The History and Status of Wetland Mitigation Banking and Water Quality Trading

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Overview

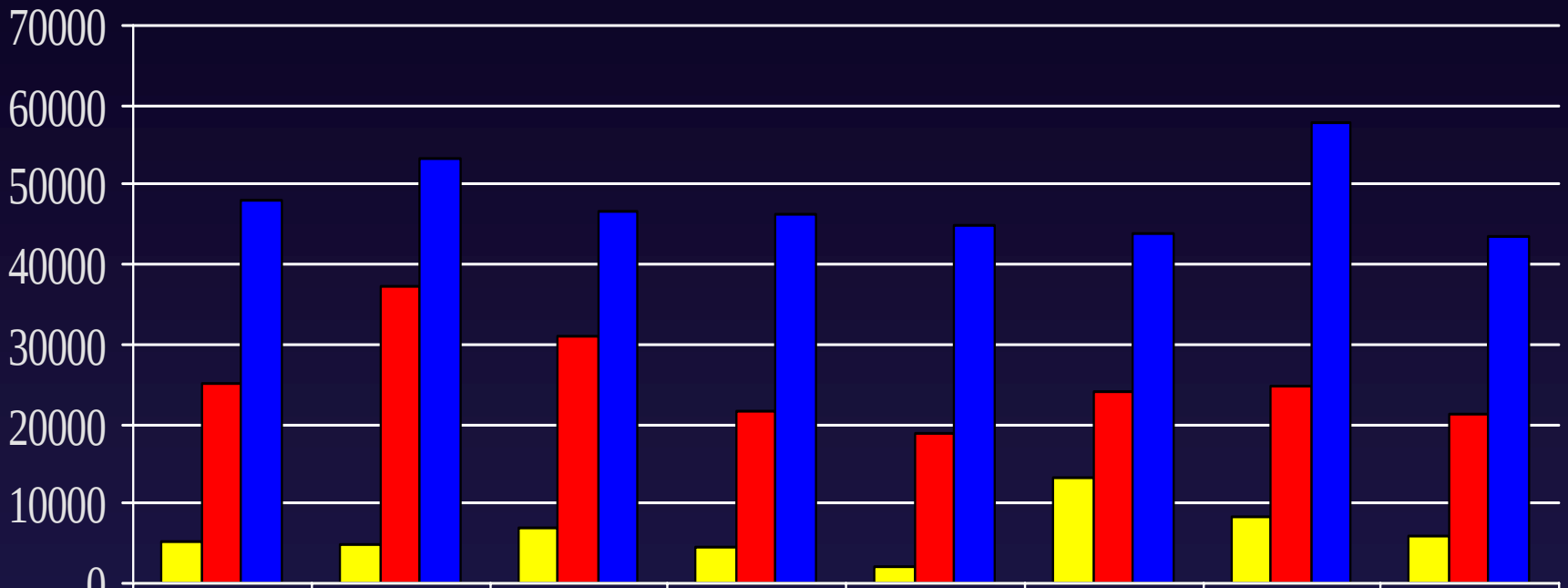
- Part I: Mitigation Banking
- Part II: Water Quality Trading
  1. History
  2. Drivers
  3. Status
  4. Terminology

Part I: Mitigation Banking

- Clean Water Act of 1972
- §404 Requires a permit to discharge dredged or fill materials into waters of the US
- Impacts must be avoided and minimized when possible
- For unavoidable impacts, *compensatory mitigation* is required

Activities regulated under §404

Acreage of Wetland Avoidance, Permitted Impacts, and Mitigation from 1996 to 2003



	FY 96	FY 97	FY 98	FY 99	FY 00	FY01	FY02	FY03
Avoided	5090	5030	6940	4600	1990	13310	8520	5800
Permitted	25000	37400	31090	21560	18900	24070	24650	21330
Mitigated	47900	53400	46630	46430	44760	43830	57820	43380

(USACOE HQ, 2004)

Compensatory Mitigation

- Action taken to replace aquatic resources lost to authorized and unavoidable impacts
- Methods:
  - Creation
  - Restoration
  - Enhancement
  - Preservation

Mitigation Mechanisms

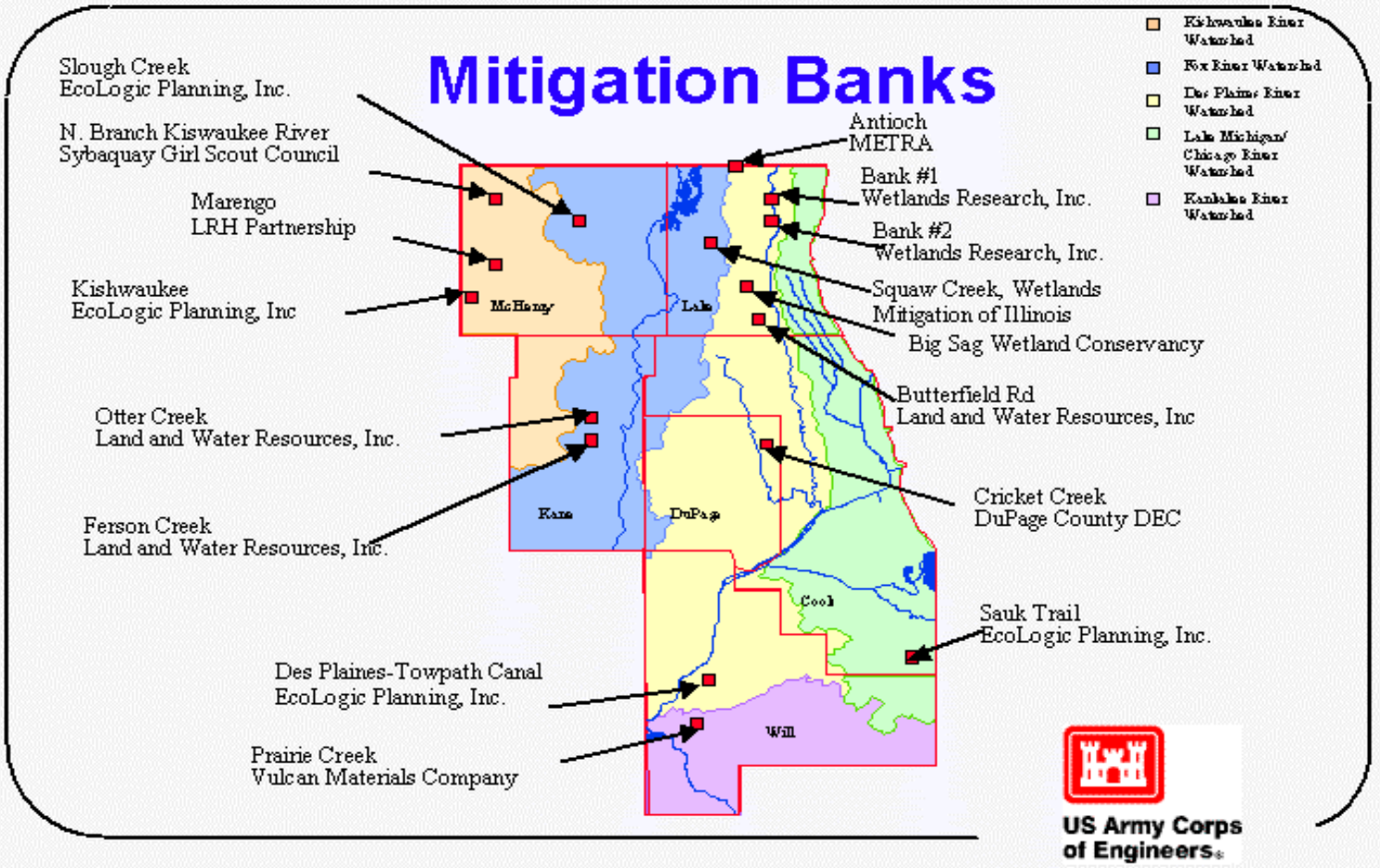
- Permittee-responsible (project specific) mitigation

- Third-party mitigation
  - Mitigation banking
  - In-lieu fee mitigation

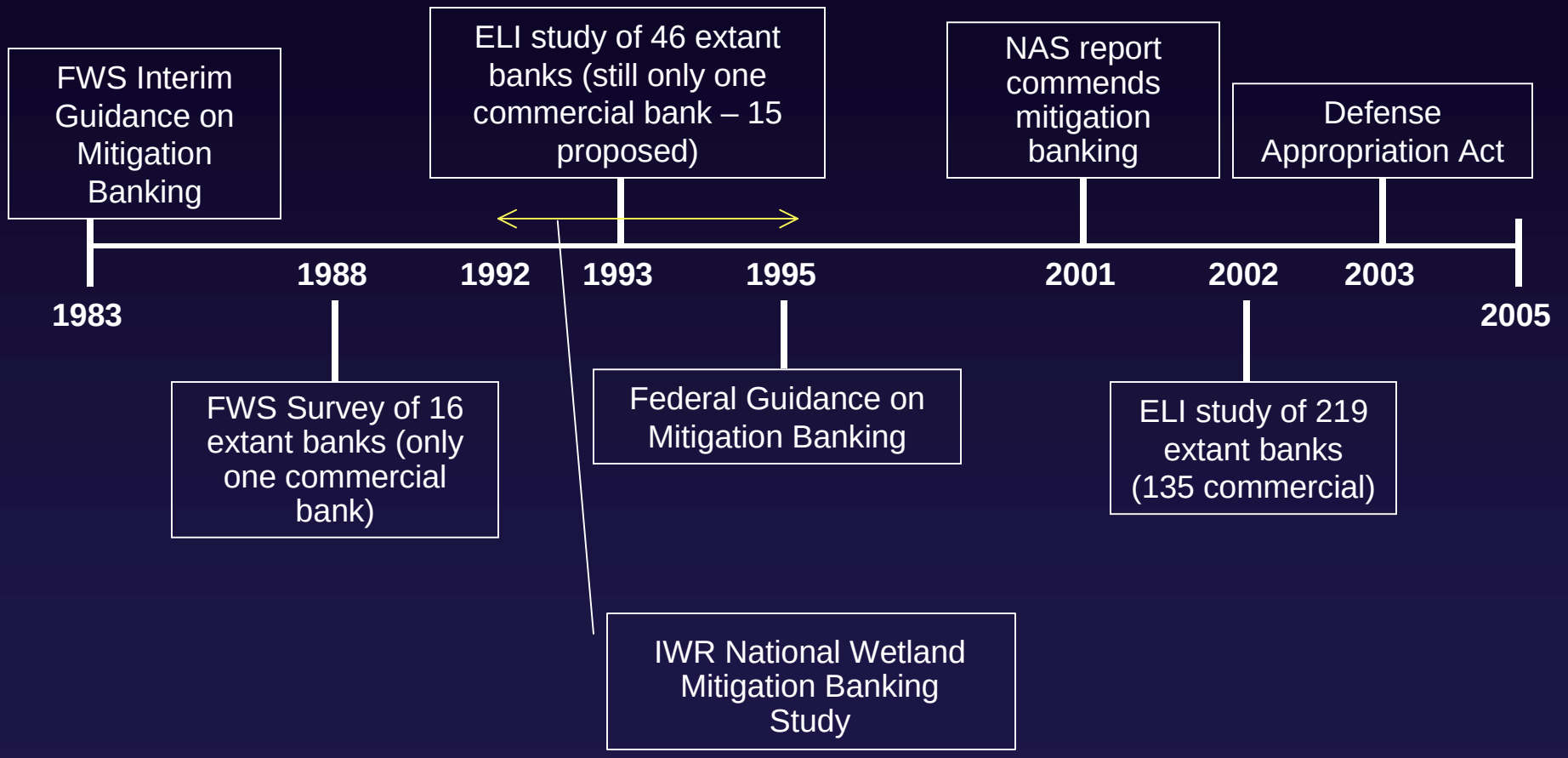
What is a Mitigation Bank?

- An aquatic resource area that has been *restored, created, enhanced, or preserved,* which is then set aside to compensate for authorized impacts.
  1. Bank site
  2. Instrument
  3. Interagency review team (MBRT)
  4. Geographic service area

Example: Chicago District Corps Bank Service Areas



Banking Timeline



Banking “Firsts”

First commercial bank: Tenneco Laterre

- Pilot project in “advance consolidated mitigation” initiated by FWS and Tenneco Oil Co. in 1982
- MOA Signed December 20, 1983 without Corps or EPA
- First third-party credit sale in 1986
- “Hybrid” between single-use and entrepreneurial

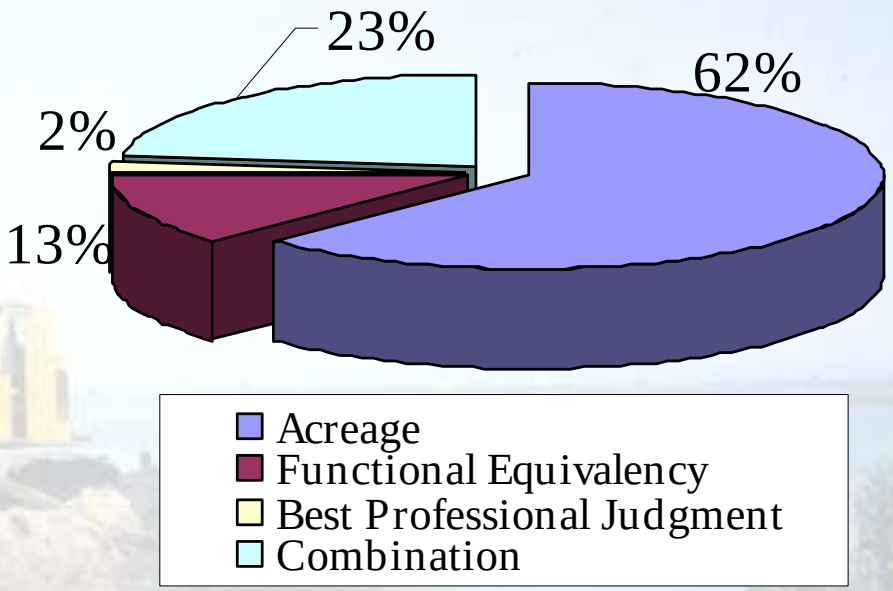
First entrepreneurial banks

- First Permit approved: 12/18/1992 (Millhaven, GA)
- First Instrument approved: 3/17/1994 (Otter Creek, IL)
- First Credit Sale: 1/4/1994 (Pembroke Pines, FL)

Mitigation Banking: *How it works…*

- Bank's value is defined in mitigation credits
- MBRT approves total potential credits available for sale using Assessment techniques/BPJ
- Credits are released over time as standards and requirements are met

Credit Definition



Crediting of Uplands

- **90% include uplands in credit valuation**

(ELI, 2002)

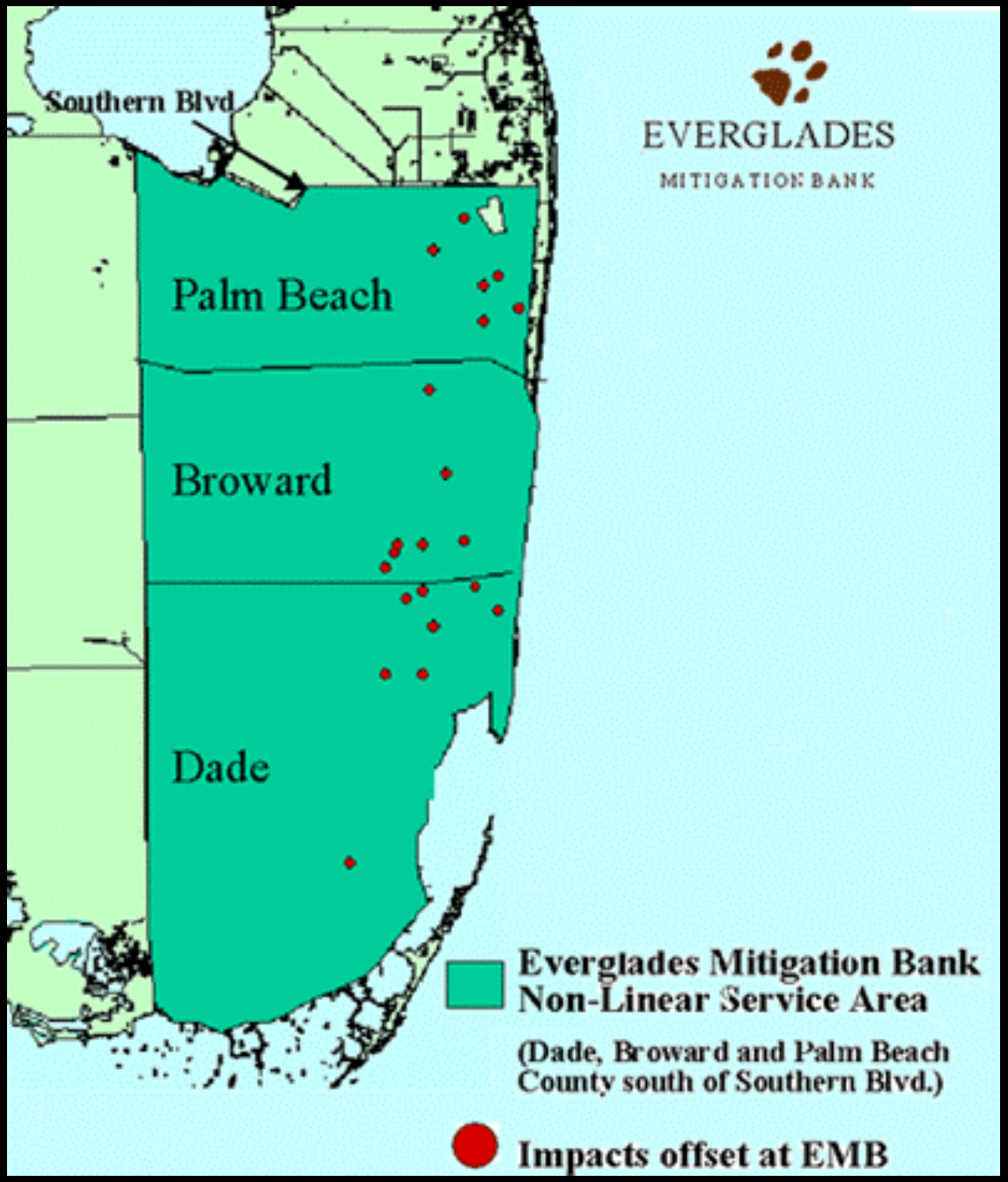
EVERGLADES

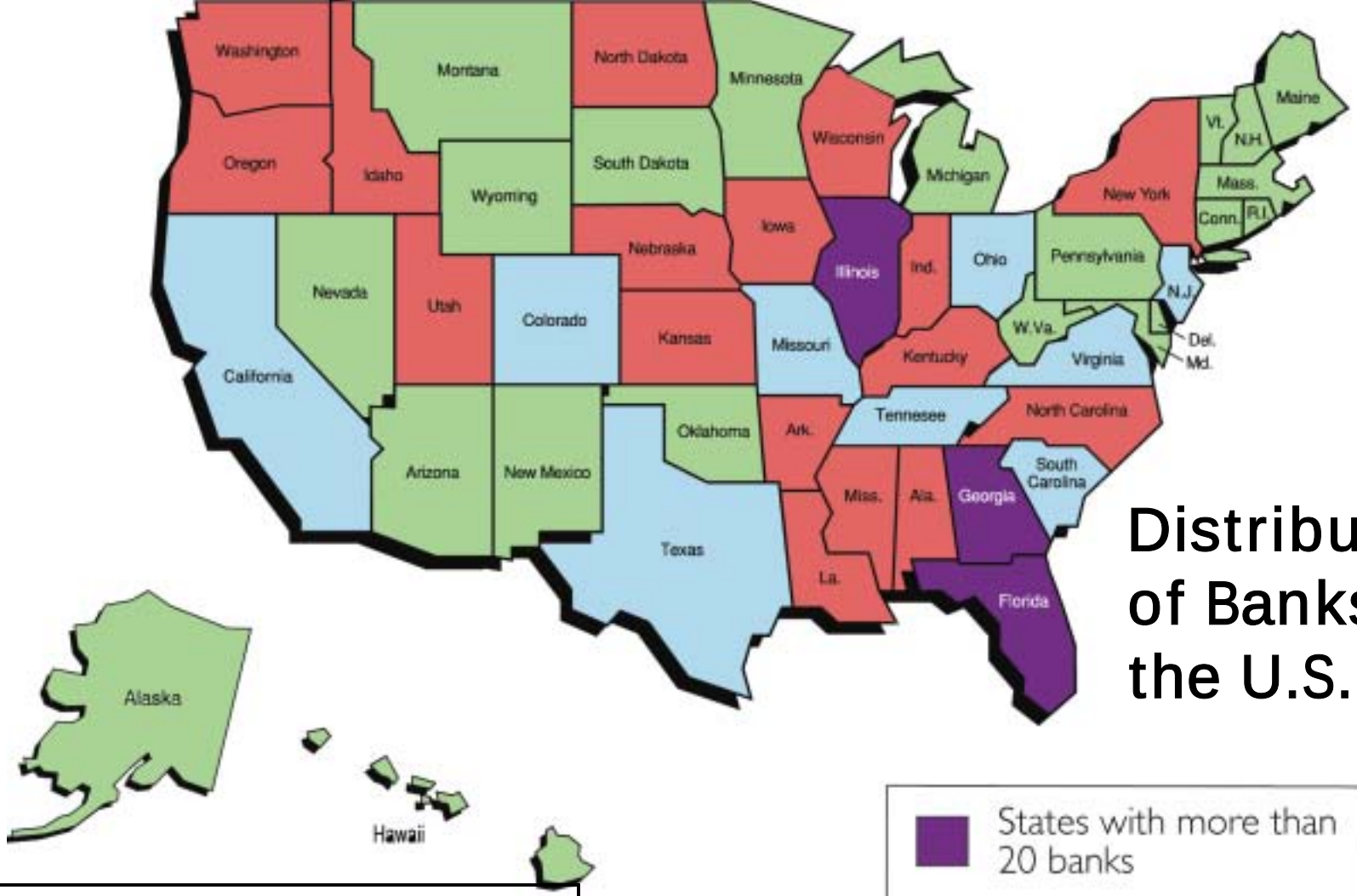
MITIGATION BANK

The Everglades Mitigation Bank benefits landowners and the environment

- 13,500-acre site in South Florida
- Operated by Florida Power and Light
- Phase 1- 4200 acres
- 391 credits (3 types)
- Assessment tool - WATER
- Credit prices:
  - $45,000 (fresh)
  - $75,000 (salt)

Florida Panther


Southern Blvd
EVERGLADES
MITIGATION BANK
Palm Beach
Broward
Dade
Everglades Mitigation Bank
Non-Linear Service Area
(Dade, Broward and Palm Beach
County south of Southern Blvd.)
Impacts offset at EMB



Distribution of Banks in the U.S.

197 Approved Active Banks
22 Approved Sold-out Banks
219 Approved Banks

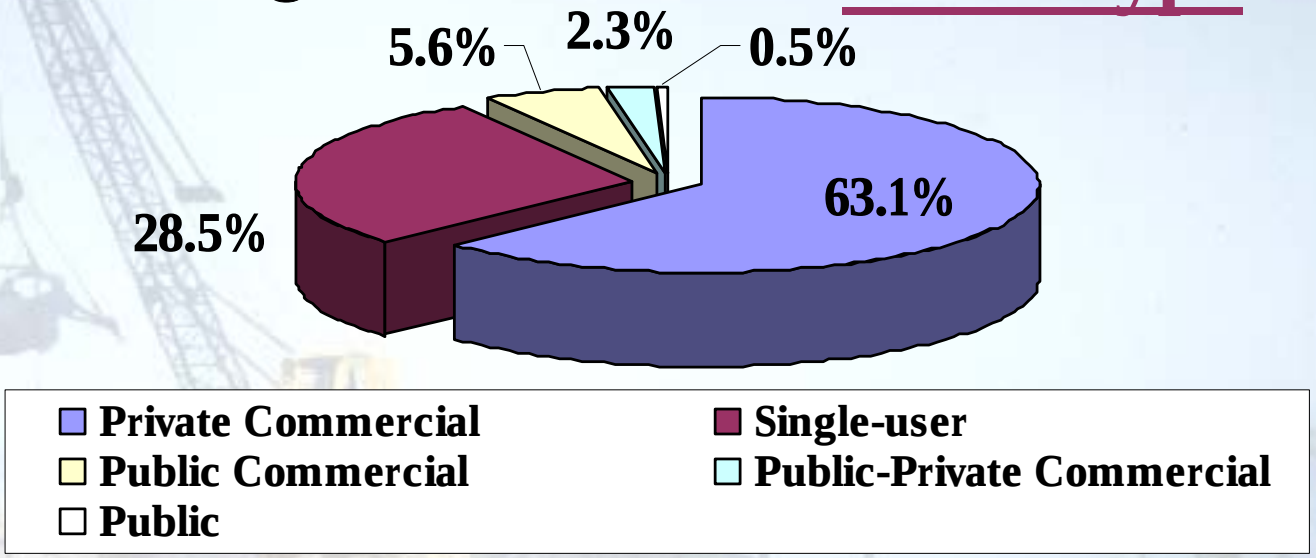
>139,000 banked acres
~8,000 pending acres

- States with more than 20 banks
- States with 6-20 banks
- States with less than or equal to 5 banks
- States with no pending or active banks

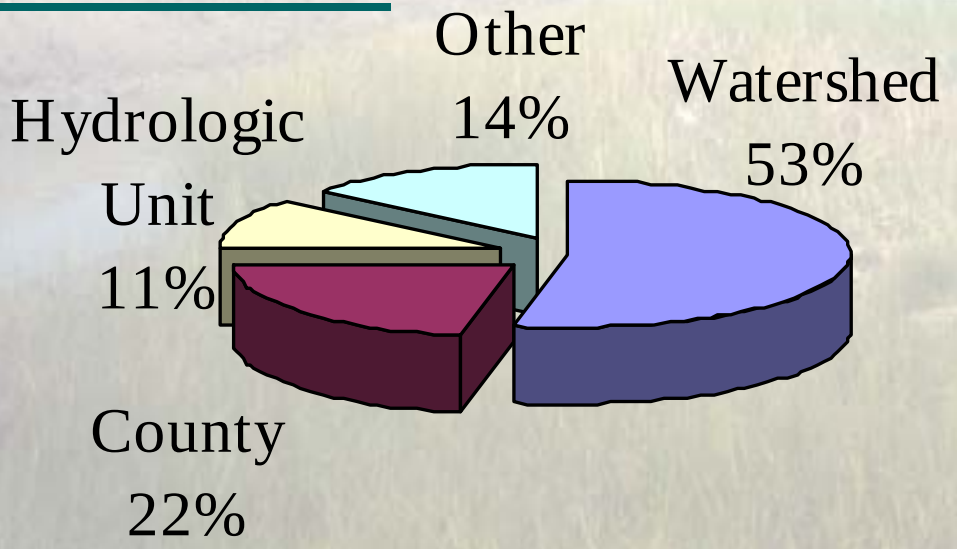
(ELI, 2002)

Status of Banking

Bank Type



Service Area

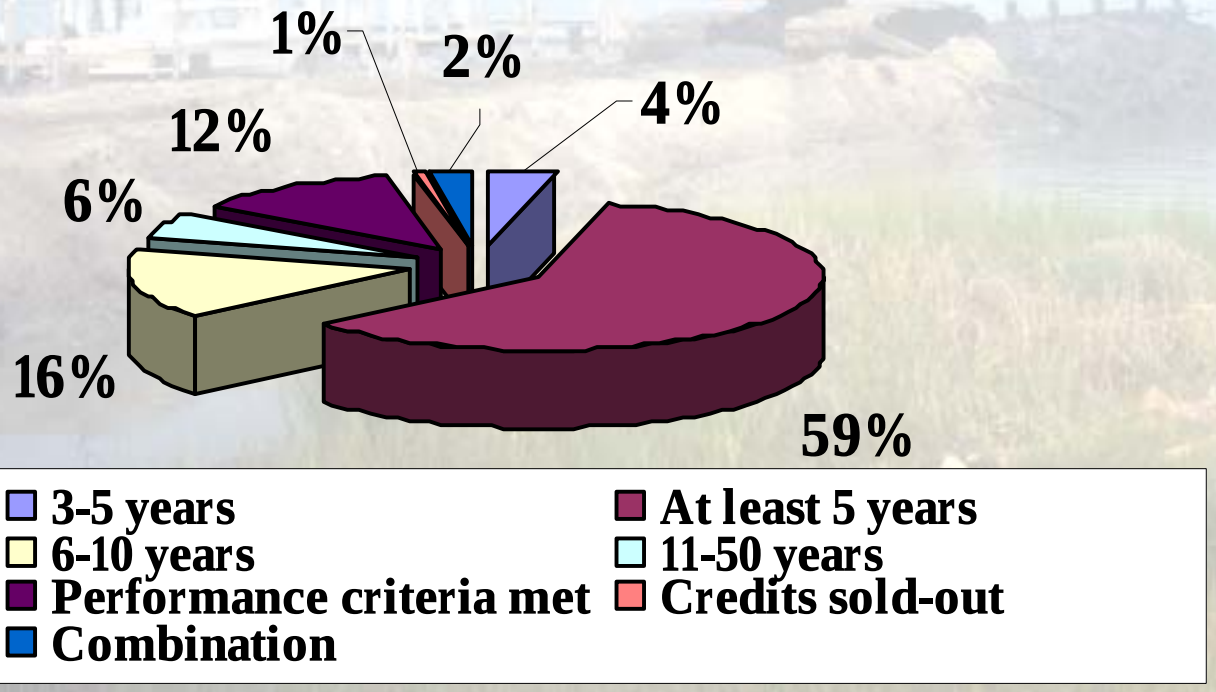


(ELI, 2002)

Mitigation Methods

- **Restoration: 62%**
- **Enhancement: 65%**
- **Creation: 45%**
- **Preservation: 44%**

Monitoring Lengths



(ELI, 2002)

Benefits of Banking

- Reduce uncertainty of success
- Expand entrepreneurial opportunities
- Bring together extensive resources
- Reduce permit processing times
- Increase efficiency of agency resources
- More likely to (NRC, 2001):
  - achieve desired outcomes
  - be protected in perpetuity

Challenges to Banking

- Bank location driven by economic factors
- Un-level playing field
- Regional regulatory idiosyncrasies
- Jurisdictional uncertainty
- Scientific uncertainty regarding spatial movement of aquatic resource functions


Photo by Beverly Rodgers

What is Water Quality Trading?

- Broad range of practices that provide pollutant reductions in a different location, often achieved by a different party, than the source required to achieve such control.
  - Where the credit supplier has lower control costs
  - Where other threshold conditions are in place

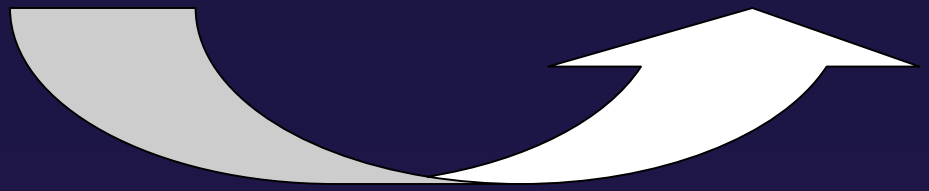
Water Quality Trading

Regulated Discharger:

- Needs to expand or meet new discharge limit
- High pollutant control costs

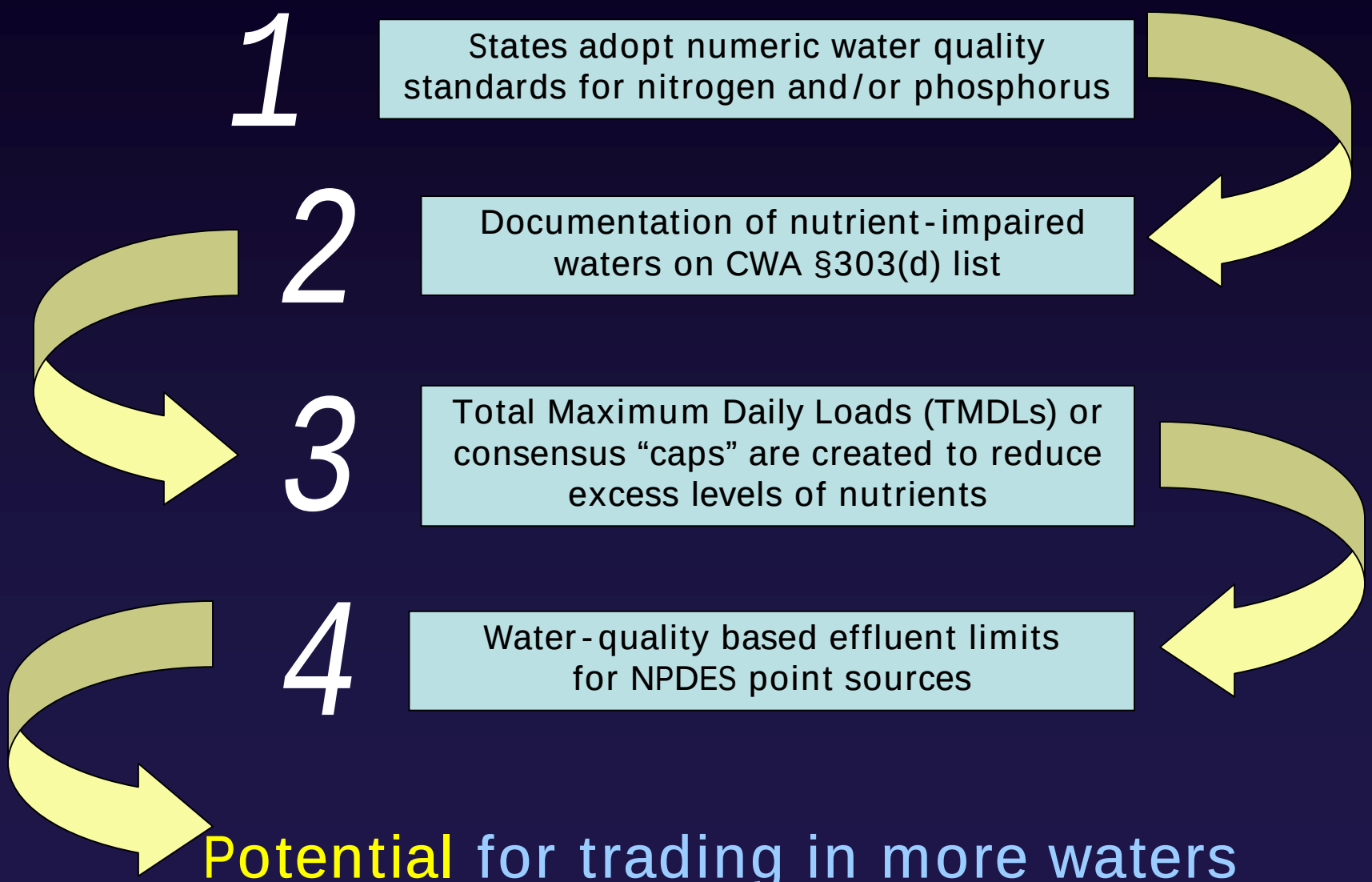
Another Pollutant Source:

- Achieves reductions at lower costs
- Sells surplus pollutant reduction “credits”



Potential Buyers & Sellers

Drivers for Nutrient Trading



Potential for trading in more waters

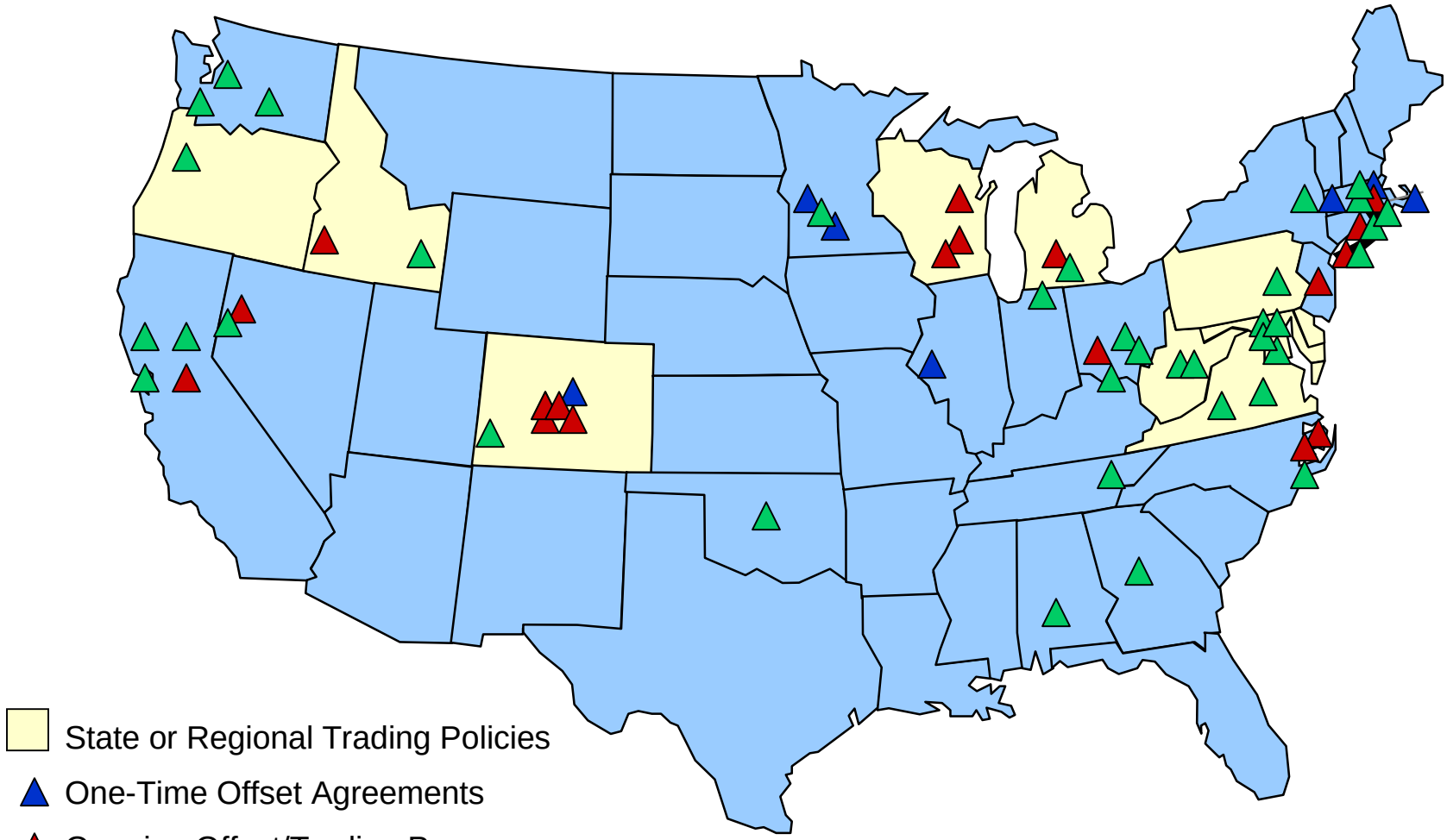
Types of Trading

- Point Source (PS) – among NPDES facilities to meet watershed goal, often under group permit
- Point/Nonpoint Source (P/NPS) – to date most are offsets for single NPDES facility to meet water quality-based effluent limit (WQBEL)
- P/NPS trading on a watershed scale, with multiple buyers and sellers, to achieve water quality goal

Where Do We Stand With WQT?

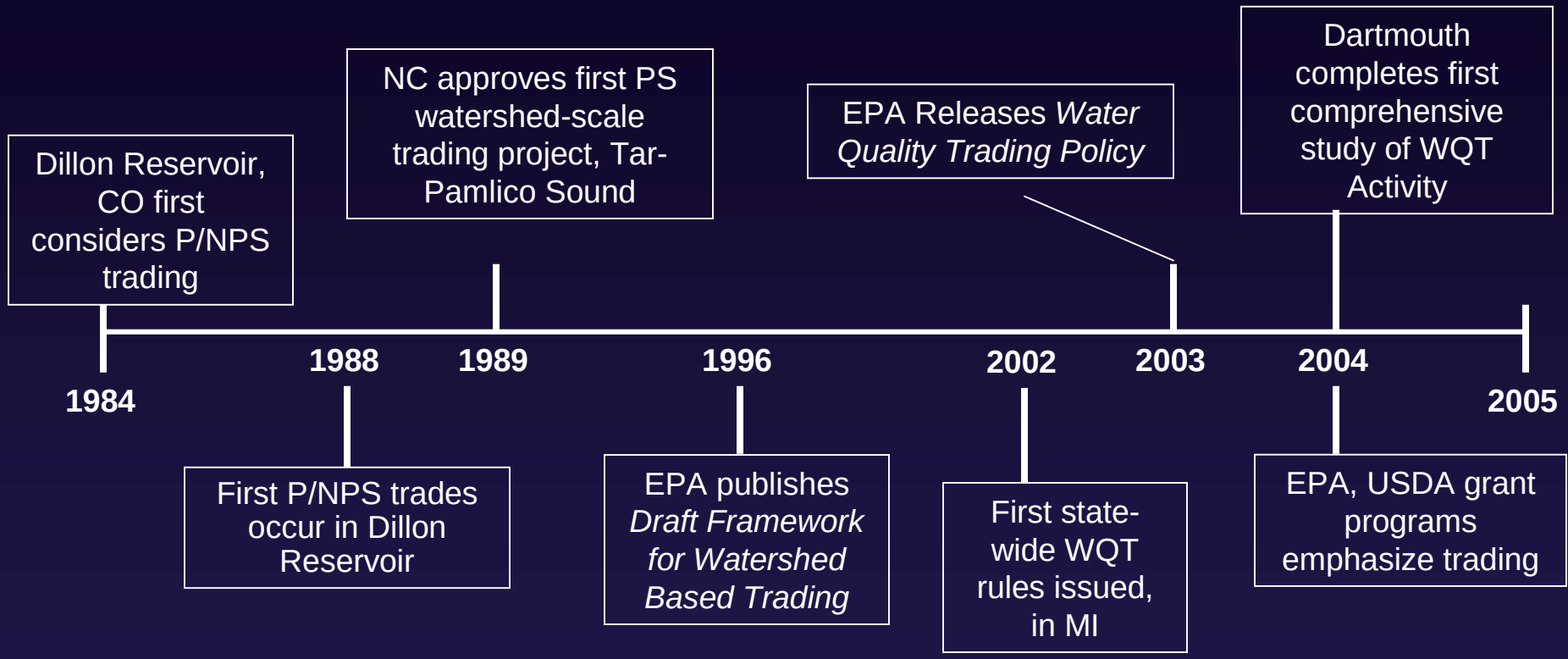
- Much exploration over 20 years
  - State policies, laws, studies, pilots, facility offsets, a few watershed-scale programs
  - Increased activity past 2-3 years
- Trading transactions (e.g., reflected in NPDES permits) in about 15 places
  - Phosphorus, nitrogen, other pollutants
- About a dozen other programs being scoped or underway

WQT Activity



Source: Morgan and Wolverton (2005) and Breetz and Fisher-Vanden (2004)

Timeline of WQT Activity



Where is Trading Likely to Occur?

Watershed, Pollutant Factors Dominate

- Water quality problem is characterized and goal identified
  - e.g., cap based on water quality standards, TMDL
- Multiple PS face more stringent NPDES permit limits
- Significant differences in pollutant control costs among PS or P/NPS

Where is Trading Likely to Occur?

Watershed, Pollutant Factors Dominate

- Water quality goal can be achieved with some sources over-controlling and others under-controlling
- Appropriate pollutant type - trading easier for pollutants that exert effects over longer term, larger scale
- Regulators and stakeholders willing to embrace non-traditional approach

What is a WQT Credit?
How is a Credit Used? How Created?

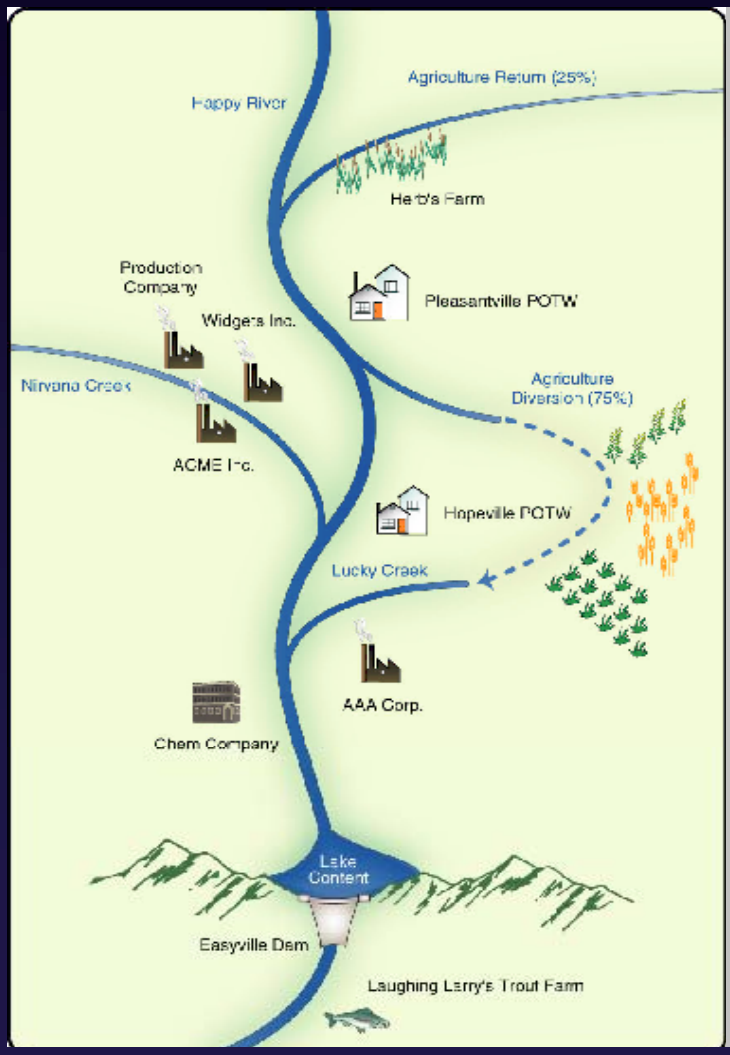
- WQT credit = mass of surplus pollutant reduction per time period
  - e.g., pound per day of total phosphorus reduction, generated over one year
  - Duration of WQT credits will vary
- NPDES facilities may use credits to meet WQBELs
  - As long as credit use also protects local water quality
- PS can create credits if pollutant discharge is reduced below WQBEL
- NPS can create credits if pollutant load reduced beyond specified baseline consistent with water quality standards

How Large is a WQT Area?

- Trading area boundaries
  - Are always within a watershed but can vary widely
  - Can be determined by ability to equate impact of pollutant reductions throughout an area
    - Based on pollutant fate, transport, watershed features
    - But may consider other factors
- Trades in closer proximity are simpler, more cost-effective
- But larger ‘markets’ make trading more likely, viable

Benefits of Watershed Scale Trading

- Substantial cost savings to meet same water quality goal
  - Chesapeake Bay – could save $1 billion
  - Miami River, OH – could save $370 million
  - Cost savings for credit buyers, revenue for suppliers
- For P/NPS trading, environmental benefits in addition to improved water quality
  - Riparian stabilization, reduced erosion
  - Co-control of multiple pollutants
  - Improved habitat, flood retention
  - More wetlands restoration?
- Greater ability to strategically locate controls for enhanced watershed benefit



How Are Watershed Trading Programs Implemented?

- State regulatory agency has overall responsibility with EPA oversight
- PS transactions reflected in NPDES permit
- Different models for managing trades
  - State-managed exchange; State is broker (CT)
  - NPDES Compliance Association; Association is the broker (NC Neuse)
  - Third-party is broker (South Nation, Ontario)
    - Could be non-profit, private enterprise, conservation organization or district, etc.
  - Other

Challenges For Watershed Scale P/NPS Trading

- Identifying, avoiding potential localized impacts
- Reliable assessment of NPS reductions
- Accounting and verification for credits
- Liability
  - especially for NPDES permit holders
- Managing multiple transactions efficiently

How Credit Brokers Could Facilitate P/NPS Trading

- Assist numerous credit buyers, sellers in finding each other
  - Multiple buyers, e.g., wastewater treatment plants
  - Many potential sellers, e.g., landowners
- Aggregate credits from multiple locations for large buyers
- Verify, discount NPS credits that vary widely in performance and uncertainty
- Other potential banker/broker functions
  - Optimize selection, location of best management practices
  - Provide escrow or backup credits in case of BMP failure


Questions?