

# Flexible Flow Management Program (FFMP)

# History

- 1954 Supreme Court Decree
- Docket D-77-20 (Revised) – Good Faith Agreement - 1983
- Docket D-77-20 Revisions 2 through 10
- Docket D-77-20 Revision 7 (extended through September 30, 2007) – Interim fishery program
- Docket D-77-20 Revision 9 (extended through September 30, 2007) Temporary spill mitigation program

# FFMP Objectives

- Flexible! – incorporates adaptive management principles
- Manage reservoir diversions and releases
- Sustainable source of water
- Safe supplies to NYC and NJ customers
- Flood mitigation
- Flows and temperatures for tailwater fisheries
- More natural flow regime
- Consider withdrawal and non-withdrawal uses in mainstem, estuary and bay, including aquatic resource needs and salinity repulsion

# FFMP Next Steps

- Parties have reached agreement
- Will be signed on or before October 1, 2007
- Will be posted to the River Master web page
- DRBC will begin rulemaking process

# FFMP Elements

## ■ Diversions

- ◆ NYC – 800 mgd maximum
- ◆ NJ – 100 mgd monthly average

## ■ Flow Objectives

- ◆ Montague – 1750 cfs Sept. 16 - June 14 and 1850 cfs June 15 - Sept. 15
- ◆ Trenton – follow section 2.5.3 DRBC Water Code  
2500-3000 cfs

## ■ Releases

- ◆ Conservation – as described in Tailwater Habitat Protection and Discharge Mitigation Program
- ◆ Interim Excess Release Quantity (IERQ) – specified as 15, 468 cfs-days and released 6/15 -9/15
- ◆ IERQ Extraordinary Needs Bank – upon unanimous consent

# FFMP Elements (Cont.)

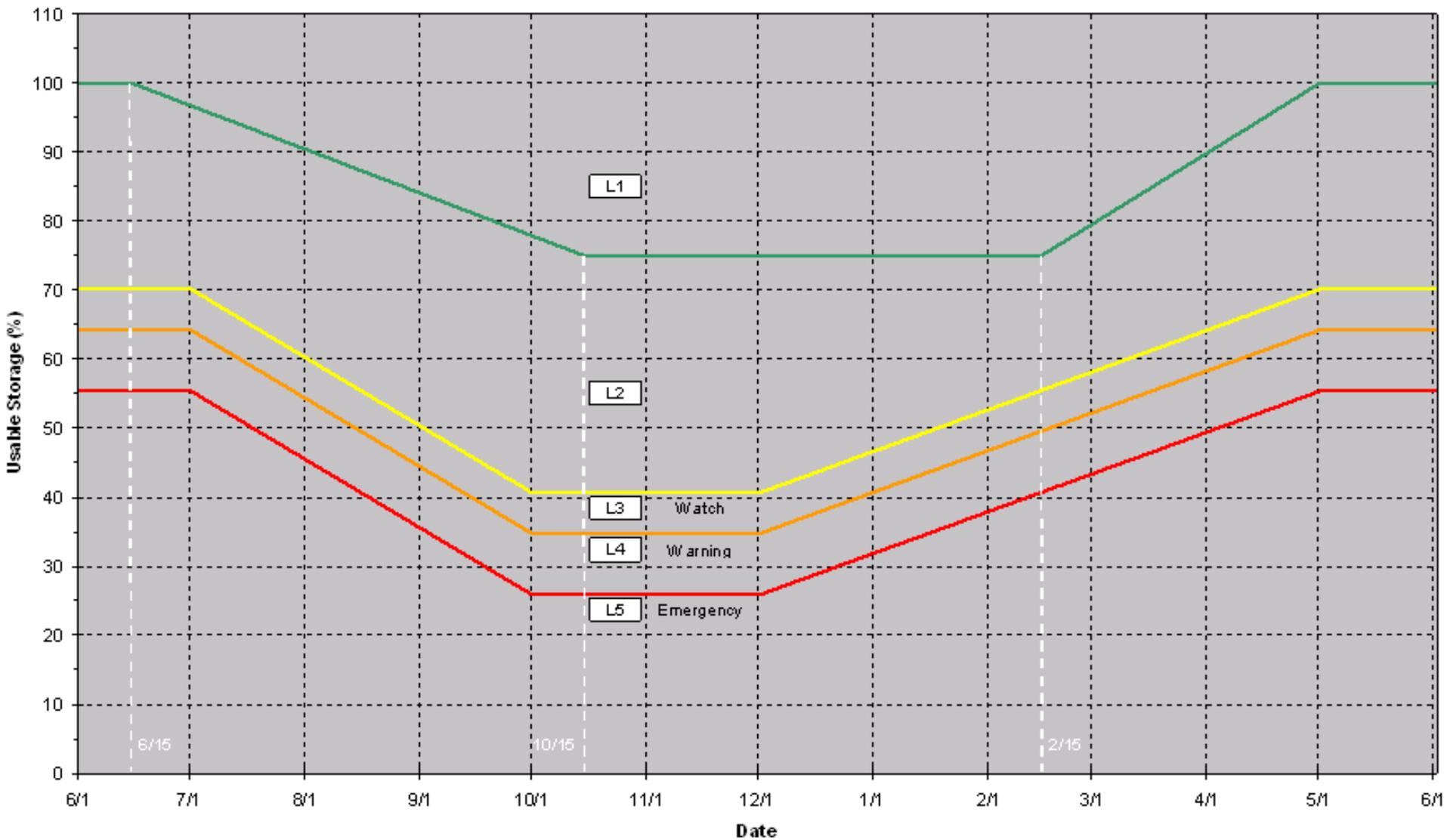
## ■ Drought Management

- ◆ Revises drought management curves – Watch, Warning, and Emergency
- ◆ Replaces Drought Emergency salt front vernier with fixed seasonal releases, for Montague flow objective
- ◆ Increases NJ's Drought Warning and Emergency diversion allowances to 85 mgd

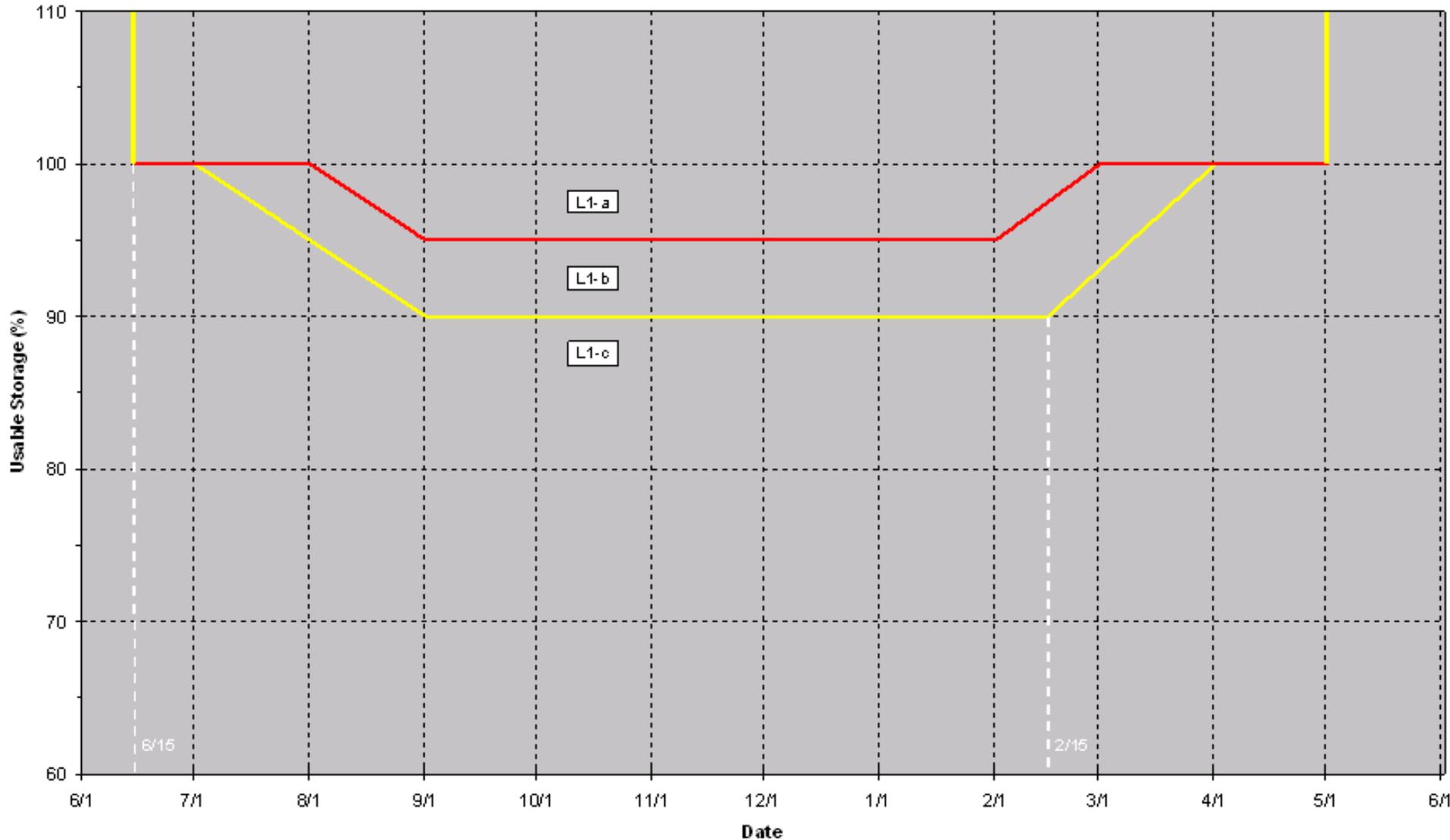
# FFMP Elements (Cont.)

- **Tailwaters Habitat Protection and Discharge Management Program (THPDMP)**
  - ◆ Replaces previous bank-based fishery program with storage-based, seasonally-adjusted, fixed release program
  - ◆ Benefits assessed using the OASIS basinwide model and the Decision Support System (DSS) developed by SEF/USGS
  - ◆ Release adjustments provide more natural flow regime
  - ◆ Spill mitigation component incorporates storage- and snowpack-based programs

**Figure 1**  
**New York City Delaware System Usable Combined Storage**  
**(Cannonsville, Pepacton and Neversink Reservoirs)**



**Figure 2**  
**New York City Delaware System Usable Individual Storage**  
**(Cannonsville, Pepacton and Neversink Reservoirs)**



**Table 3**  
**Schedule Of Releases (cfs)**  
**With 35 mgd Available**

	Winter		Spring	Summer			Fall	
<b>Cannonsville</b>	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
<b>Storage Zone</b>	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	1500	1500	*	*	1500	1500	1500	1500
L1-b	250	*	*	*	*	350	275	250
L1-c	110	110	225	275	275	275	140	110
L2	80	80	215	260	260	260	115	80
L3	70	70	100	175	175	175	95	70
L4	55	55	75	130	130	130	55	60
L5	50	50	50	120	120	120	50	50

	Winter		Spring	Summer			Fall	
<b>Pepacton</b>	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
<b>Storage Zone</b>	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	700	700	*	*	700	700	700	700
L1-b	185	*	*	*	*	250	200	185
L1-c	85	85	120	150	150	150	100	85
L2	65	65	110	140	140	140	85	60
L3	55	55	80	100	100	100	55	55
L4	45	45	50	85	85	85	40	40
L5	40	40	40	80	80	80	30	30

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	Winter		Spring	Summer			Fall	
<b>Neversink</b>	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
<b>Storage Zone</b>	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	190	190	*	*	190	190	190	190
L1-b	100	*	*	*	*	125	85	95
L1-c	65	65	90	110	110	110	75	60
L2	45	45	85	100	100	100	70	45
L3	40	40	50	75	75	75	40	40
L4	35	35	40	60	60	60	30	30
L5	30	30	30	55	55	55	25	25

\* Storage zone does not apply during this period. Releases will be made in accordance with zone L1-c.

**Table 3 (Continued)**  
**Schedule Of Releases (cfs)**  
**With 0 mgd Available**

	Winter		Spring	Summer			Fall	
<b>Cannonsville</b>	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
<b>Storage Zone</b>	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	1500	1500	*	*	1500	1500	1500	1500
L1-b	250	*	*	*	*	350	275	250
L1-c	110	110	225	275	275	275	140	110
L2	58	58	157	190	190	190	84	58
L3	51	51	73	128	128	128	69	51
L4	40	40	55	95	95	95	40	44
L5	37	37	37	88	88	88	37	37

	Winter		Spring	Summer			Fall	
<b>Pepacton</b>	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
<b>Storage Zone</b>	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	700	700	*	*	700	700	700	700
L1-b	185	*	*	*	*	250	200	185
L1-c	85	85	120	150	150	150	100	85
L2	47	47	80	102	102	102	62	44
L3	40	40	58	73	73	73	40	40
L4	33	33	37	62	62	62	29	29
L5	29	29	29	58	58	58	22	22

	Winter		Spring	Summer			Fall	
<b>Neversink</b>	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
<b>Storage Zone</b>	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	190	190	*	*	190	190	190	190
L1-b	100	*	*	*	*	125	85	95
L1-c	65	65	90	110	110	110	75	60
L2	33	33	62	73	73	73	51	33
L3	29	29	37	55	55	55	29	29
L4	26	26	29	44	44	44	22	22
L5	22	22	22	40	40	40	18	18

\* Storage zone does not apply during this period. Releases will be made in accordance with zone L1-c.

# FFMP Elements (Cont.)

- Discharge Management – Currently incorporated in THPDMP
- Salinity Repulsion – retains Good Faith objective
- Dwarf Wedgemussels – Provision to review impacts
- Lake Wallenpaupack – Provision to consider spill mitigation program
- Recreational Boating – Provision to consider future proposals

# FFMP Elements (Cont.)

- Estuary and Bay Ecological Health – Provision for future consideration when studies currently underway provide meaningful information
- Warm-water and Migratory Fishery – Placeholder
- Monitoring, Reporting and Periodic Evaluation – Requires annual evaluation of FFMP and provides adaptive management flexibility

# FFMP Elements (Cont.)

- Reassessment study
- Temporary Suspension or Revision – for unforeseen circumstances
- Effective Date – Through May 31, 2011
- Renewal – Upon agreement of Decree Parties in 2011 and automatically thereafter in 5-year increments
- Cancellation – On any automatic renewal date, upon notification of any Party at least 180 days prior to renewal date
- Rescissions