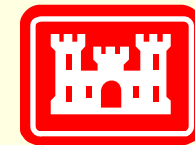


Welcome

**Recreational Enhancements
on the Lehigh River
Public Information Workshop
25 January 2007
Mountain Laurel Resort**

Cooperating Agencies



**US Army Corps
of Engineers
Philadelphia District**

Delaware River Basin Commission

Pennsylvania Fish & Boat Commission

**Pennsylvania Department of Conservation
and Natural Resources**

US Army Corps of Engineers

Delaware River Basin Commission



- DRBC is responsible for meeting Trenton flow objective and coordinates with the Corps of Engineers.
- DRBC requests emergency storage in F.E. Walter during drought emergencies.
- DRBC supports a release program which improves recreation opportunities while preserving flood storage potential.

Pennsylvania Fish & Boat Commission



- To protect, conserve and enhance fish and other aquatic life
- To promote fishing and boating

Bureau of State Parks



- To provide opportunities for enjoying healthful outdoor recreation and to serve as outdoor classrooms for environmental education
- To place priority on the conservation of the natural, scenic, aesthetic and historic values of our parks
- To carry out our stewardship responsibilities in a way that protects the natural outdoor experience for the enjoyment of current and future generations

Agenda

- **F. E. Walter Project Overview**
- **Review Performance of 2005 & 2006 Release Plans**
- **Water Quality Issues/Study**
- **2007 Release Plan**

Francis E. Walter Dam

Completion Date: 1961

Single Purpose, Flood
Control Dam

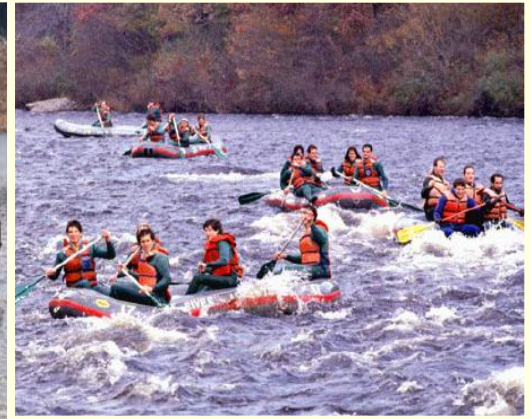
Recreation was defined as
Authorized Project
Purpose in 1988

Access road across top of
dam was completed in
Spring 2005



Water Based Recreation

- Whitewater Boating
 - Kayaking
 - Rafting
 - Canoeing
- In-Lake Boating
- Fishing
 - In-lake
 - Downstream





Review of Flow Management Plans

2005 Flow Management Plan

- Pool elevation: 1335
 - 35 feet and 1.8 billion gallons above normal pool
- Limit pool fluctuation between 1330 and 1335 in May and June
- Target whitewater releases of 750 – 1000 cfs
- Target daily release of 250 cfs
- Storage subject to evacuation for flood control

2005 Flow Management Plan

Number of Whitewater Days

	<u>2005 Scheduled Release Days</u>	<u>2005 Actual Release Days</u>
May	4	3
June	4	3
July	4	4
August	4	0
September	4	0
October	2	0*

*Scheduled Release for October 1-2 was canceled. However, hydrologic conditions allowed for releases on October 8-9, 15-16 and 22-23.

Working Together: Partnership in Action

- Public meetings held in February 2005 and February 2006
- Received several hundred responses within weeks of each meeting
- Compiled list of over 400 stakeholders
- Many comments received on the Flow Management web site
- Improved communication via email
 - Including press releases, notifications, announcements
- Incorporated comments into Recreation Plan

Working Together: Partnership in Action

- State and local officials working to secure financial support for a boat ramp and water quality monitoring
 - Boat launch on Bear Creek Township side of project never funded. Working to make small turn around on Rt. 940 side of lower road to ease launch difficulties.
 - State agencies have partnered with the Lehigh Coldwater Fisheries Alliance and the Wildlands Conservancy to support Water Quality Monitoring and Modeling

Changes to 2005 Flow Management Plan for 2006

The following components were incorporated into the 2006 Plan

- Store earlier
- Maintain higher pool level
- Conserve water when possible
- Allocate storage throughout recreation season
- Possibility of October releases during drawdown

2006 Flow Management Plan

- Pool elevation 1365 Feet NGVD
 - 65 feet and 5.3 billion gallons above normal pool
 - 30 feet and 3.5 billion gallons above 2005 plan

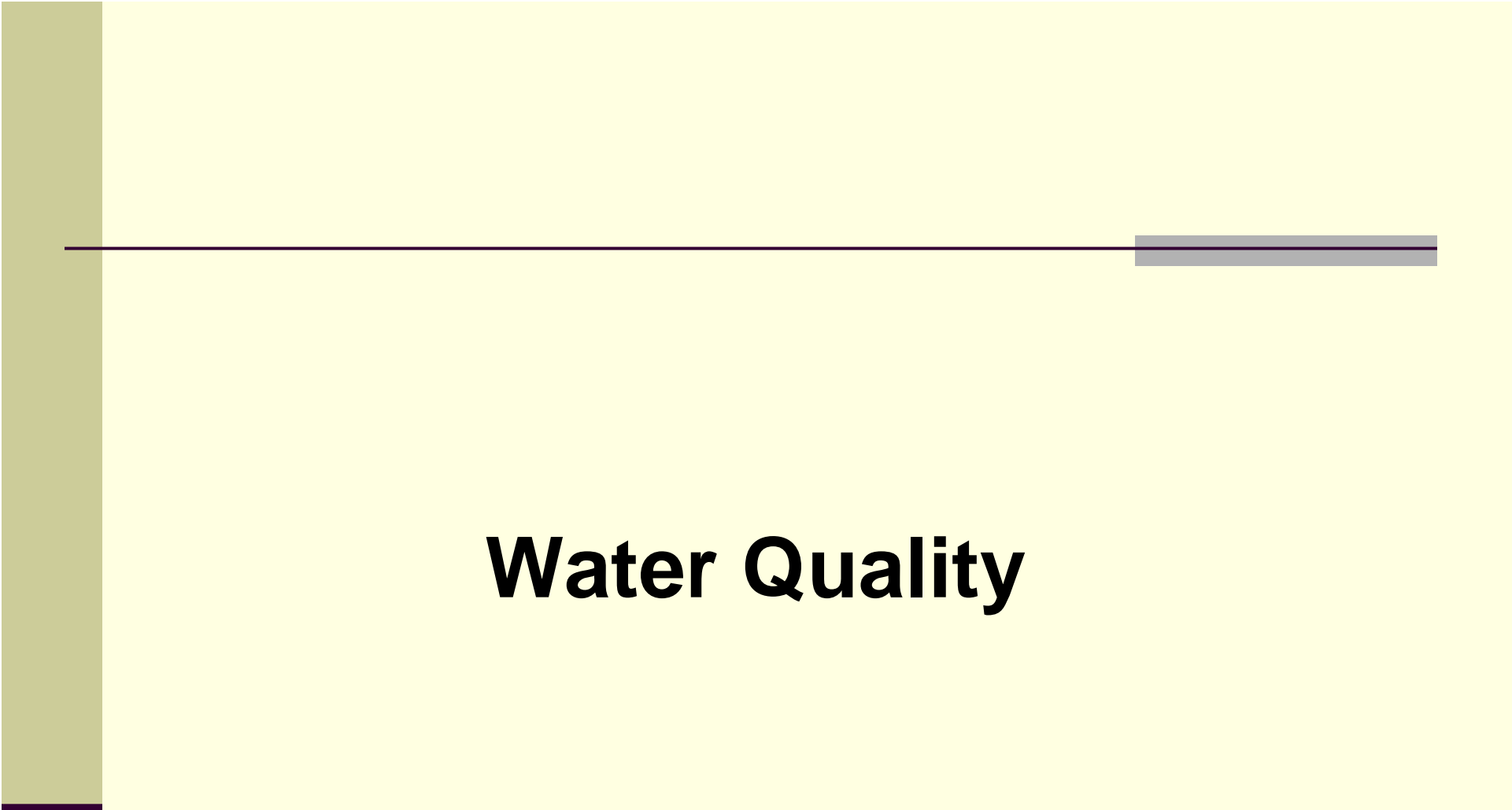
- Whitewater releases from 1 a.m. to 1 p.m.

- Whitewater releases are scheduled every other weekend starting with the second weekend in May and ending October 1.

- All storage is subject to evacuation for flood control or other emergencies. Evacuation of storage due to impending hurricanes or tropical storms may result in cancellation of scheduled events.

2006 Flow Management Plan Performance

- 22 scheduled days of Whitewater releases
- All scheduled releases accomplished
- Flood of June 2006 set record pool. During drawdown after flood, releases were reduced to allow scheduled event.
- Drawdown in anticipation of flooding from Hurricane Ernesto (never materialized)
- Whitewater releases made during passage of Ernesto.
- Sufficient storage remained at end of season for additional releases. 7-8 Oct and 14-15 Oct.



Water Quality

Water Quality Data Collection

- Annual Water Quality Sampling Since 1975
- Water Quality Monitoring from April – September
 - Testing Locations
 - In-Lake Water Column
 - Upstream
 - Downstream
 - 21 Major Parameters Including:
 - Temperature
 - Dissolved Oxygen
 - pH
 - Conductivity
- Results continuously evaluated throughout Season

Water Quality Monitoring Results

- Limited useful information has been gathered
 - In 2005 the 35 foot pool could not be maintained
 - In 2006 we were releasing high flows, regularly making bottom releases (June Flood)
 - Temperature stratification did not develop
 - 2005 data represents the reservoir operation and hydrologic conditions for a very dry year, The 2006 information represents wet conditions with large flood event in June

- Historic Data indicate
 - Changes in water chemistry at higher pool levels
 - Downstream effects

- WQ Reports for 2005 and 2006 are posted on the Corps' web site

Water Quality Study

- Water Quality and Flow Model
 - Corps and the State are working to secure funds to develop a water quality computer model
 - Initial model would study flow and temperatures from the F. E. Walter Reservoir to Northampton, PA and would include Beltzville Reservoir



2007 Flow Management Plan

2007 Flow Management Plan

- Minor modifications to 2006 plan
- Pool elevation 1365 Feet NGVD
 - 65 feet and 5.3 billion gallons above normal pool
 - 30 feet and 3.5 billion gallons above 2005 plan
- Whitewater releases from 1 a.m. to 1 p.m.
- Whitewater releases are scheduled every other weekend starting with the second weekend in May and ending September 30.
- All storage is subject to evacuation for flood control or other emergencies. Evacuation of storage due to impending hurricanes or tropical storms may result in cancellation of scheduled events.

The Francis E. Walter Flow Management Plan 2007 Whitewater Release Schedule

May 12,13

May 26, 27

June 9,10

June 23, 24

July 7, 8

July 21, 22

August 4, 5

August 18, 19

September 1, 2

September 15, 16

September 29, 30

2007 Flow Management Plan

- Release decisions will be made by Wednesday afternoon
 - Notifications posted to the Corps web site, White Water Release Hotline, email distribution list, and press releases will be issued when deviating significantly from the plan.
- To benefit downstream fisheries, the bypass system will be used until release temperature exceeds 68⁰
- Plan requires sufficient inflows to impound 65 feet of storage by the second weekend in May.
- Releases are dependent on hydrologic conditions

2007 Flow Management Plan

April

- Start storing no later than April 1
- Match inflow up to 1000 cfs on weekends while storing
- Minimum release while storing will be 250 cfs.

* If Hydrologic conditions indicate that reaching 1365 by mid May is in jeopardy, weekend releases may be reduced to 850 cfs, and weekday releases to 225 cfs

2007 Flow Management Plan

May – June

- Match inflow on non-whitewater weekends (up to 750 cfs if pool is below 1365)
- Limit pool fluctuations to elevations 1360-1365
 - Protect fish spawning areas in-lake
 - Conserve cold water for later in season
- Target minimum release is 250 cfs
- Target whitewater releases will be 1000 cfs in May, 750 cfs in June

2007 Flow Management Plan

July-October 1

- Use a set of rule curves to allocate storage from July 1 – September 30
- The minimum daily augmentation is 50 cfs above inflow (up to a total release of 250 cfs)
- Allocate storage based on a 1 to 6 ratio. For example, release 50 cfs above inflow daily and 300 cfs above inflow on scheduled whitewater weekends
- If inflow plus 300 cfs is not sufficient for a weekend whitewater release, the release will be modified
 - Sunday release will be modified or canceled before Saturday releases

2007 Flow Management Plan

July-October

- Amount of augmentation will be determined by rule curves based on date and storage
- The following rule curves will be used in the 2007 plan:

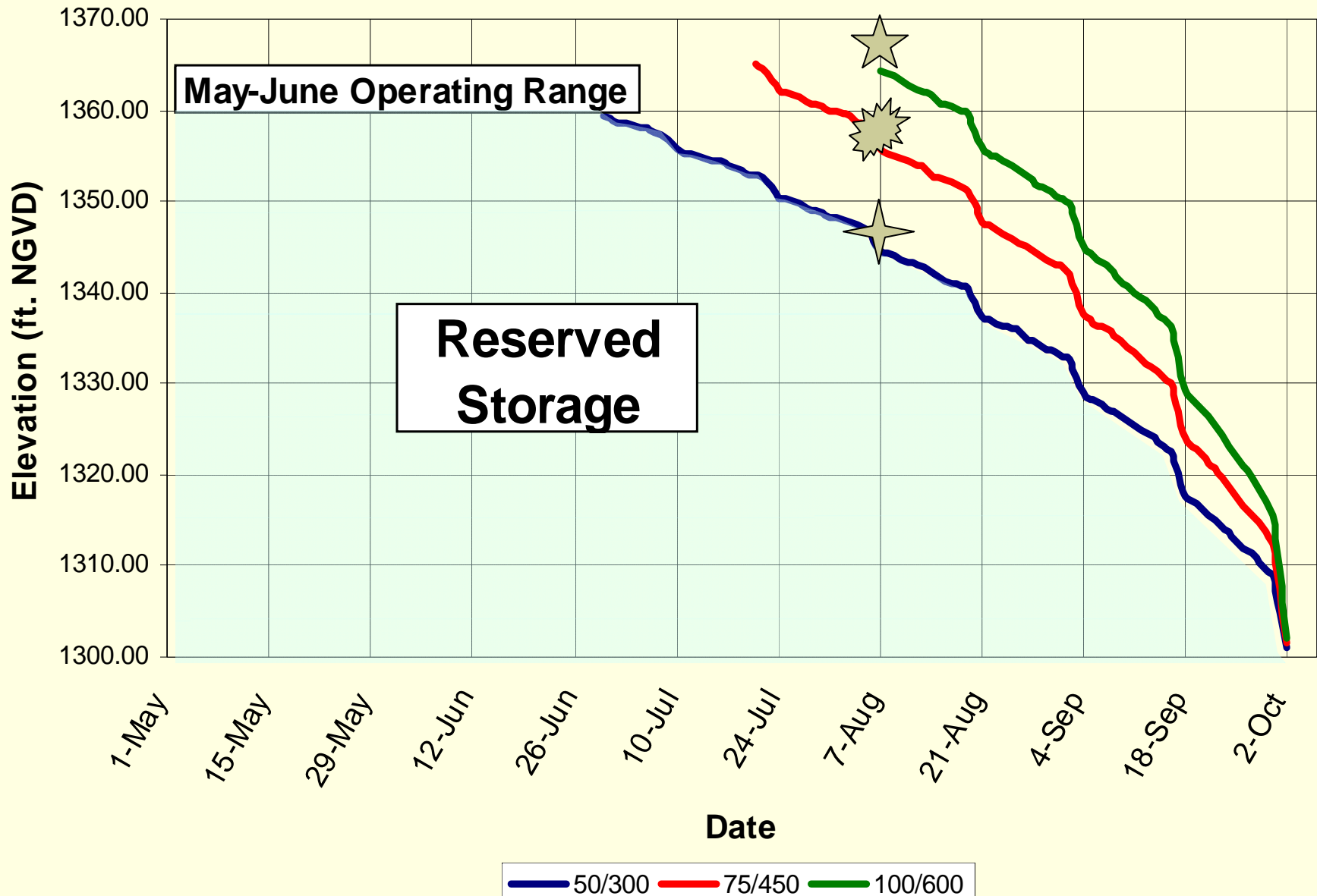
50/300 cfs	55/330 cfs	60/360 cfs
65/390 cfs	70/420 cfs	75/450 cfs
85/510 cfs	95/570 cfs	100/600 cfs
- The lowest augmentation of 50/300 cfs allows for a minimum 1-day event of 600 cfs above inflow for each scheduled weekend (12 hour period)

2007 Flow Management Plan

July-September 30

- Target whitewater releases will be 750 cfs in July, August, and early September, 1000 cfs thereafter.

Augmentation Rule Curve Daily Elevations (2007 Season)



Priority Flow Distributions based on Available Storage & Inflow (CFS)

Saturday Release	Sunday Release
650	min
700	min
750	min
700	500*
750	550*
800	600*
750	650
750	750
900	700
1000	700
1000	800
1000	900
1000	1000

•Release for 6-hour period

2007 Flow Management Plan

■ *October*

IF there is surplus storage on October 1, the following drawdown priorities will be followed:

1. Minimum release for drawdown will be 144 cfs
2. Additional release for October 13 & 14 up to 1200 cfs
3. Add mid week release up to 4000 cfs on October 10

Public Involvement

- Visit our web site for updated information and to submit your input:

www.nap.usace.army.mil/Projects/FEWalter/index.htm

- Public comments may also be submitted to:

U. S. Army Corps of Engineers

Philadelphia District

ATTN:

Wanamaker Building

100 Penn Square East

Philadelphia, PA 19107

Khaalid.H.Walls@usace.army.mil