

# Delaware River Basin Flood Mitigation Task Force: Progress to Date

- Governor's Charge
- Task Force Composition
- Report Development Timeline
- Report Architecture/Overview
- Flood Analysis Model
- Implementation Considerations
- Next Steps

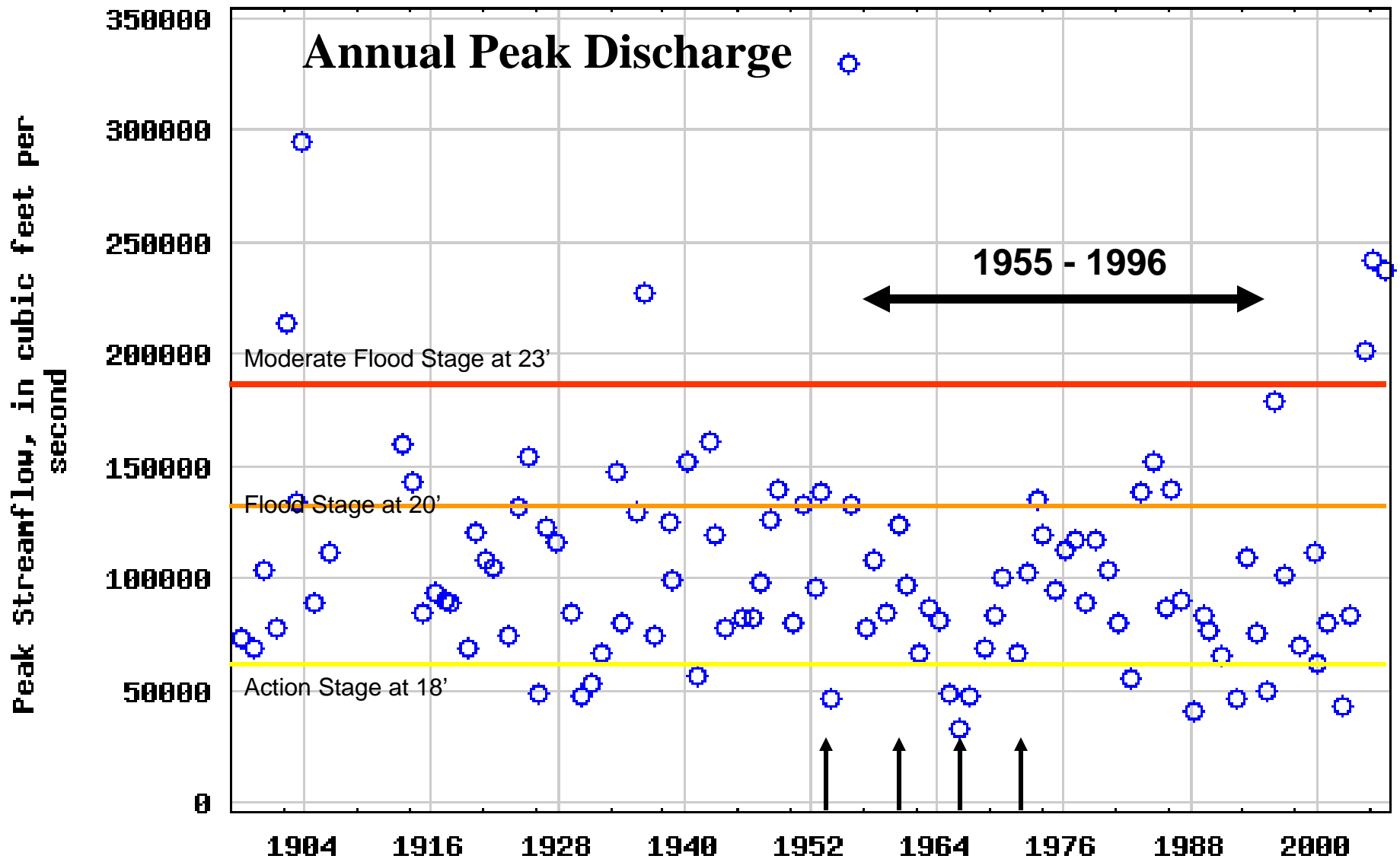


# Governor's Charge

- Form an Interstate Flood Mitigation Task Force
- Develop a Preliminary Action Plan (12/30/06)
- Develop a Flood Analysis Model
- Implement Short-Term Actions early 2007



# USGS 01463500 DELAWARE RIVER AT TRENTON NJ



Data Provided by USGS

# Report Development Critical Path

- 9/21/06: Governor's Letter received
- 10/25/06: Organization/Steering Meeting
- 11/14/06\*: Technical Meeting #1
- 12/05/06\*: Technical Meeting #2  
Preliminary Action Plan, Draft 1
- 12/15/06: Preliminary Action Plan, Draft 2 Presented
- 12/20/06: Full Task Force Meeting Draft 2 Finalized
- January 2007: Final Public Review Draft
- Jan.-Mar. 2007: Public Comment Process
- \* Roll-up of Multiple Focus Area Committee Meetings and Conference Calls

# Interstate Task Force Composition

(31 members)

**Federal:** USACE, NOAA/NWS, FEMA, USGS, USDA/NRCS

**State Agencies:** DNREC, NJDEP, PADEP, NYSDEC, NYCDEP, NJOEM, PEMA, NYSEMO, PA DCED

**Elected Officials:** Congress (Delaware River Basin Task Force Members), State Legislature (PA and NJ), County and Municipal (Delaware Co, NY and Yardley, PA)

**Regional Agencies:** NJ Water Supply Authority, Lehigh Valley Planning Commission, Delaware River Joint Toll Bridge Commission

**Local Emergency Management:** Sullivan Co. NY, Lambertville, NJ

**Citizen/Academic Interests:** Riverkeeper, Temple University

# Report Architecture

- Guiding Principles
- 6 Priority Management Areas
- 44 Draft Recommendations
- Implementation Considerations

# Guiding Principles

- Preserve and Restore Floodplains Where Possible
- Be Prepared for Floods
- Help People Protect Themselves from Flood Hazards
- Prevent Adverse Impacts and Unwise Uses in the Floodplain
- Prevent Adverse Impacts from Development and Redevelopment
- Acknowledge the Values of Structural Flood Control Measures

# Priority Management Areas

- Reservoir Operations: Rick Fromuth (DRBC)
- Structural and Non-Structural Measures: David Dech (Warren Co., NJ) and Scott Steigerwald (PADEP)
- Stormwater Management: Amy Shallcross (NJ Water Supply Authority)
- Floodplain Mapping: Joe Ruggeri (NJDEP)
- Floodplain Regulations: Vince Mazzei (NJDEP)
- Flood Warning: Peter Gabrielsen (NOAA/NWS) and Laura Tessieri (DRBC)





*Photograph provided by U.S. Army Corps of Engineers*



# Reservoir Operations

## **R-1: Develop a Flood Analysis Modeling Tool**

- Show combined effects of reservoir operations
- Use as a basis for support of operating plans
- Experimental and educational tool
- Include pre-storm hydrologic conditions
- Allow for changes in operations prior to and during flood events

# Reservoirs in the Delaware River Basin



# Corps of Engineers Flood Control Reservoirs

June '06 Flood:

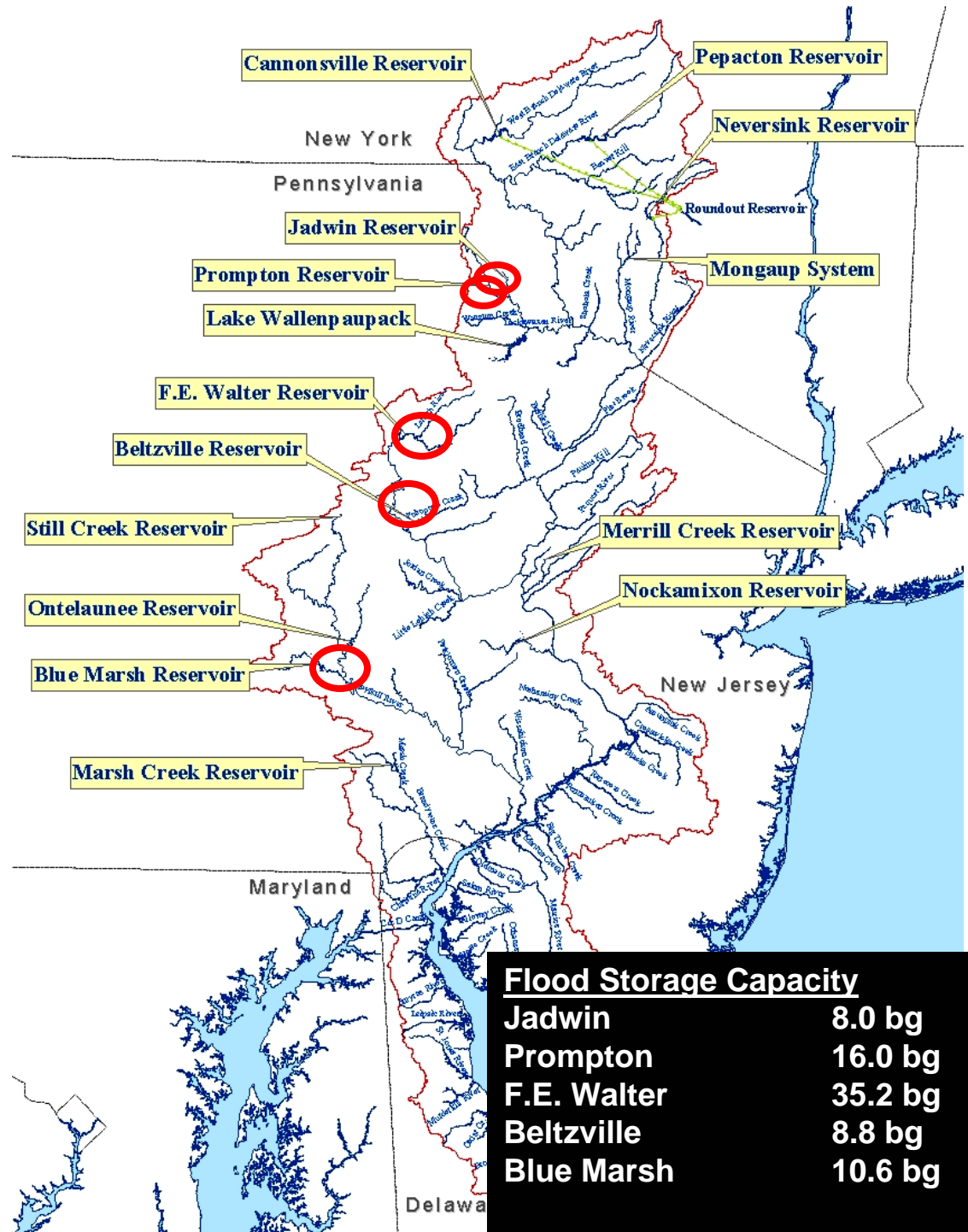
## Storage

Jadwin	5.6 bg
Prompton	4.3 bg
F.E. Walter	24.6 bg
Beltzville	4.5 bg
Blue Marsh	10.3 bg

## Maximum Inflows /Outflows (cfs)

	<u>In</u>	<u>Out</u>
Jadwin	13,600	3,500
Prompton	11,100	3,500
F.E. Walter	23,000	10,000
Beltzville	4,700	1,600
Blue Marsh	17,000	6,000

Data Provided by  
U.S. Army Corps of Engineers



## Flood Storage Capacity

Jadwin	8.0 bg
Prompton	16.0 bg
F.E. Walter	35.2 bg
Beltzville	8.8 bg
Blue Marsh	10.6 bg

## Percent of Drainage Area Impounded by Reservoirs

<u>Station</u>	<u>Drainage Area</u>	<u>% Impounded (NYC)</u>	<u>% Impounded (All)</u>
Callicoon	1820	45	45
Montague	3480	26	42
Belvidere	4535	20	32
Riegelsville	6328	15	29
Trenton	6780	14	28

Unregulated area increases as distance from dam increases.

## Delaware River Basin



## **R-3: Evaluate Discharge Mitigation Programs for Reservoirs**

- Analysis to include seasonal and snowpack based voids (In effect: Temporary Spill Mitigation Program)
- Potential release and diversion capabilities, as well as flood stages immediately downstream of dams, should be further evaluated. The maximum rate at which reservoirs can be lowered without adverse impacts on water supply or downstream flooding must be determined.

### Issues:

The capacity of a reservoir's outlet valves and piping (release works) is a critical limiting factor in the ability to lower reservoir levels and maintain voids.

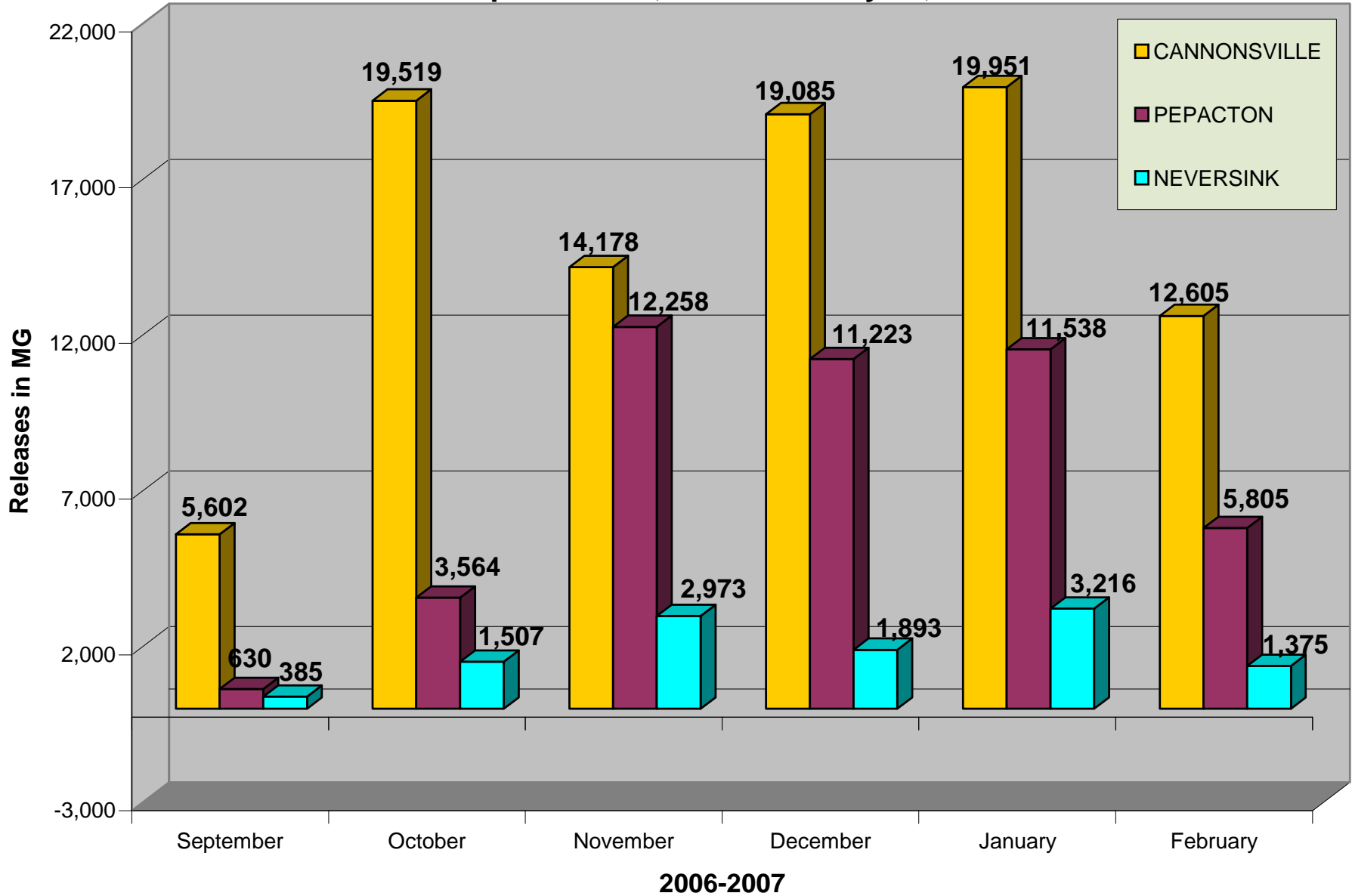
## Current Release Rates under the Temporary Spill Mitigation Program

Release Level	Release Rates (cfs)					
	Spring/Fall			Winter		
	Cannonsville	Pepacton	Neversink	Cannonsville	Pepacton	Neversink
L1	1000	700	190	1000	700	190
L2	275	200	85	250	185	85
L3	140	100	75	110	85	65

**Spring/Fall:** May 1 – May 31 and Sept 15 – Sept 30  
**Winter:** October 1 – April 30



# Temporary Spill Mitigation Program September 22, 2006-February 25, 2007



**NYC DEP Temporary Spill Mitigation  
Program Releases:  
September 22, 2006 through February 25, 2007**

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*In Millions of Gallons*

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<b>CANNONSVILLE</b>	<b>PEPACTON</b>	<b>NEVERSINK</b>
<i>90,940</i>	<i>45,018</i>	<i>11,349</i>

<b>Grand Total:</b>	<b>147,307 MG</b>
	<b>147 BG</b>

***Total Useable Storage in 3 Reservoirs = 271 BG***

***54% of Usable Storage has been released to date.***

*All Data is Provisional*

*Source: NYC DEP Daily Reservoir Reports*

# Structural and Non-Structural Measures

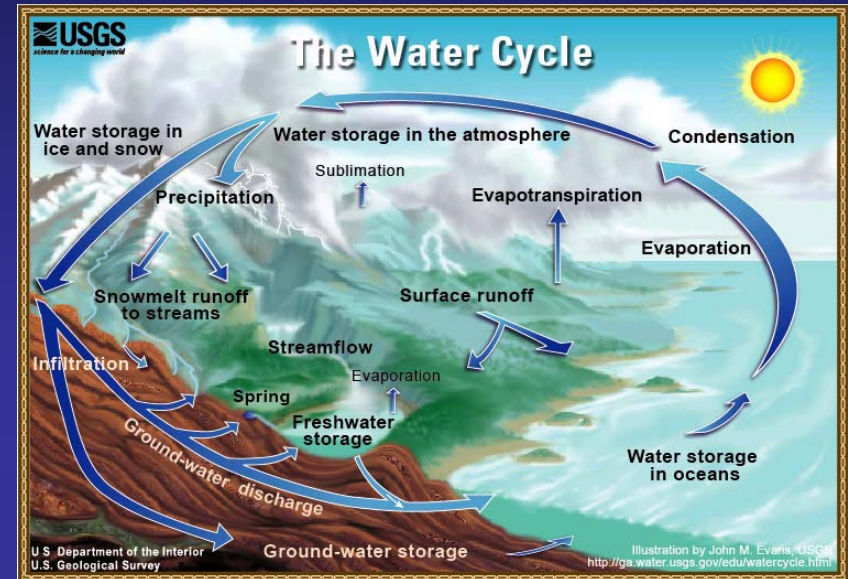
- Prioritize and Provide Greater Funding for Acquisitions, Elevations and Flood-proofing of Structures in the Floodplain
- Maintain Existing Flood Control Structures; Support State Dam Safety Programs
- Support a Comprehensive Basin-wide Flood Mitigation Study by the U.S. Army Corps of Engineers.



*New Hope, PA; Photo provided by John Miller*

# Stormwater Management

- Implement Watershed-based Stormwater Management Plans
- Provide for Long-term Maintenance of Existing Stormwater Infrastructure
- Encourage Non-structural Stormwater Management
- Evaluate, Expand Incentives and Encourage Enforcement of Existing Stormwater Regulations
- Develop Stream Restoration and Debris Removal Guidelines



# Floodplain Mapping & Floodplain Regulations

- Coordinate Flood Study and Map Updates; Incorporate Development and Residual Risk Zones
- Catalog, Evaluate and Update Existing State and Local Floodplain Regulations

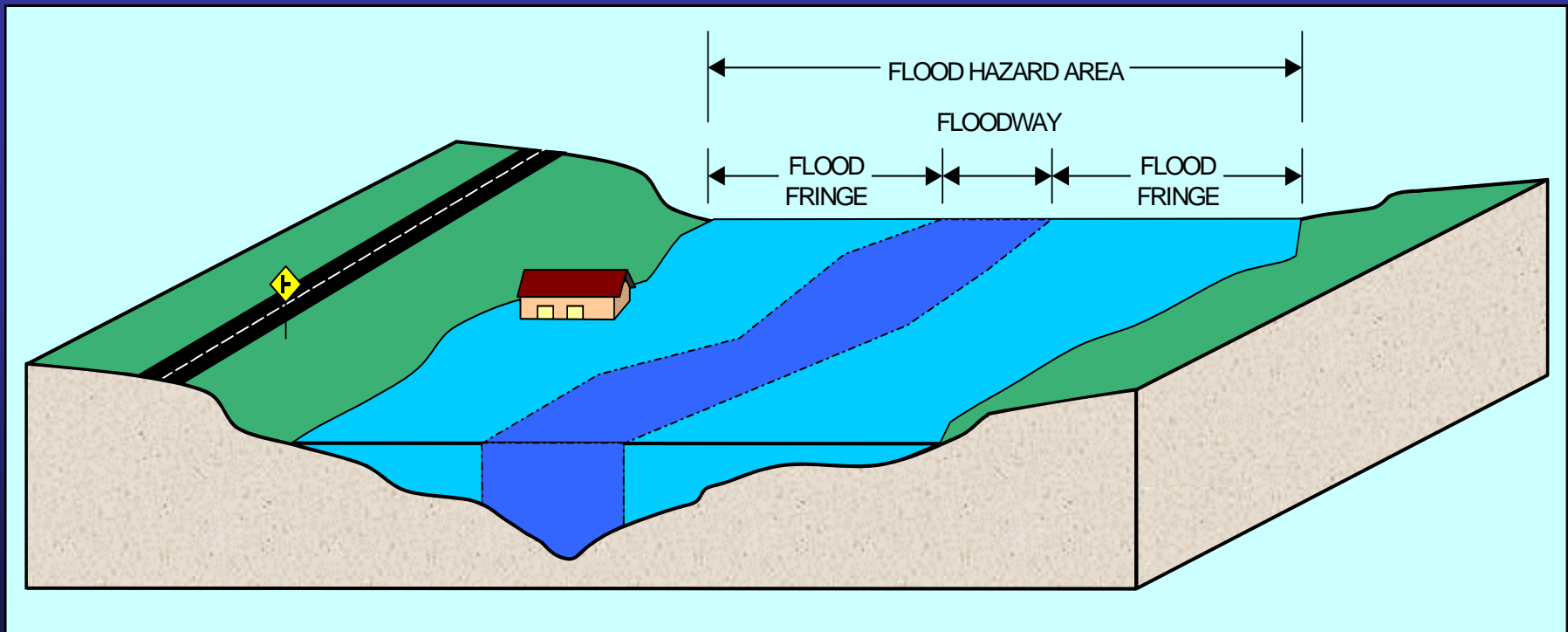


FIGURE A THE FLOOD HAZARD AREA IS COMPRISED OF THE FLOODWAY AND FLOOD FRINGE

# Flood Warning

- Evaluate Gage Network and Forecast Points
- Extend Rating Tables; Flood Harden Gages
- Flash Flood Forecasting
- Flood Inundation Maps
- Dam Emergency Action Plans
- Education/Outreach
- Coastal Flooding Impacts

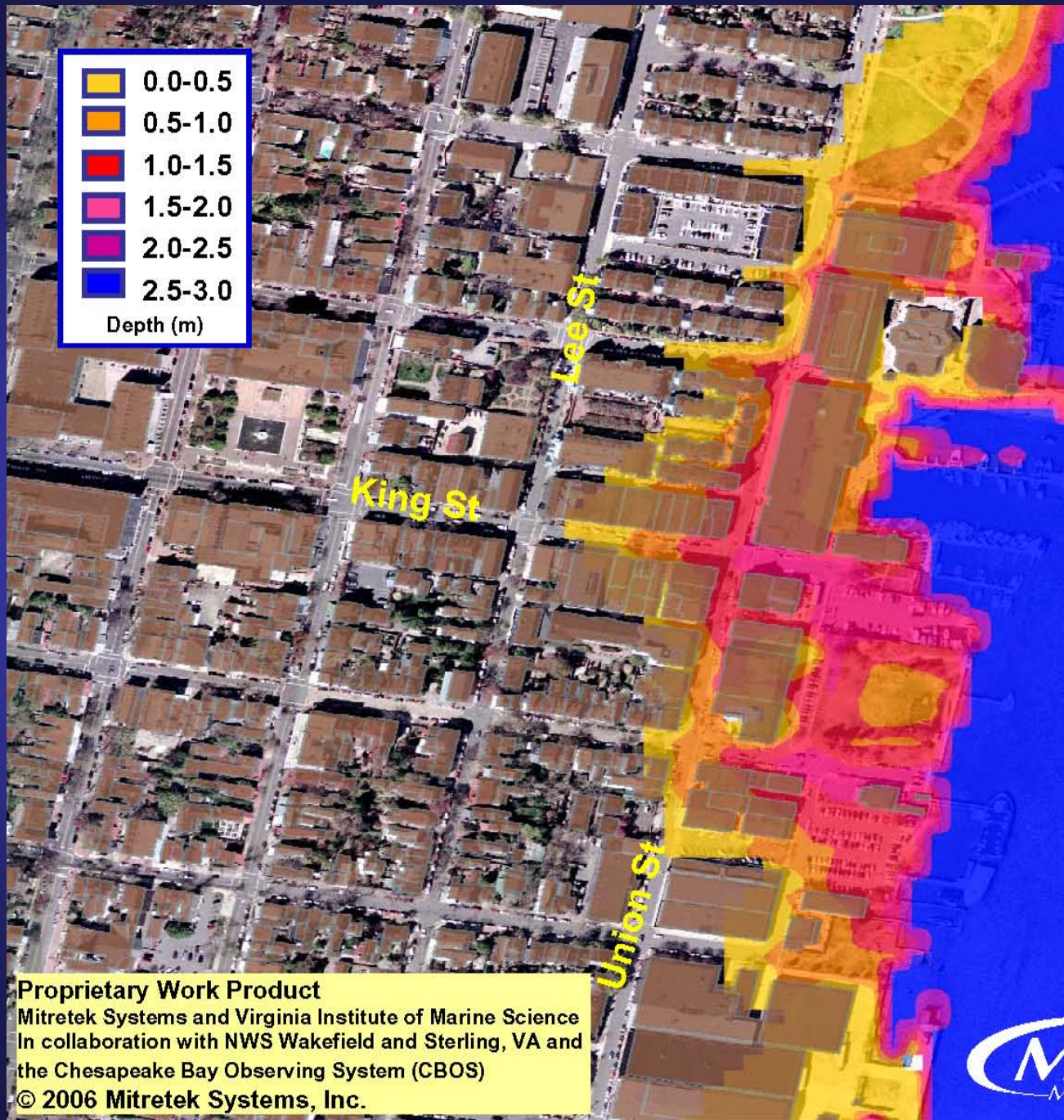


Map provided by U.S. Army Corps of Engineers, Philadelphia District

Chesapeake Bay Inundation  
System (CIPS)  
*Initial Prototype*

Storm Surge Flooding  
Hurricane Isabel

Old Town Alexandria, VA  
September 19, 2003 (04:00)



Proprietary Work Product  
Mitretek Systems and Virginia Institute of Marine Science  
In collaboration with NWS Wakefield and Sterling, VA and  
the Chesapeake Bay Observing System (CBOS)  
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# Implementation Considerations

- Roles and Responsibilities of Agencies
- Implementation time frame; identification of short term actions
- Resource Identification: Staffing levels/Funding
- Interstate Coordination
- Local Support



# Next Steps

- Public Meetings: Comments and Response
- February 28<sup>th</sup> DRBC Commission Meeting
- Transmit Final Report to Governors
- Early Action Items
- Tracking Implementation Progress