

Headwaters:

The Delaware River and Berks County, PA

Nov 12, 2015

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What do these enterprises have in common?

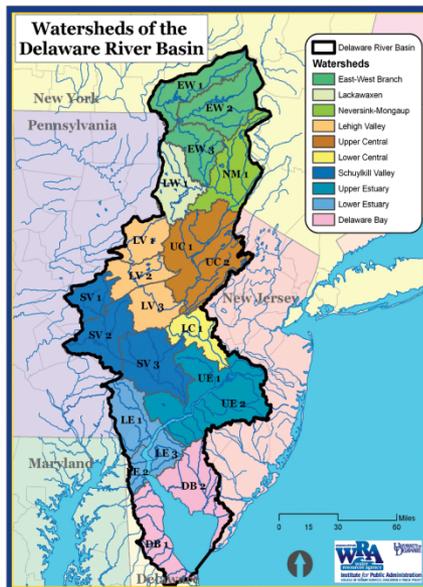
- *Boeing*
- *Bachman Pretzels*
- *Campbell's Soup*
- *DuPont*
- *Wawa*
- *Yuengling Brewery*
- *Starbucks*
- *Boscovs*
- *New York Yankees*
- *United States Navy*
- *Guggenheim Museum*
- *Cabela's*

They all depend on the Delaware Basin!

Technical Summary

State of the Delaware River Basin Report

A Report on the Health of the 13,539-square-mile Delaware River Basin
in Delaware, New Jersey, New York, and Pennsylvania



July 4, 2008



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Delaware River Basin Partners



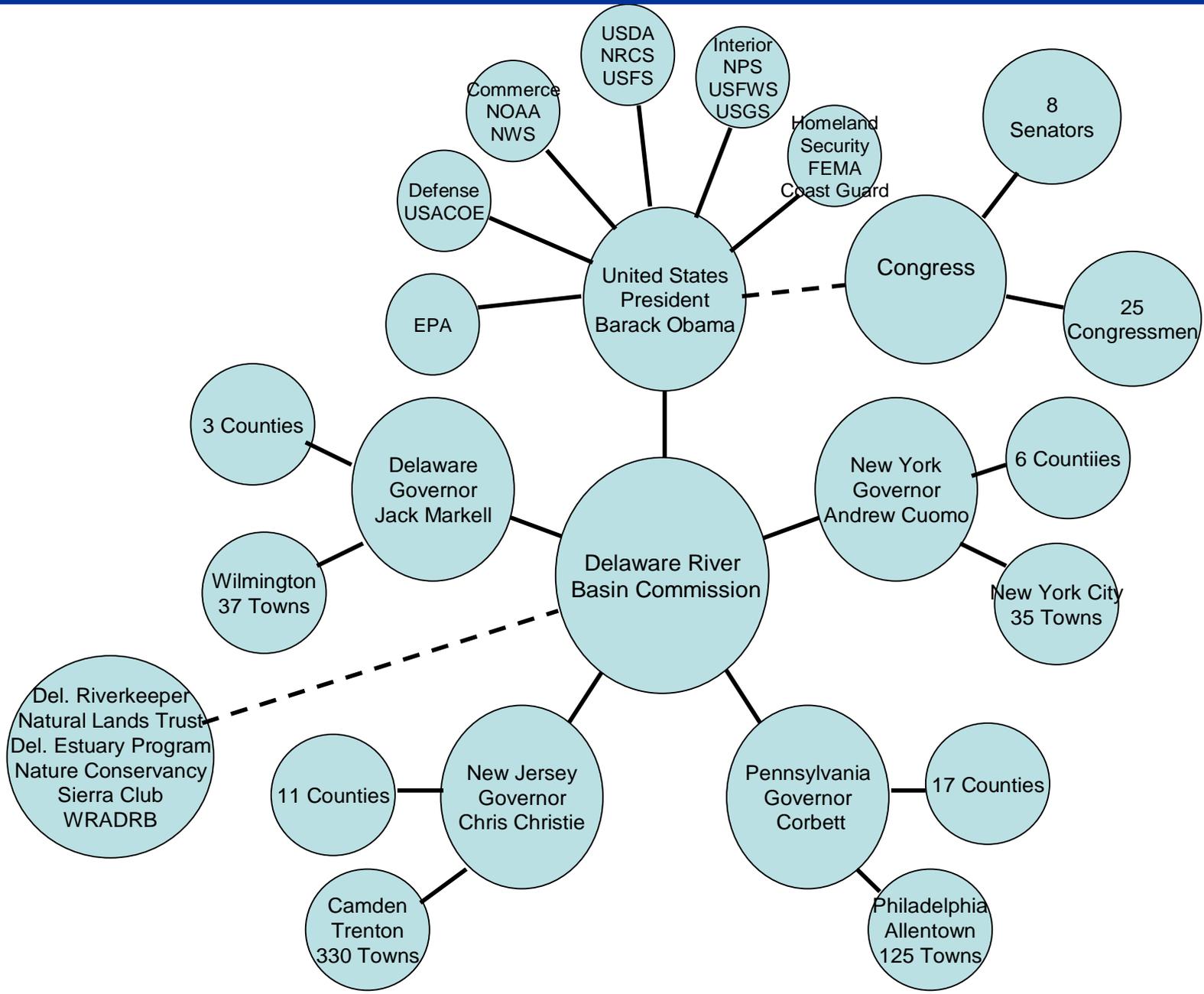
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Delaware River Basin



- Federalist model of shared power in water management
- 1961 DRBC Compact manages “without regard to political boundaries.”
- Global model of efficient watershed governance.
- 4 states, 24 counties, and 838 municipalities
- 8 Senators, 25 Members of HR
- 19 federal, 43 state, 14 interstate agencies
- Use charges on water allocations (\$0.08/1000 gal.).



1945

HMS Nelson docks at the Philadelphia Navy Yard





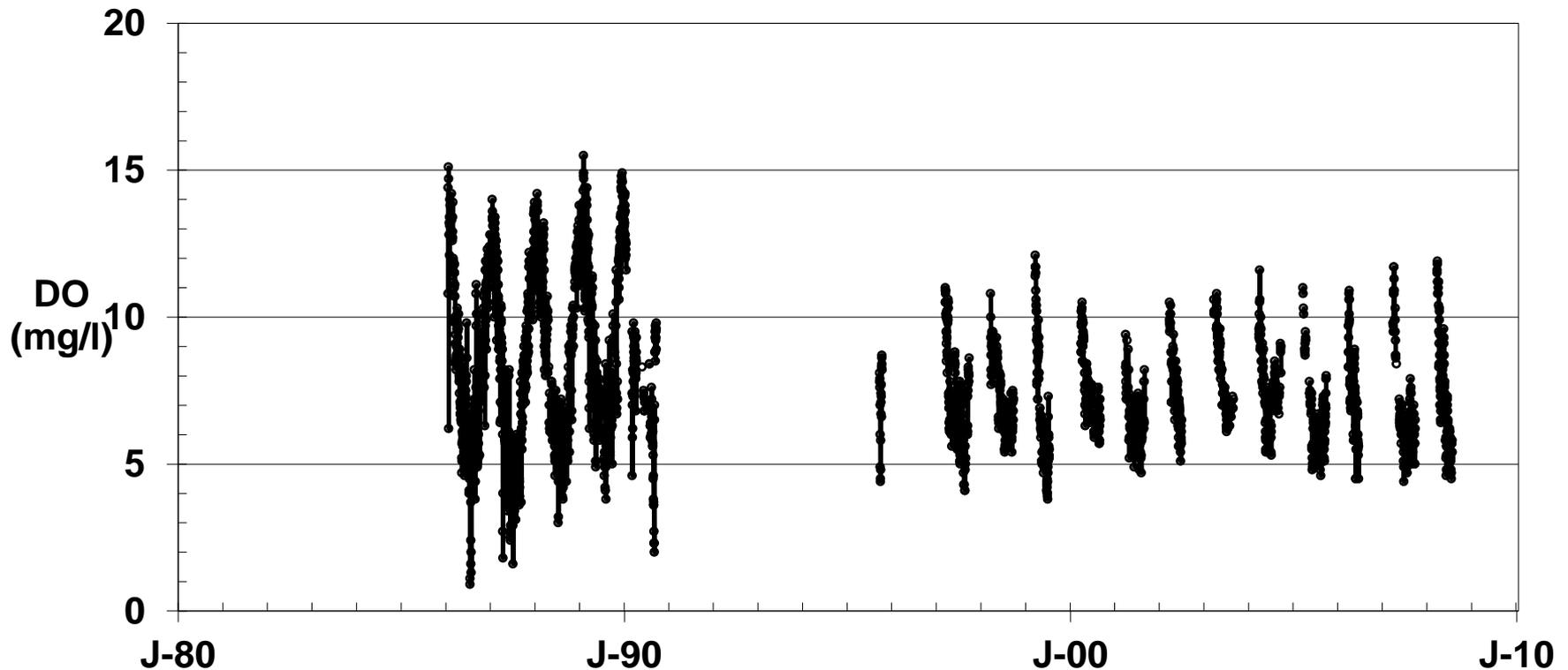
1961: JFK signs DRBC Compact.

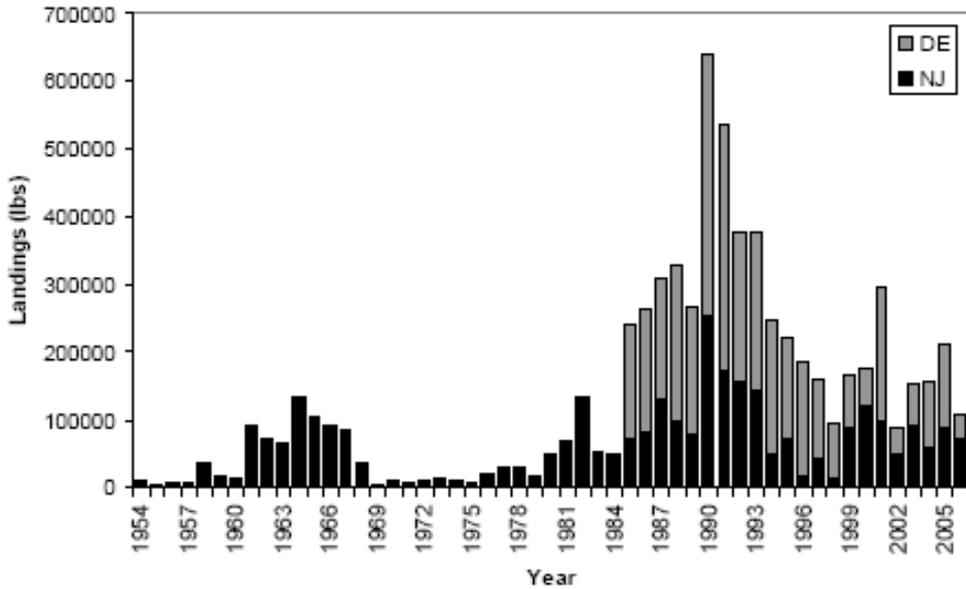
1972: Congress authorizes Clean Water Act

1996: Congress adds Del. Estuary to National Estuary Program.

2015: Delaware River revival is underway.

**Dissolved Oxygen
Schuylkill River at Linwood, PA
USGS 1472104**

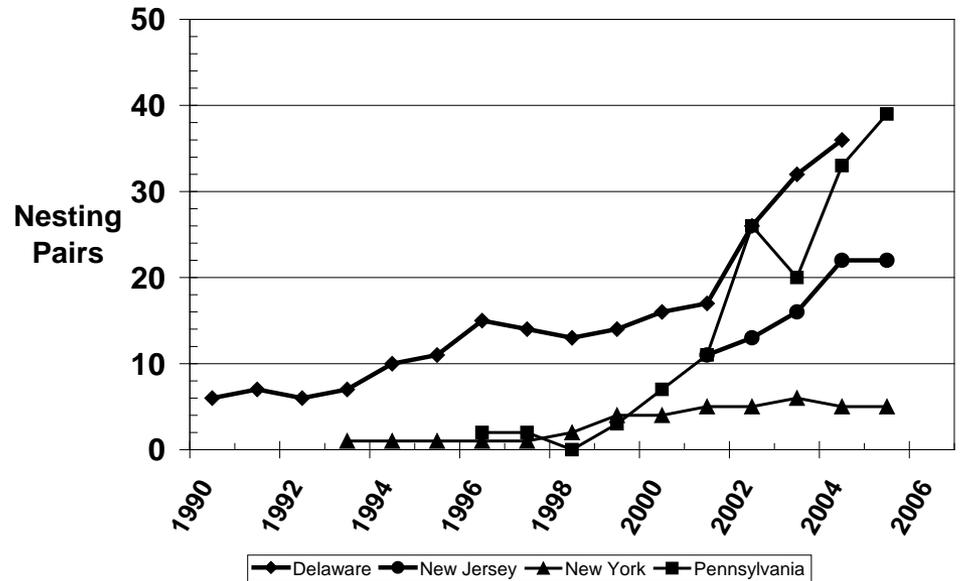




American shad

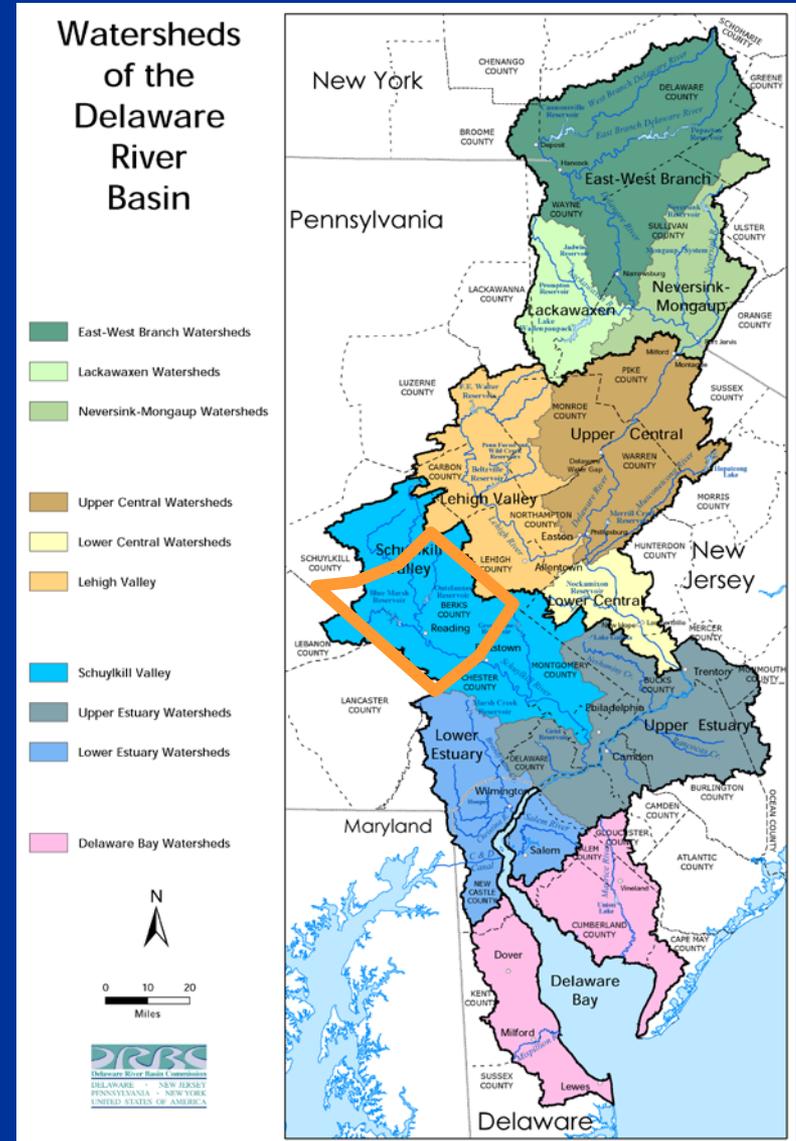
Bald Eagles

Bald Eagle Nesting Pairs in the Delaware River Basin

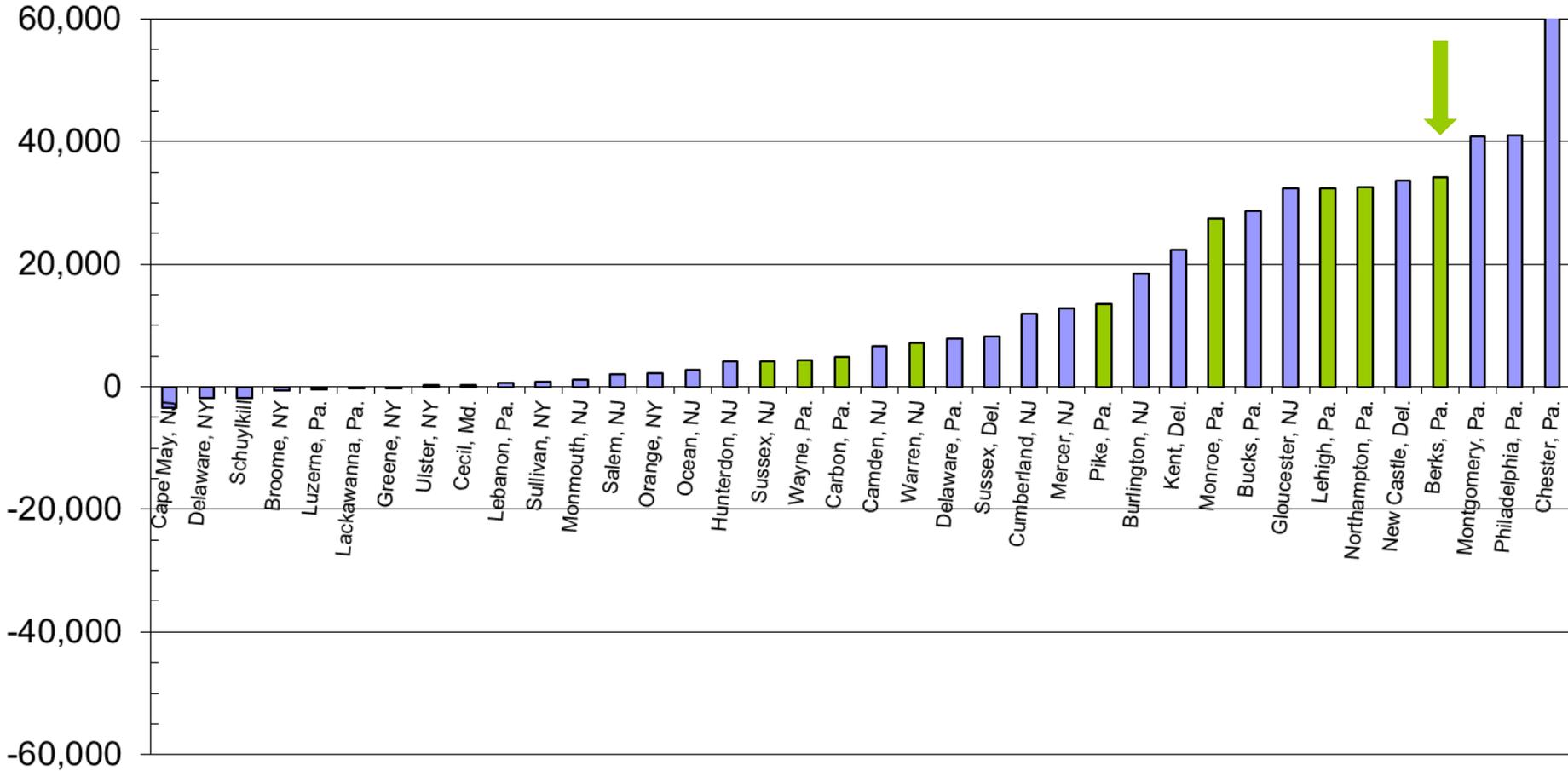


The Delaware River Basin

- 13,000 sq mi
- 8.2 million people
- 11th most populous state
- Drinking water: 5% of U.S.
- 1st, 7th largest metro. economies
- Pa. (43% of pop.)
- Berks Co.
 - 866 sq. mi. (7% of basin)
 - 413,000 pop. (5% of basin)



Population Change by County Delaware Basin, 2000-2010



The Delaware River Basin in Del., NJ, NY, and Pa. contributes:

1. **\$25 billion** in annual economic value from recreation, water quality, water supply, ecotourism, forest, agriculture, open space, and port benefits.
2. Ecosystem goods and services worth **\$21 billion** per year, net present value (NPV) = **\$683 billion**.
3. Over **600,000 jobs** with **\$10 billion** in wages.

Skiing

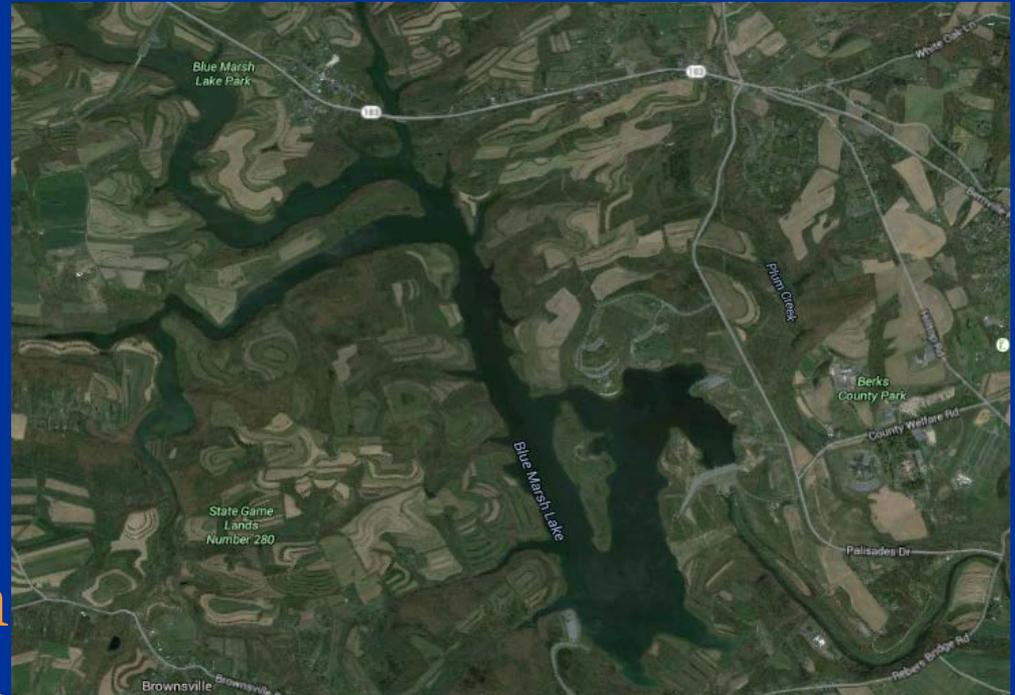
- \$325 million
- 1,753 jobs
- 9 ski areas
- 1,005 acres
- 1 mgd
- 1.9 million ski visits

source: PSAA 2010



Recreation (Berks Co.)

- Powerboating
 - \$14 million
 - Pa. ranked 17th in sales
- Paddling
 - 211 jobs
 - Gear: \$3.3 million
 - Trips: \$8.1 million
 - 11,000 paddlers



Flood Control

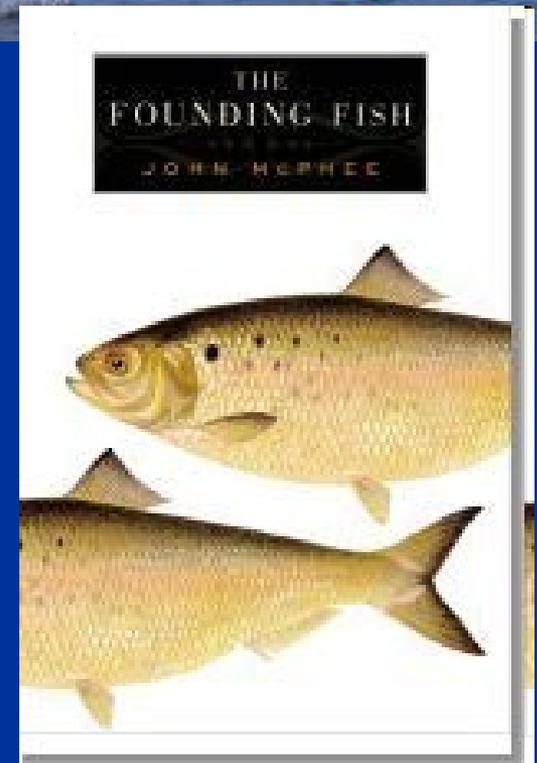
Damages Prevented Update-USACE Philadelphia District Flood Control Projects

7-May-14

| Project | Initial Year of Operation | Cumulative Damages Prevented | | Cumulative Damages Prevented | |
|------------|------------------------------|------------------------------------|-----------------|------------------------------------|---------------------|
| | | Oct-12 | CWCCIS Index | May-14 | May-14 (ROUNDED) |
| Prompton | 1960 | \$24,615,000 | 1.027944 | \$25,302,849 | \$25,303,000 |
| Jadwin | 1960 | \$31,140,000 | 1.027944 | \$32,010,186 | \$32,010,000 |
| Allentown | 1960 | \$68,707,000 | 1.027944 | \$70,626,970 | \$70,627,000 |
| Walter | 1961 | \$199,666,000 | 1.027944 | \$205,245,530 | \$205,246,000 |
| Bethlehem | 1964 | \$26,871,000 | 1.027944 | \$27,621,892 | \$27,622,000 |
| Beltzville | 1972 | \$33,055,000 | 1.027944 | \$33,978,699 | \$33,979,000 |
| Blue Marsh | 1978 | \$85,451,000 | 1.027944 | \$87,838,870 | \$87,839,000 |
| Total | | \$469,505,000 | | \$482,624,996 | \$482,626,000 |

Fishing, Hunting, Bird Watching Berks Co.

- Fishing **\$29 million**
(18 trips/angler, \$53/trip)
- Hunting **\$17 million**
(16 trips/hunter, \$50/trip)
- Bird Watching **\$28 million**
(13/trips/yr, \$27 trip)

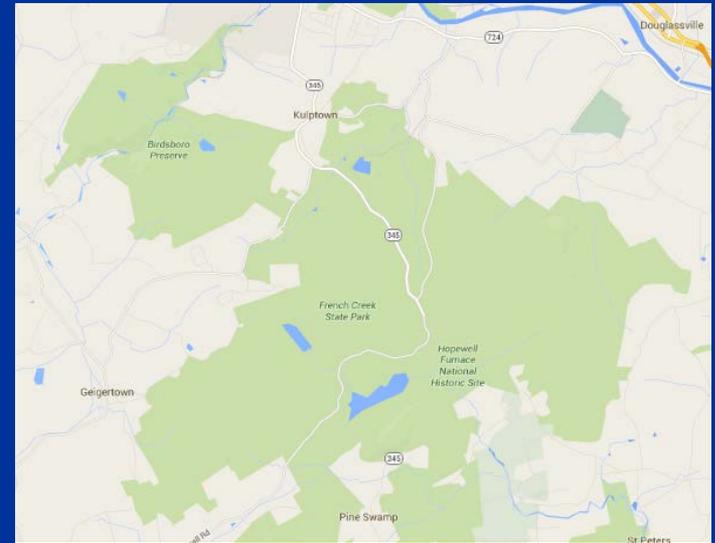


Source: USFWS 2006

Open Space (Berks Co.)

Parks (Berks Co.)

- 3,979 ac
- Health: **\$38.7 million**
- Community: **\$9.5 million**
- Stormwater: **\$3.7 million**
- Air Pollution: **\$0.4 million**



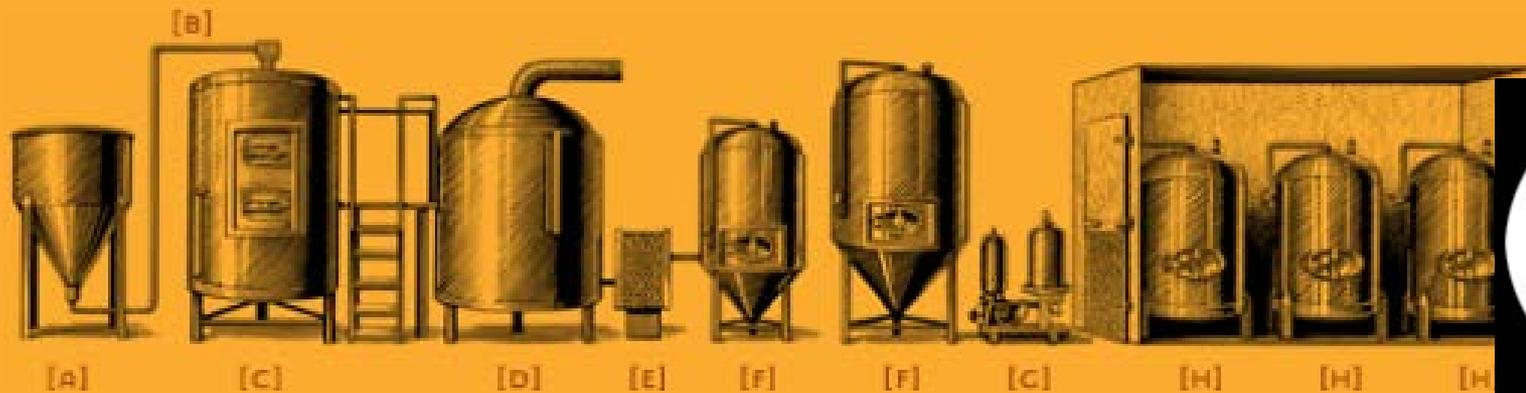
Hopewell Furnace National Historic Site

- NPS (2011)
- 44,873 visits (2011)
- **\$2.4 million** food, lodging, equip.
- 33 jobs with **\$2.5 million** income



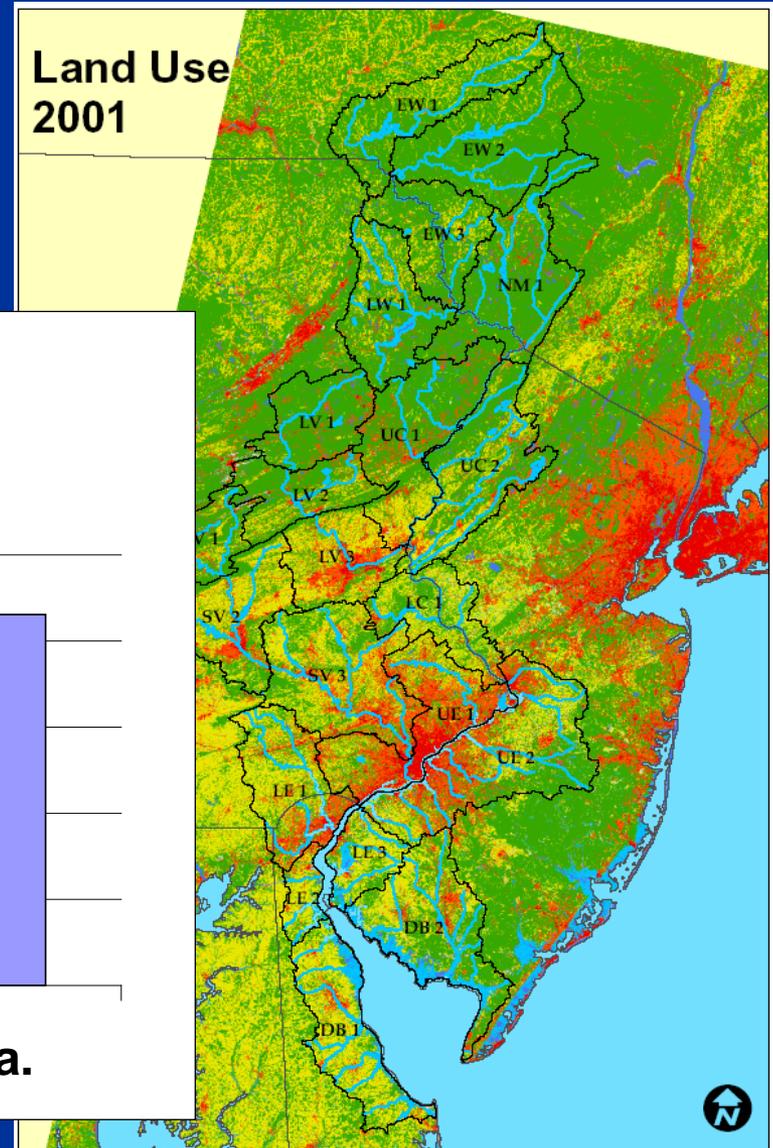
Water Supply (Schuylkill)

| Use | Supply | Value (\$ million) |
|----------------|----------|----------------------|
| Drinking Water | 25 mgd | \$45 |
| Reservoir | 6 BG | \$3 |
| Irrigation | 0.02 mgd | \$8 |
| Thermoelectric | 2,230 MW | \$200 |
| Industrial | 40 mgd | \$9 |
| | | \$265 million |

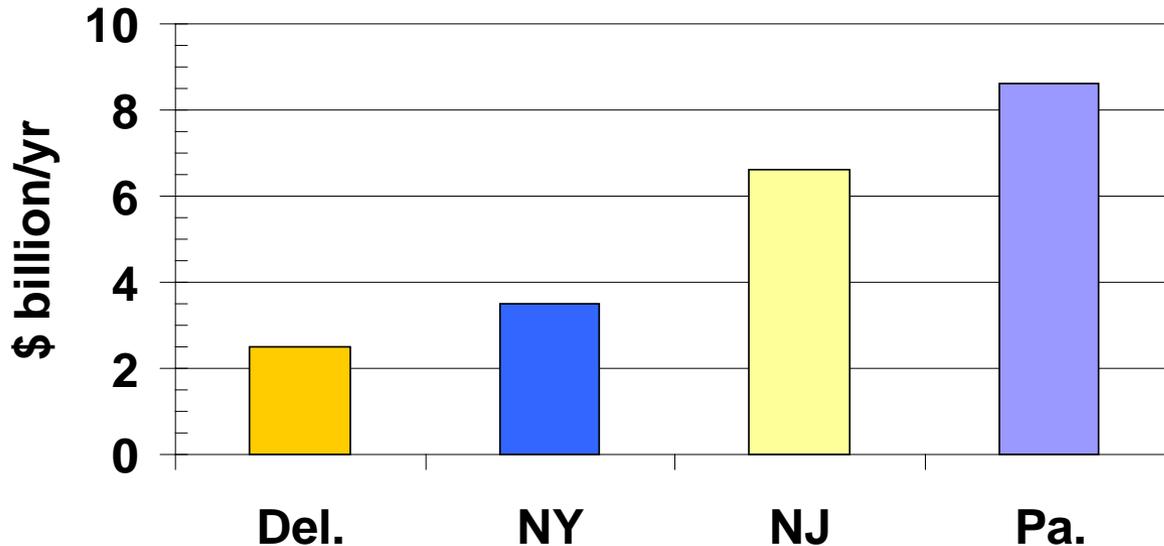


Ecosystem Goods and Services

- Wetlands - \$6.8 billion
- Farms - \$4.8 billion
- Forests - \$8.6 billion



**Ecosystem Services Value
Delaware River Basin**

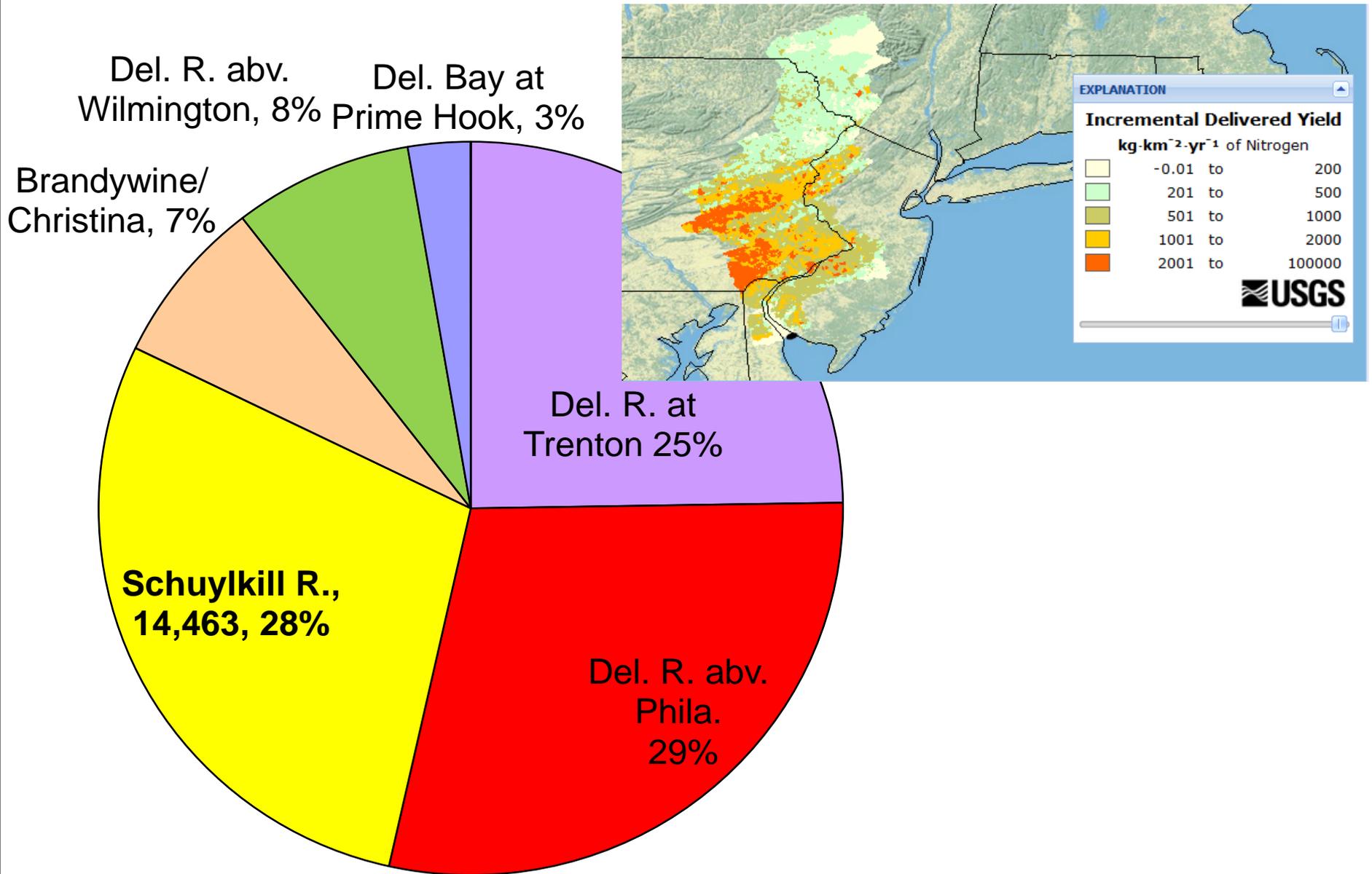


>19,000 jobs (\$350 million in wages)

- Water-related Construction
- Fishing & Aquaculture
- Tourism/Recreation
- Hunting/Fishing/Wildlife Recreation-related
- Farming
- Water/Wastewater Utility
- Watershed Protection
- Industry



Nitrogen Loads by Watershed Delaware River Basin



Del. R. abv. Wilmington, 8%

Del. Bay at Prime Hook, 3%

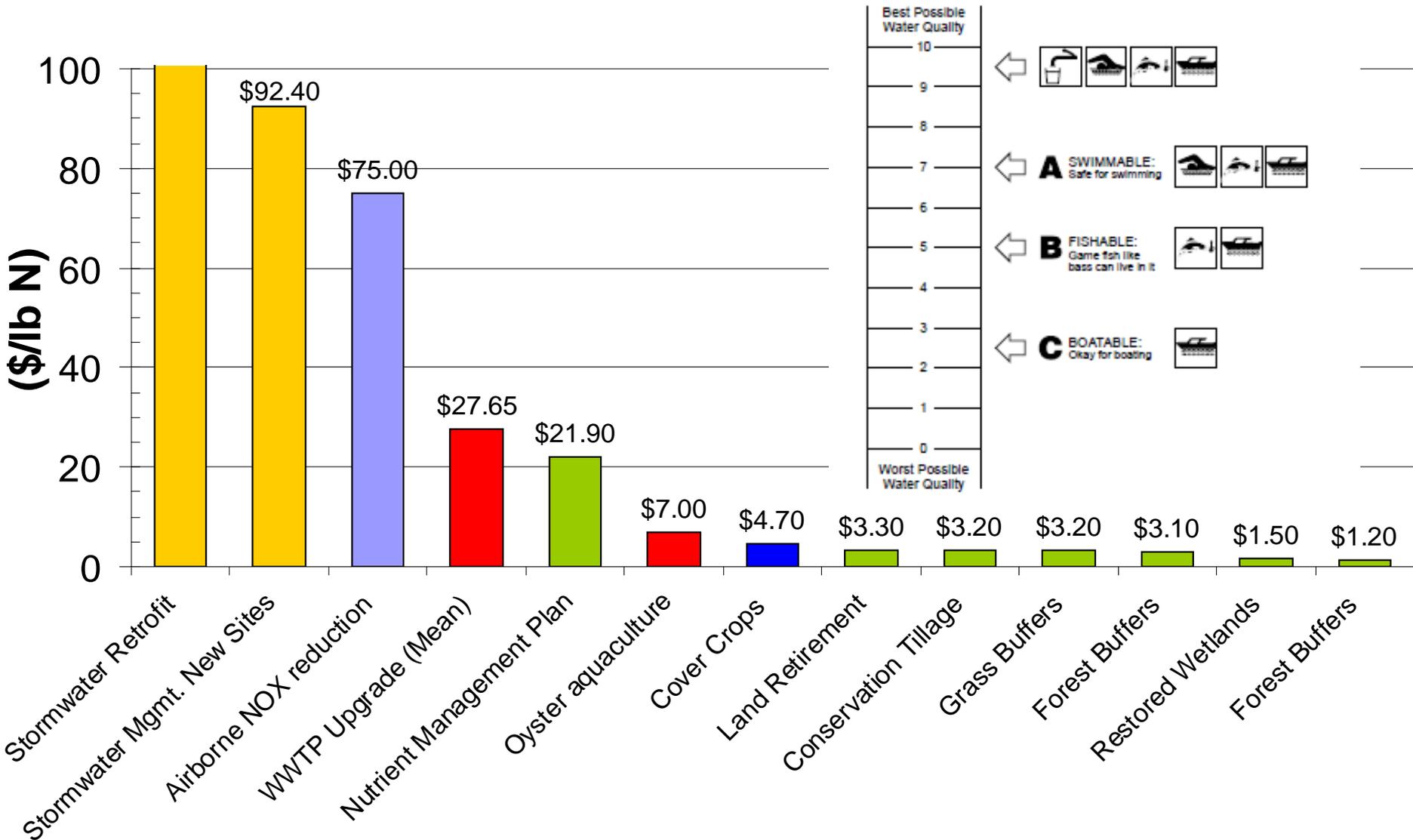
Brandywine/Christina, 7%

Del. R. at Trenton 25%

Schuylkill R.,
14,463, 28%

Del. R. abv. Phila.
29%

Per-Pound Costs of Reducing Nitrogen Pollution in the Chesapeake Bay Region



Annual Economic Value Delaware River Basin

