

Root Cause

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Primary Issues

Two issues have become manifest in the management of the UDR system's waters:

“overdrafting”, and “withholding”

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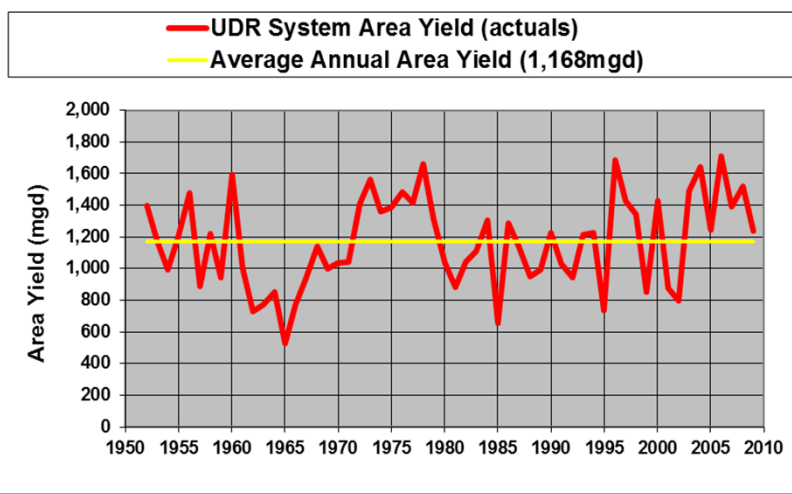
Area Yield

The area yield of a drainage basin/reservoir system is defined as the amount of water that enters the system's reservoirs during a specified time period.

How much water comes into the system.

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UDR System - Area Yield (average 1,168mgd)



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Safe Yield

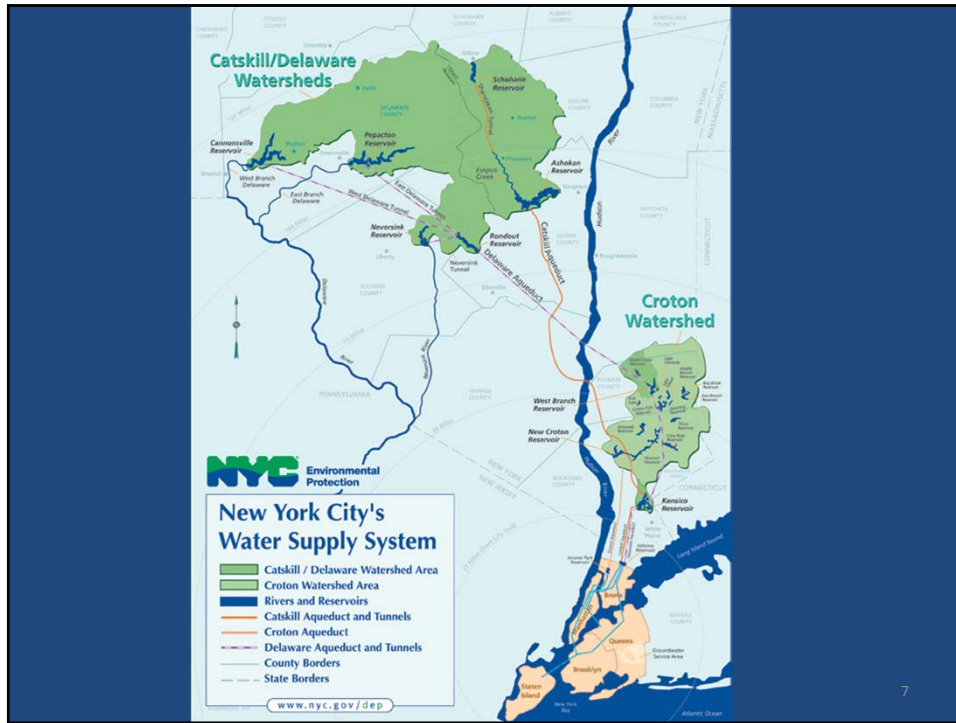
*The safe yield of a drainage basin/reservoir system is defined as: **the amount of water that can be continuously withdrawn from the system during a specified drought, without causing an undesirable result.***

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Photo by Lee Hartman



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1954 Decree Safe Yield

	1954 Decree mgd
NYC system safe yield	1,665
UDR diversion safe yield	800
Drought-of-Record	1930's

1954 Decree vs 1960's Drought

	1954 Decree mgd	1960's Drought mgd
NYC system safe yield	1,665	1,290
UDR diversion safe yield	800	480
Drought-of-Record	1930's	1960's

How much water was available to the UDR system during the 1960's drought-of-record?

Answer = **855** mgd

Apportionment

1960's UDR system availability = **855** mgd

1954 NYC diversion safe yield = 800 mgd

balance = 55 mgd

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Apportionment

1960's UDR system availability = **855** mgd

1954 NYC diversion safe yield = 800 mgd

balance = 55 mgd

1960's UDR system availability = **855** mgd

1960's NYC diversion safe yield = 480 mgd

balance = **375** mgd

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FFMP Table-1

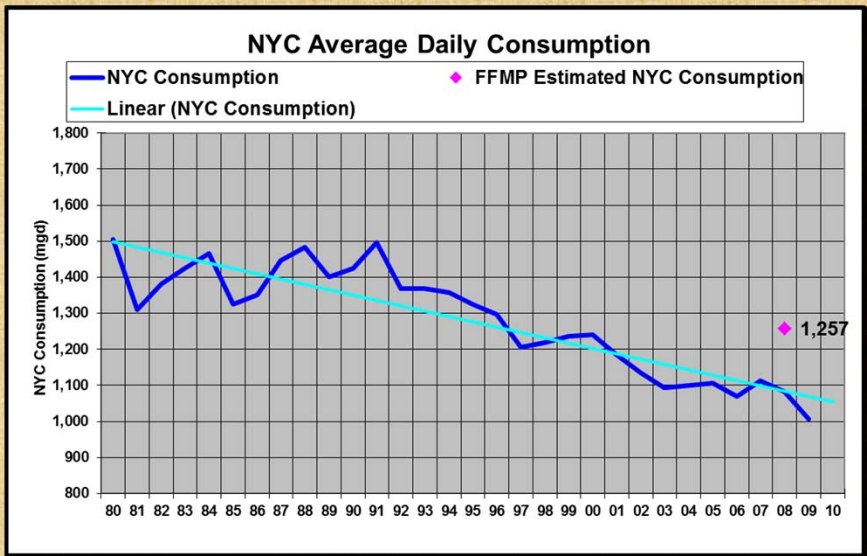
<i>Condition</i>	<i>NYC Diversion</i>
Normal (Jun-15 to Sept-15)	800 mgd
Normal (Sept-16 to Jun-14)	800 mgd
Drought Watch (L3)	680 mgd
Drought Warning (L4)	560 mgd
Drought Emergency (L5)	520 mgd

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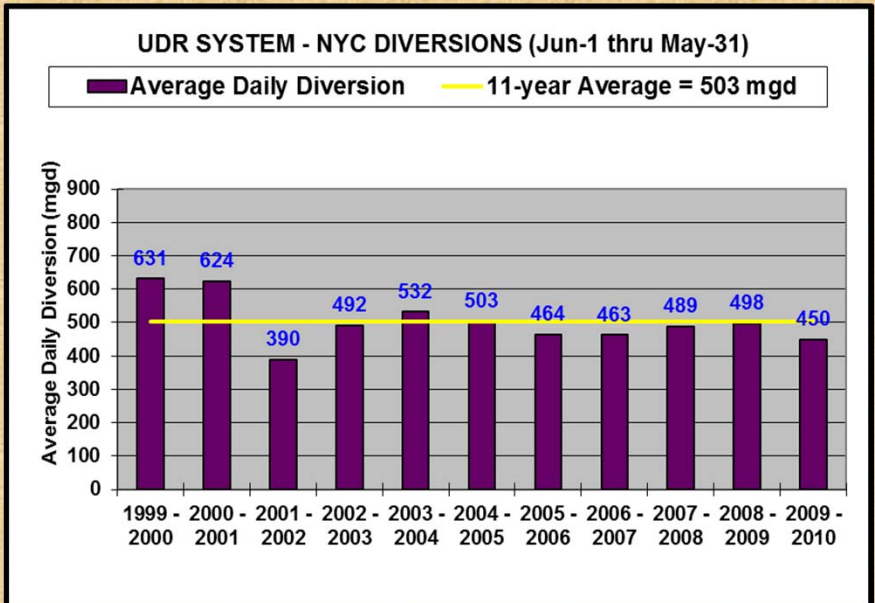
Root Cause

Overdrafting by NYC (in one form or another) has been the root-cause of major problems for the UDR system for more than 40 years.

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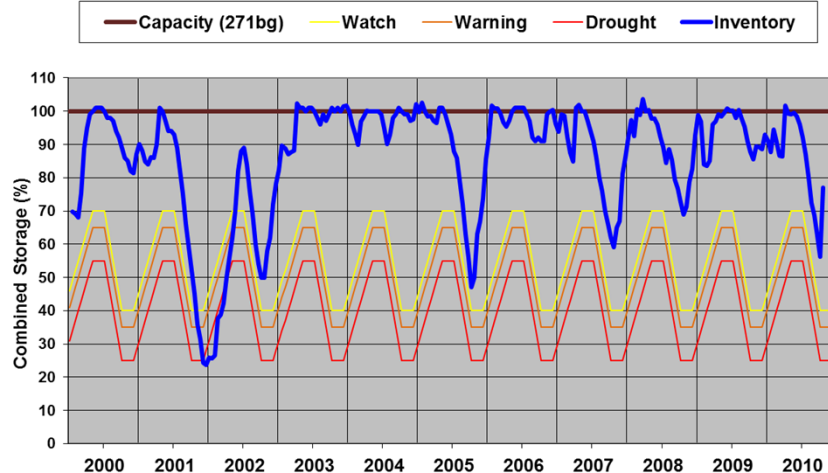
Withholding

Despite consistently needing less, NYC will not release the unused portion of the 800mgd it considers to be the City's safe yield:

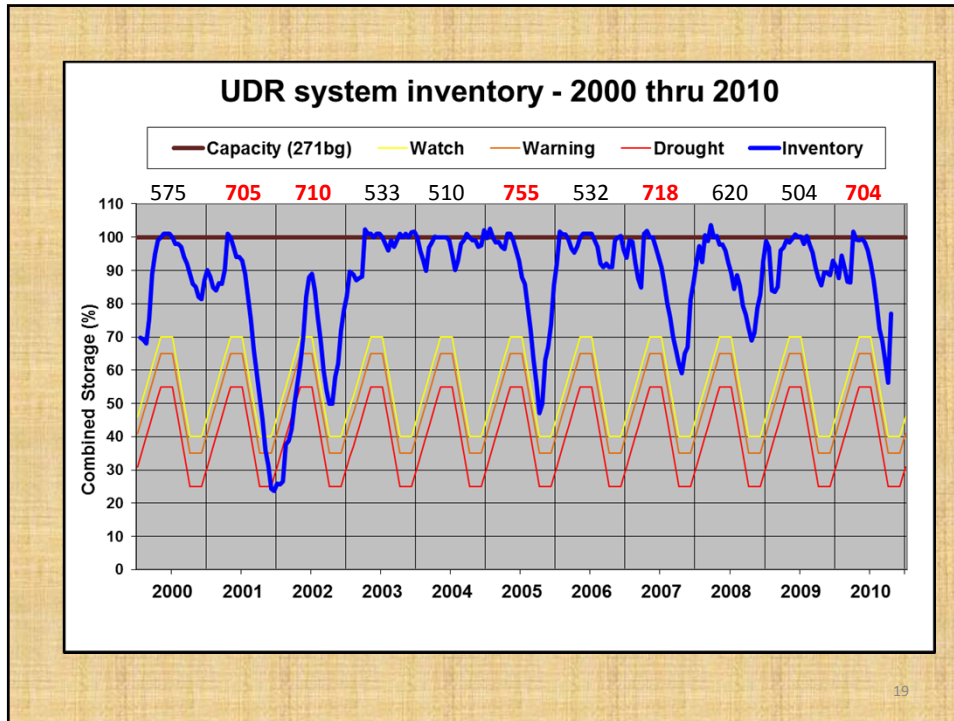
- **higher water levels in the reservoirs;**
- **reduced flood mitigation capability;**
- **the frequent creation of undesirable and artificial drought conditions in the rivers below the dams.**

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UDR system inventory - 2000 thru 2010



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Article III of the 1954 Decree

III. DIVERSIONS BY THE CITY OF NEW YORK ENJOINED EXCEPT AS HEREIN AUTHORIZED.

(d) The City of New York shall release the excess quantity (**IERQ**) provided for in subsection (c) at rates designed to release the entire quantity in 120 days. Commencing with the fifteenth day of June each year, the excess releases shall continue for as long a period, but not later than the following March 15, as such additional quantity will permit. Such period is hereafter referred to as the "seasonal period." The excess quantity required to be released in any seasonal period shall in no event exceed 70 billion gallons.

FFMP IERQ Calculation

The IERQ is computed as **83%** of the difference between the highest year's consumption of the NYC water supply system during the past five years, and NYC's current estimate of the continuous safe yield of the NYC water supply system obtainable without pumping.

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FFMP IERQ Calculation

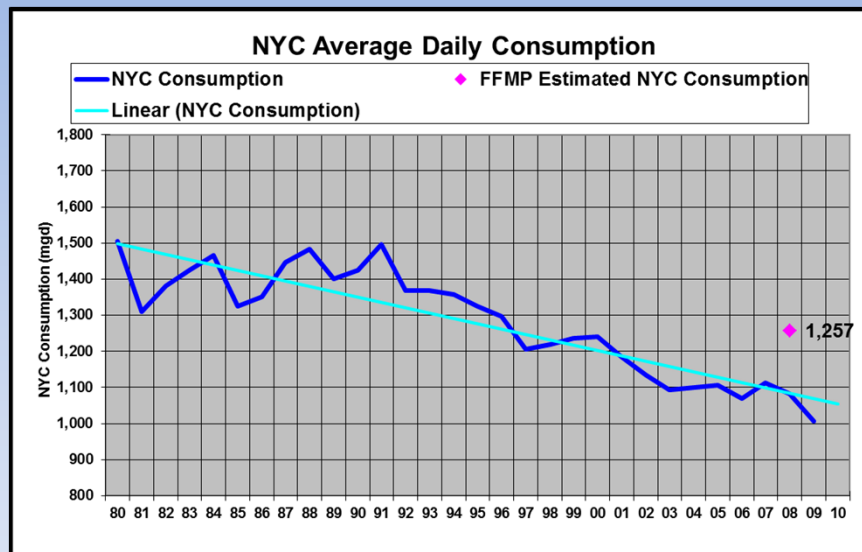
The IERQ is computed as **83%** of the difference between the highest year's consumption of the NYC water supply system during the past five years of **1,257** mgd, and NYC's current estimate of the continuous safe yield of the NYC water supply system of **1,290** mgd obtainable without pumping.

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Misrepresentation of the IERQ

- NYC **overstates** the City's consumption rate, citing **1,257** mgd in the FFMP, while the highest recorded NYC consumption during the 5 years prior to the FFMP was **1,136** mgd in 2002; a drought year.
- NYC **understates** the continuous safe yield of the City's water supply system by **not counting a 25% reserve capacity in the safe yield calculations** of the Catskill system, the Croton system, and Rondout Reservoir.

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Correcting NYC's Consumption Value

Consumption

Year	NYC Consumption (Million gallons per day)	Per Capita (Gallons per person per day)*
2009	1007.2	125.8
2008	1082.9	135.2
2007	1113.9	139.1
2006	1068.7	133.5
2005	1107.4	138.3
2004	1099.5	137.3
2003	1093.7	136.6
2002	1135.6	141.8
2001	1184	154.6
2000	1240.4	169.4

NYCDEP Website

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Correcting NYC's Water Supply Safe Yield Calculation

The equivalent "safe yield" of the uncounted 25% reserve capacity held in the **Catskills system = 20 mgd; Croton system = 12 mgd; and Rondout Reservoir = 8 mgd;**

the corrected NYC system safe yield becomes:

$$1,290 + 20 + 12 + 8 = \mathbf{1,330 \text{ mgd}}$$

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The difference in the resultant IERQ is significant:

Per the values in the FFMP:

$$(1,290 - 1,257) \times 83\% = 27.4 \text{ mgd} \quad (15,472 \text{ cfs days})$$

With corrected NYCDEP consumption records:

$$(1,290 - 1,136) \times 83\% = 127.8 \text{ mgd} \quad (72,163 \text{ cfs days})$$

With corrected 0% reserve safe yields:

$$(1,330 - 1,136) \times 83\% = 161.0 \text{ mgd} \quad (90,909 \text{ cfs days})$$

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Catch 22

**FFMP Article 15
"REASSESSMENT STUDY"**

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“NYCDEP will calculate the safe yield of the City Water Supply System based on the most current information available and will calculate the expected annual consumption of the City Water Supply System.”

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“NYCDEP recognizes that this information may be utilized for analyses outside of the scope of this Agreement; such analyses shall not be used or relied upon in connection with the Reassessment Study.”

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“The Reassessment Study to be conducted pursuant to this Agreement shall not revise or test other assumptions for the safe yield of New York City’s water supply system.”

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The only way to even come close to attaining an 800mgd safe yield, **is at the expense of the compensating releases to the rivers and down-basin States**

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Temporary FFMP PROPOSAL - SUMMER 2010 (Posted June 3, 2010)

35 mgd Available										
CANNONSVILLE	Winter			Spring		Summer			Fall	
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov
Storage Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30
L1-a	1500	1500	200	250	325	1500	1500	1500	1500	1500
L1-b	250	110	200	250	325	325	350	300	275	250
L1-c	110	110	200	250	325	325	325	275	140	110
L2-High	80	80	190	240	325	325	325	260	115	80
L2-Low	80	80	190	240	300	300	300	260	115	80
L3	70	70	100	100	175	175	175	95	95	70
L4	55	55	75	75	130	130	130	55	55	60
L5	50	50	50	50	120	120	120	50	50	50

35 mgd Available										
PEPACTION	Winter			Spring		Summer			Fall	
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov
Storage Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30
L1-a	700	700	110	130	150	700	700	700	700	700
L1-b	185	85	110	130	150	150	250	200	200	185
L1-c	85	85	110	130	150	150	150	150	100	85
L2-High	65	65	100	125	140	140	140	140	85	60
L2-Low	65	65	100	125	140	140	140	140	85	60
L3	55	55	80	80	100	100	100	55	55	55
L4	45	45	50	50	85	85	85	40	40	40
L5	40	40	40	40	80	80	80	30	30	30

35 mgd Available										
NEVERSIK	Winter			Spring		Summer			Fall	
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov
Storage Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30
L1-a	190	190	85	100	110	190	190	190	190	190
L1-b	100	65	85	100	110	110	125	125	85	95
L1-c	65	65	85	100	110	110	110	110	75	60
L2-High	45	45	75	90	100	100	100	100	70	45
L2-Low	45	45	75	90	100	100	100	100	70	45
L3	40	40	50	50	75	75	75	40	40	40
L4	35	35	40	40	60	60	60	30	30	30
L5	30	30	30	30	55	55	55	25	25	25

Using the FFMP as a tool to help attain
an 800mgd diversion safe yield

TOTAL	375mgd = 580cfs Safe Release Quantity (SRQ)										
35 mgd Available											
TOTAL FFMP	Winter			Spring		Summer			Fall		AVERAGE
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov	
Storage Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30	1/1 - 12/31
L1-a	2,390	2,390	395	480	585	2,390	2,390	2,390	2,390	2,390	2,149
L1-b	535	260	395	480	585	585	725	625	560	530	543
L1-c	260	260	395	480	585	585	585	535	315	255	368
L2-High	190	190	365	455	565	565	565	500	270	185	317
L2-Low	190	190	365	455	540	540	540	500	270	185	311
L3	165	165	230	230	350	350	350	190	190	165	219
L4	135	135	165	165	275	275	275	125	125	130	171
L5	120	120	120	120	255	255	255	105	105	105	150

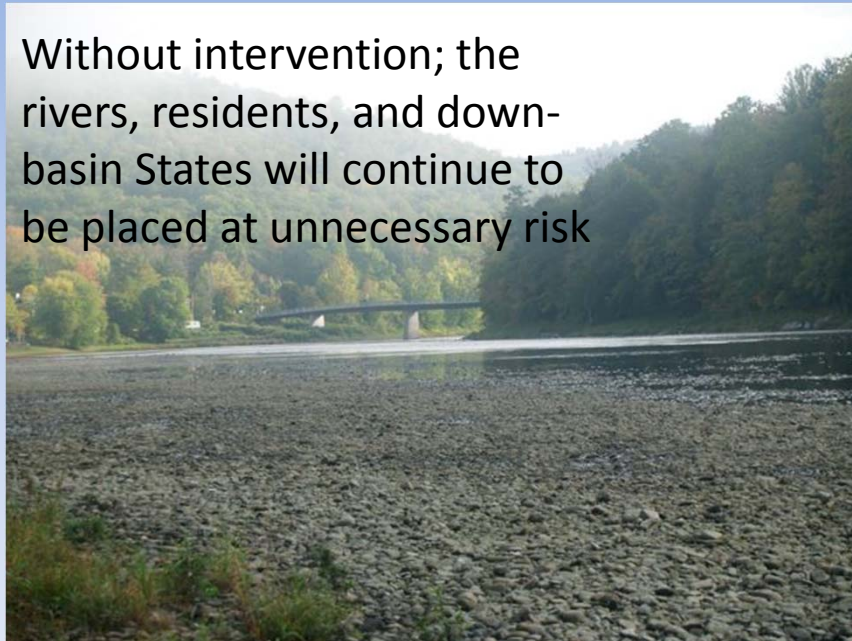
Numbers in red indicate Total FFMP release rates below the SAFE RELEASE QUANTITY (SRQ) of 580cfs

Conclusions and Recommendations

In order to ensure that a fair and equitable apportionment of the limited resources provided by the reservoirs is safely afforded to all Parties; we believe that it would be in the interests of all Parties to request the Federal Government to intercede, and enforce the provisions of the US Supreme Court Decree.

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Without intervention; the rivers, residents, and down-basin States will continue to be placed at unnecessary risk



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The Fundamentals & the Future

- **The safe yield of the Delaware system is 480mgd; not 800mgd.**
- **Turbidity issues with the Catskill system, does not change the safe yield of the Delaware system.**
- **Poor water quality of the Croton system, does not change the safe yield of the Delaware system.**
- **Continued development of New York's upstate (outside) communities, does not change the safe yield of the Delaware system.**

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