Potake Storage and ability to produce water from Ramapo valley.

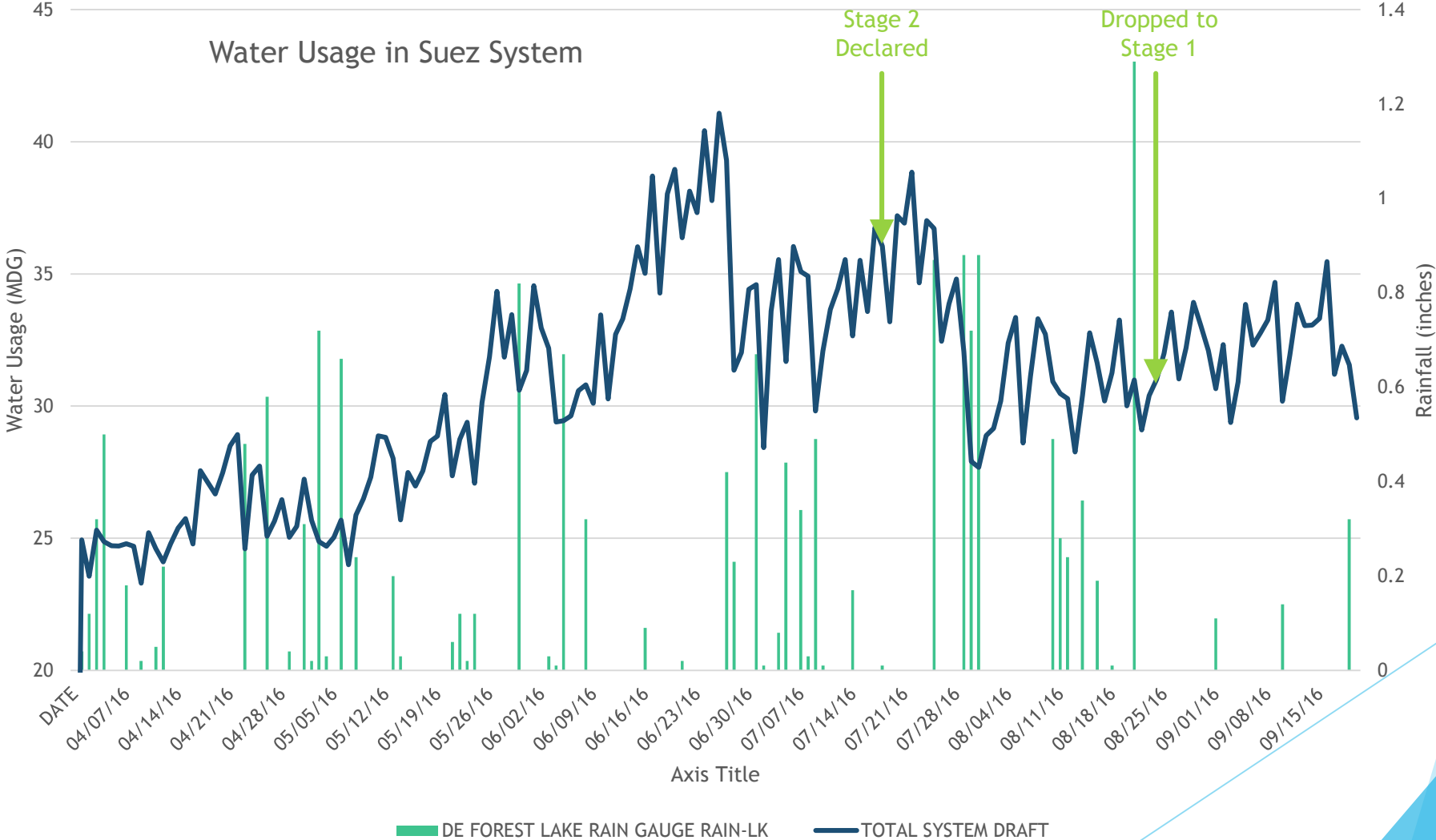
Actions Taken by DOH

- ▶ Declaration of Stage 2
- ▶ Preparation for Stage 3 if needed
- ▶ Routine communication with Suez, NYSDEC, and NYSDOH to assess and explore other options.
 - ▶ Alternate sources
 - ▶ Relief on state permit restrictions

Stage 2 Implementation

- ▶ Received excellent media coverage from the July 21, 2015 declaration. Picked up by many local and regional outlets.
- ▶ Website and social media were used to get message out. DOH phones were still overwhelmed with calls. Revisions were made to clarify points of confusion.
- ▶ Flexibility in declaration was used to impose irrigation limited to 2 times per week to reflect current best practices in replace of alternate day watering that is specified in the code.
- ▶ Variance applications were accepted for plantings/new lawns installed within a specified time period. Approximately 60 waiver applications were filed and processed.
- ▶ Complaints were directed to an online system. Approximately 65 complaints were received.
- ▶ Significant DOH resources were diverted from other duties/programs to handle demands.

Did it work?



Monthly Average Damands

SYSTEM DRAFT (MGD):

	2011	2012	2013	2014	2015	2016
January	27.47	26.30	26.17	27.32	26.88	25.23
February	27.56	26.02	26.02	27.63	28.45	25.15
March	26.64	25.53	25.53	27.30	28.81	25.08
April	27.02	27.63	27.63	26.59	27.16	25.64
May	28.72	28.23	28.23	27.83	32.05	28.21
June	34.67	31.16	31.16	31.54	30.88	34.44
July	35.85	34.36	34.36	31.91	32.62	33.98
August	31.13	31.83	31.83	32.49	35.15	31.25
September	29.84	29.08	29.08	31.19	33.00	
October	27.31	25.57	25.57	26.72	27.20	
November	26.88	25.84	25.84	25.90	24.92	
December	26.35	25.36	25.85	26.17	24.11	

Suez Water New York

Questions and Issues

- ▶ This event was due to low streamflow in the Ramapo, more than low rainfall in the county. Drought or potential emergency?
- ▶ Questions raised about the reliability of the Ramapo Valley Well Field.
- ▶ Questions raised about the ability of water system in to handle moderately high sustained seasonal demands.
- ▶ Difficult to determine to what extent mandatory restrictions helped in reducing demand. Periodic precipitation may have been the primary contributor.
- ▶ Feedback from the other side
 - ▶ Residents and businesses that object to the restrictions.
 - ▶ Those on wells that don't feel restrictions should apply to them.
 - ▶ Loss of income from landscaping industry.
- ▶ Confusion caused with differences in declared requirements and code specifics.
- ▶ Variances process takes significant time with little return on desired goal.
- ▶ Logistical issues with code applicability for some requirements.

Next Steps

- ▶ Perform more detailed after action assessment once declaration is lifted.
- ▶ Identify potential code changes to help with implementation.
 - ▶ Remove outdated/unworkable components.
 - ▶ Adapt to current best practices.
 - ▶ Consider expanding flexibility of Commissioner.
- ▶ Begin discussing and evaluating the reliability of the Ramapo Valley Well Field and potential implications of seasonal average limitations.
- ▶ Better modeling and understanding of Ramapo River needed.