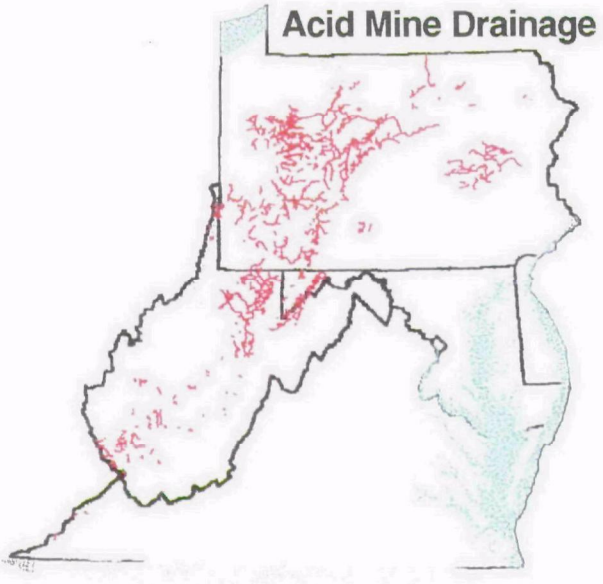
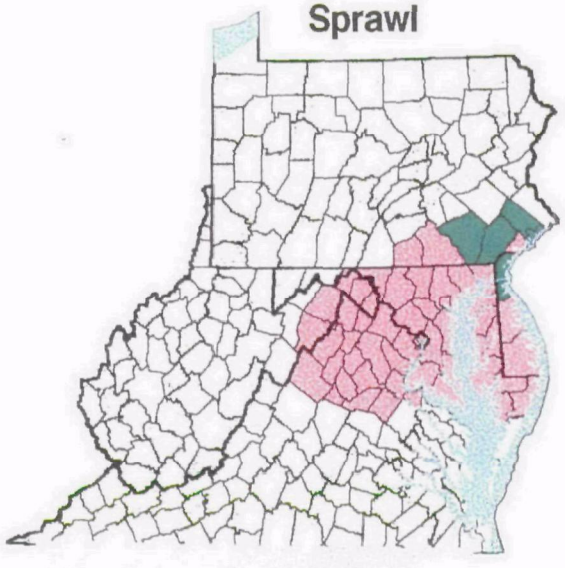
Fall 2000
Region III Strategic Planning Meeting
October 17 - 18, 2000

Integrating Our Priorities

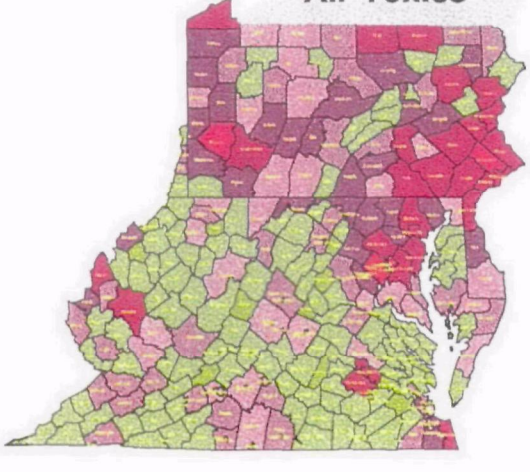
Acid Mine Drainage



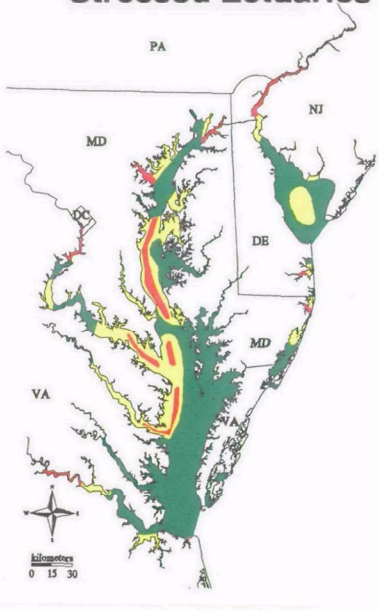
Sprawl



Air Toxics



Stressed Estuaries



This report was produced by the Office of Environmental Data (OED) with the help of several Regional program offices for the Strategic Planning Meeting held on October 17 - 18, 2000. The purpose of the report was to characterize the environmental issues in the Region. Each Division/Office presented their top issues, which OED supplemented and integrated into this report.

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Fall Planning Meeting

October 17 - 18, 2000

Our Environmental Story

Established Programs are Doing Their Jobs:

Major Successes in Targeting Pollutants:

Air - Criteria Pollutants Mostly Controlled

(Carbon Monoxide, Sulfur Dioxide,
NOx, Particluate Matter, Ozone, Lead)

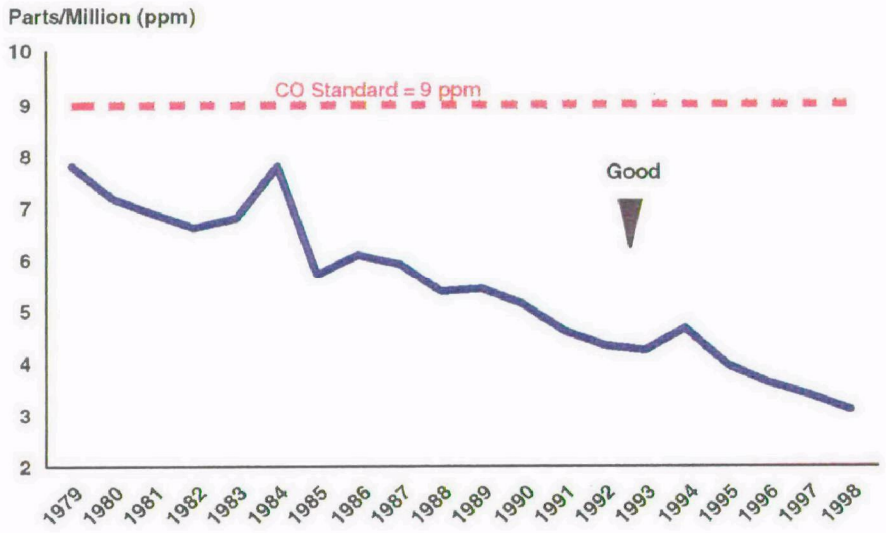
Water - DO, Nutrients, Toxics, Fecal Coliform are Reduced in Waterways & Estuaries

Hazardous Waste Site Clean-ups Increased

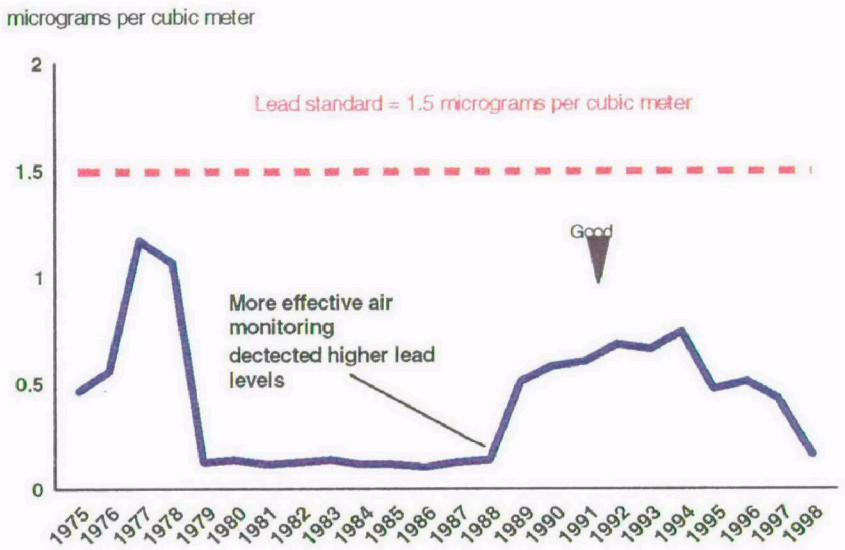
- 95 Construction Completions

Serious Reductions Made in 4 of 6 Common Air Pollutants

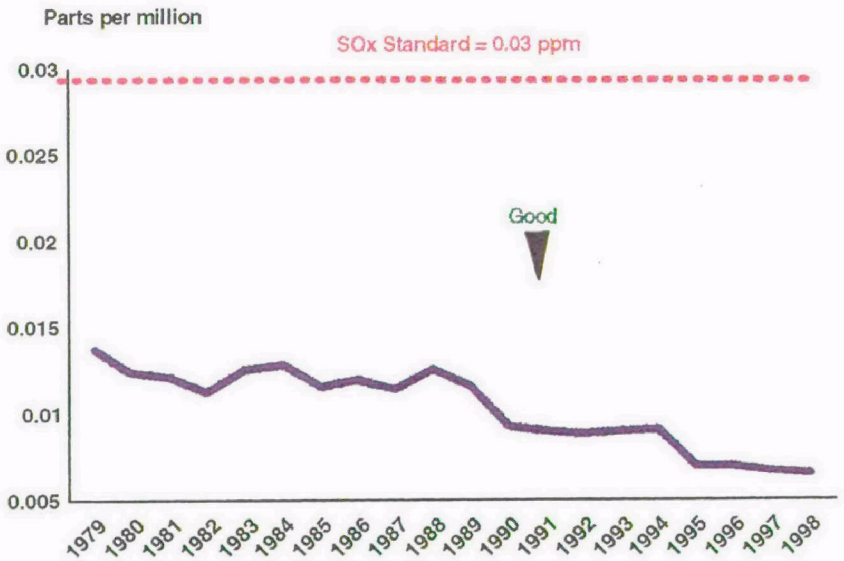
Carbon Monoxide Air Levels Have Dropped Significantly



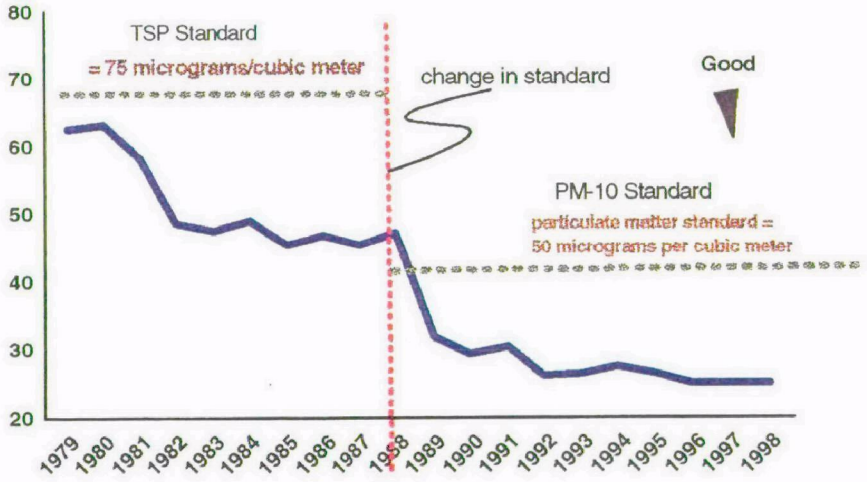
Regional Lead Air Levels are Declining



Sulfur Dioxide Levels are Far Below the Standard

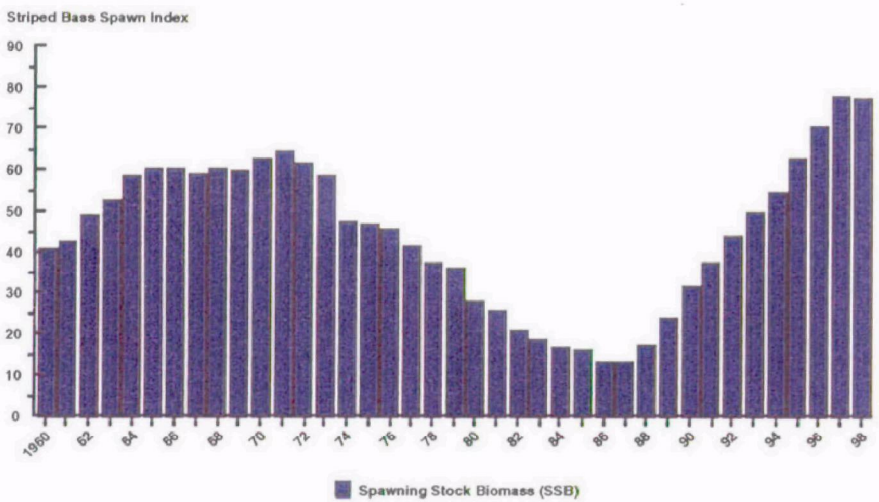


TSP & PM-10: Less Dust & Soot in Air

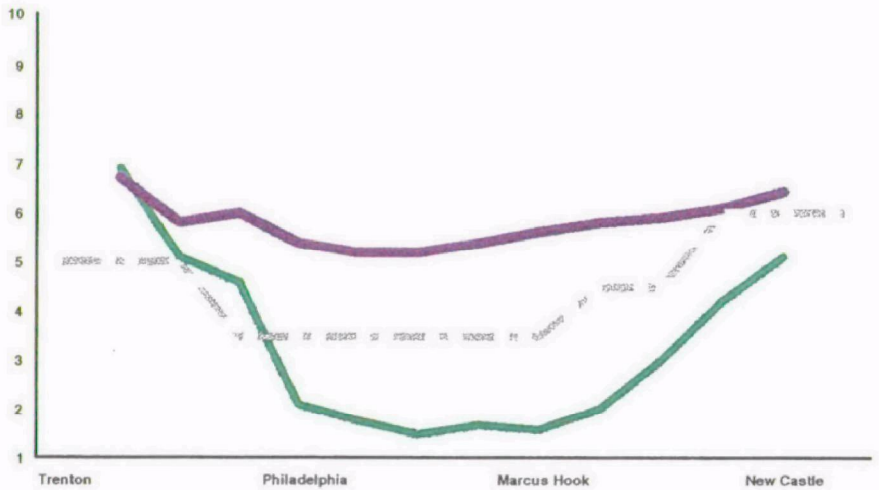


Successes in Water

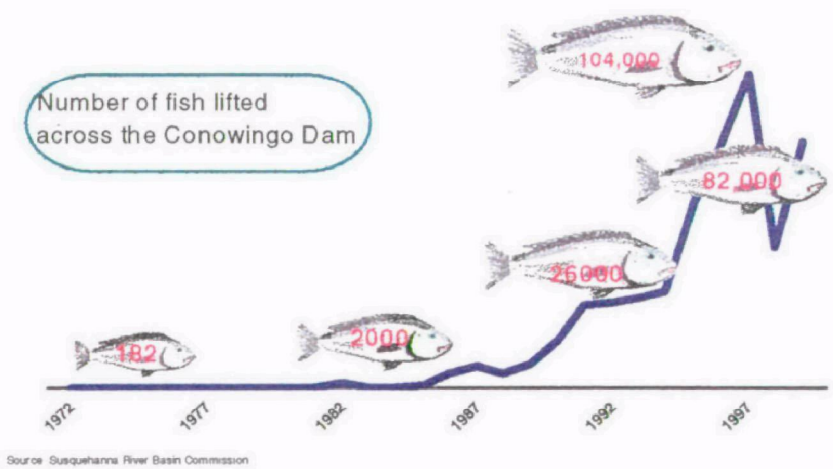
Striped Bass Population has Increased in the Chesapeake Bay



Summer Oxygen Levels in the Delaware River Now Support Aquatic Life

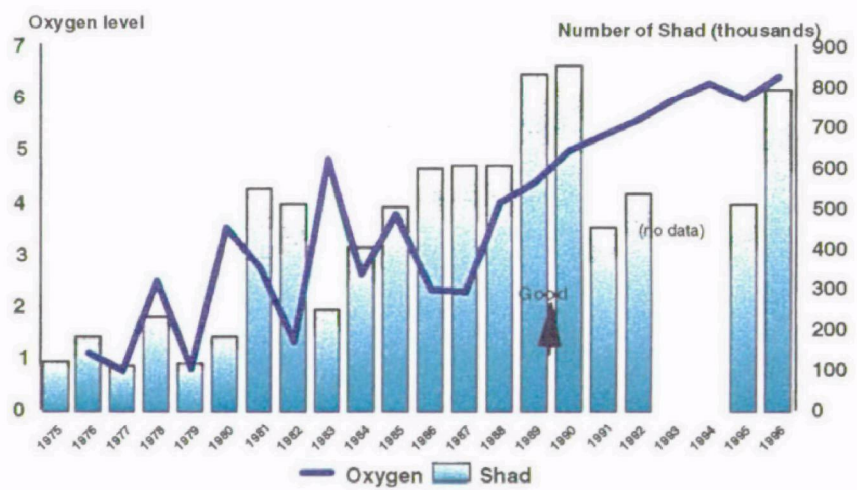


Improved Water Quality in the Susquehanna River Fostered the Shad's Return

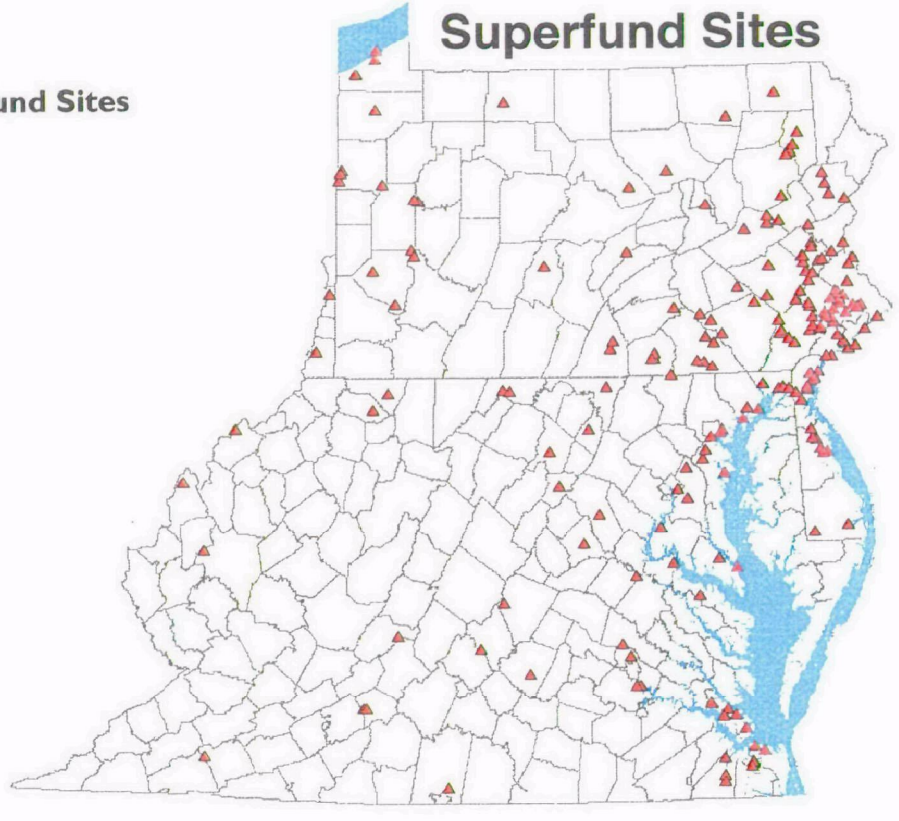


Source: Susquehanna River Basin Commission

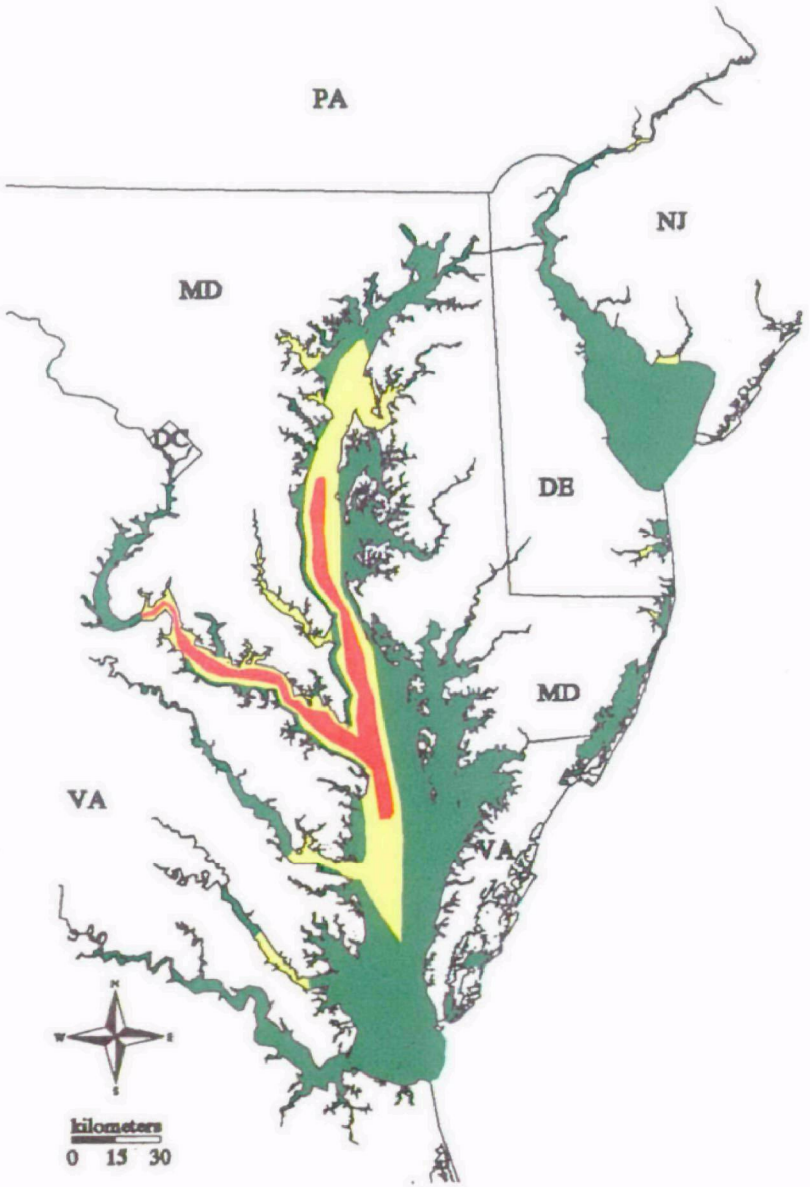
The Shad Have Returned to the Delaware River



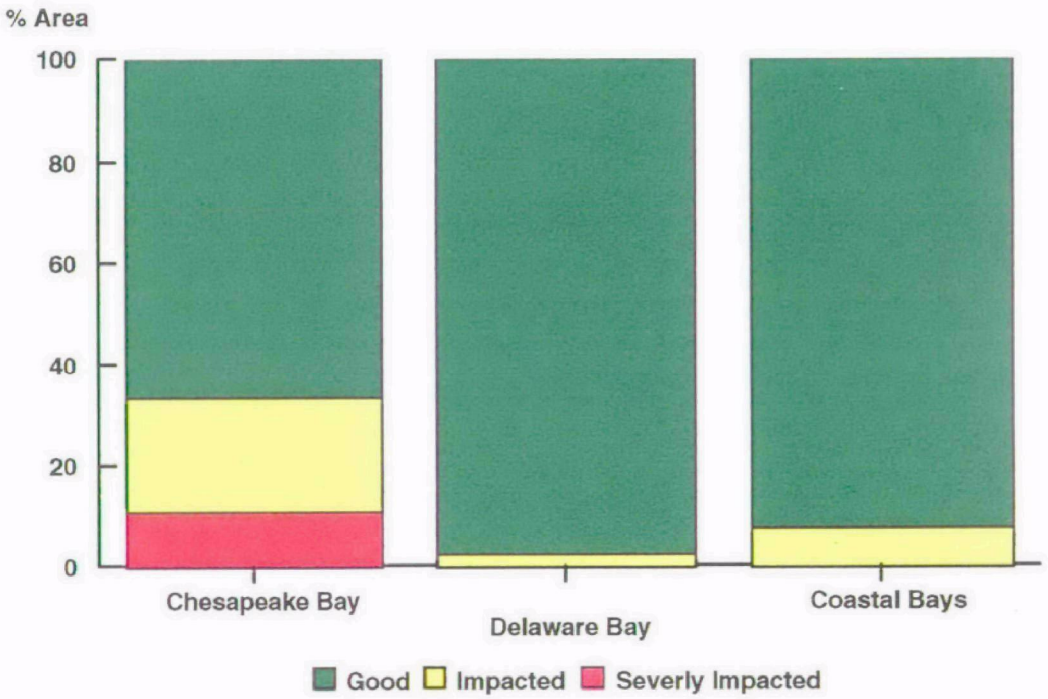
Superfund Sites Construction Completions Increased



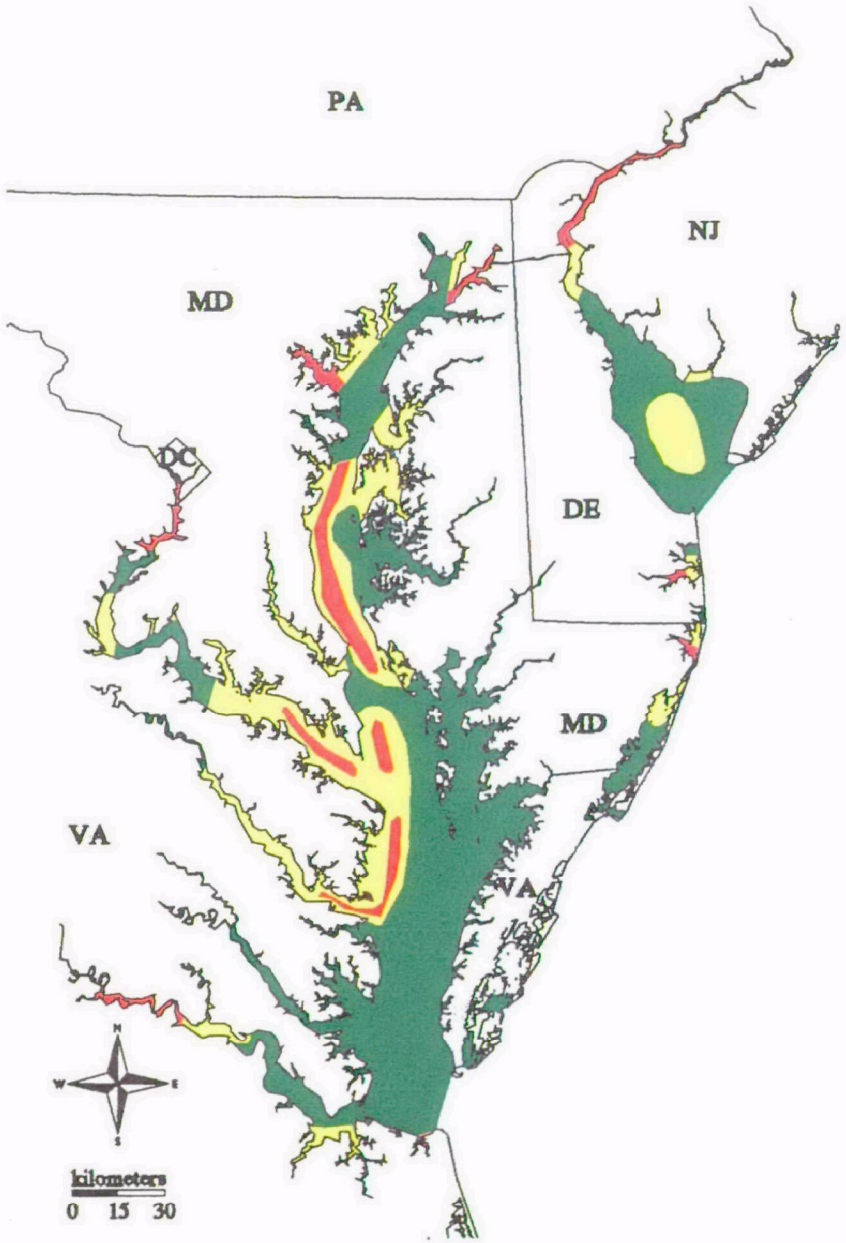
DO Levels Still a Concern in the Bays & Other Estuaries



Dissolved Oxygen Conditions



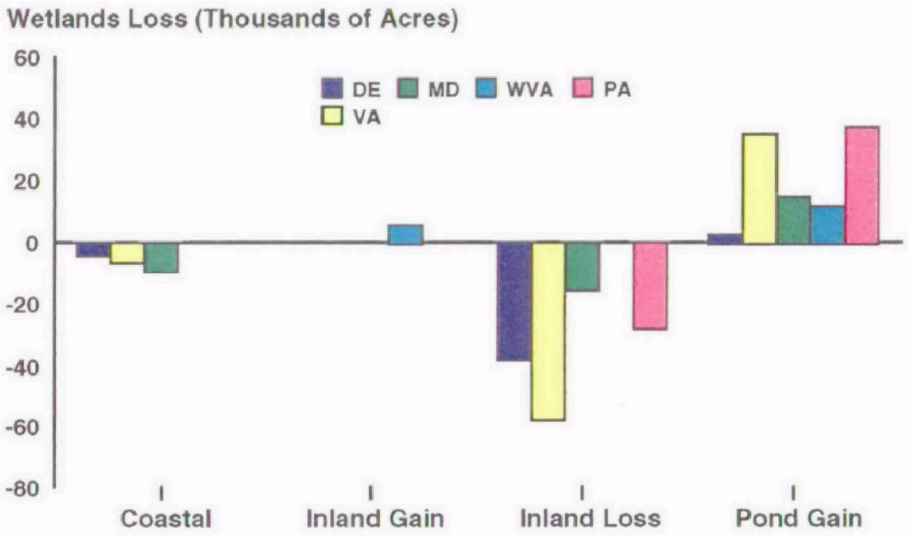
Estuarine Living Resources Stressed



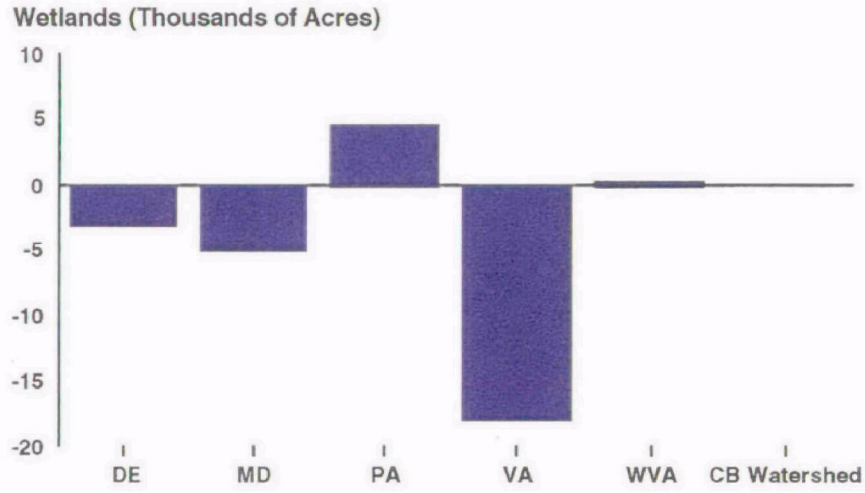
Condition of Benthic Community

Wetlands Data Abysmal

Wetlands Loss in Region III
1950s - 1970s



20,000 Acres of Wetlands Lost in the Chesapeake Watershed
1982 - 1989



Increase in Wetlands = Increased Likelihood of Meeting WQS

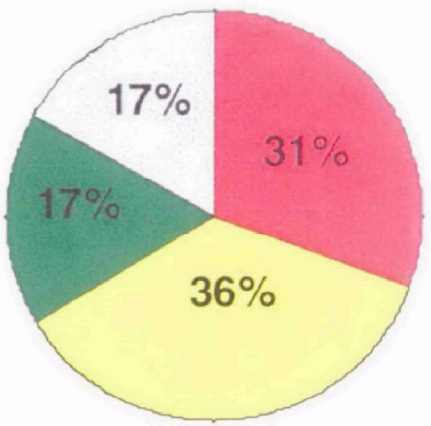
Regional Wetlands Data is 20 years old

- **Need Updated Monitoring & Better Tracking**
  - **Work w/ MAIA Program**
  - **Update Region's Wetland Status/Trends Report**

Regional Support for Restoration Efforts

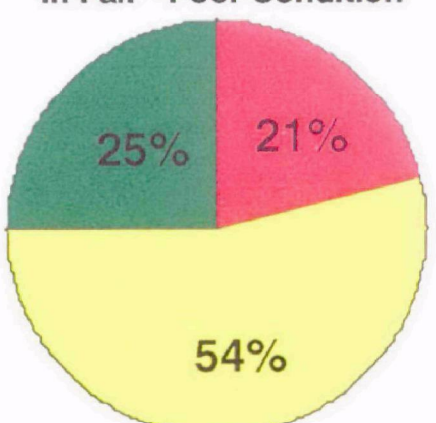
Despite Improvement in Meeting Water Quality Standards, Biological Indicators are Stressed Throughout the Region

1/3 of Streams in MAIA Region in Poor Condition

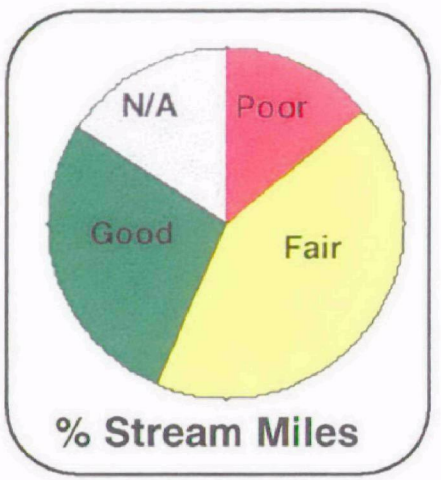


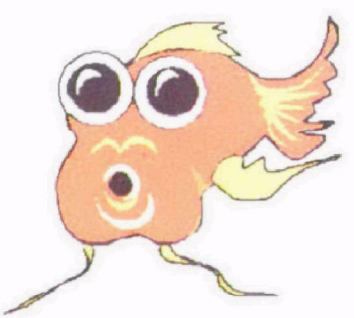
Criterion: Fish

3/4 of Pennsylvania Streams in Fair - Poor Condition

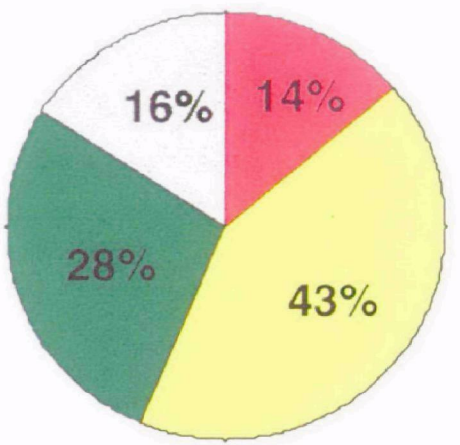


Criterion: Benthic Insects



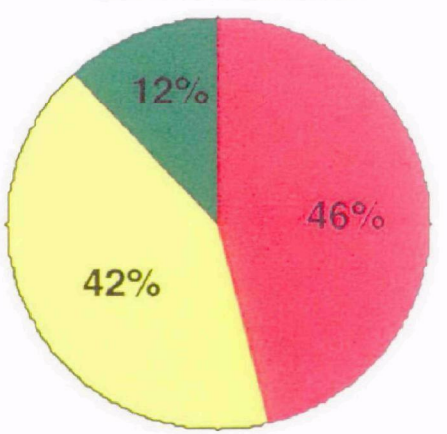


> 1/2 of Susquehanna Streams in Fair - Poor Condition



Criterion: Fish

~ 1/2 of Maryland Streams in Poor Condition



Criteria: Fish & Benthic Insects

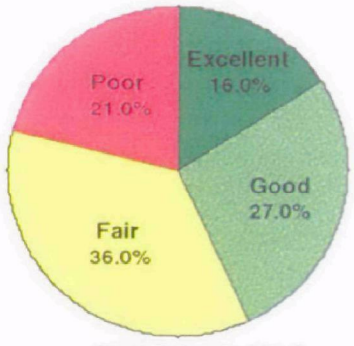
Birds, Ecological Condition & Land Use are Linked

As Ecological Conditions Change, Bird Population Changes

43% Watershed Area has Good/Excellent Ecological Community

21% Watershed Area has Poor Ecological Community

- Diverse Bird Community Changes Occurs when:
  - Agriculture > 60% of Watershed, or
  - Urban > 30% of Watershed



Mid-Atlantic Bird Community Scores

- Action for Urban Livability & Sprawl Initiatives

- **Forest** - maintain current land cover and try to maintain green corridors between forested areas;
- **Mixed** Forest/Rural areas - restore forest where possible, develop in the context of surrounding landscape, maintain green ways between and around communities, and guide development into areas of poorer ecological condition;
- **Urban** Areas - remove barriers to redevelopment, and encourage areas of small parks with trees and shrubs;
- **All** Areas – Inspire the general public to observe the birds and learn about how their activity impacts the bird populations. Enlist "birders" to do surveys to track changes and share their results in schools and with the media.

We've Come a Long Way, but There's Still More Work to Do:

Safe & Sustainable Environment for People & Ecosystems are Still Being Stressed

Our traditional approach needs to emphasize cross-program & cross-agency innovative approaches

They often fall outside traditional roles, regulations, & practices needed to solve our new challeges

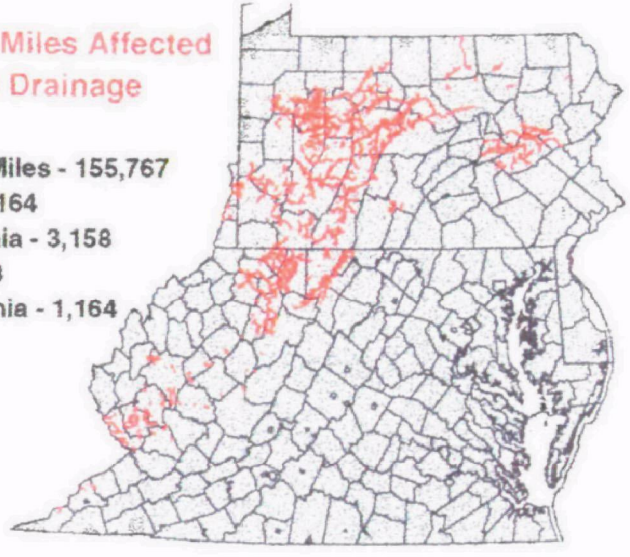
eg., sprawl, cities/urban, estuaries, air & water toxics, monitoring

Three Major Causes of Habitat Loss/Degradation in Region III

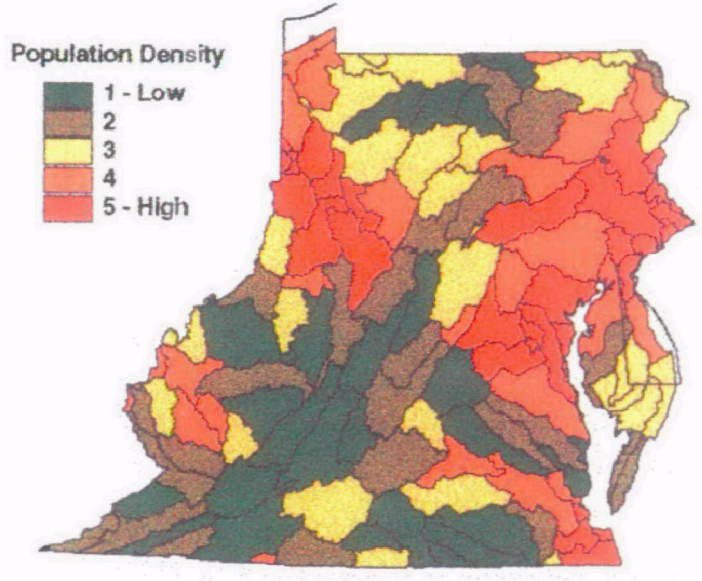
West - Resource Extraction

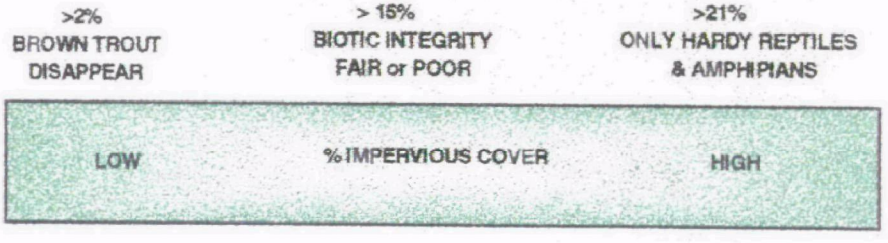
4,505 Stream Miles Affected by Acid Mine Drainage

Total Stream Miles - 155,767
Maryland - 164
Pennsylvania - 3,158
Virginia - 18
West Virginia - 1,164

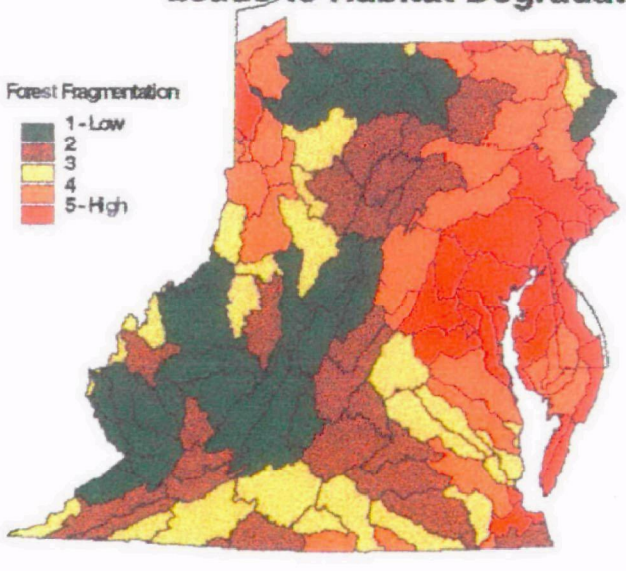


East - Urban Sprawl





Forest Fragmentation Wide-Spread Leads to Habitat Degradation



Sprawl The Cause Of It All

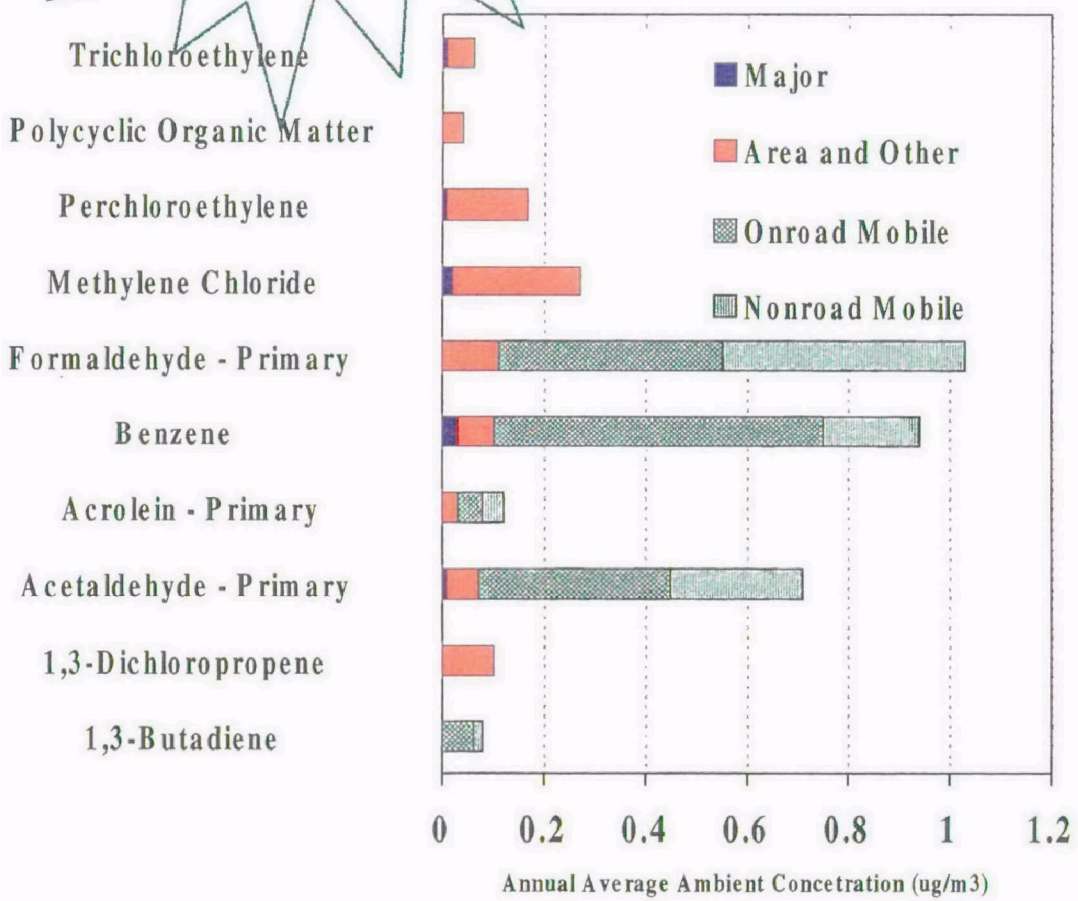
Why Should EPA Care About Sprawl?

- Water Pollution/Water Quality
- Air Pollution
- Loss of Habitat, Forest, Wetlands & Farmland
- Environmental & Economic Cost of Infrastructure

Source: EPA Center for Sustainability

Increased Road Density and Auto Use is Impacting the Region III

Mobil Source Category Dominates Ambient Air Concentrations Region III



Source: 1996 NATA Modeled Ambient Air Data (minus background)

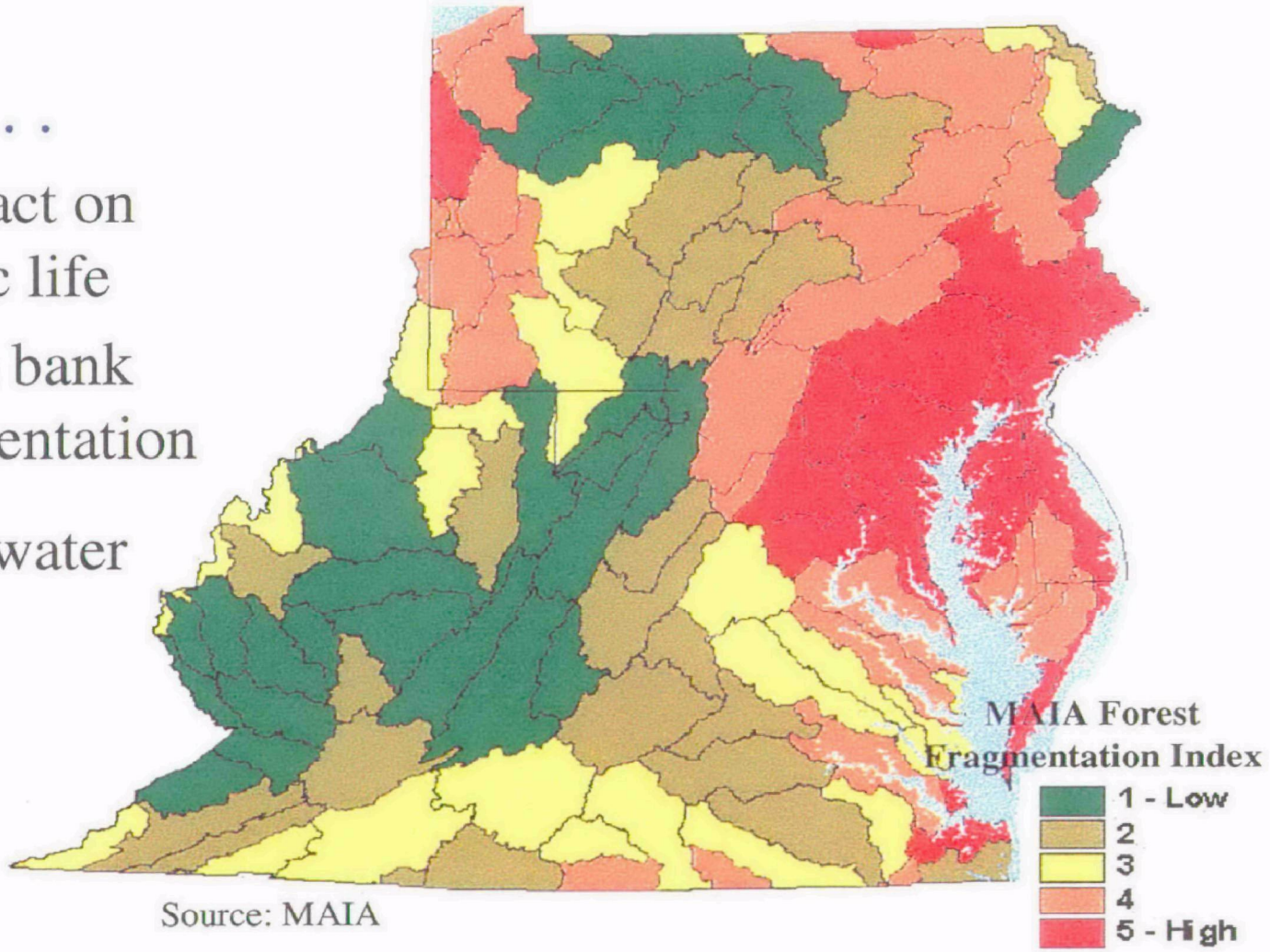
Road Density in Region III

Source: EPA/ORD: An Ecological Assessment of the United States Mid-Atlantic Region, November 1997.

Forest Fragmentation is High in the Eastern Part of Region III

Fragmentation . . .

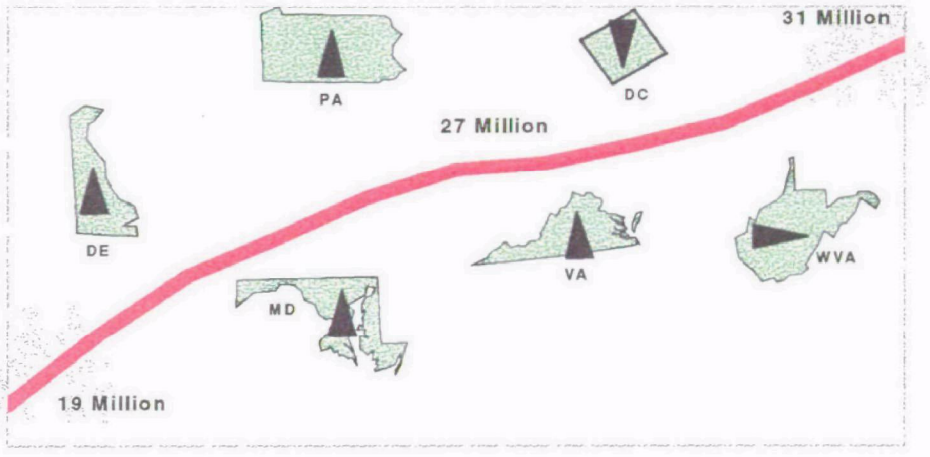
- has adverse impact on habitat & aquatic life
- Increases stream bank erosion & sedimentation
- Increases storm water flows



Source: MAIA

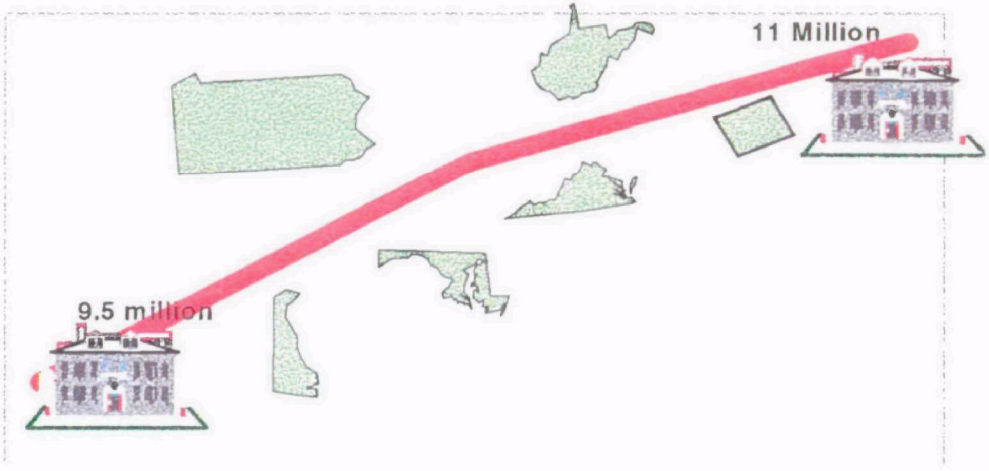
Sprawl will continue to increase in Region III

Population Expected to Grow by 14% in 25 Years



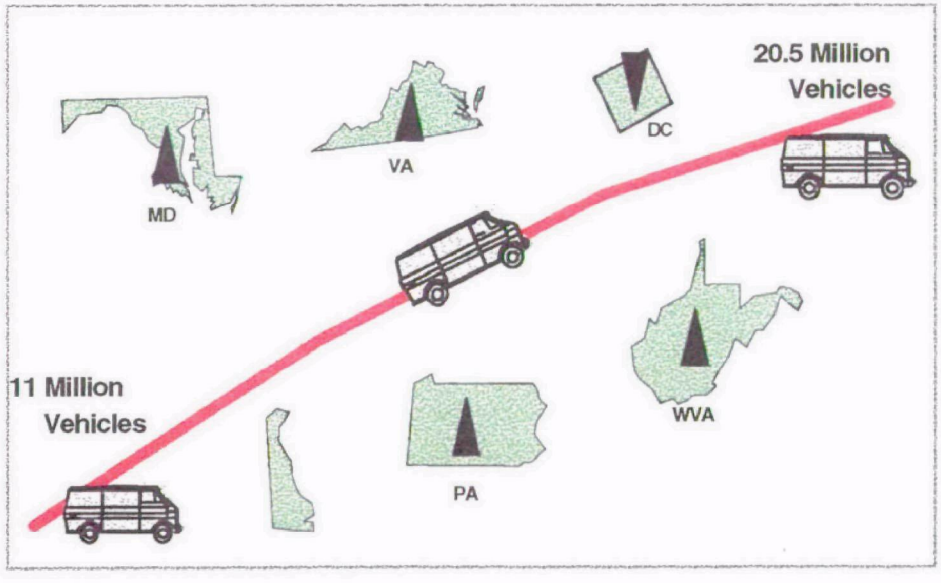
1950 1985 2025

The Number of Houses has Increased by 16% Since 1980



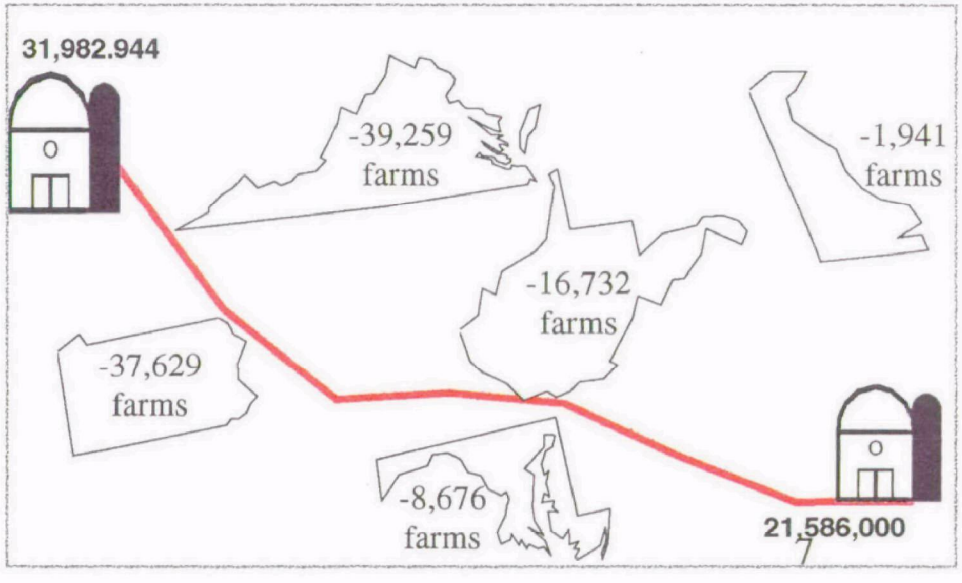
1980 1990 1996

Number of Vehicles Has Increased by 86% Since 1970



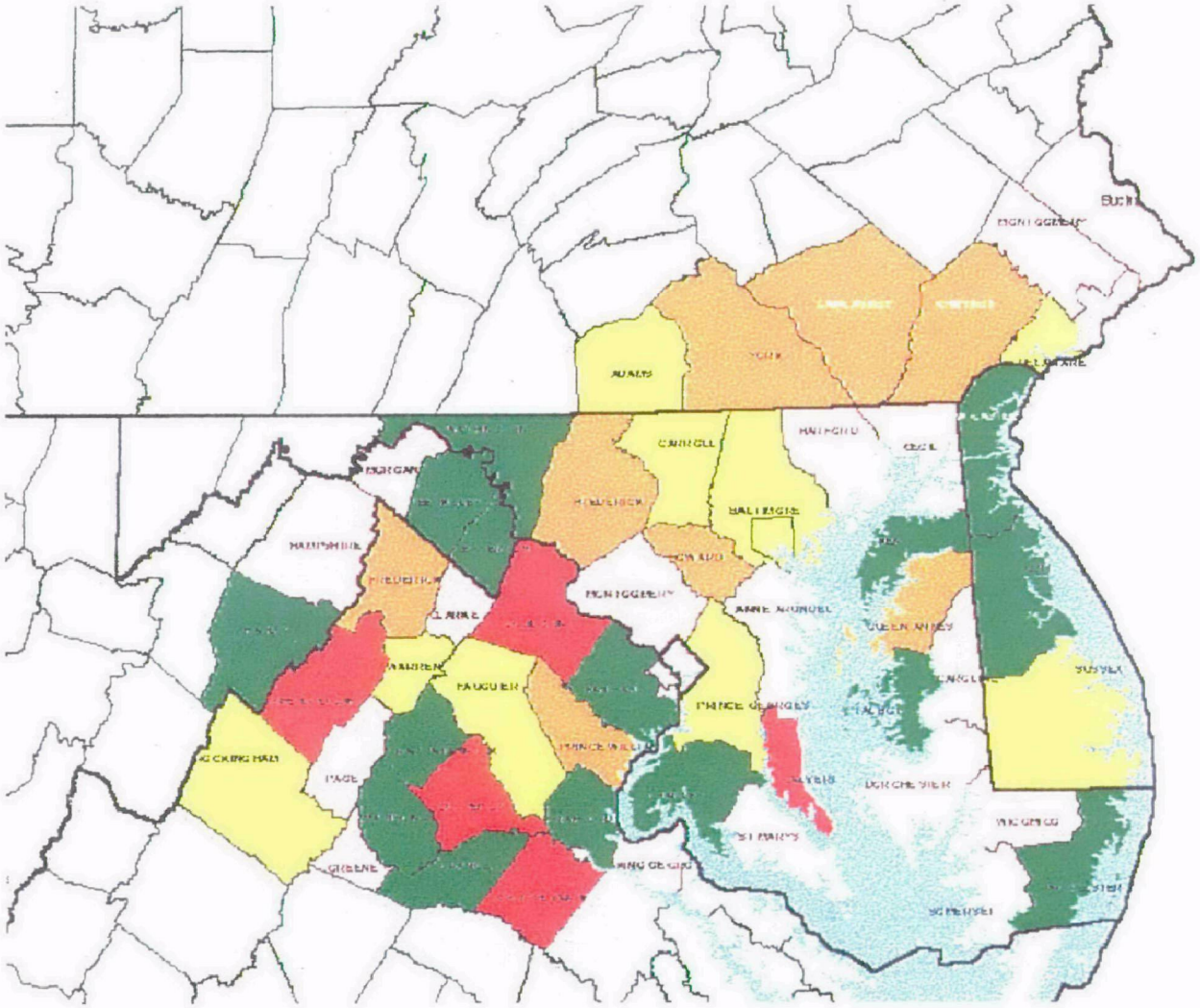
1970 1980 1997

Farmland Decreased by 33% Since 1964



1964 1980 1997

Region III Areas of Concern



Projected Areas of Sprawl as Defined by

AFT, CBP, ESD ,ORD

- 1 of 4
- 2 of 4
- 3 of 4
- 4 of 4

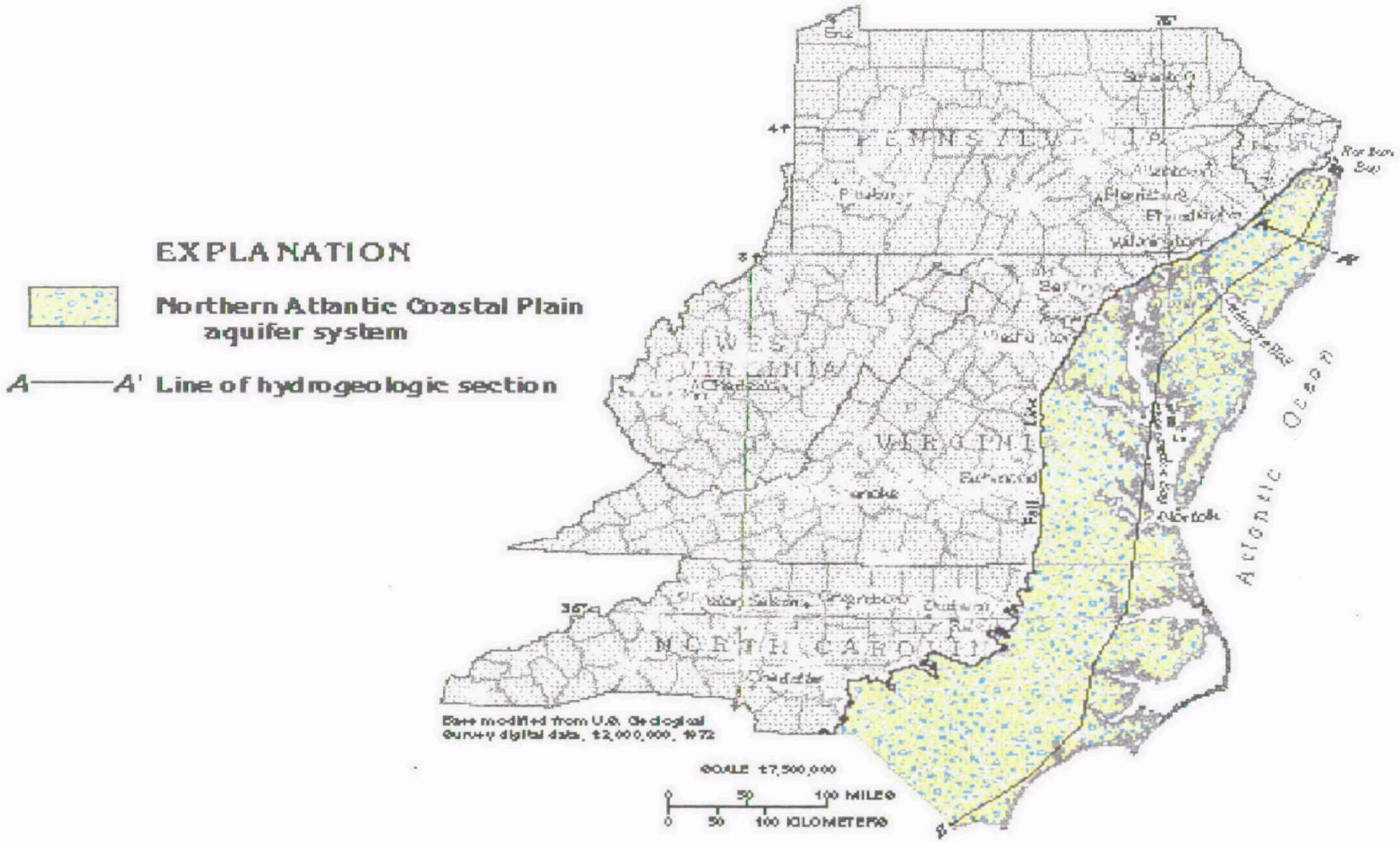
Sources: American Farm Trust (AFT), CBP Land Growth & Stewardship Subcommittee (CBP), ESD Recommendation for Sprawl Pilot Areas (ESD), ORD Modeled Areas (ORD)

Climate Change

Enhanced sea-level rise almost certainly will occur, with the potential for substantial damage to the coastal zone's structures, wetlands and estuaries *and to water supplies because of salt water intrusion"* –

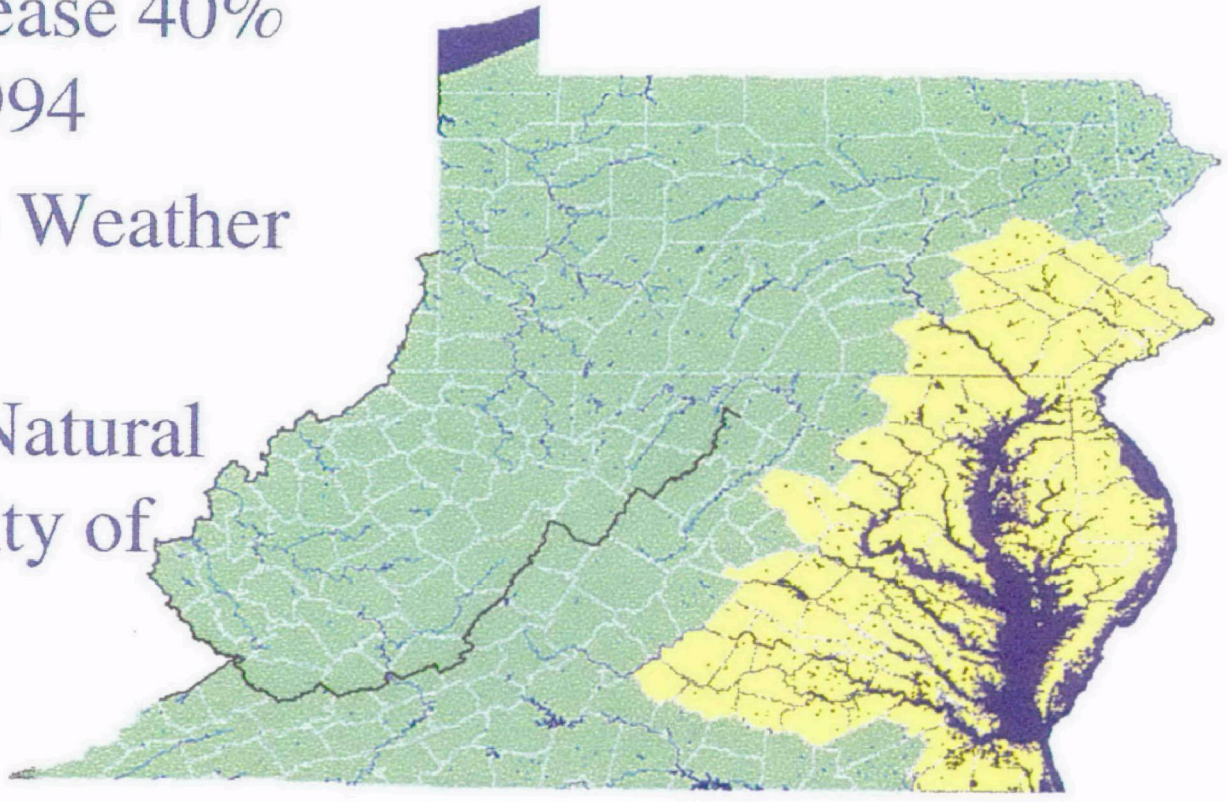
Preparing For A Changing Climate, Mid-Atlantic Overview, March 2000

Where is the Coastal Plain?



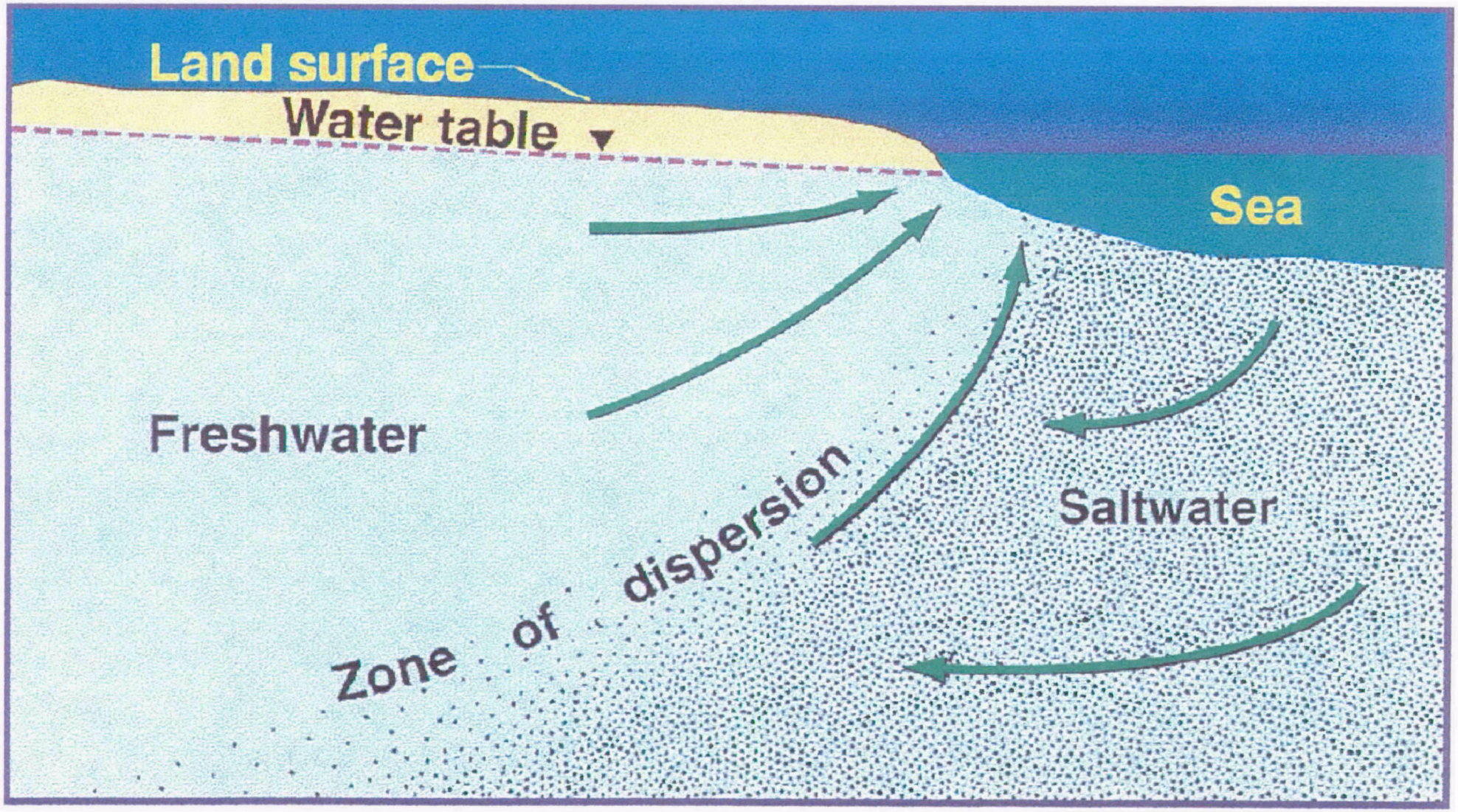
Population Growth Impacting Coastal Areas

- Population increase 40% from 1960 to 1994
- Vulnerability to Weather Damage
- Destruction of Natural Filtering Capacity of Wetlands

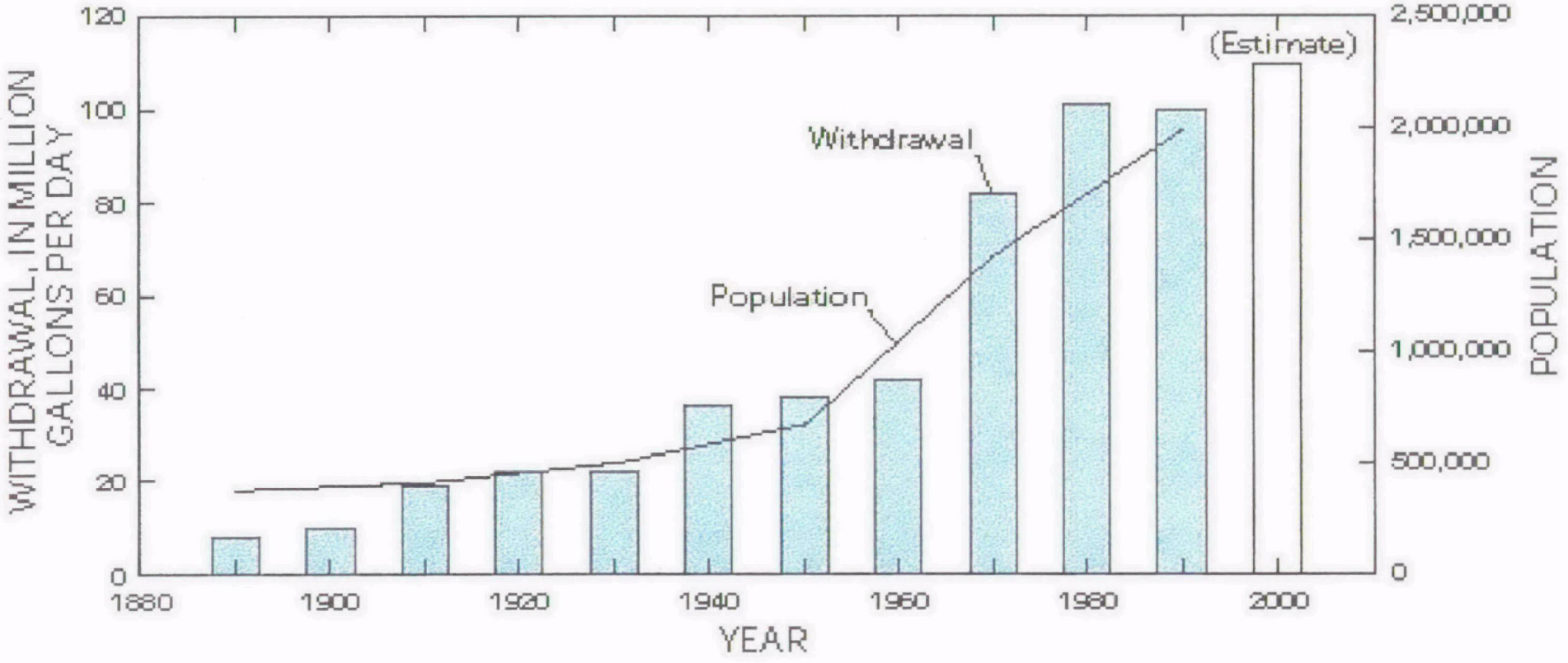


Source: Kyle Zieba & Definition of costal counties defined by NOAA.

Withdrawal of fresh water can cause denser salt water to migrate inland

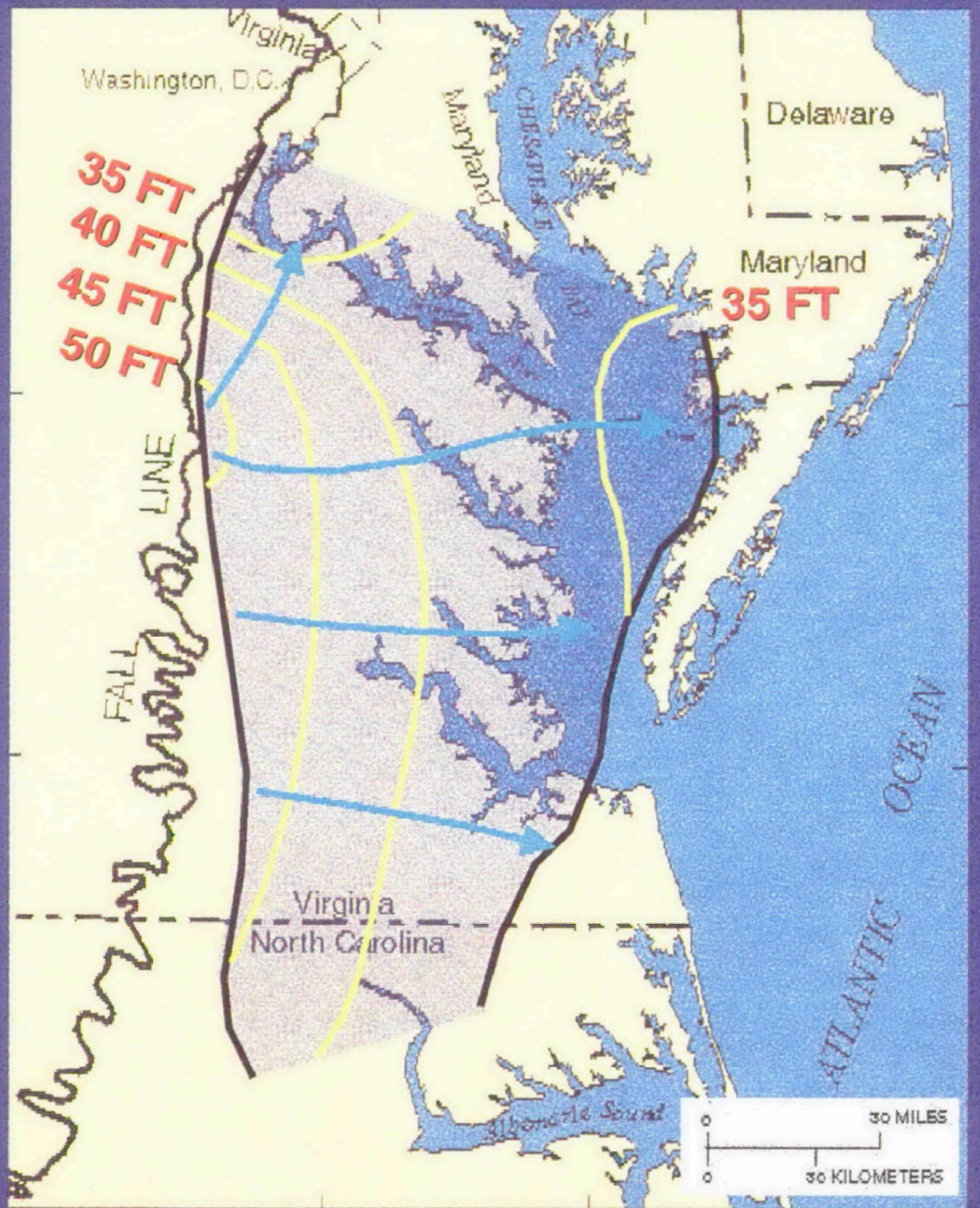


Ground water usage has increased with time in Virginia



Estimated Pre-Pumping Water-Level Elevations in the Lower Potomac Aquifer

- **eastward flow**
- **discharge along coast**
- **localized discharge to Potomac River**
- **above sea level**
- **low hydraulic gradient (5-ft interval)**
- **⇒slow flow rates**
- **pre-pumping flow directions uncertain**



Measured Modern (1990's) Water Levels in the Lower Potomac Aquifer

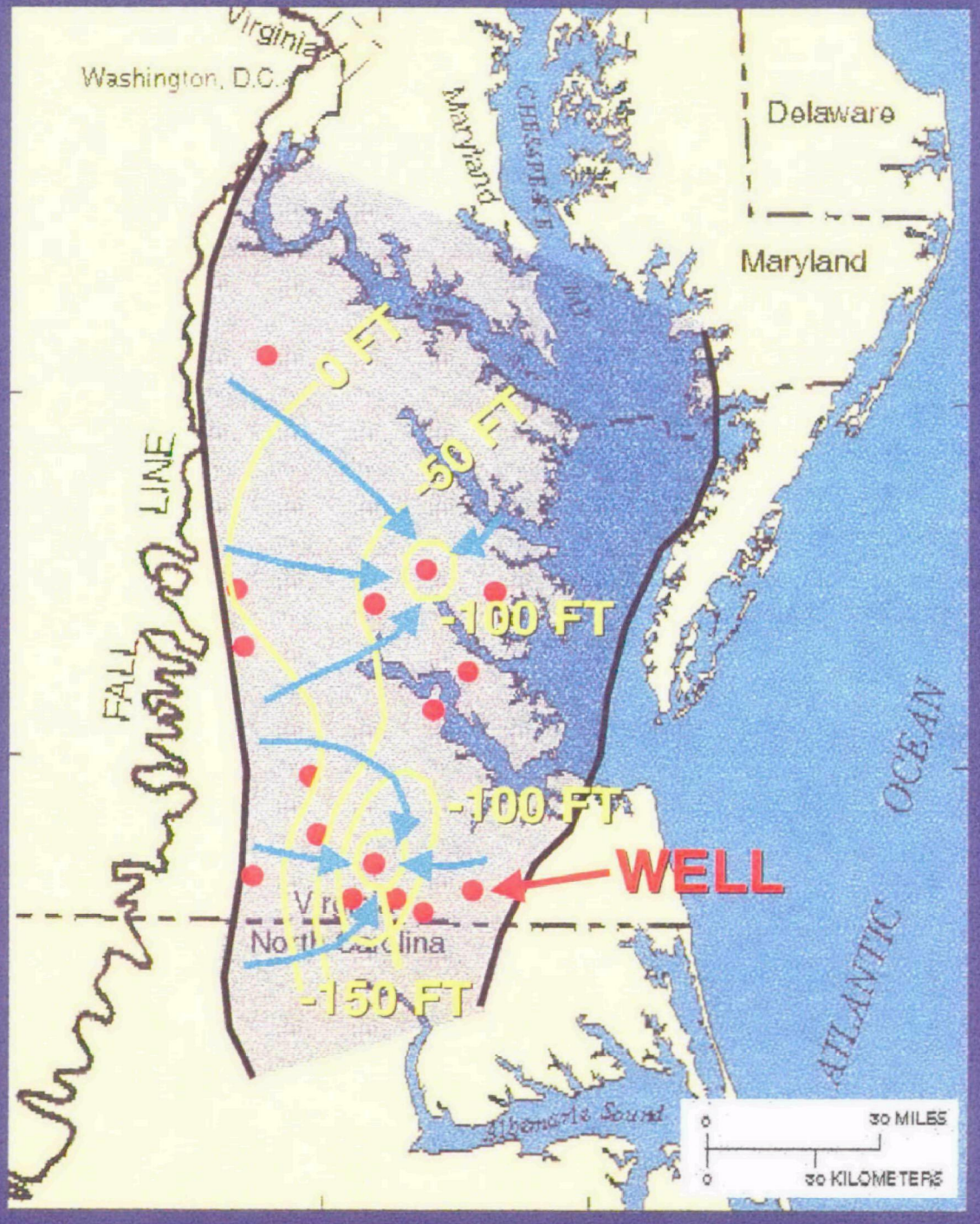
- **actual measured water levels**
- **flow to pumping centers**
- **region-wide lowering below sea level**

⇒increased pumping costs

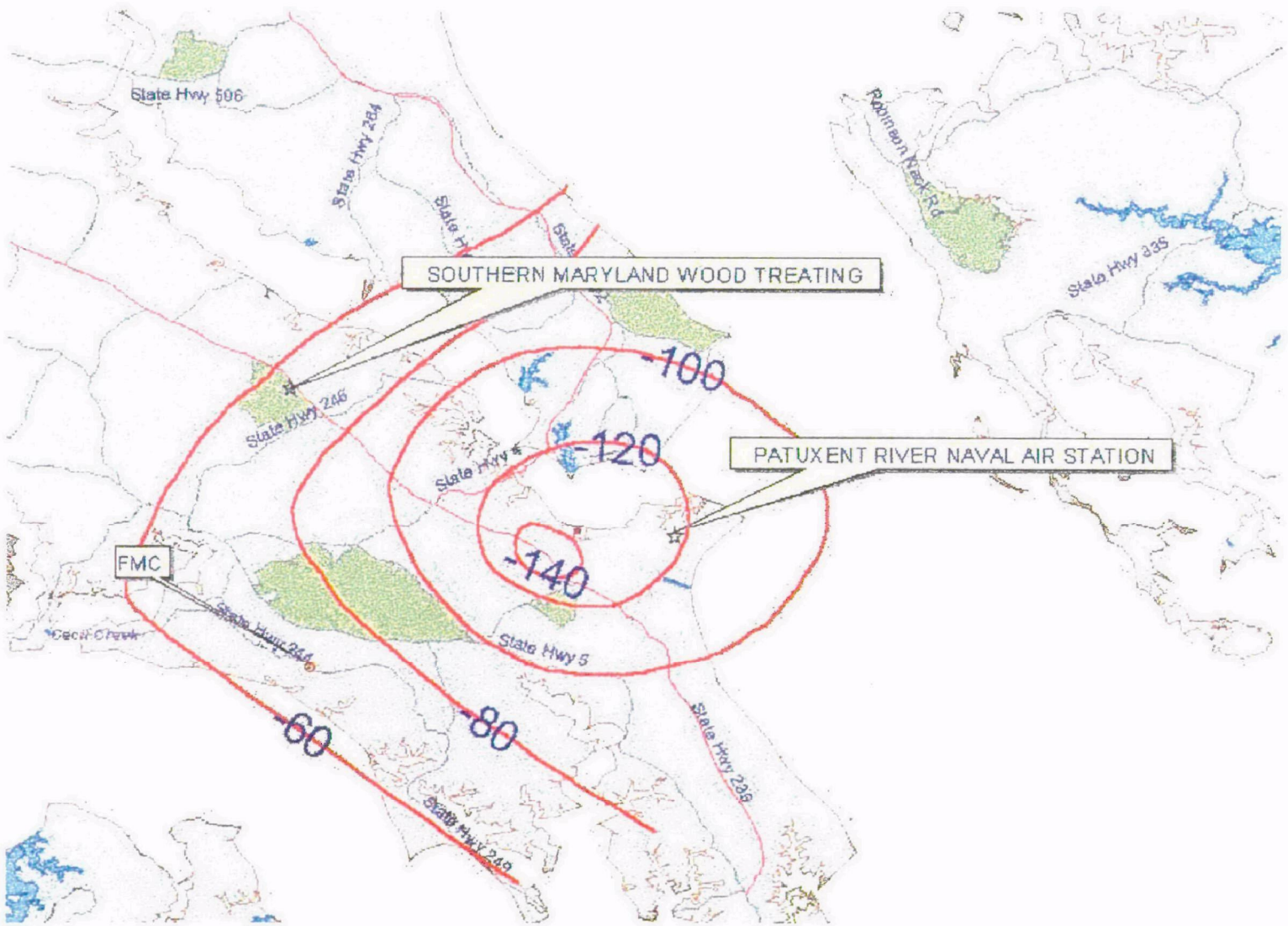
- **high hydraulic gradient (50-ft interval)**

⇒rapid flow rates

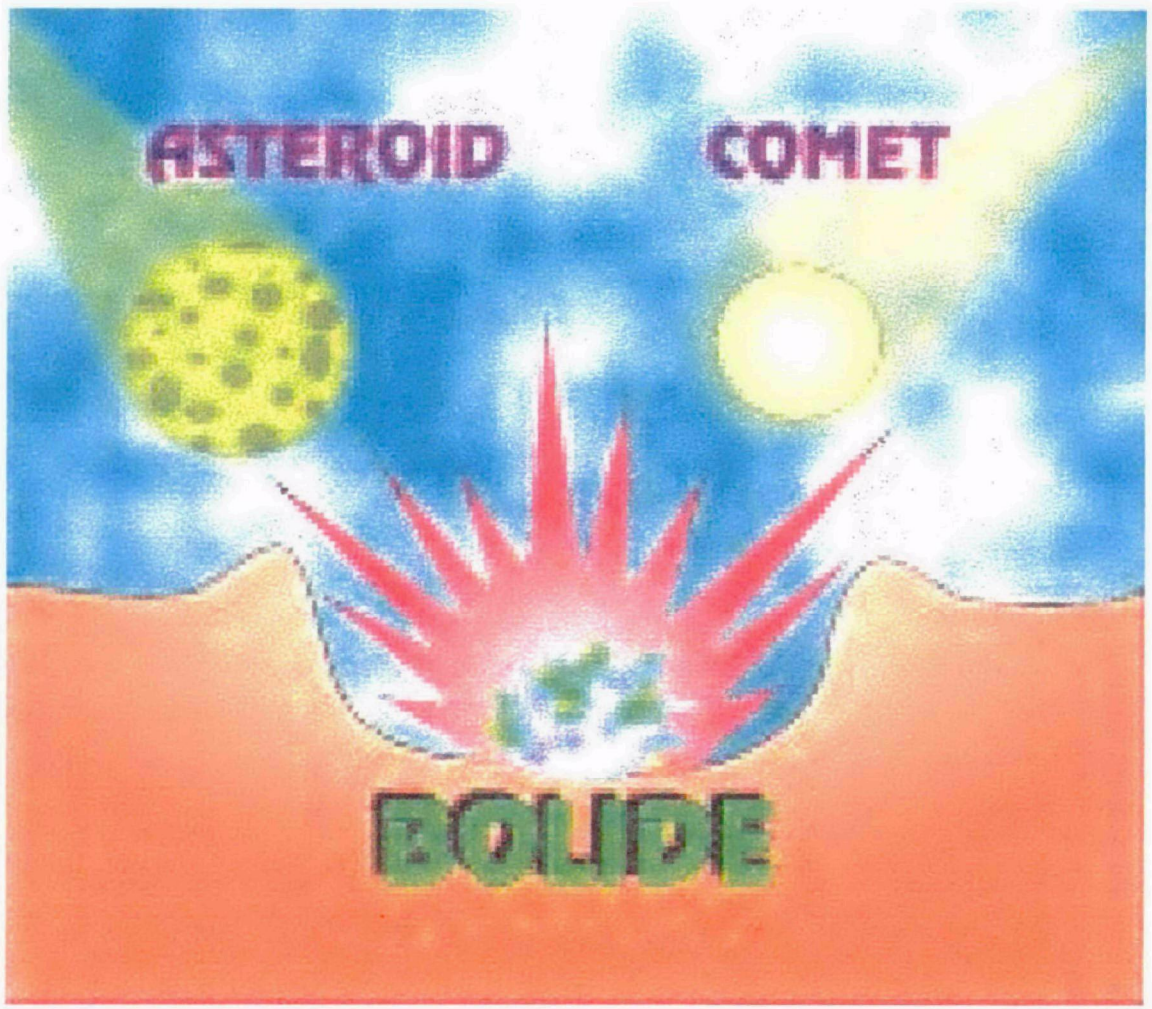
⇒threat of saltwater intrusion



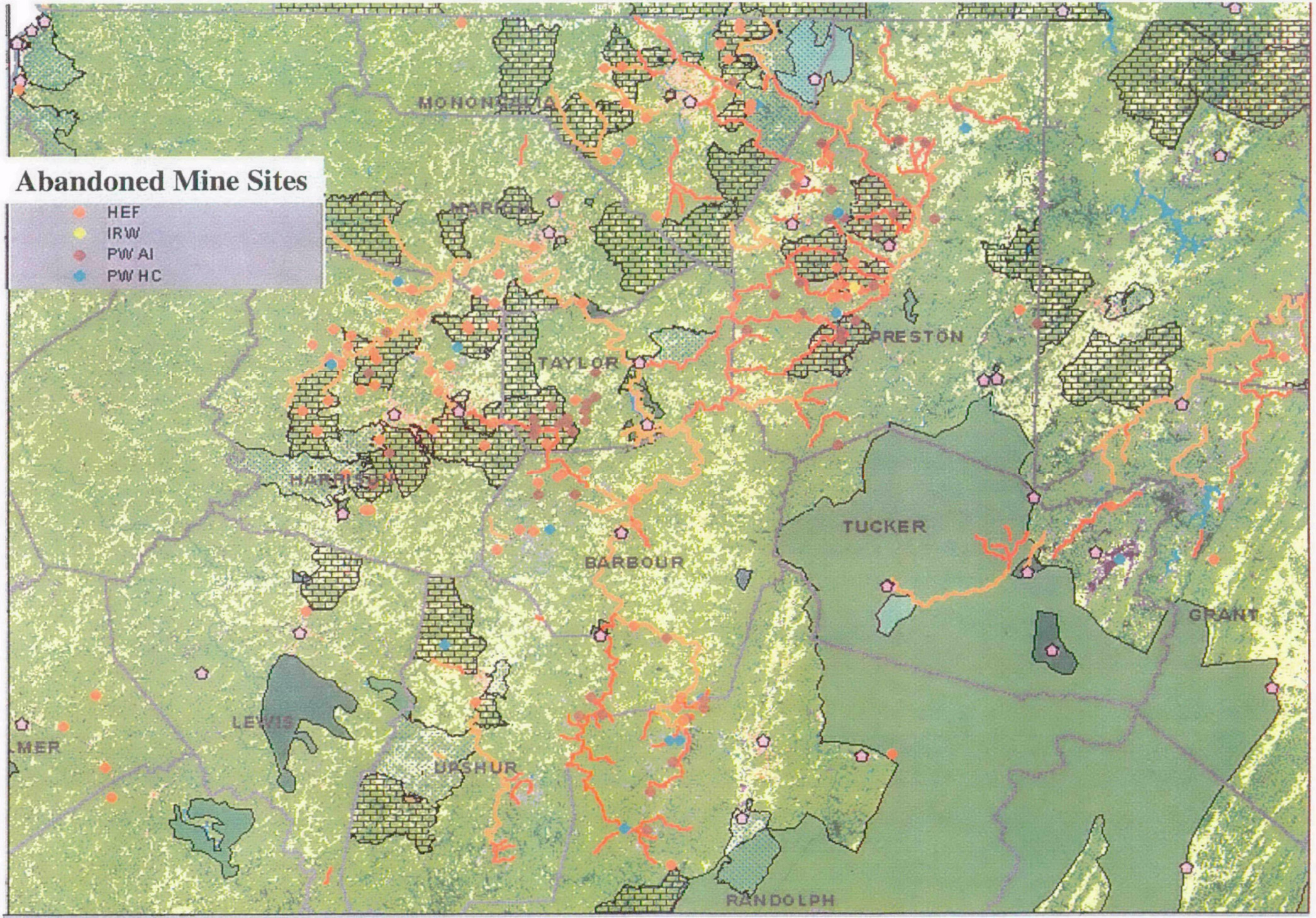
Closeup of 1997 Aquia aquifer contours in Maryland



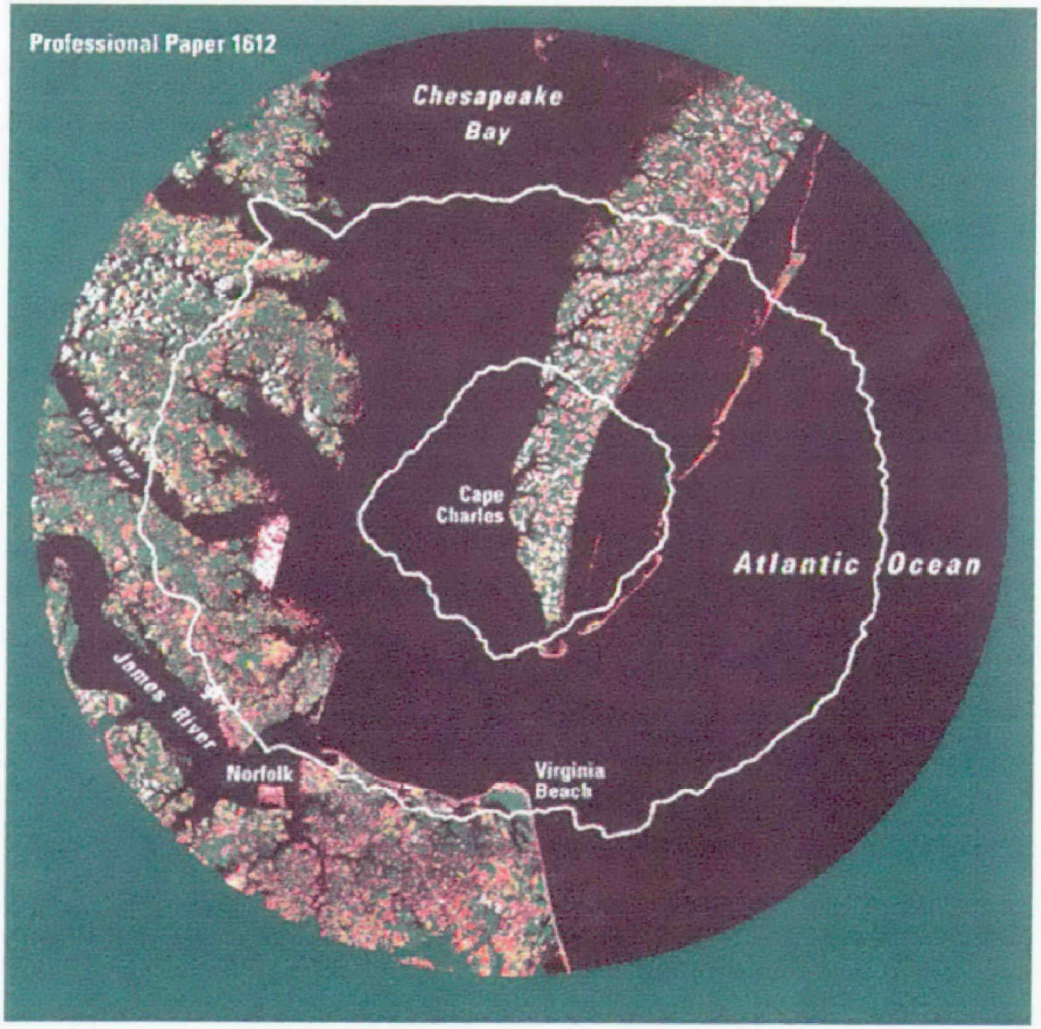
A bolide hit the Chesapeake Bay area roughly 35 million years ago



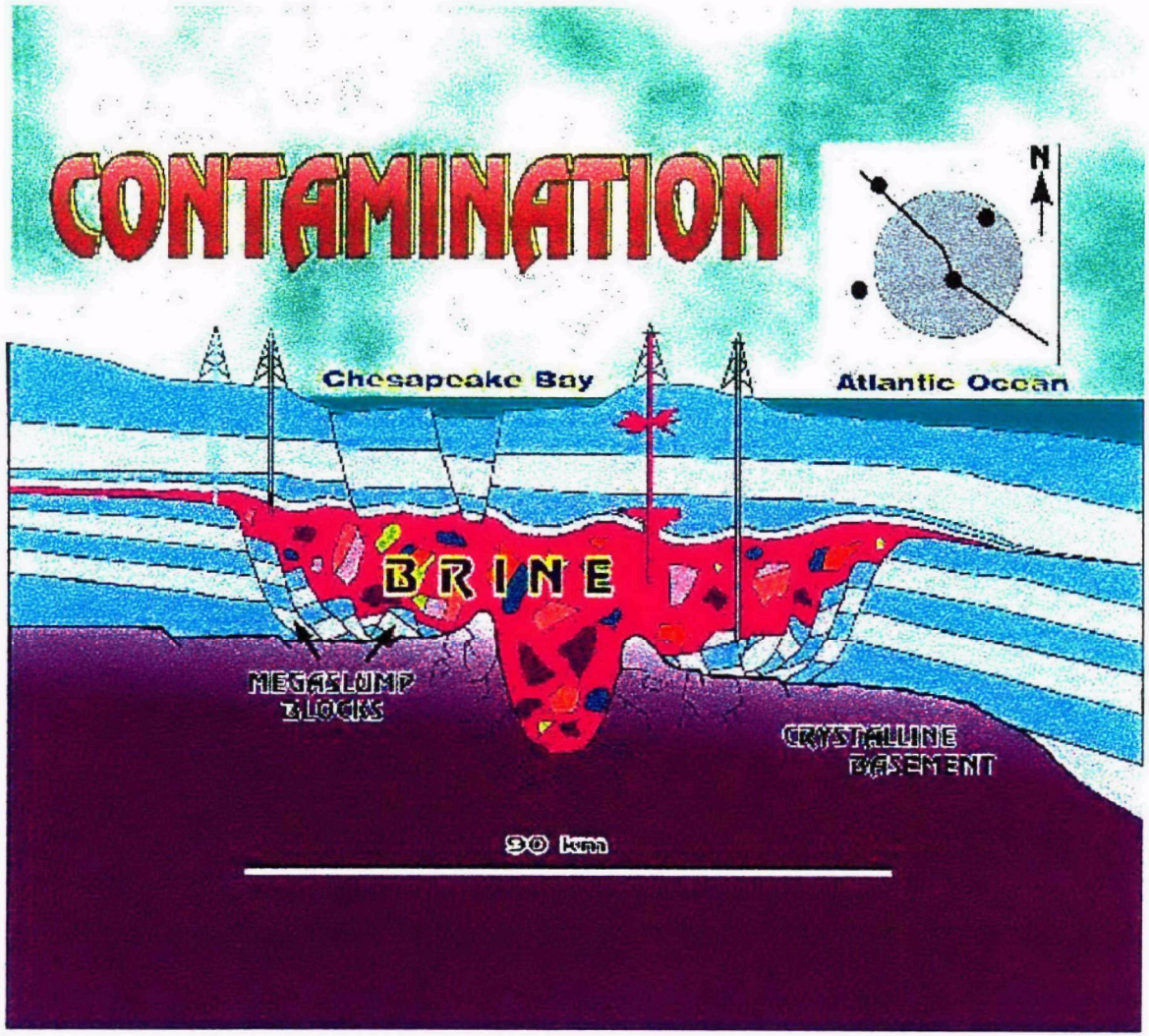
Using the Above Approach Give. Examples of Potential Sites in WV



New evidence of buried crater shows aquifers explains some of salt water intrusion



The breccia remaining in the crater has ground water 1.5 times saltier than seawater



Recommendations

- Continuing water use will continue to stress aquifers
- Salt water intrusion and contaminant migration are possibilities
- Potentiometric contours may help predict future water quality problems in large ground water sources
- Special case: Water supply development may be further limited due to the buried crater in the Chesapeake Bay
- Expanded use of USGS products

The Problems of American Cites are Not New

"We will neglect our cities at our peril, for in neglecting them we neglect the nation."

– President John F. Kennedy 1963

"In the last 10 years, 90% of the growth tool place in the suburban areas beyond the city limits. In the next 20 years, we expect the 80% of the total increase will take place in the suburban areas rather than the central city."

L.N. Werner, before a U.S. Senate Subcommittee, 1967

"There is a clear and compelling requirement for better coordination of federally funded programs, particularly those designed to benefit the residents of the inner city."

- Report of the National Advisory Commission on Civil Disorders, 1976

"By 1960, inflated land cost were threatening to price good housing clear out of the market. Main causes . . . Include: speculation, over-zoning and excessive improvement requirements and fragmentation of acreage into holding too small for economic development."

- House & Home 1962

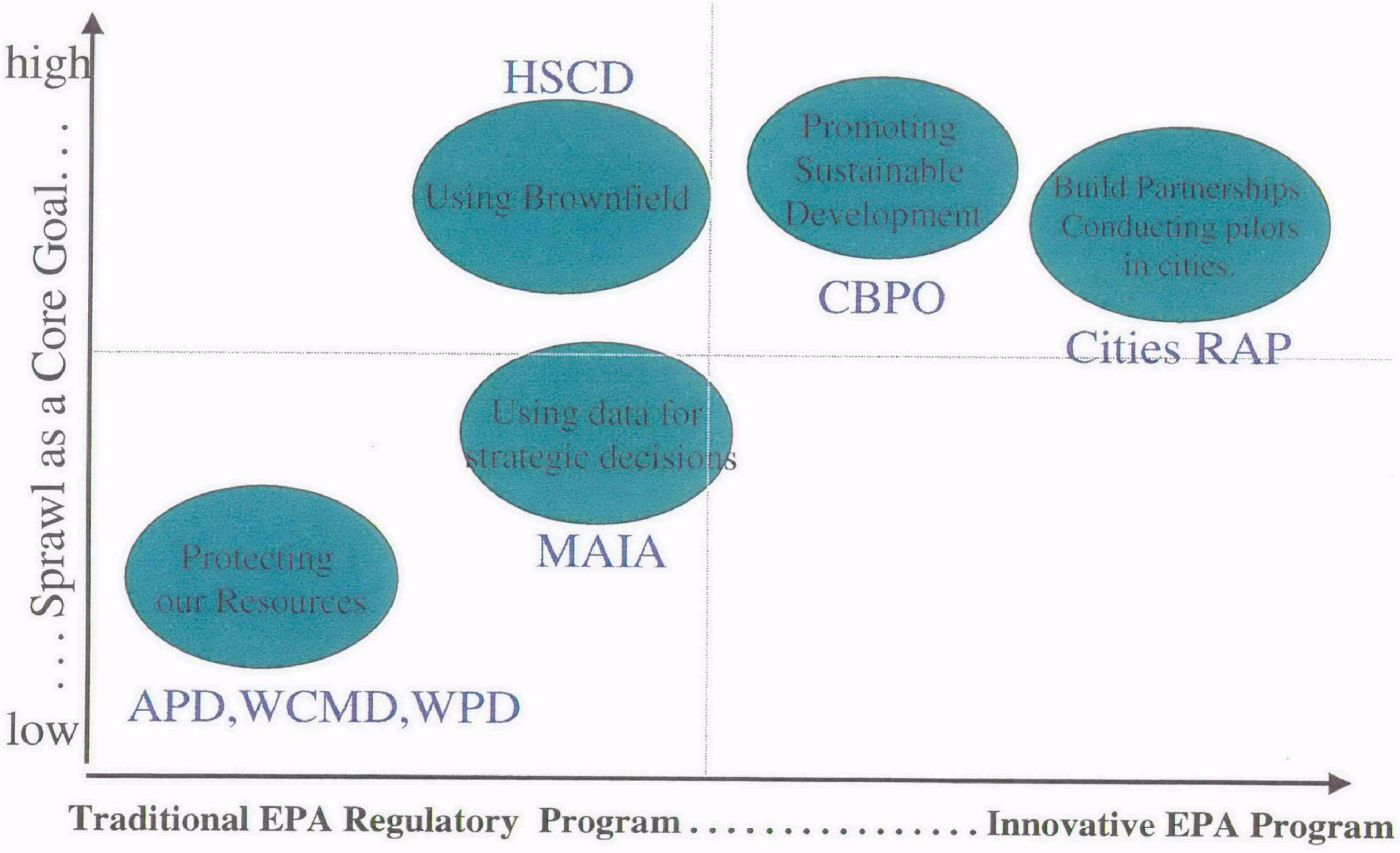
Source: Rene A. Henry, Director, Office of Communication & Government Relations

Promoting the Idea of Cities & Livability

- *Commitment and Incentives Needed*
  - Let the builders rebuild
  - Tax abatement to attract redevelopment
  - Stream line permitting process
  - Waiver building codes (if no impact to health& safety)
  - Eliminate water & sewer fees for high priority projects
  - Down zoning, land subsidies, flexible zoning
  - Use bonds for site acquisition

Source: Rene A. Henry, Director, Office of Communication & Government Relations

Region III where we are now . . .



Region III, where we need to go . . .

- Help rebuild our cities
  - Showcase grants
  - Showcase successful redevelopment plans
  - Promote "Better American Bonds"
- Promote Sound Land Use
  - Implement "Pilot Projects on Sprawl" (i.e., innovative approaches to regulatory programs)
  - Focus Regional Programs and Activities in Sprawl Areas

Air Quality

- *Status of Region III Air Pollutants*
- *Air Toxics Reaffirmed as Emerging Issue*
- *Air Monitoring Update*

Air Quality

Status of Regional Air Pollutants

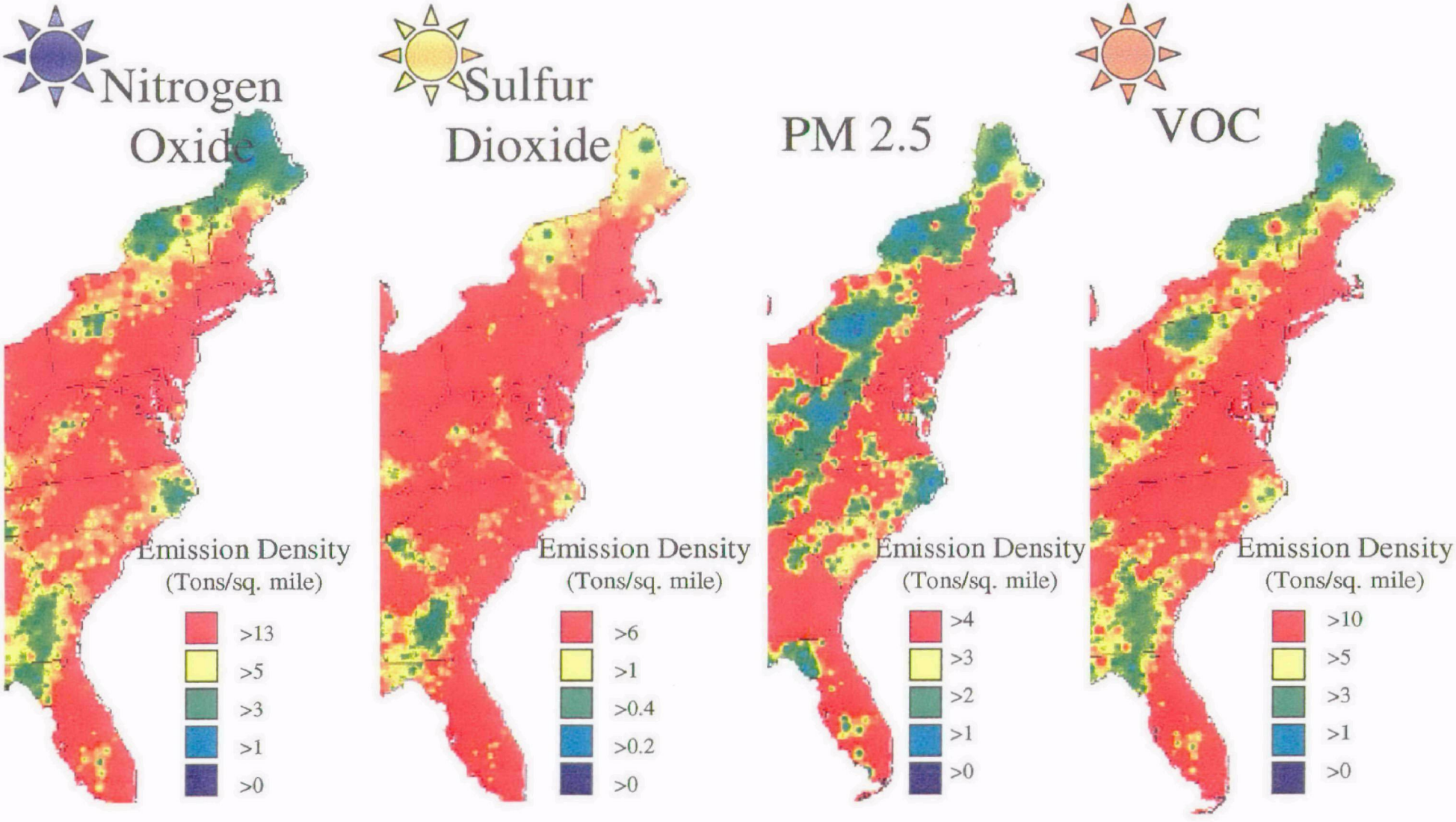
- *Regional Air Problems Continue to . . .*
  - come from up-wind sources
  - contribute to downwind pollution
  - be a long term problem
  - be complex and pervasive

Pollutants Causing Air Pollution Problems*

Problem / Pollutant	Ozone	Acid Deposition	Eutrophi-cation of Ches. Bay.	Visibility	Particulate Matter	Global Warming
Nitrogen 	✔	✔	✔	✔		✔
Sulfur 		✔		✔	✔	
VOCs 	✔					
CO2 						✔

* As listed by Air Program

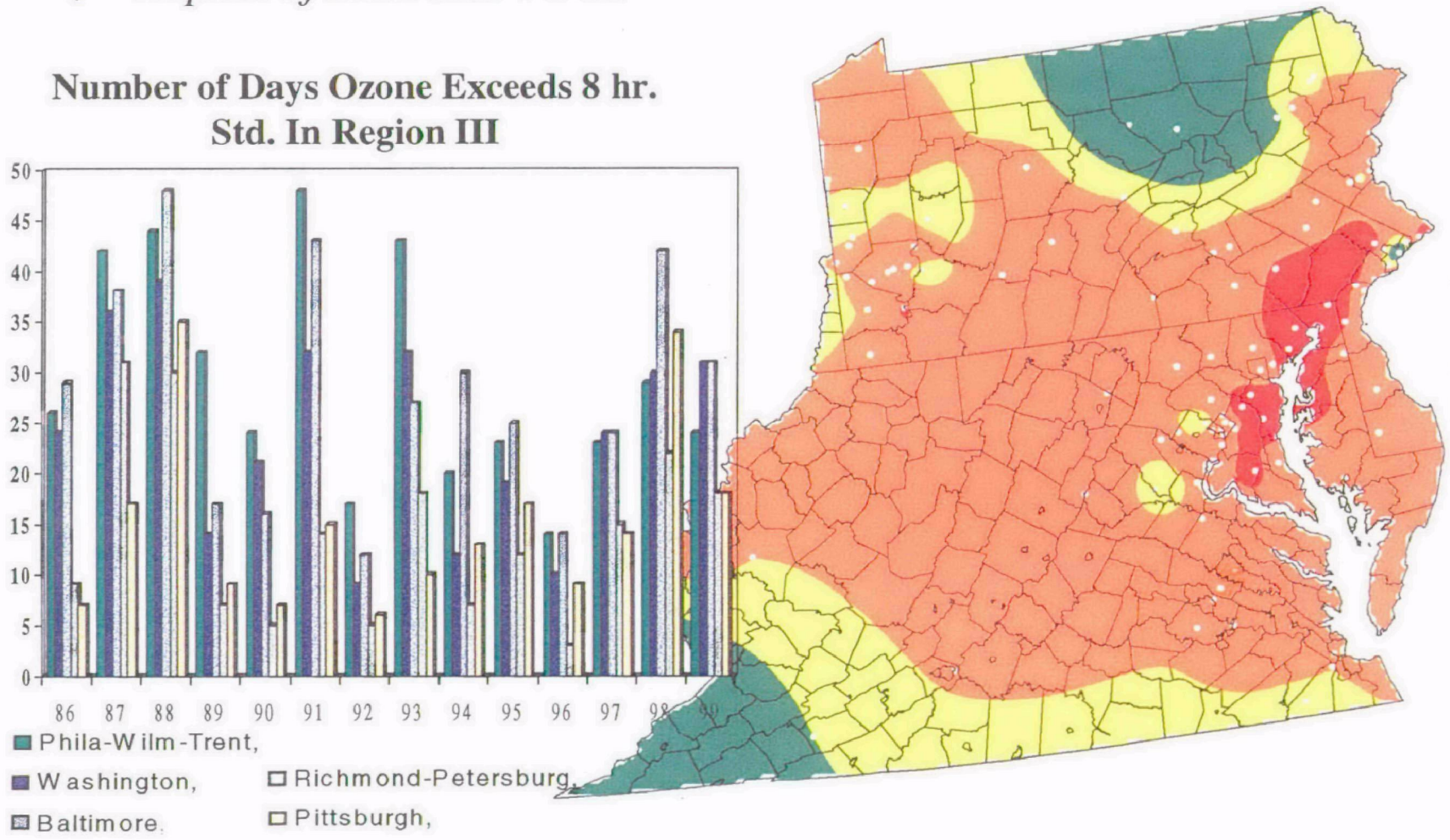
Region III and Surrounding States Continue to Have High Air Emission Densities



Source: National Air Pollutant Emission Trends -Density Map of 1998 Emissions by County, 1900-1998, EPA-454/R-00-002

Ozone exceedances varies over time and location

Impact of NOx and VOCs



Source: APD - Number of Days w/daily max >the 8hr. Standard (85 ppb)

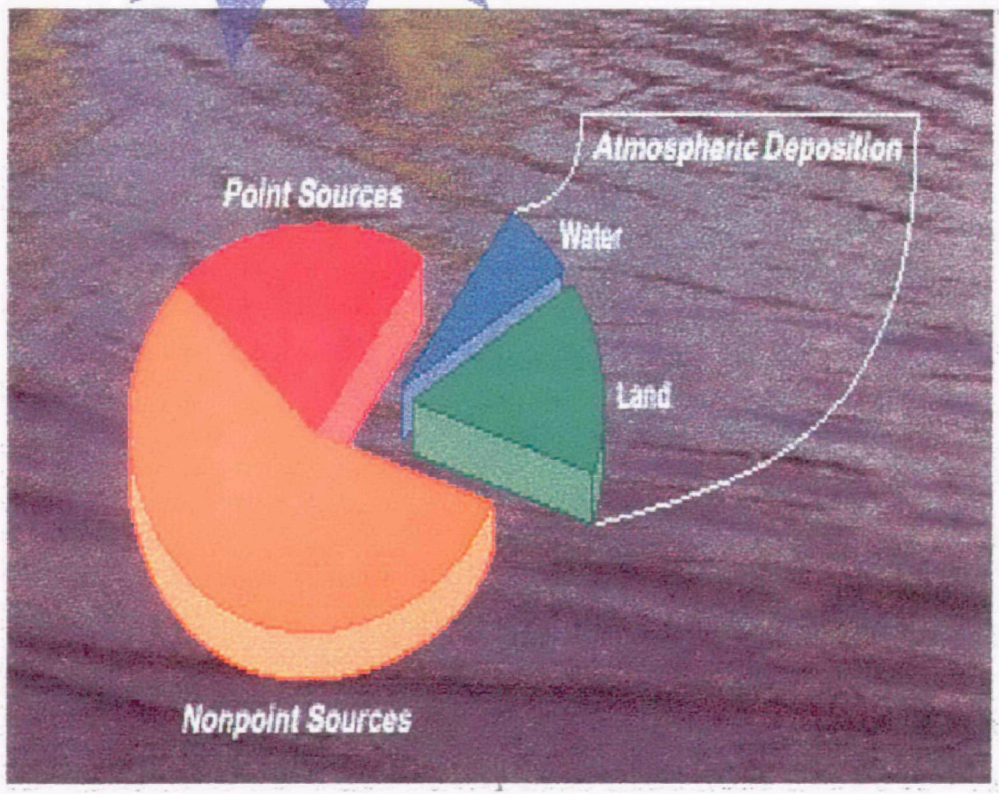
Source: DCM Team - 1999 – 8hr. Ozone Design Value from 1997 1999 (84 ppb)

Eutrophication of Chesapeake Bay

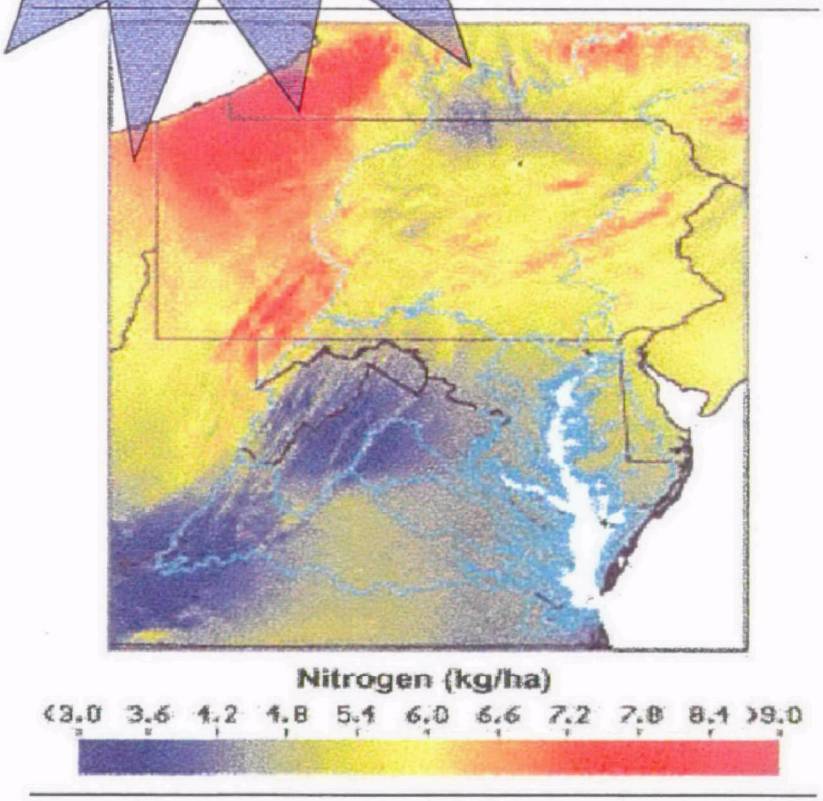
40 – 50% Nitrogen in Bay from the Air

Impact of Atmospheric Nitrogen

Sources of nitrogen



Estimated 1997 wet deposition of nitrogen



Source: National Atmospheric Deposition Program, Nitrogen in the Nation's Rain, 2000

Air Quality: Status of Regional Air Pollutants

Management Recommendation

- *Regional Air Quality Improvement should*
  - Continue to come from traditional program functions (regulations); with an
  - Increase focus on voluntary reduction, education and outreach

4

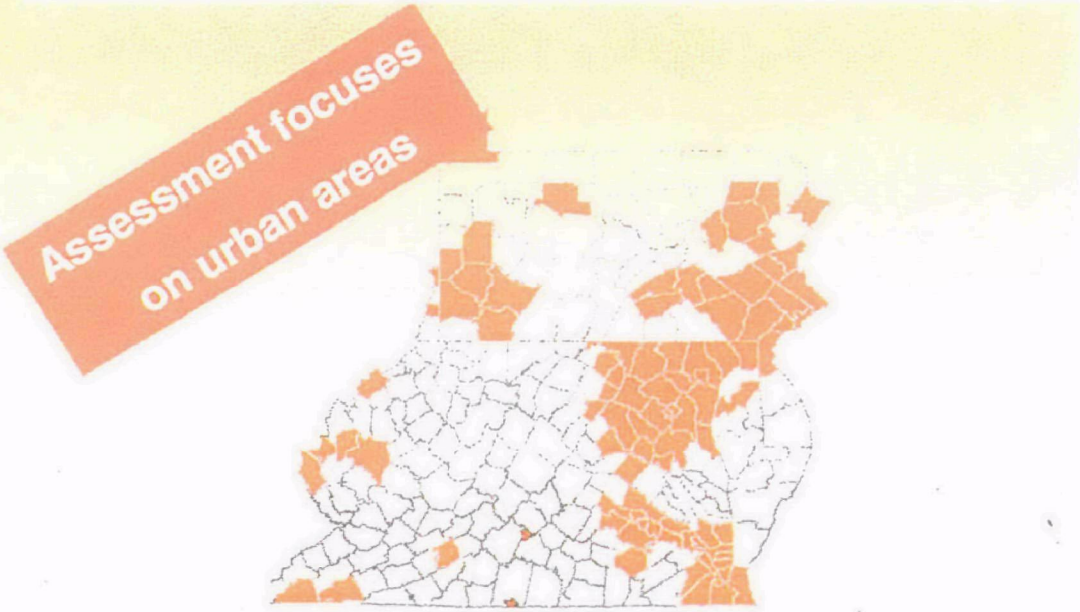
The National Air Toxics Assessment (NATA)

The 33 Air Toxics

1,1,2,2-Tetrachloroethane
1,3-Butadiene
1,3-Dichloropropene
7-PAH
Acetaldehyde - Primary
Acrolein - Primary
Acrylonitrile
Arsenic Compounds
Benzene
Beryllium Compounds
Cadmium Compounds
Carbon Tetrachloride
Chloroform
Chromium Compounds
Coke Oven Emissions
Ethylene Dibromide
Ethylene Dichloride
Ethylene Oxide
Formaldehyde - Primary
Hexachlorobenzene
Hydrazine
Lead Compounds
Manganese Compounds
Mercury Compounds
Methylene Chloride
Nickel Compounds
Perchloroethylene
Polychlorinated Biphenyls
Polycyclic Organic Matter
Propylene Dichloride
Quinoline
Trichloroethylene
Vinyl Chloride

The assessment will help to:

- Identify air toxics of greatest potential concern
- Characterize the relative contributions to air toxics concentrations
- Set priorities for the collection of additional air toxics data

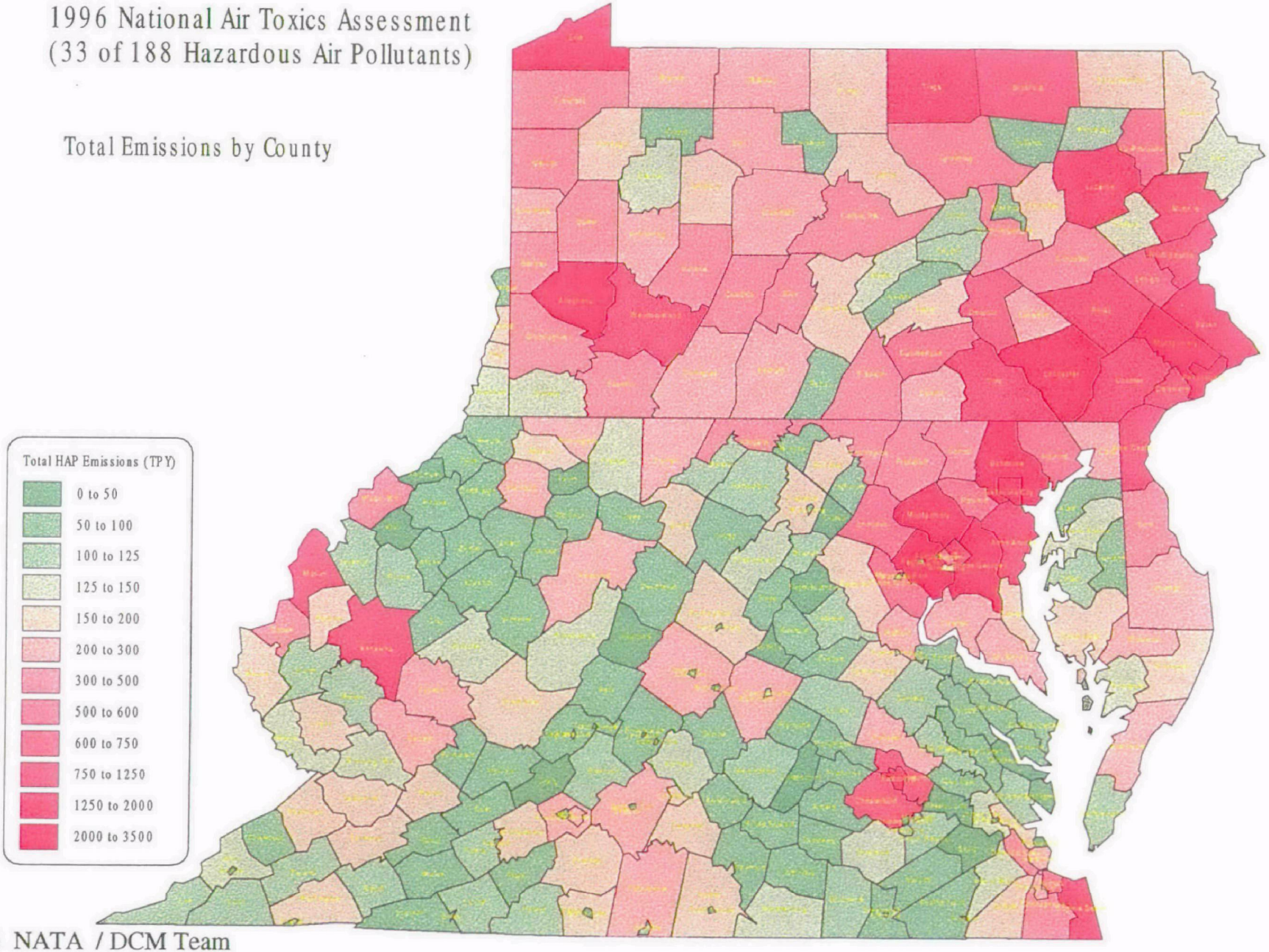


Source: 1996 NATA / OED

Urban Areas have highest Air Toxic Emissions

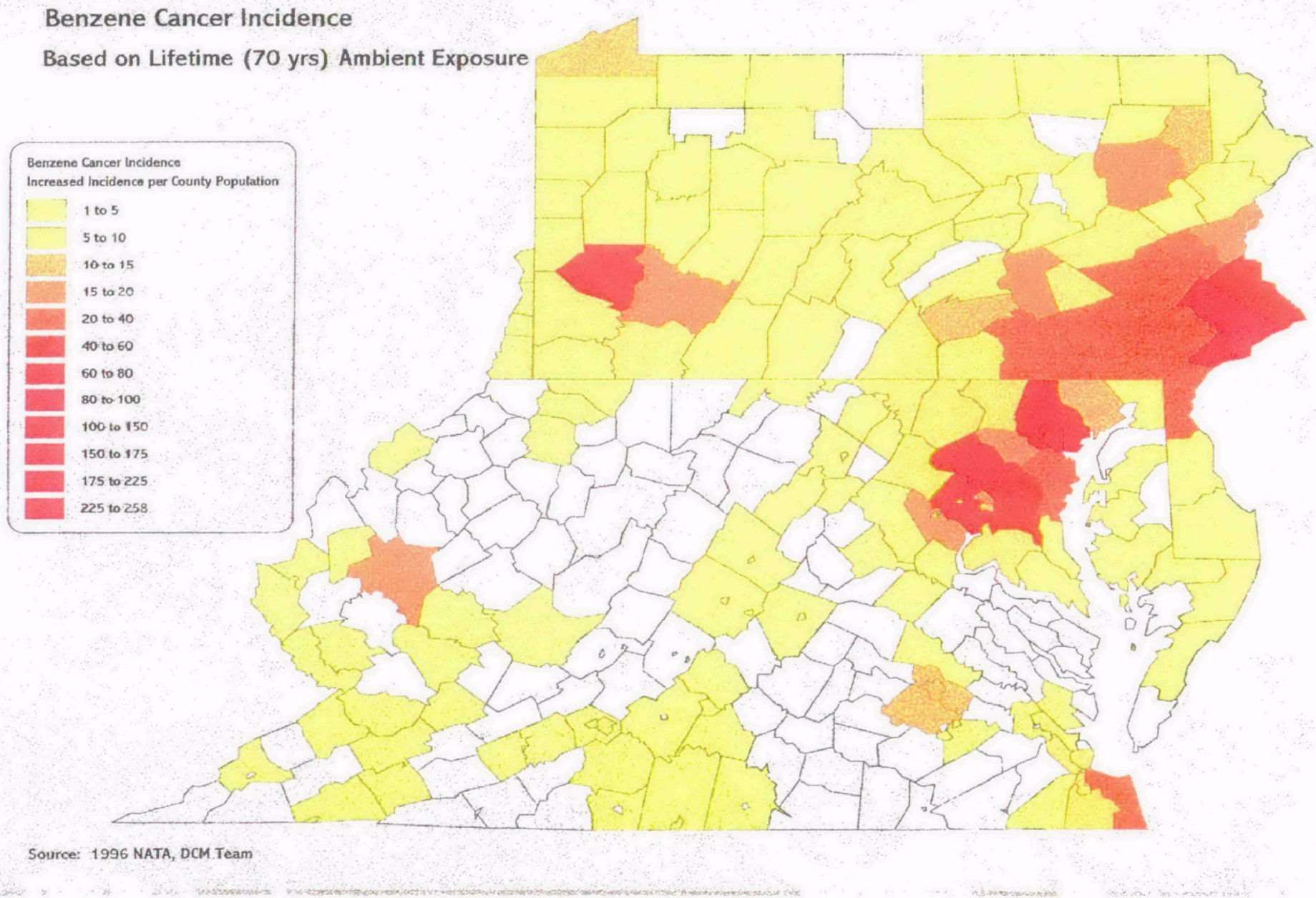
1996 National Air Toxics Assessment
(33 of 188 Hazardous Air Pollutants)

Total Emissions by County

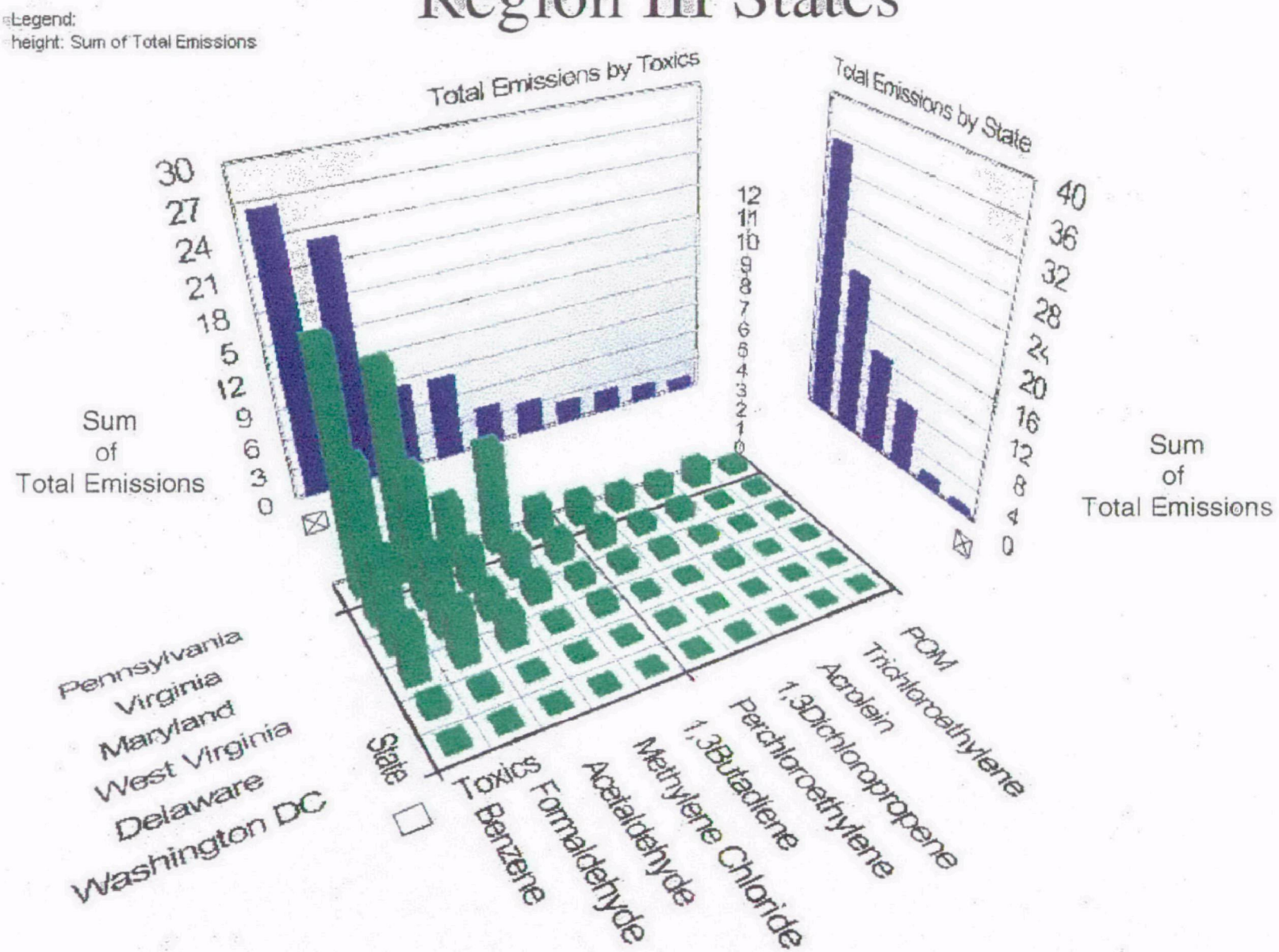


Source: 1996 NATA / DCM Team

Urban Areas show highest Benzene Cancer Incidence



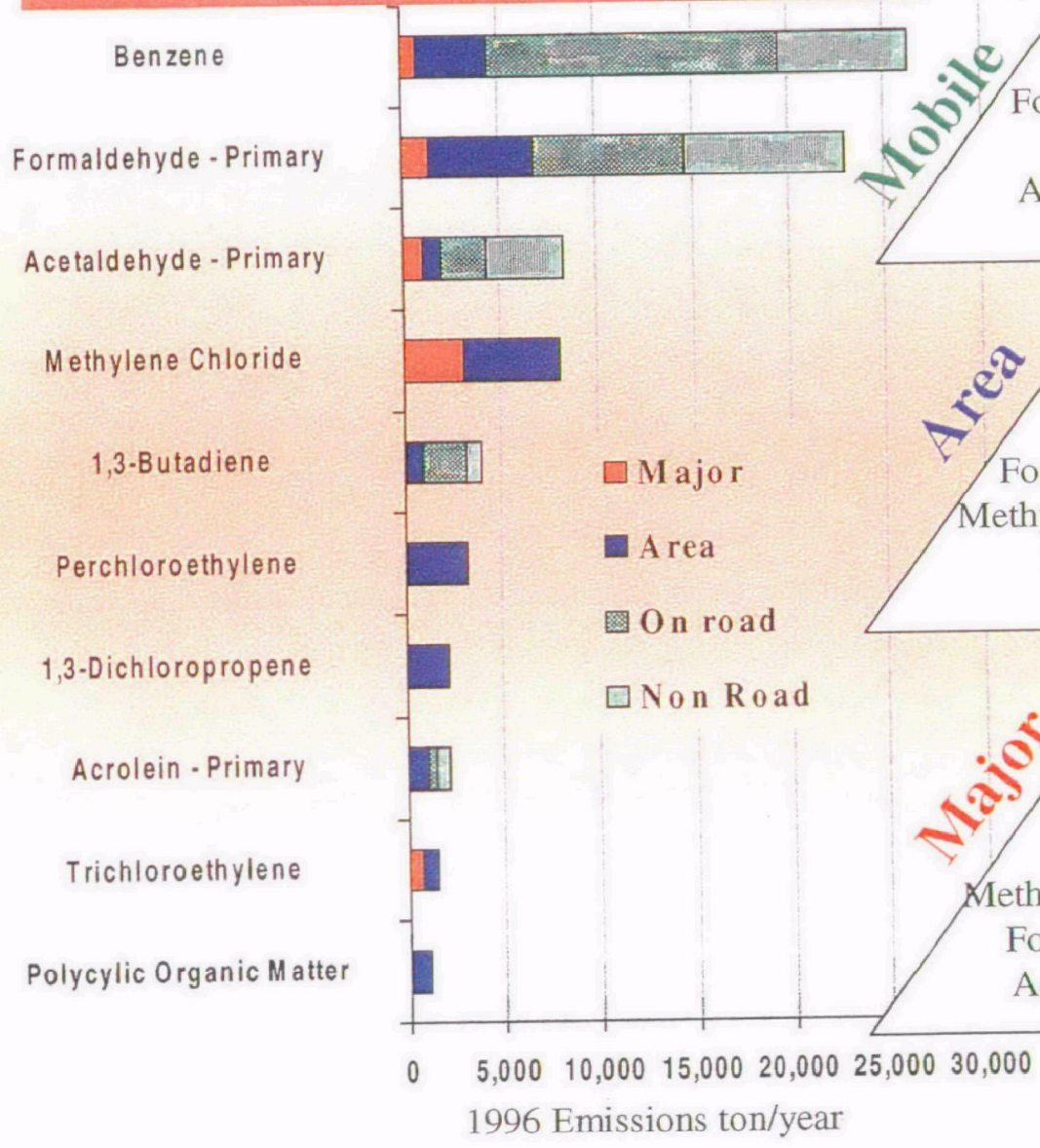
Benzene and Formaldehyde Emissions Pervade Region III States



Source: 1996 NATA / OED

Air Toxics Emissions and Their Sources – Region III

Top 10 Major Toxic Emissions by Source Category



Top 3 Toxics

Typical Sources

Mobile

Formaldehyde
Benzene
Acetaldehyde

automobile exhaust emissions

Area

Formaldehyde
Methylene Chloride
Benzene

stationary internal combustion engines & turbines, manufacturing facilities, incinerators

manufacture of drugs, pharmaceuticals, & film coatings; electronics manufacturing; urethane foam blowing, landfills & wastewater processing

oil and natural gas production, petroleum refining, burning coal and oil, gasoline service stations

Major

Methylene Chloride
Formaldehyde
Acetaldehyde

electronics manufacturing

pulp and paper plants, petroleum refineries, power plants, manufacturing facilities

pulp and paper production, wastewater processing

Source: 1996 NATA / OED

Air Quality: Air Toxics Reaffirmed as Emerging Issue

Management Recommendation

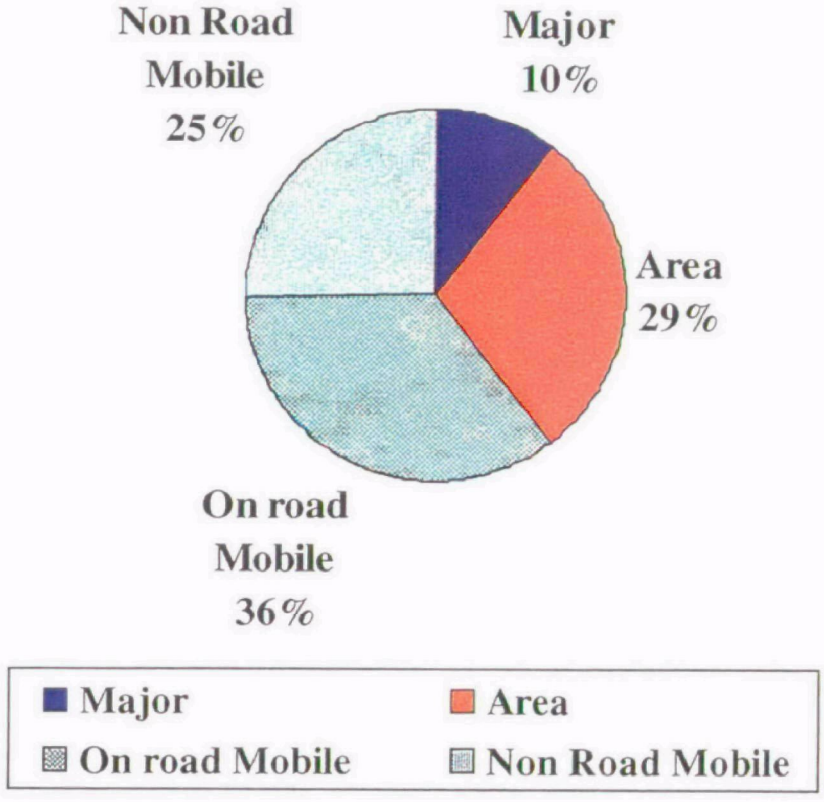
- Air Toxics is often a local issue

- Regionally they are seen as a big problem for urban areas

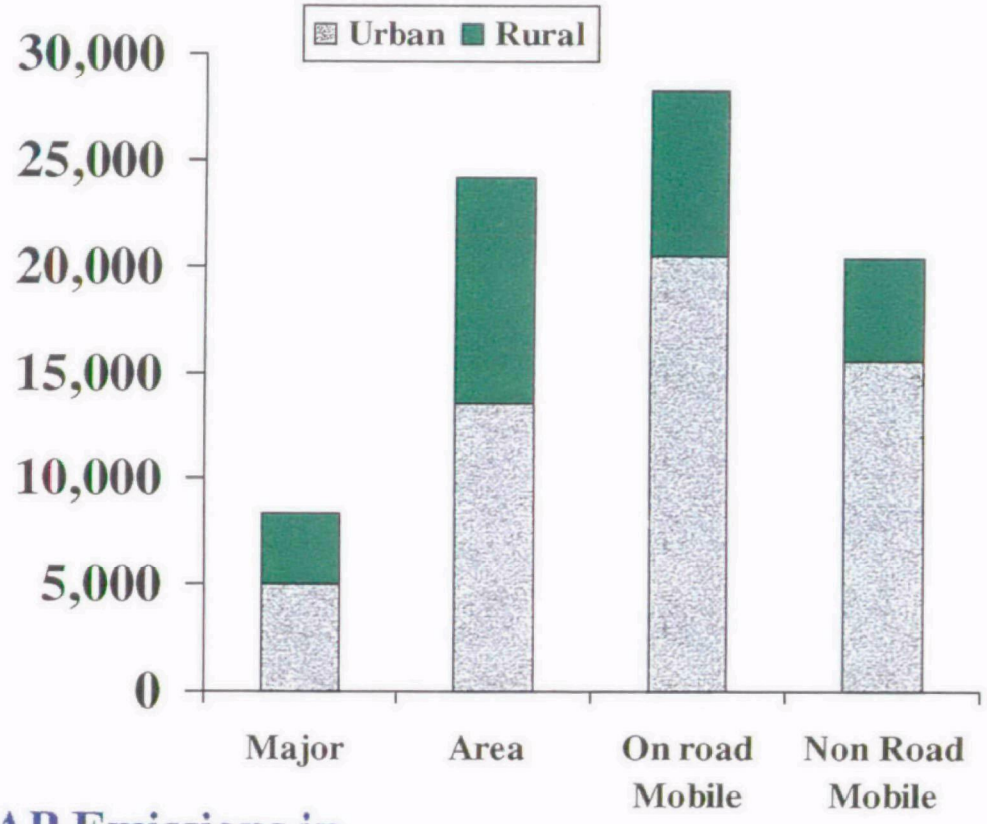
- This is an emerging priority

Mobile Sources Dominate Region III Toxics Emissions

65% of Emissions Come from Mobil Sources



Mobile Sources Dominate in Urban Areas



Total 1996 HAP Emissions in Region III = 81150 Tons

Source: 1996 NATA / OED

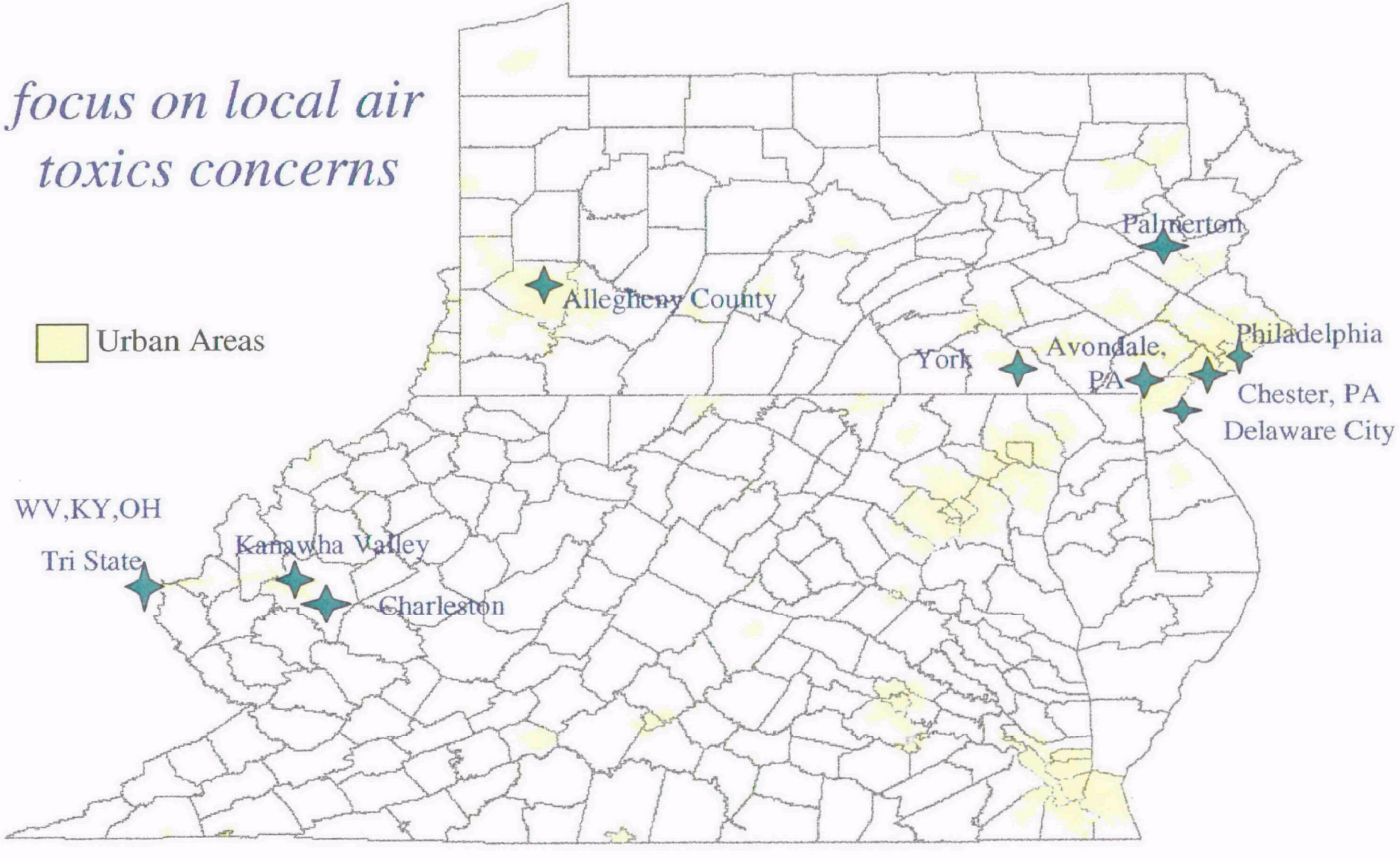
Air Quality

Region III Air Monitoring Update

- EPA and States do not maintain monitoring network for air toxics as they do for the criteria pollutants. However some type of toxic monitoring has been ongoing.
  - Photochemical Air Monitoring Station (PAMS) measure air toxics
  - Specialized studies for local concerns

- In 1997 EPA promulgated new NAAQS for PM2.5 - Region III currently operates 94 PM2.5 monitoring stations
  - Data collected during 00/01/02 will be used for attainment of the standard

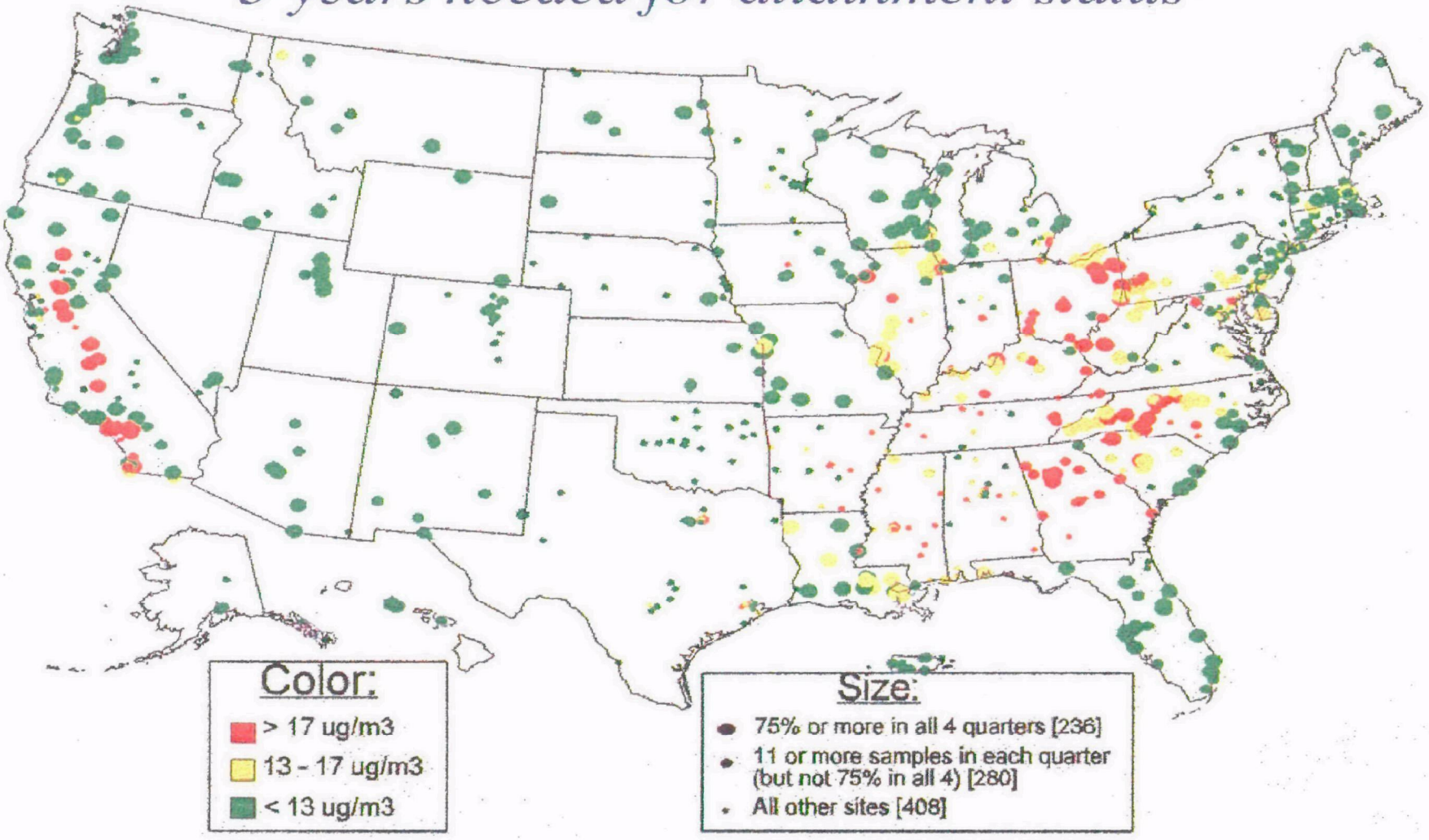
Specialized Air Toxic Studies



Source: ESD

First Year of PM2.5 Air Monitoring Shows Some Hits in Region III

3 years needed for attainment status



Source: ESD using AIRS as of 7/26/00 weighted annual mean, Jan. Dec. 1999

Air Quality: Air Toxics Monitoring Update

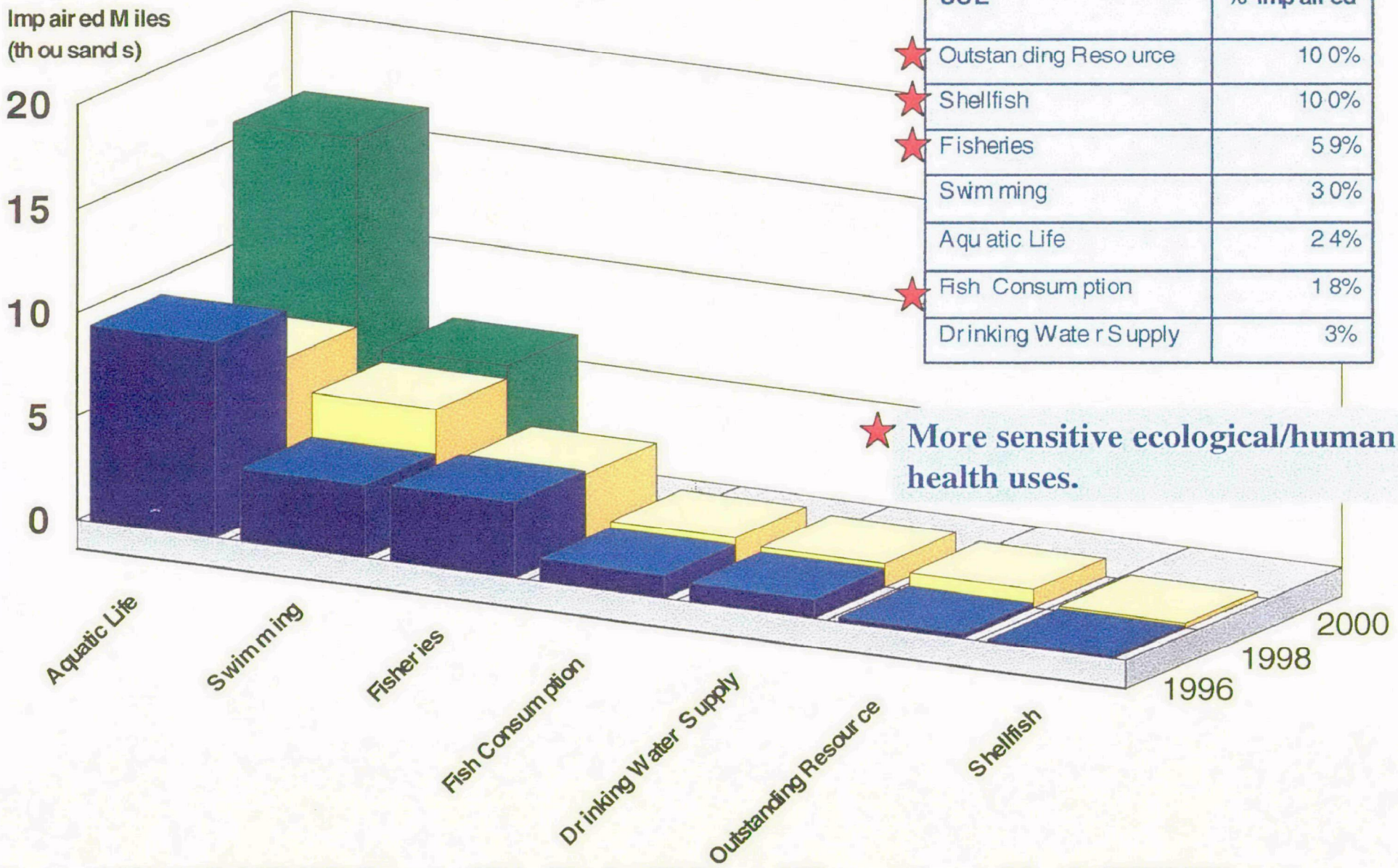
Management Recommendation

- Region III should continue to provide technical assistance to HQ.
- Region III should work w/ states to improve/expand monitoring networks.
- Mangers need to maintain awareness of air toxics data as an emerging issue.

Region III Water Quality Presentation Overview

- View Results of 3 Water Quality Assessment Cycles.
- Evaluate consistency between Assessments and TMDL listings.
- Look at how sources and stressors rank in terms of severity of impact.
- Monitoring trends/future directions.
- TMDL Challenges and the Path to Stream Restoration
- A Closer Look at 2 Top Sources.

Stream Use Impairments Show an Increase



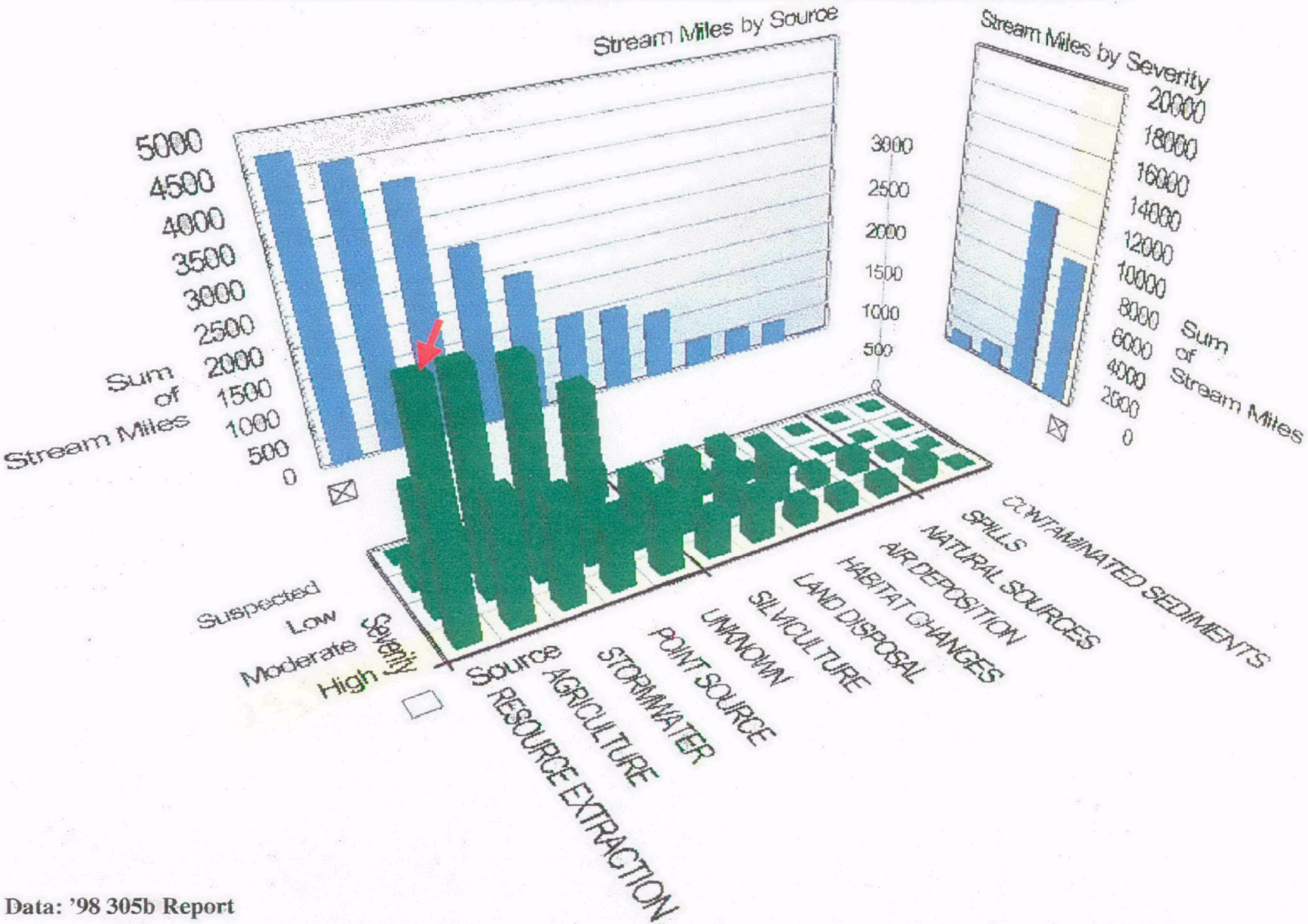
% of Assessed Miles Impaired

USE	% Impaired
★ Outstanding Resource	100%
★ Shellfish	100%
★ Fisheries	59%
Swimming	30%
Aquatic Life	24%
★ Fish Consumption	18%
Drinking Water Supply	3%

★ More sensitive ecological/human health uses.

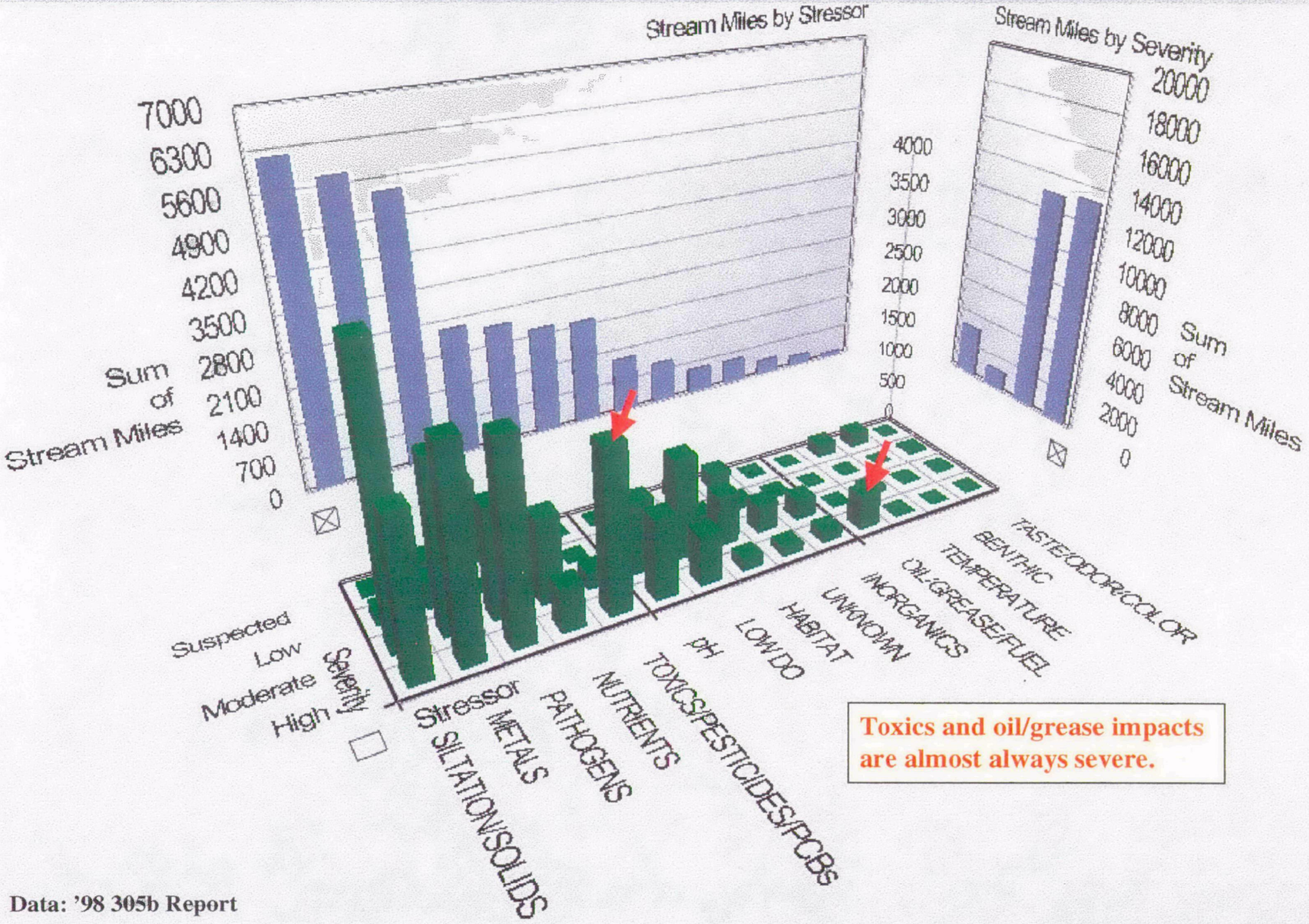
Source: 1996, 1998, 2000 305b Reports. 37% of Region III Stream Miles were Assessed for the FY'2000 Report.
Total Region III Stream Miles = 179,676.

Environmental Severity topped by Resource Extraction



Data: '98 305b Report

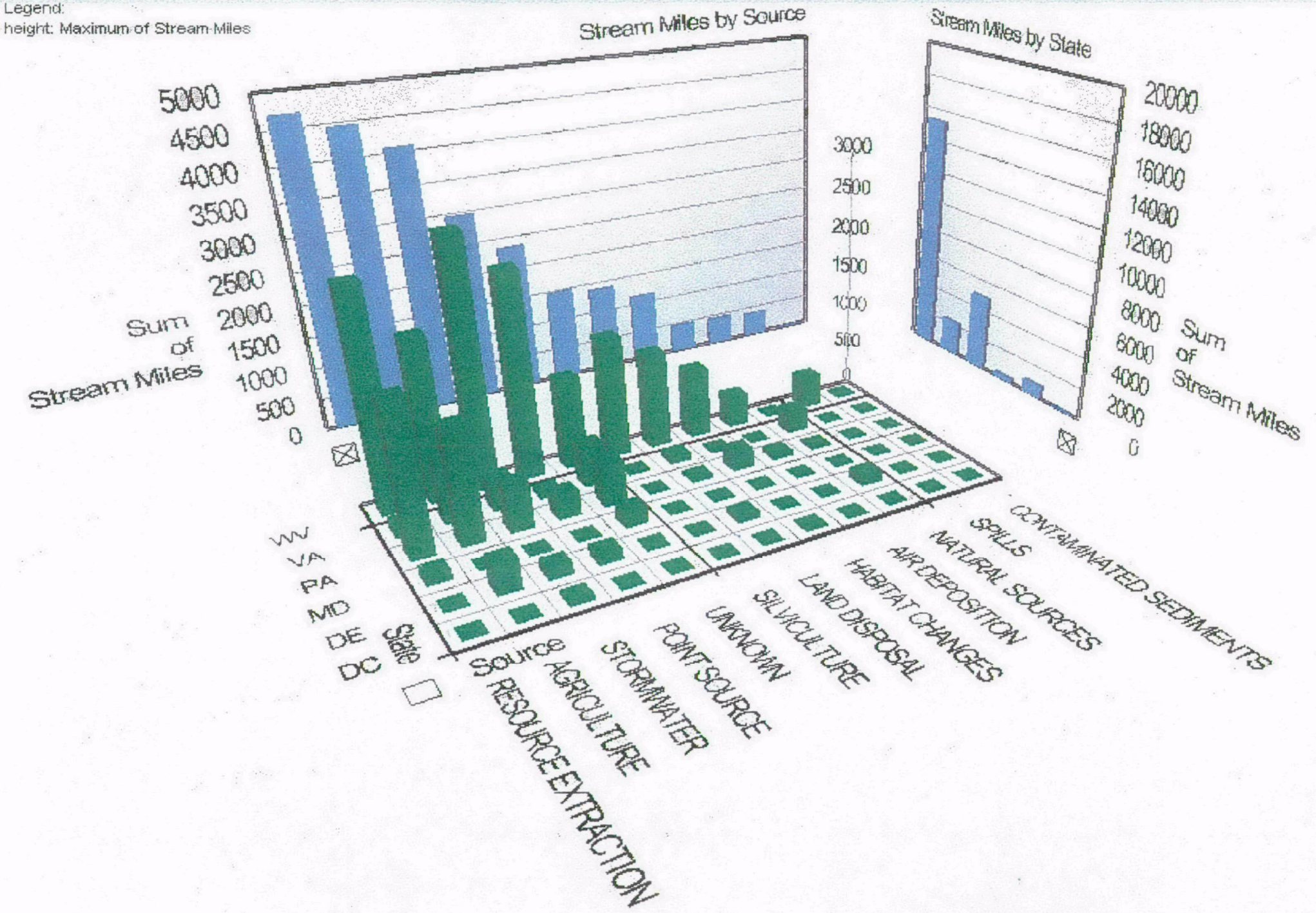
Solids, Metals, Pathogens,and Toxics Lead in Severely-Impacted Miles



Toxics and oil/grease impacts are almost always severe.

Data: '98 305b Report

1998 *305b* Sources of Stream Impairment by State



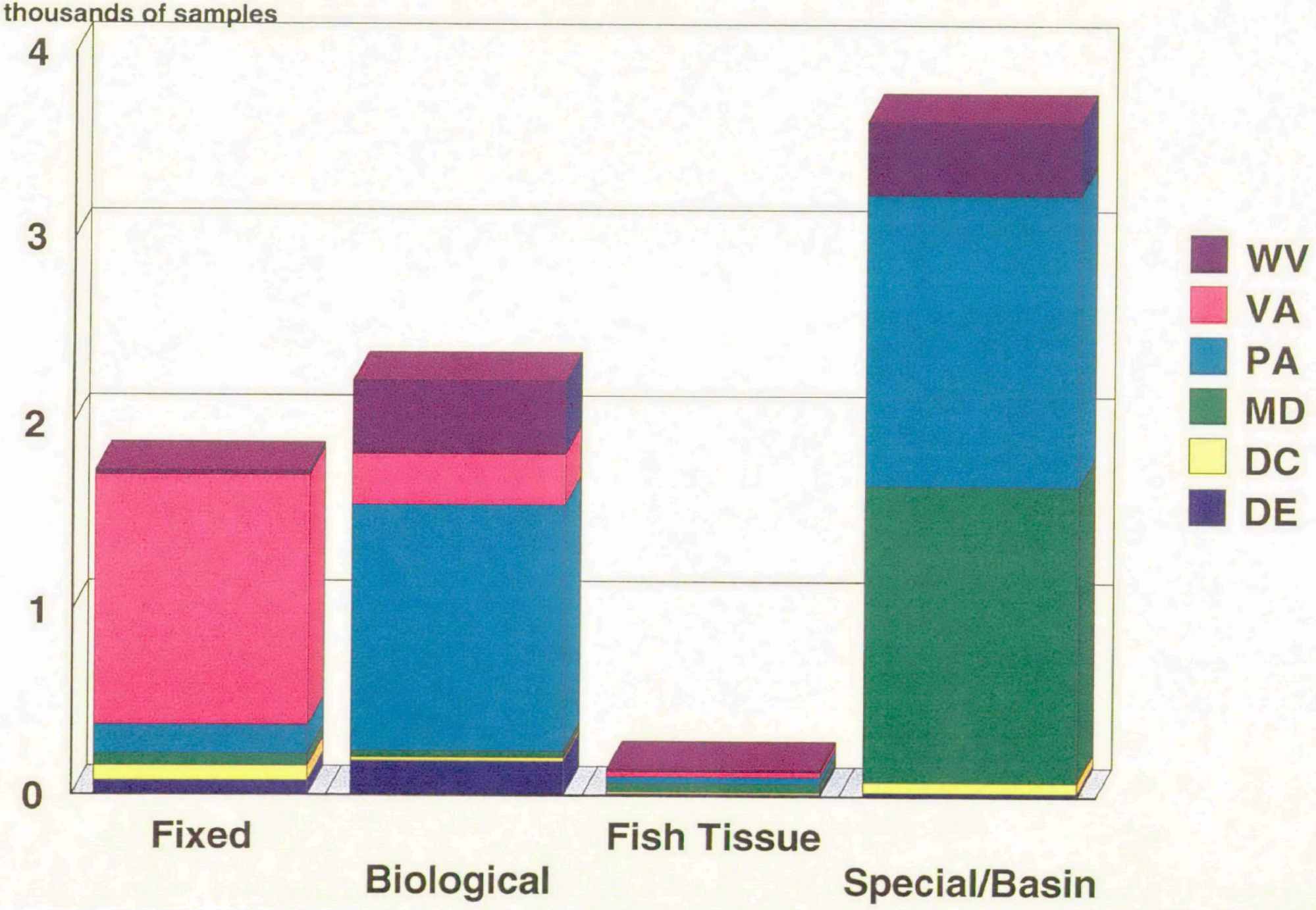
Water Quality Assessment Summary

- Designated Use Impairments Have Increased.
- More Sensitive Uses Show Highest Degree of Impairment.
- Agriculture, Stormwater and Resource Extraction are the Leading Sources in Terms of Magnitude of Impacts.
- Resource Extraction is the Leading Sources in Terms of Severely Impacted Stream Miles.
- Habitat Loss is Increasing in Impact and Significance.
- Toxics Impacts have Increased and are Typically Severe.
- Contaminated Sediments Harbor Significant Toxics But are Rarely Identified as Sources of Stream Impairment .

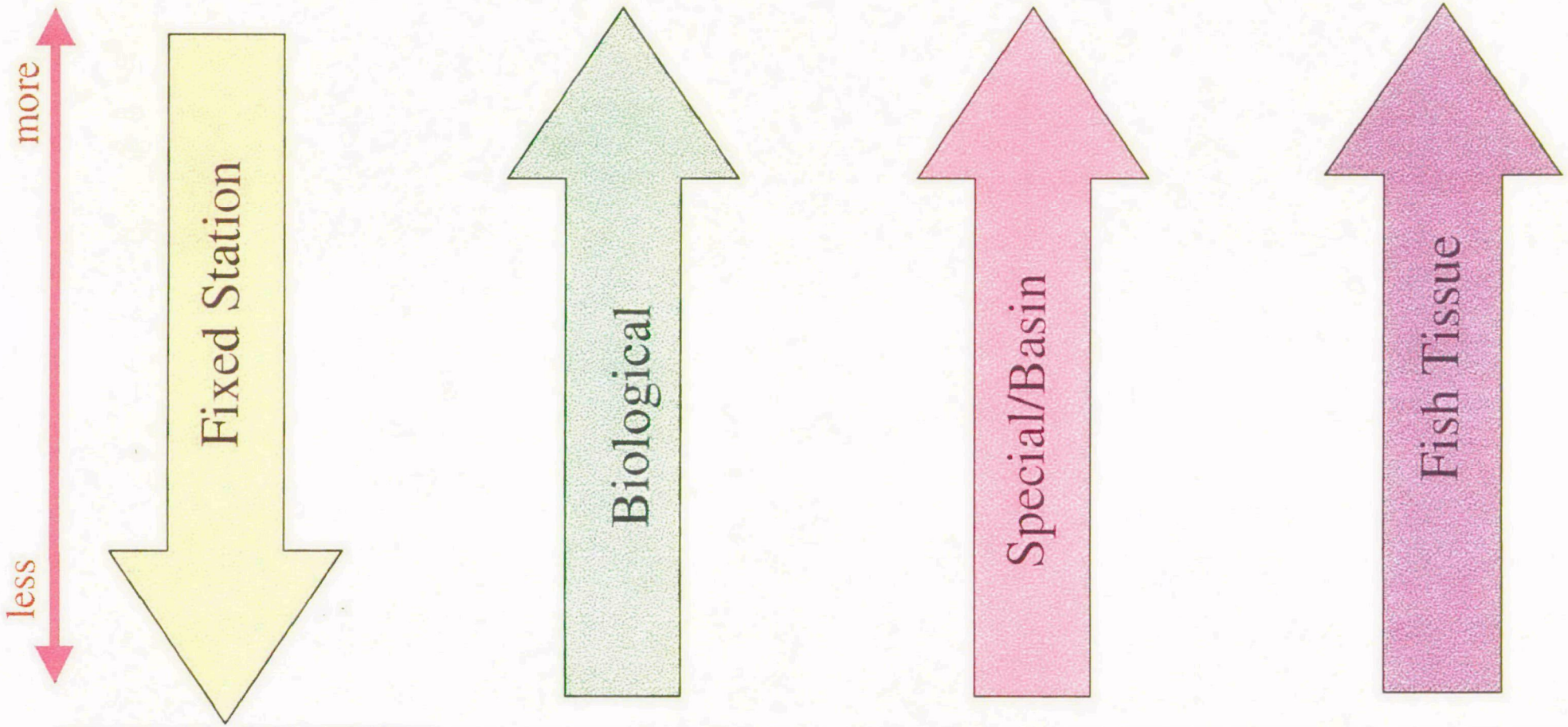
Water Quality Monitoring

Fish Tissue Monitoring Severely Lags Other Types

(Critical for Identifying Toxics Contamination)



Overall State Water Quality Monitoring Trends



Fixed Station	Biological	Special/Basin	Fish Tissue
Provides long-term trends of conventional pollutants	Provides data for 303d/TMDL and watershed plans	Provides data for 303d/TMDL and watershed plans	Provides data for issuing fish consumption advisories

* Based on Personal Interviews.

The results of better monitoring are not always good news:

Maryland's Recent Biological/Probabilistic Stream Results* Show:

- Trout never found when upstream impervious land cover exceeds 2%. *(Sprawl, Habitat)*
- At 15% impervious cover, stream quality is never good. *(Sprawl, Habitat)*
- 52% of all MD stream miles have poor quality physical habitat - loss of riparian buffer from development activities. *(Sprawl, Habitat)*
- Acid rain impacts nearly 20% of MD streams. *(Acidification)*
- Based on the more sensitive fish and benthic data:

  12% of all stream miles are in good condition.
  88% are fair or poor.

*** REMAP Project with MD DNR, EPA Region III, MAIA and ORD.**

Mid-Atlantic Highlands Assessment - Key Messages:

- 31% of stream miles in poor condition for fish populations. *(Sprawl, Habitat)*

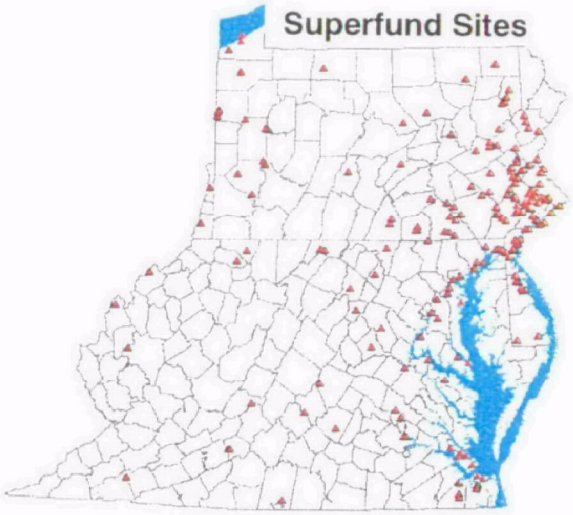
- Habitat destruction is the main stressor throughout the Highlands. *(Sprawl, Habitat)*

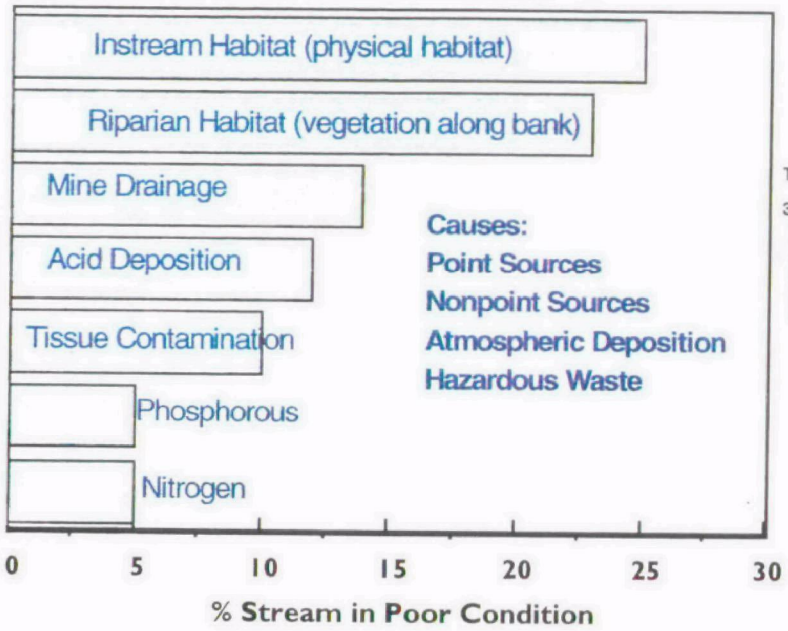
- Habitat loss is occurring in and along the streams removing the ecologically critical riparian (streamside) habitat. *(Sprawl, Habitat)*

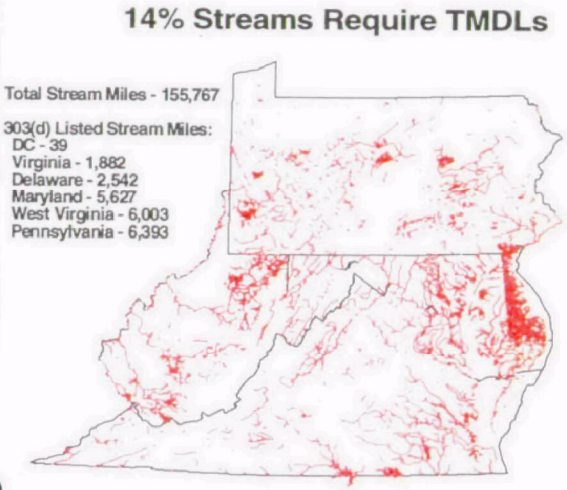
- In PA and WV the main stressors identified are:
  - Habitat Loss
  - Sedimentation
  - Acid Mine Drainage
  - Acid Deposition
  - Fish Tissue Contamination
  - Non-Indigenous Species

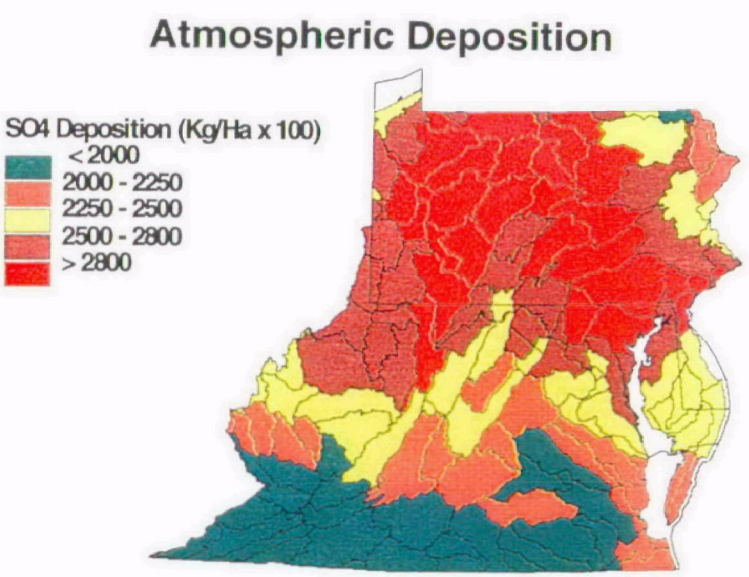
  } *(Sprawl, Habitat, acidification, toxics)*

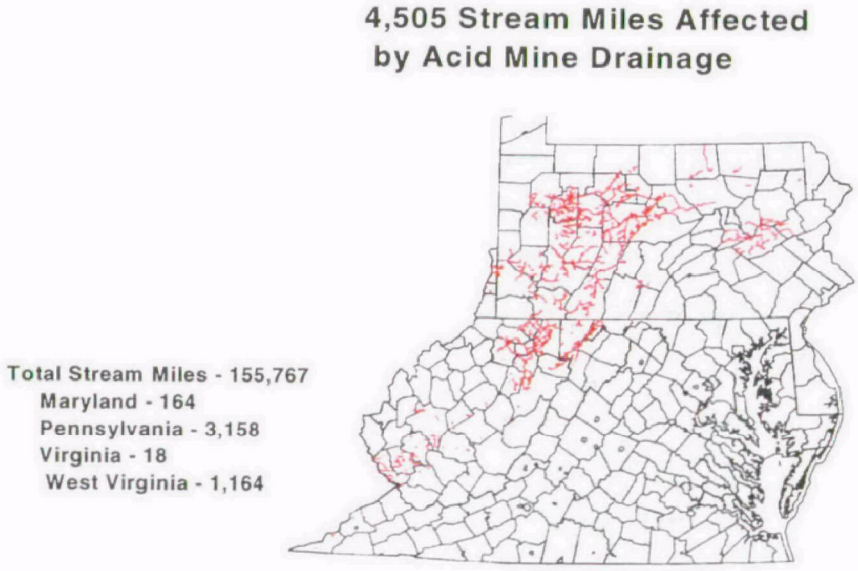
Habitat Destruction is a Major Stressor of Streams











What are Invasive Species?

- Thousands of foreign plant and animal species have become established beyond original range
  - Crops
  - Game animals
  - Many are beneficial
- Nonindigenous Species
  - Species outside their historic range
  - Intentional & unintentional
- Invasive Species
  - Population levels unchecked
  - Threaten natives and ecosystems

Vertebrates

- Sea lamprey
- Walking catfish
- Alewife
- Common carp
- Lake trout

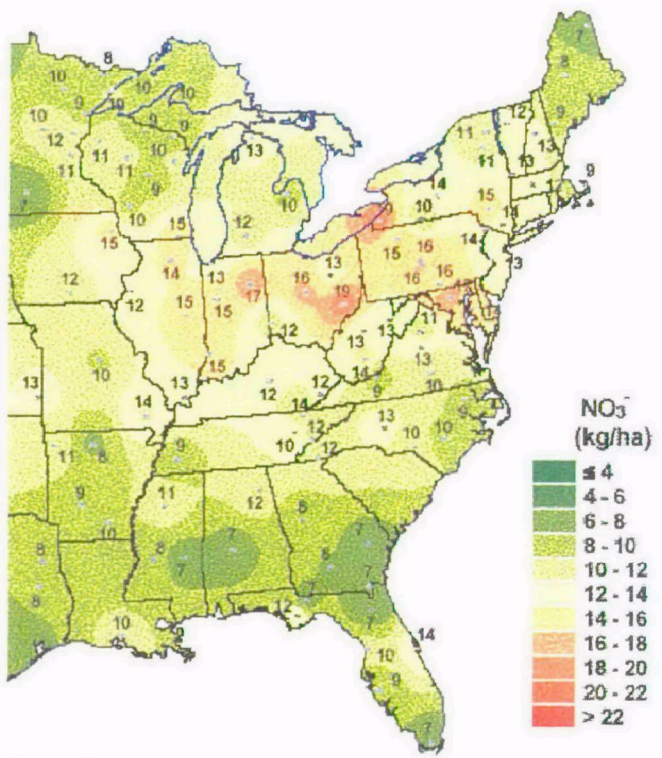
Invertebrates

- Formosan termite
- Fire ant
- Africanized honeybee
- Honeybee mites
- European green crab
- Zebra mussel
- Asian clam

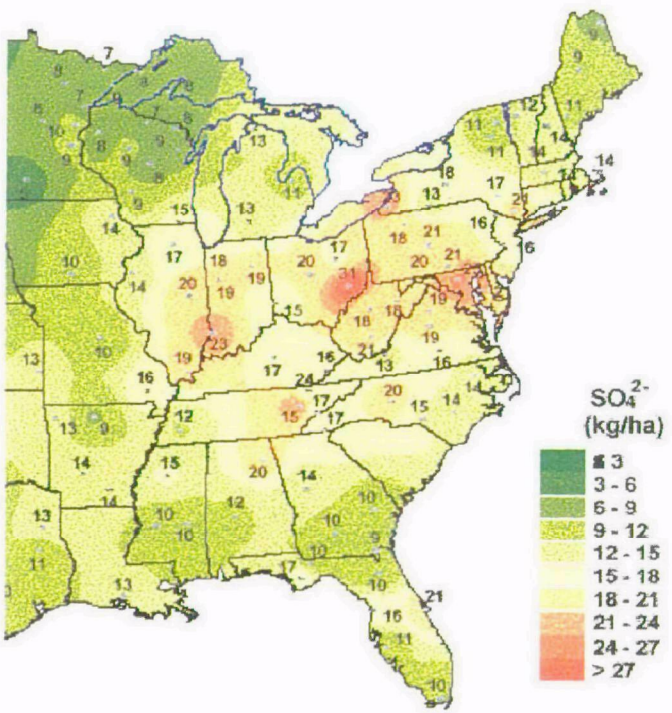
Acid Deposition Continues to Affect the Region

Impact of Nitrogen and Sulfur

Estimated nitrate deposition, 1999

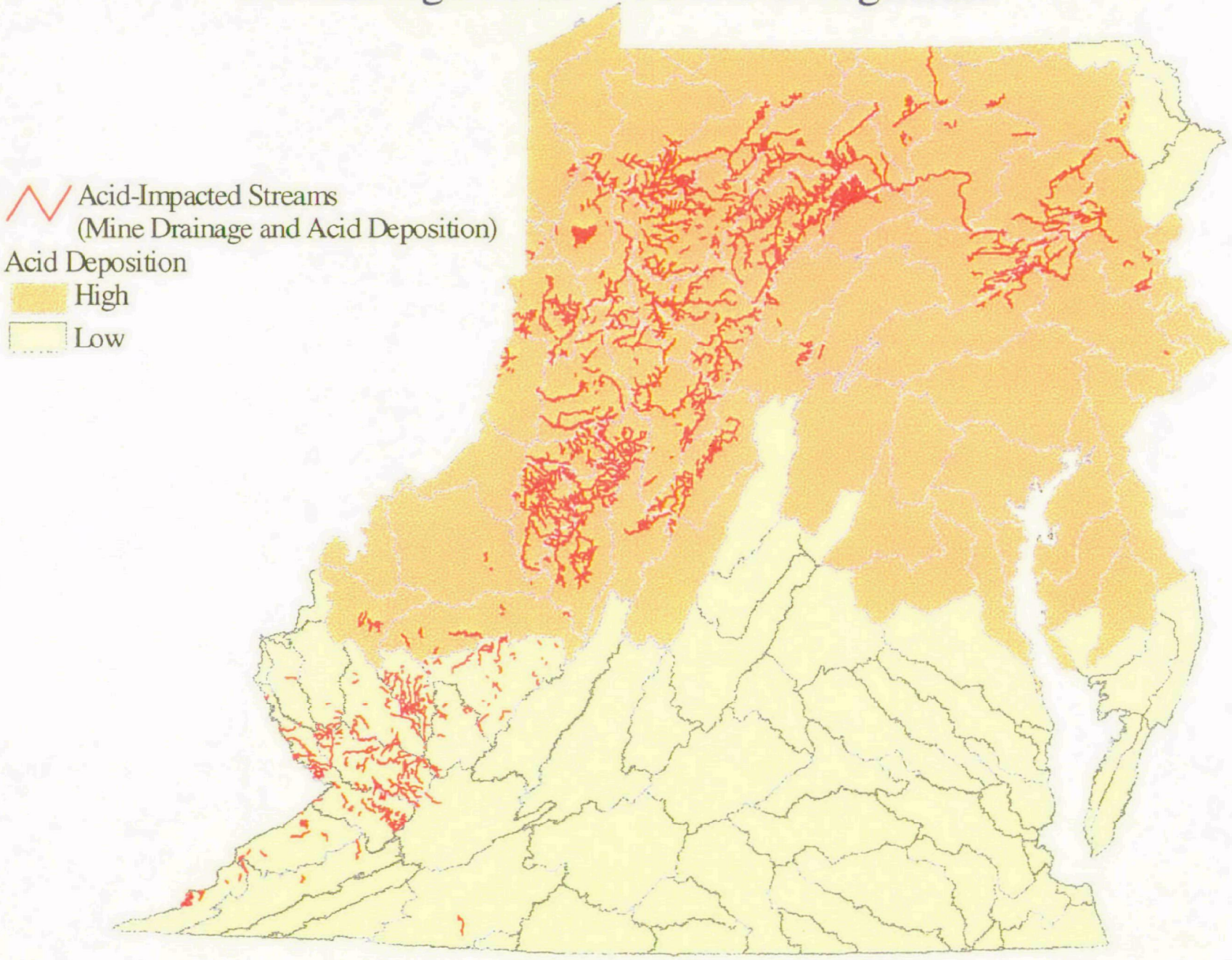


Estimated sulfate ion deposition, 1999

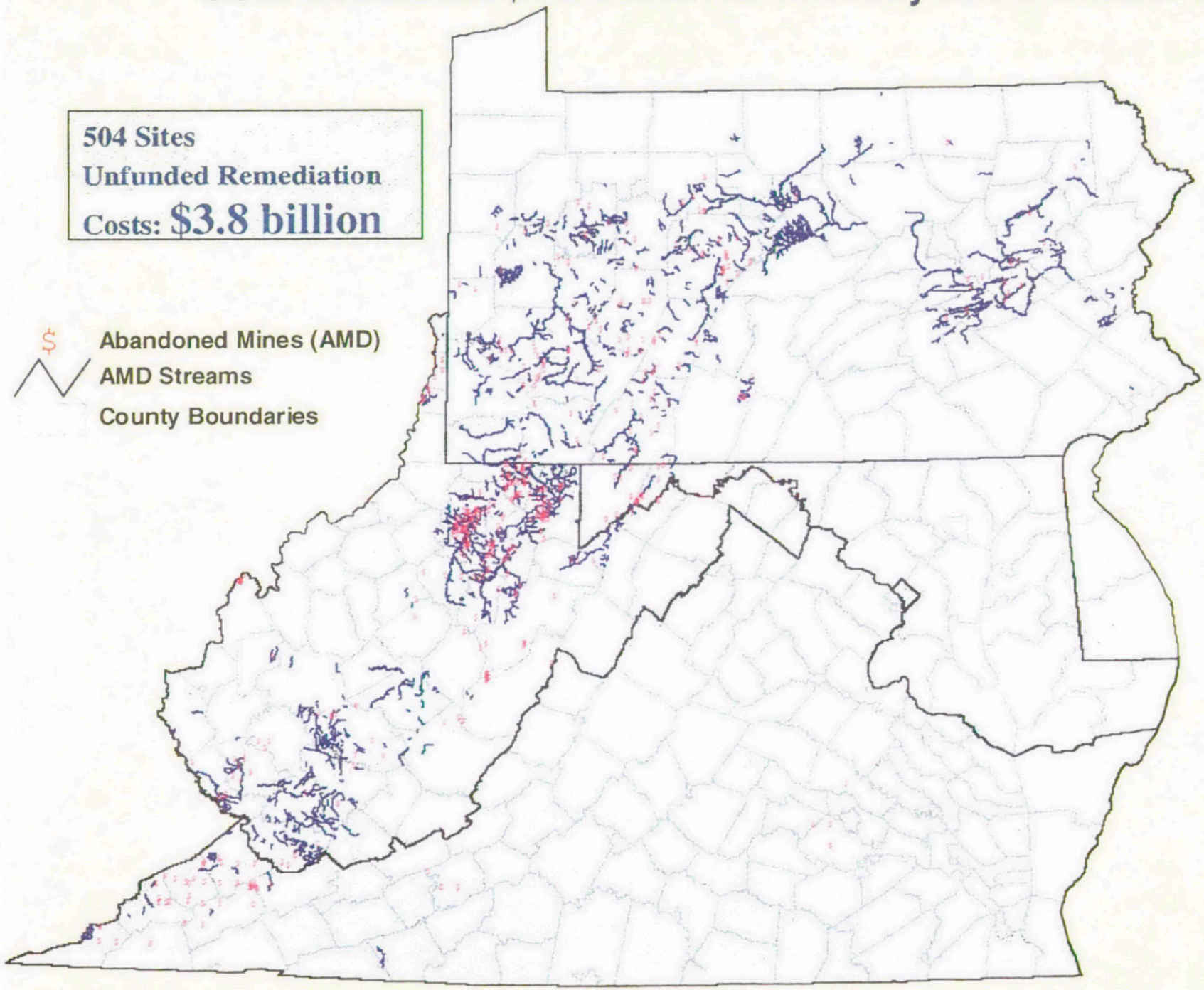


National Atmospheric Deposition Program/National Trends Network
http://nadp.sws.uiuc.edu

Acid Deposition and Acid Mine Drainage Remain Significant Problems in Region III



OSM Estimates $3.8 billion to Remedy Known AMD Sites

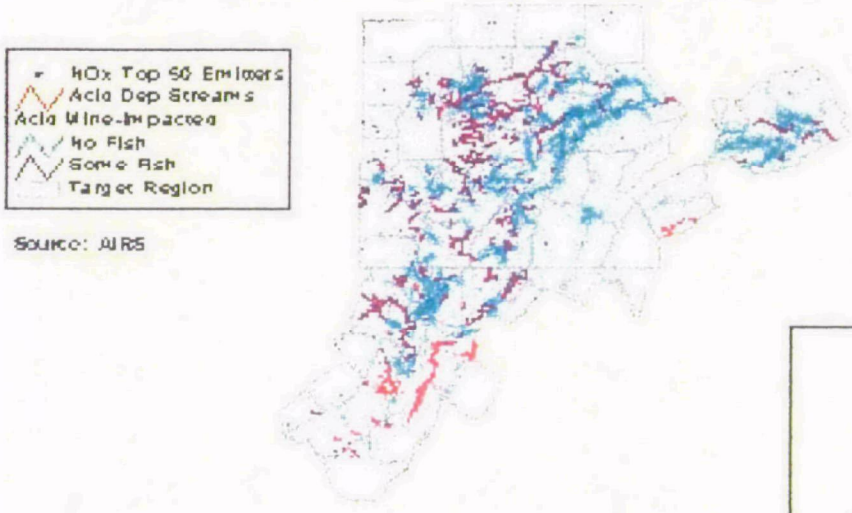


Source: U.S. Office of Surface Mining Abandoned Mine Lands Inventory System (AMLIS)

Proposal: Targeting Air Inspections to Reduce Acid Impacts

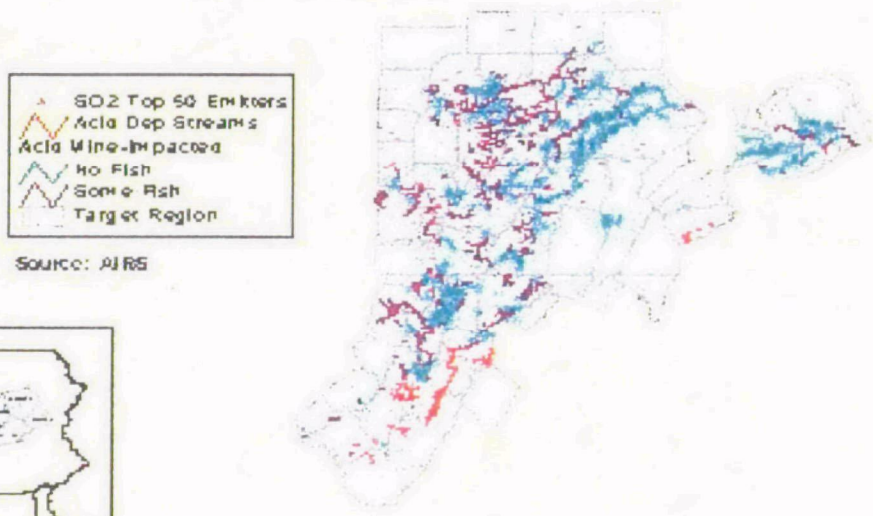
Acidification RAP - 2001 Proposed Focus Areas

Top 50 NOx Emitters



Source: AIRS

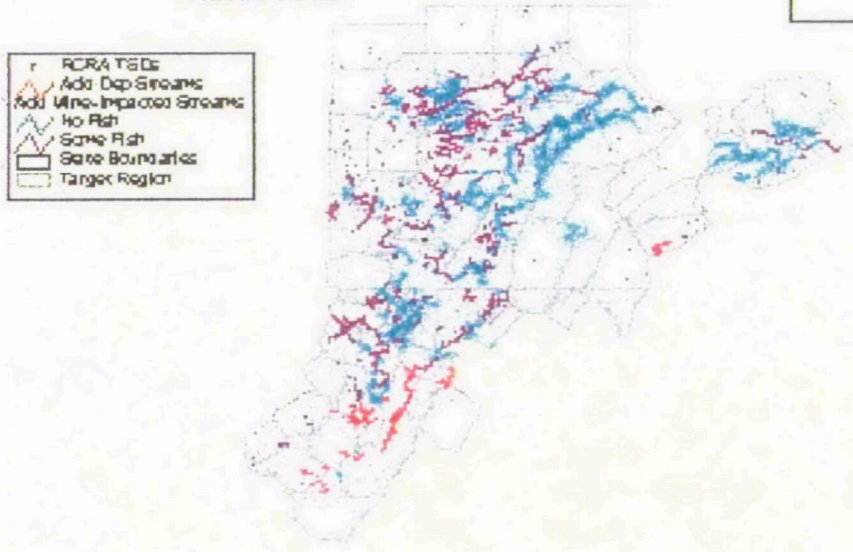
Top 50 SO2 Emitters



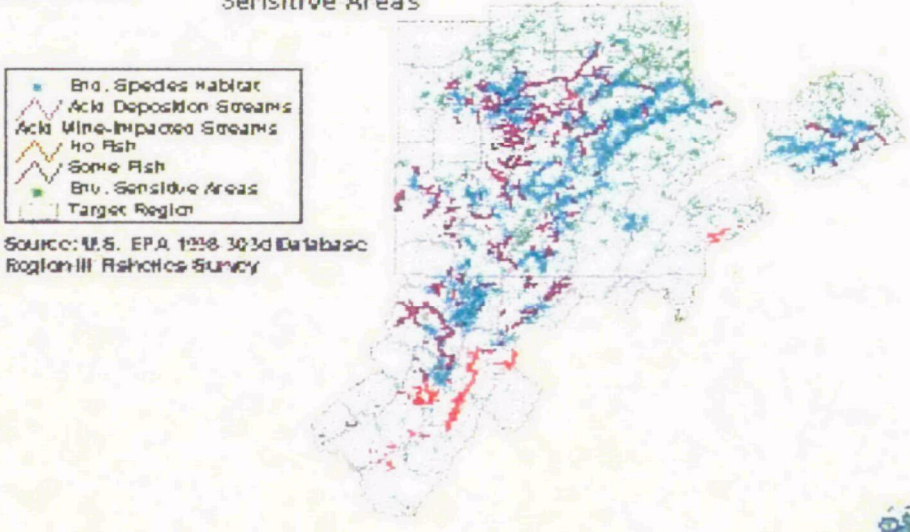
Source: AIRS

Focus Area

RCRA TSDs



Acid-Impacted Streams and Environmentally Sensitive Areas

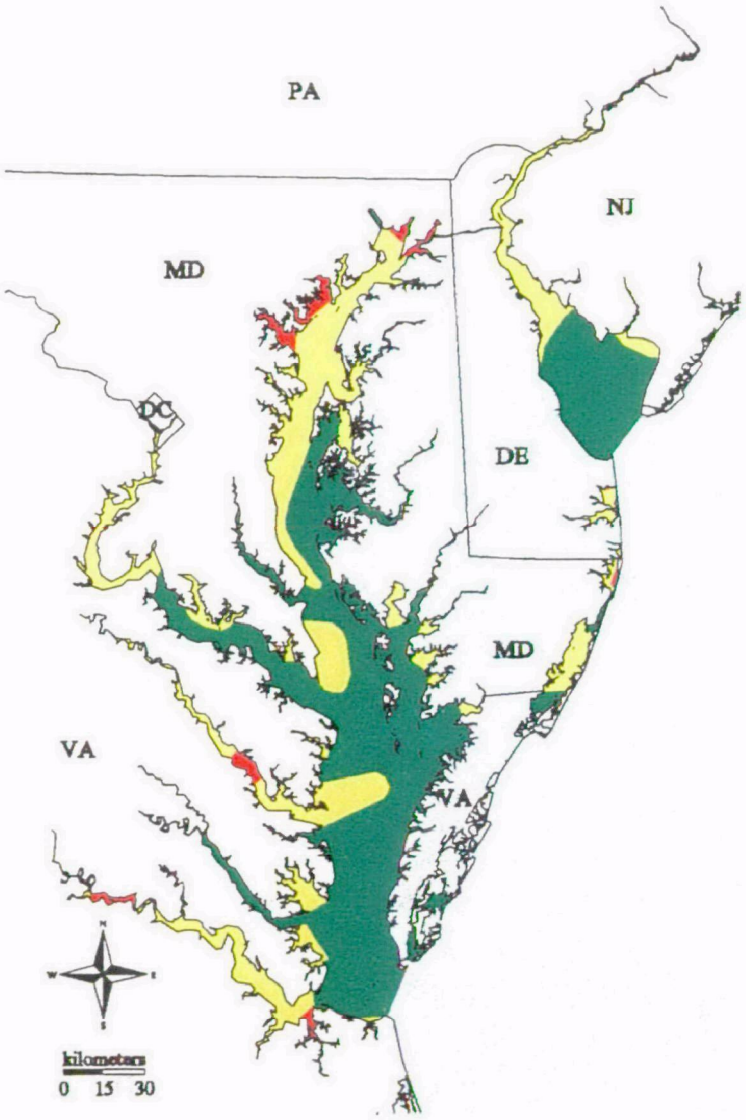


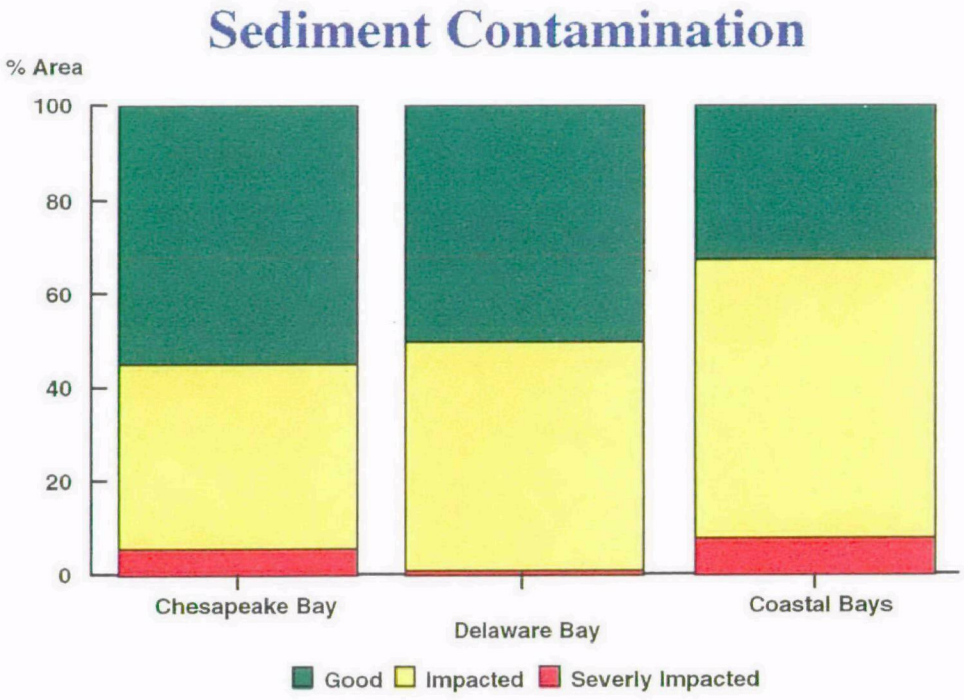
Source: U.S. EPA 1998 303d Database
Region III Fisheries Survey

Region III watersheds contain contaminated sediment

Some are recommended for Superfund clean up

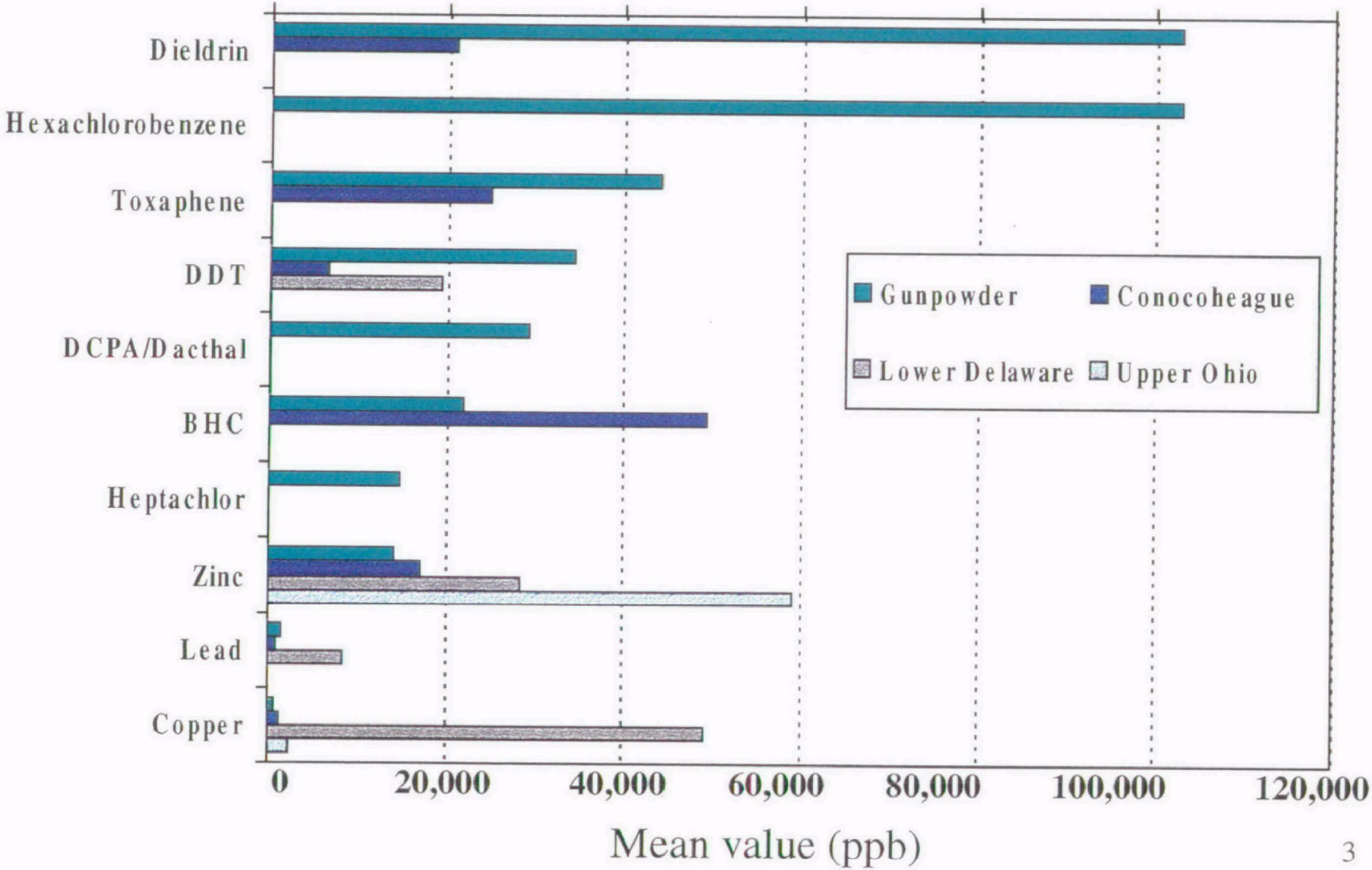
Sediment Contamination Widespread in the Estuaries





Pesticides and Metals Pervade the Sediments

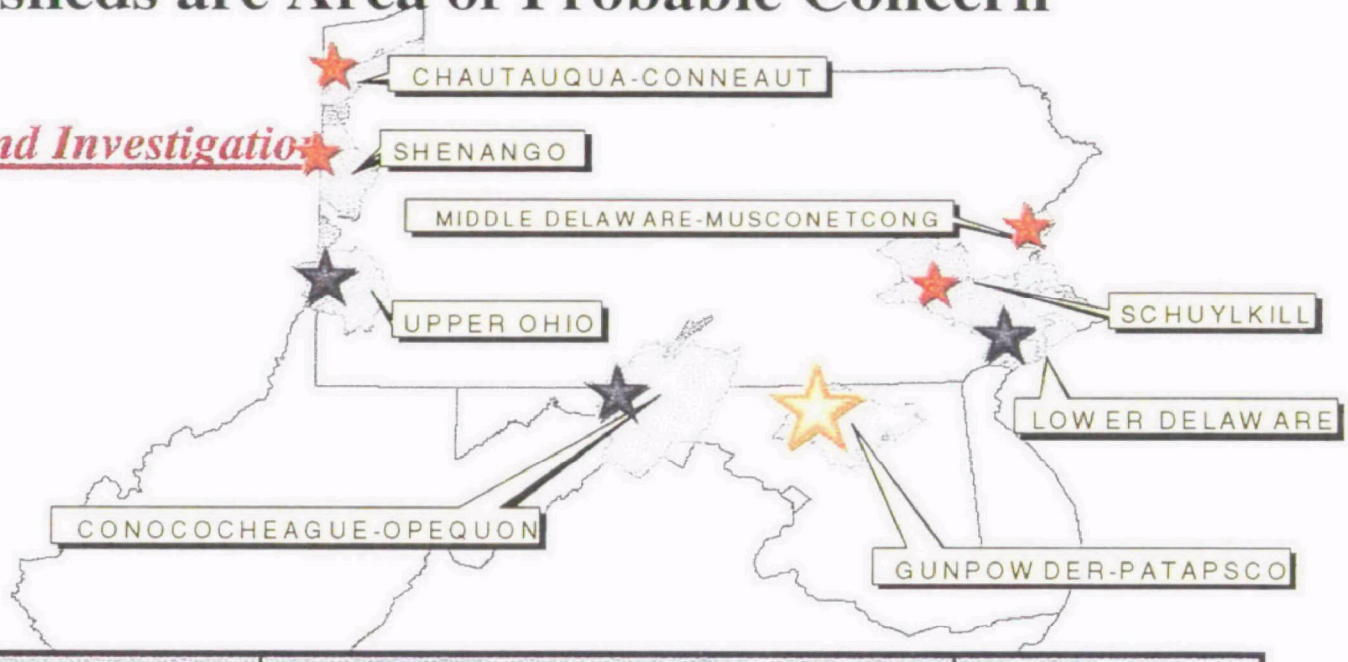
Tissue Residue Chemical Summary



Eight R3 Watersheds are Area of Probable Concern

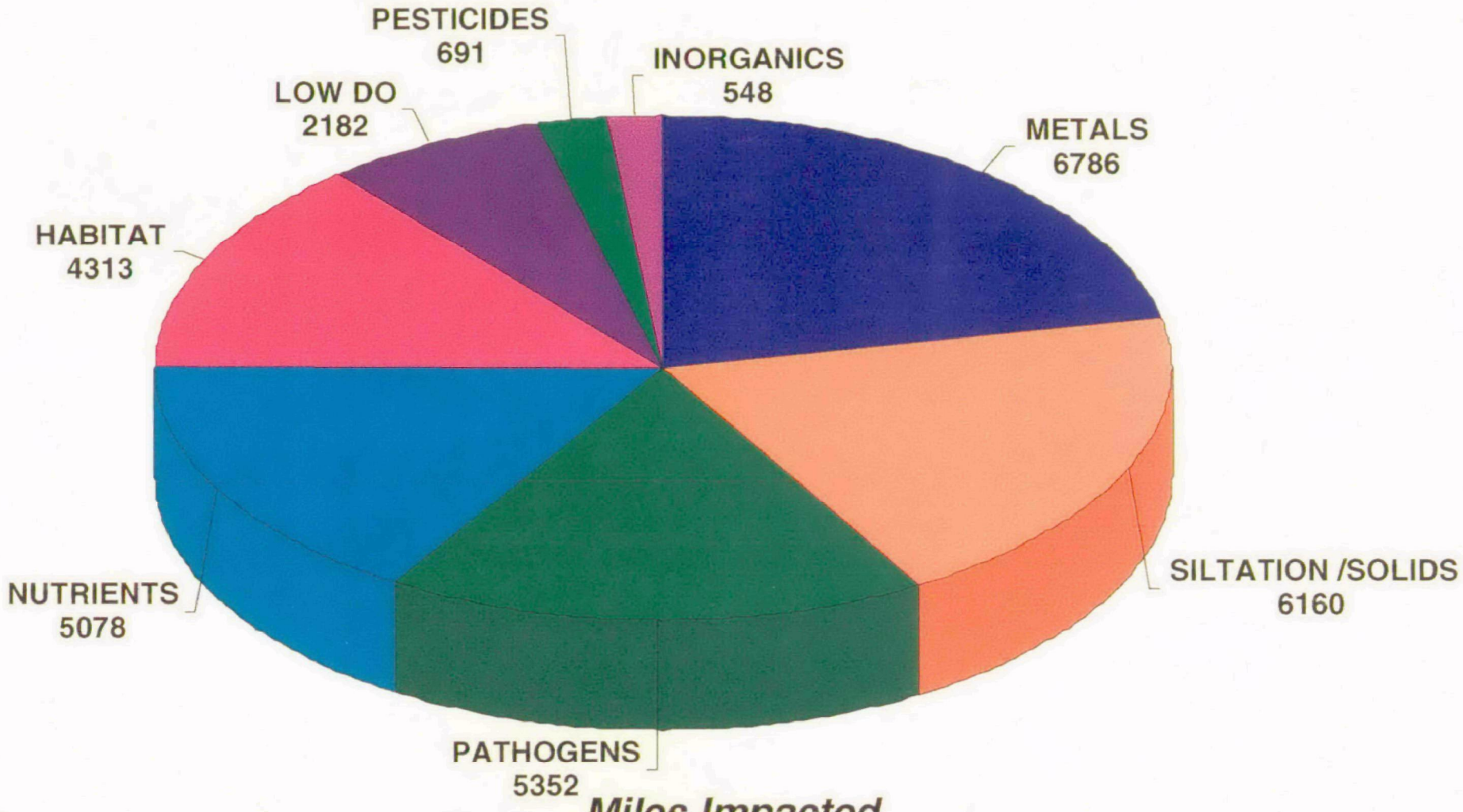
Four Candidates for Super fund Investigation

- Very Good
- Good
- Not strong



Chautauqua-Conneaut	•Marginal human health issues •Some potential ecological concerns w/ PAHs & metals	•Marginal human health effects •Potential ecological effect at higher trophic levels	Not strong
Gunpowder-Patapsco	•No human health issues •Significant ecological concerns w/ PAHs & metals	•Significant pesticides issues for human health & ecological receptors	Very Good
Lower Delaware	•Few human health issues •Some ecological concerns w/ PAHs & PCBs	•Some human health concern w/ metal, pesticides & PCBs •Some ecological issues w/pesticides & mercury	Good
Conococheague-Opequon	•No human health issues •Possible ecological concerns	•Significant human health & ecological issues with pesticides	Good
Middle Delaware-Musconetcong	•Little human health issues •Some ecological concerns w/ pesticides & mercury	•Some marginal concern w/pesticides and PCBs	Not strong
Schuylkill	•No human health issues •Some ecological concerns w/ metals	•Marginal human health and ecological concerns	Not strong
Shenango	•Marginal human health & ecological issues	•Marginal human health and ecological issues.	Not strong
Upper Ohio	•Marginal human health & ecological issues	•Potentially significant human health and ecological concerns with PCBs.	Good

Agriculture-Related Pollutants/Stressors in Region III



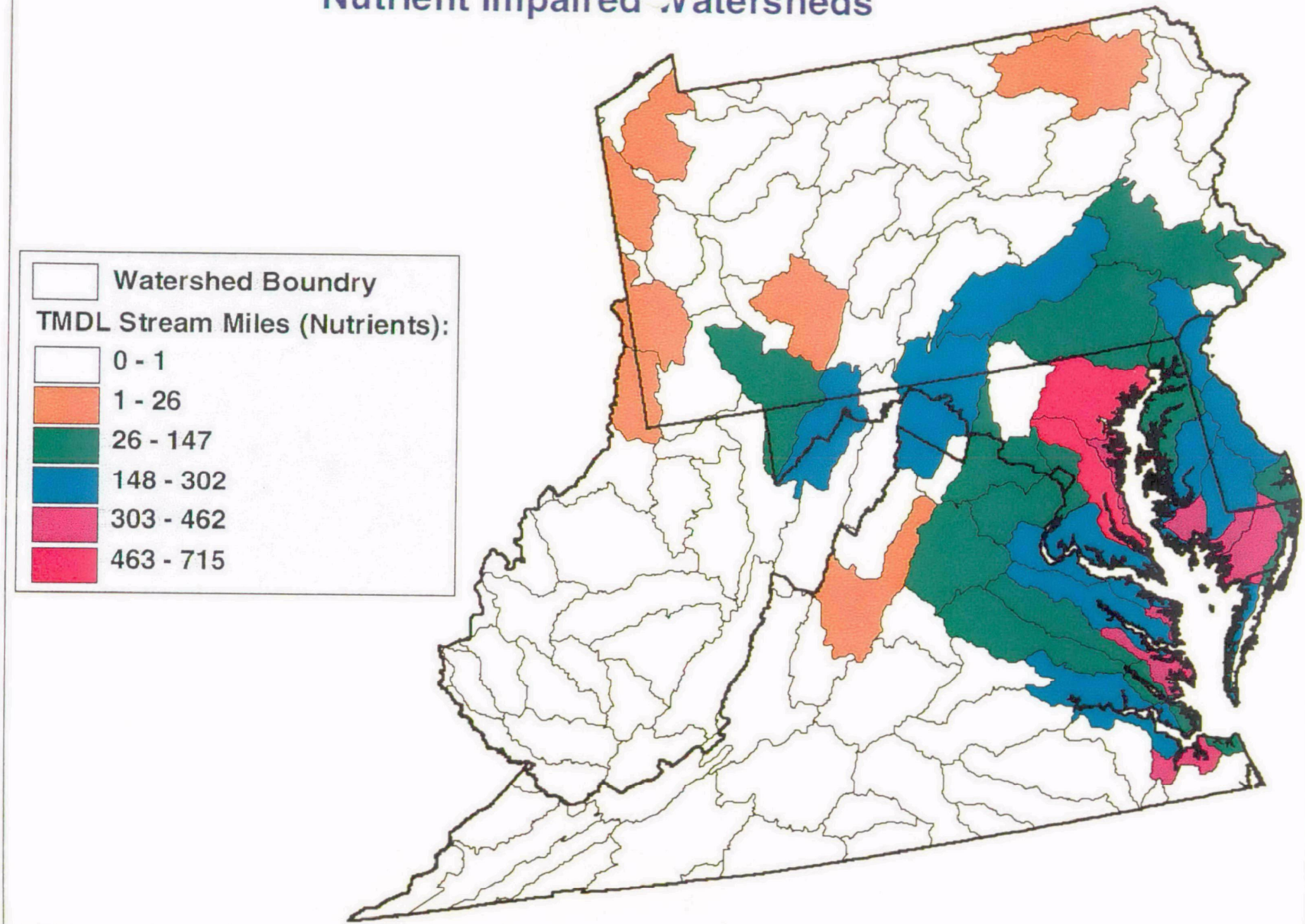
Other Ag-Related Pollutants Not Assessed:

* hormones
* antibiotics
* specific pathogens

Note: Metals primarily from mining, stormwater and point sources.

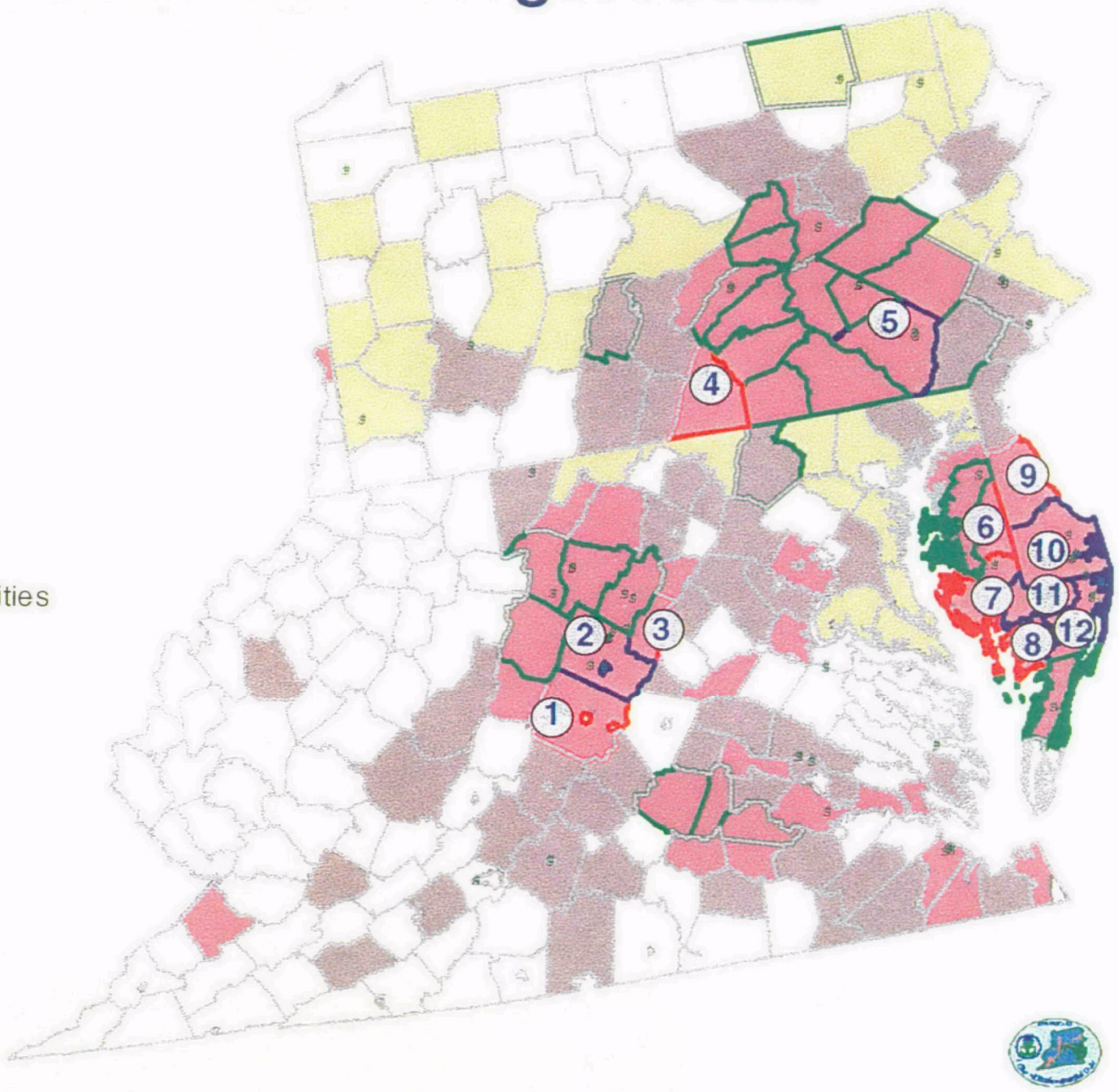
Highest reported miles by pollutant/stressor.
Based on '96, '98, '00 305b Reports and '98 303d List.

Nutrient Impaired Watersheds



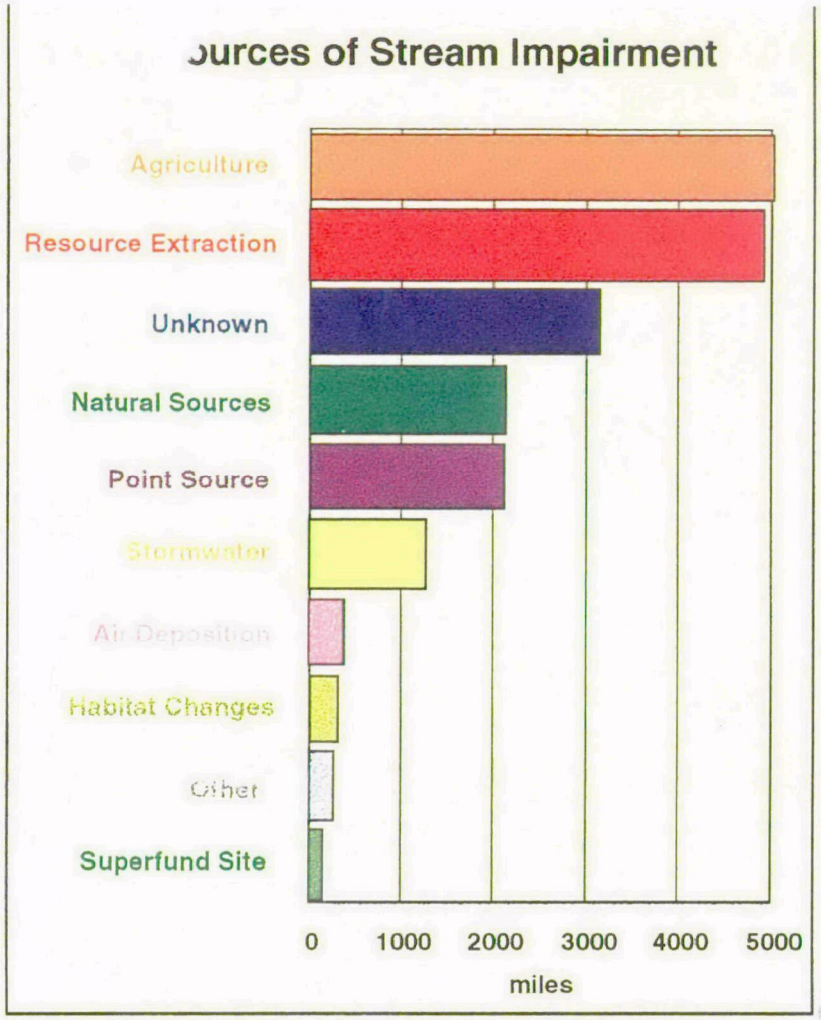
Potential AFO Target Areas

#	County	State
1	Augusta	VA
1a	Staunton	VA
1b	Waynesboro	VA
2	Rockingham	VA
2a	Harrisonburg	VA
3	Page	VA
4	Franklin	PA
5	Lancaster	PA
6	Caroline	MD
7	Dorchester	MD
8	Somerset	MD
9	Kent	DE
10	Sussex	DE
11	Wicomico	MD
12	Worcester	MD



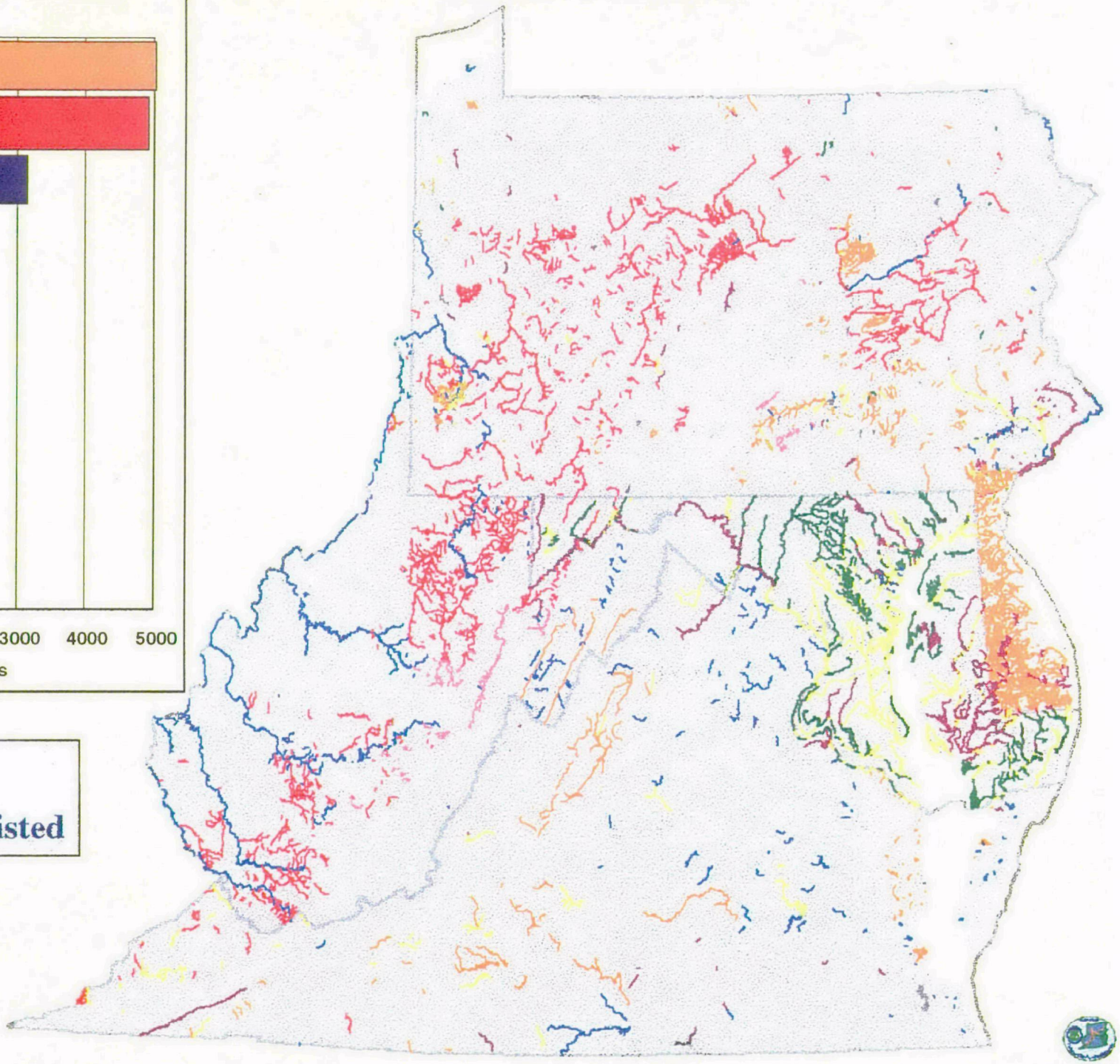
TMDLs: Implementation Issues and Stream Restoration

TMDL Sources

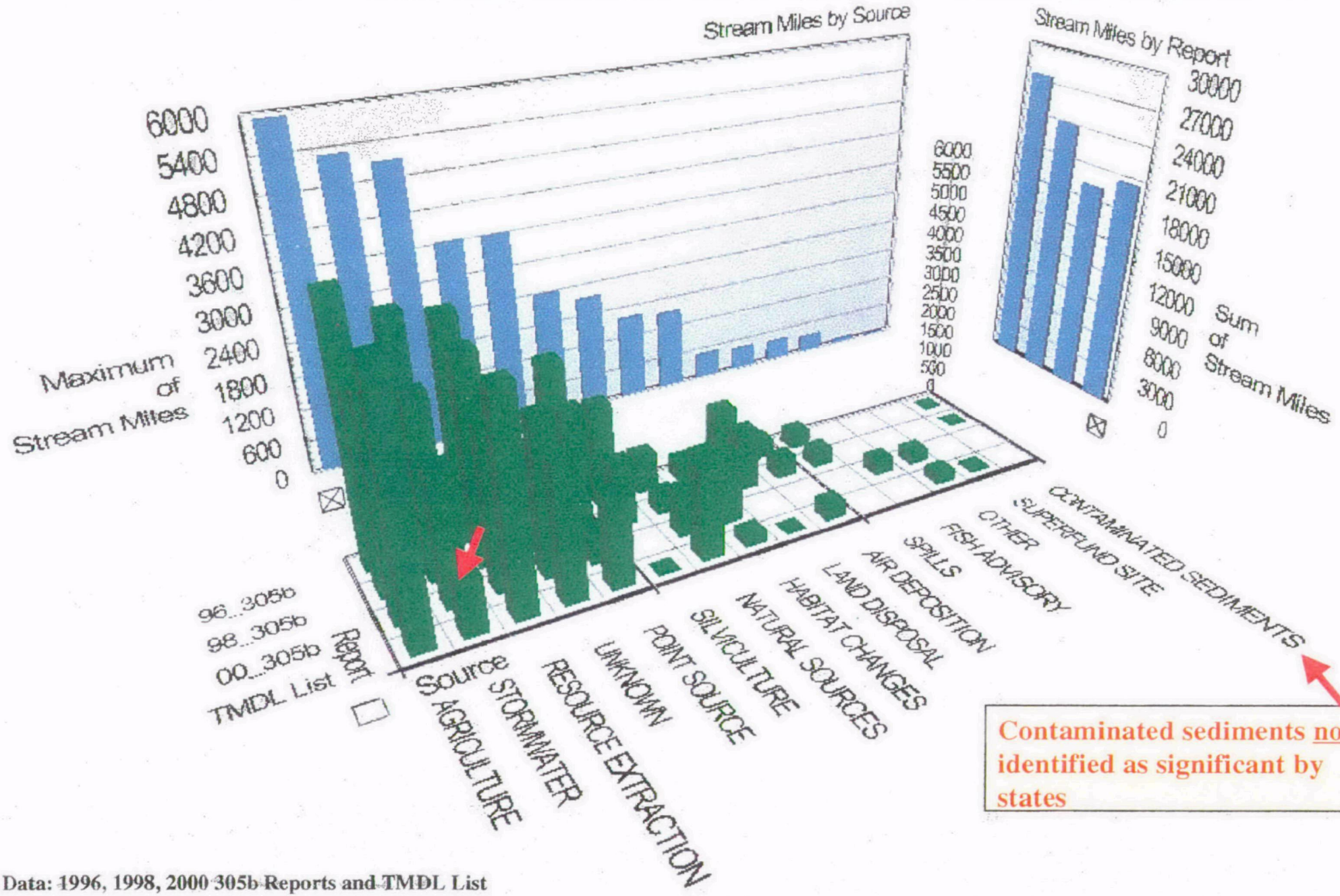


2604 Stream Listings

19,721 Stream Miles Listed

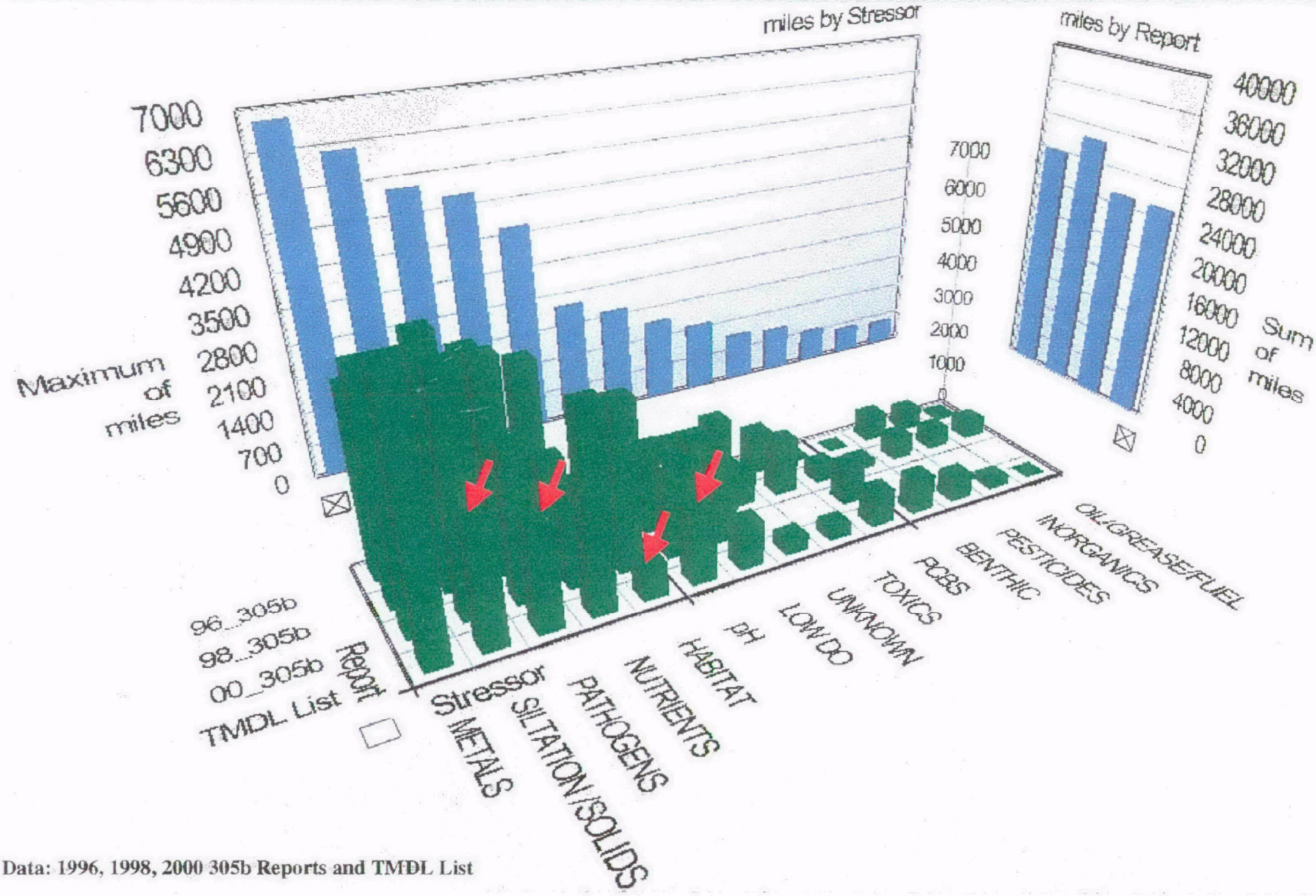


Top 3 Sources: Agriculture, Stormwater and Resource Extraction
TMDL List doesn't reflect the assessments for Stormwater

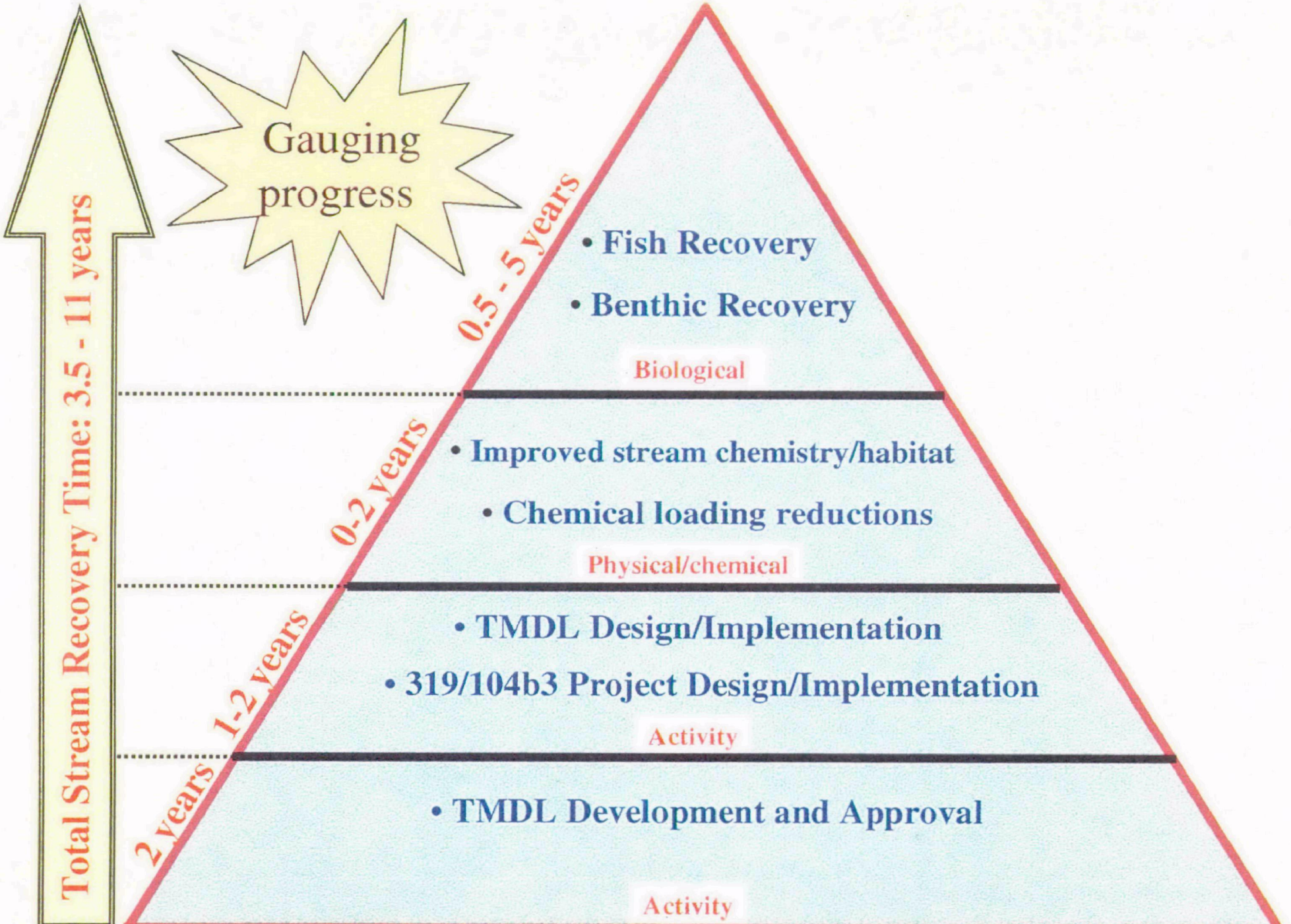


Data: 1996, 1998, 2000 305b Reports and TMDL List

Top 3 Stressors: Metals, Solids and Pathogens.
TMDL List doesn't fully reflect the assessments.

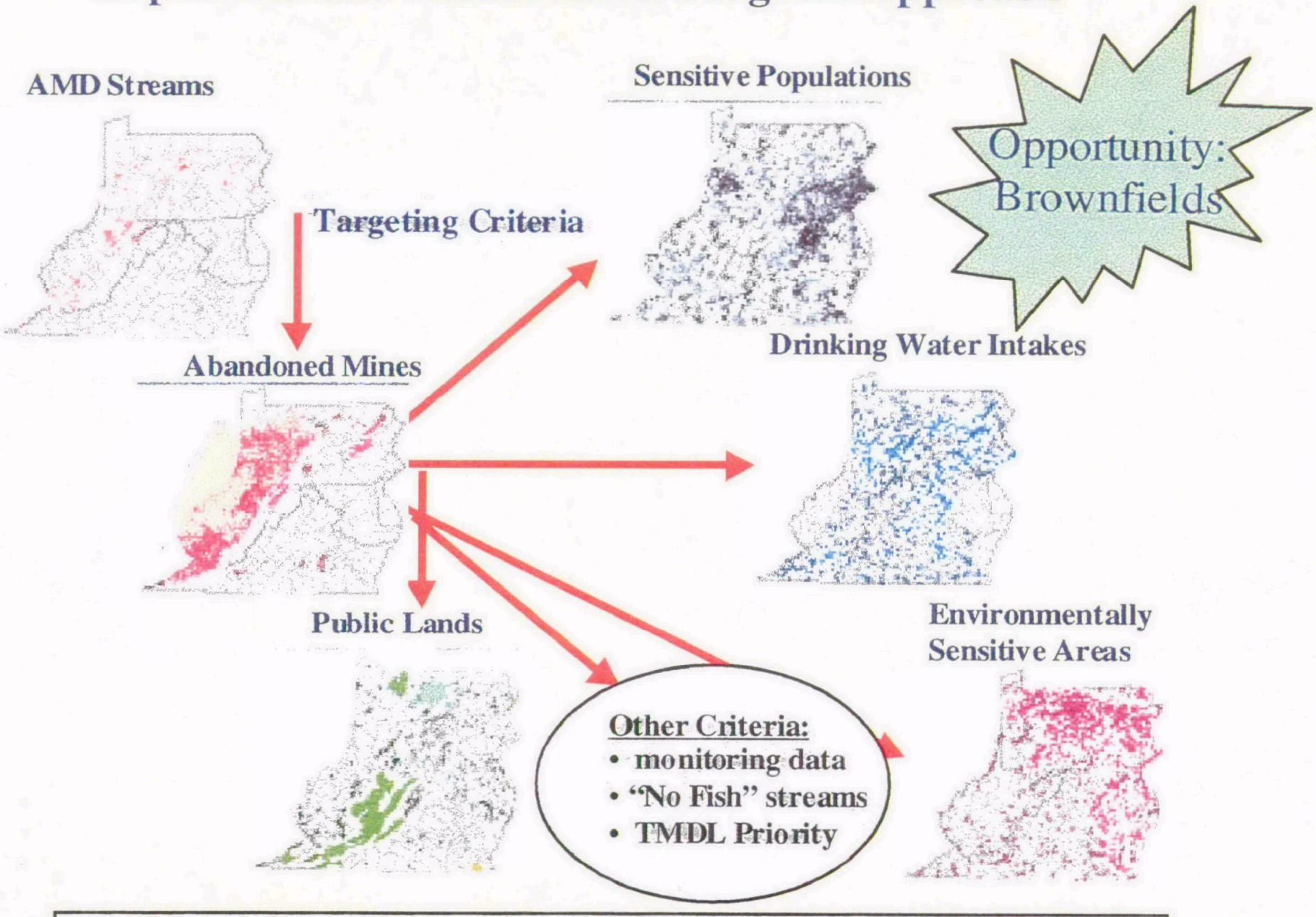


Data: 1996, 1998, 2000 305b Reports and TMDL List



Impaired Streams: Hierarchy of Progress Measures

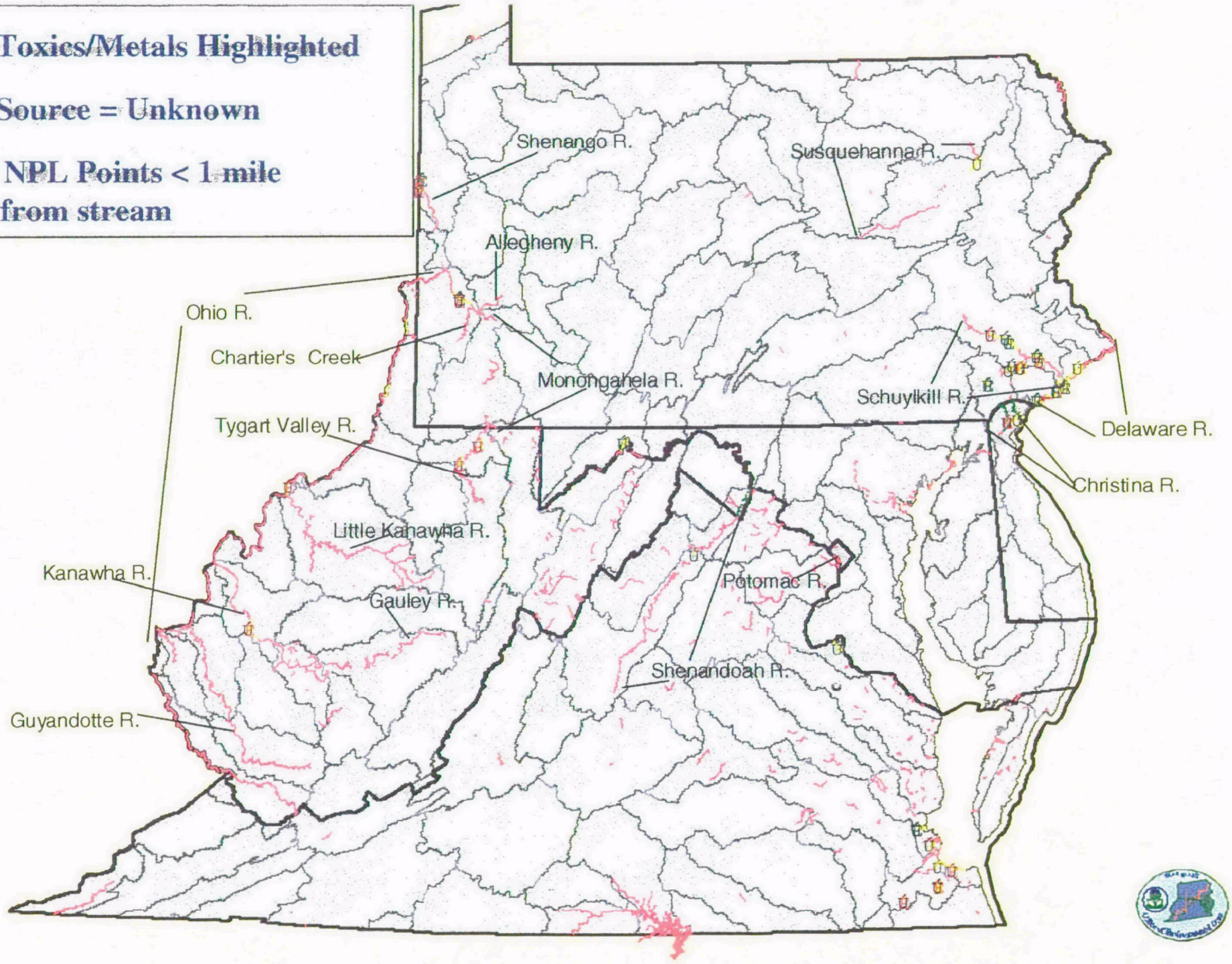
Superfund and Water: Multi-Program Approach



Currently 2 sites in PA are being assessed for CERCLA Removal and Preliminary NPL evaluation

Toxics Problems < 1 mile from NPL Sites - Use Superfund $?

- Toxics/Metals Highlighted
- Source = Unknown
- NPL Points < 1 mile from stream



TMDL Implementation Challenges

- Multi-jurisdicational waters require coordinated multi-state, multi-region efforts.
- Non-point source loads are difficult to quantify and control; Many are not regulated - abandoned mines and many AFOs.
- There are huge unfunded costs associated with acid mine drainage treatment, installation of nonpoint BMPs, and stream bank restoration.
- Sources of air toxics deposition often very difficult to identify.
- Contaminated sediments very expensive to remediate.
- Significant and costly follow-up monitoring is required to track and verify stream improvements.

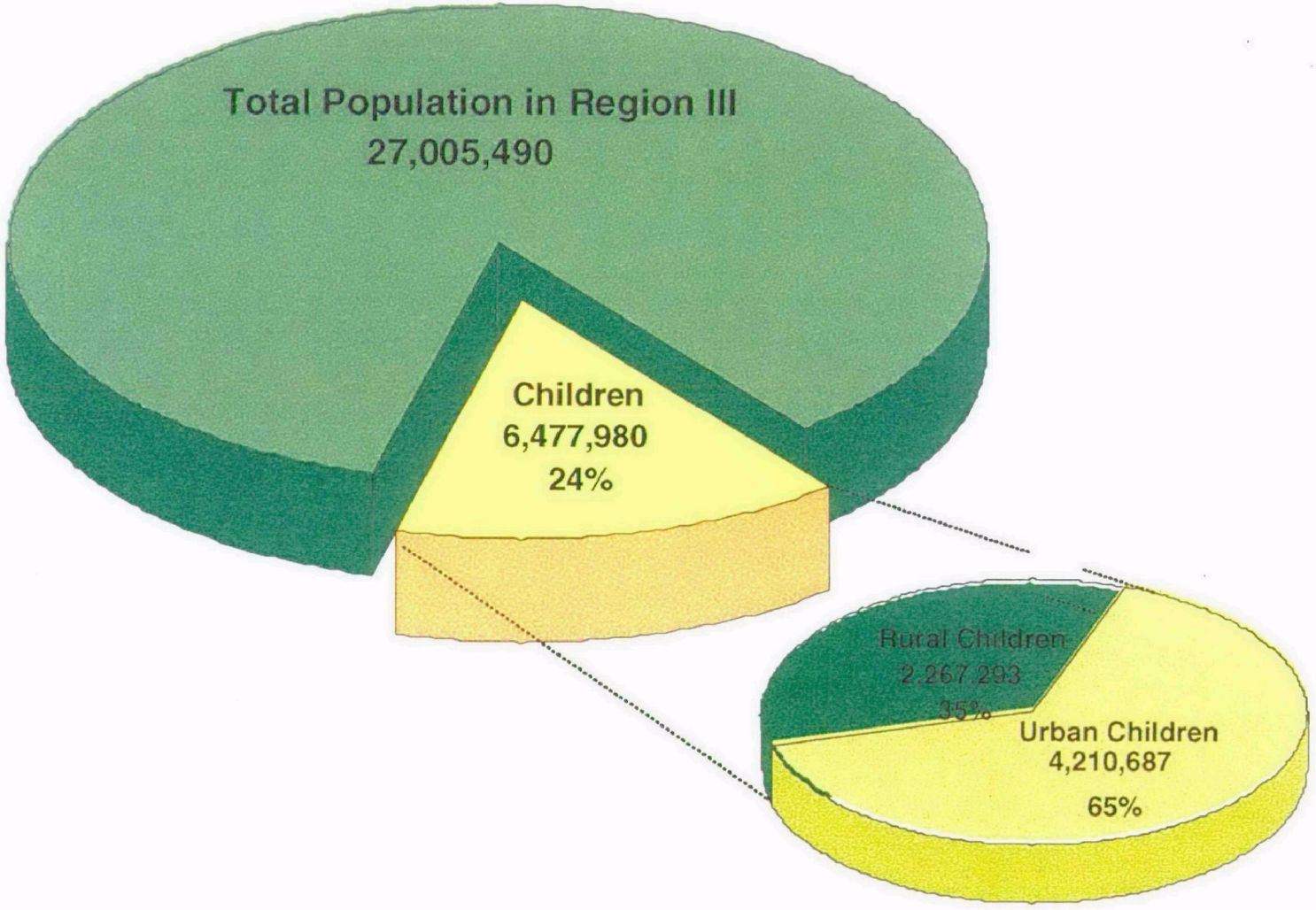
Region III Water Quality

Management Recommendations:

- Increase the level biological/fish tissue monitoring.
- Improve consistency between water quality assessments and TMDL listings for sources and pollutants/stressors.
- Retain the acidification priority.
- Increase resources directed toward agriculture especially AFOs and CAFOs.
- Increase multi-program efforts toward TMDL implementation.

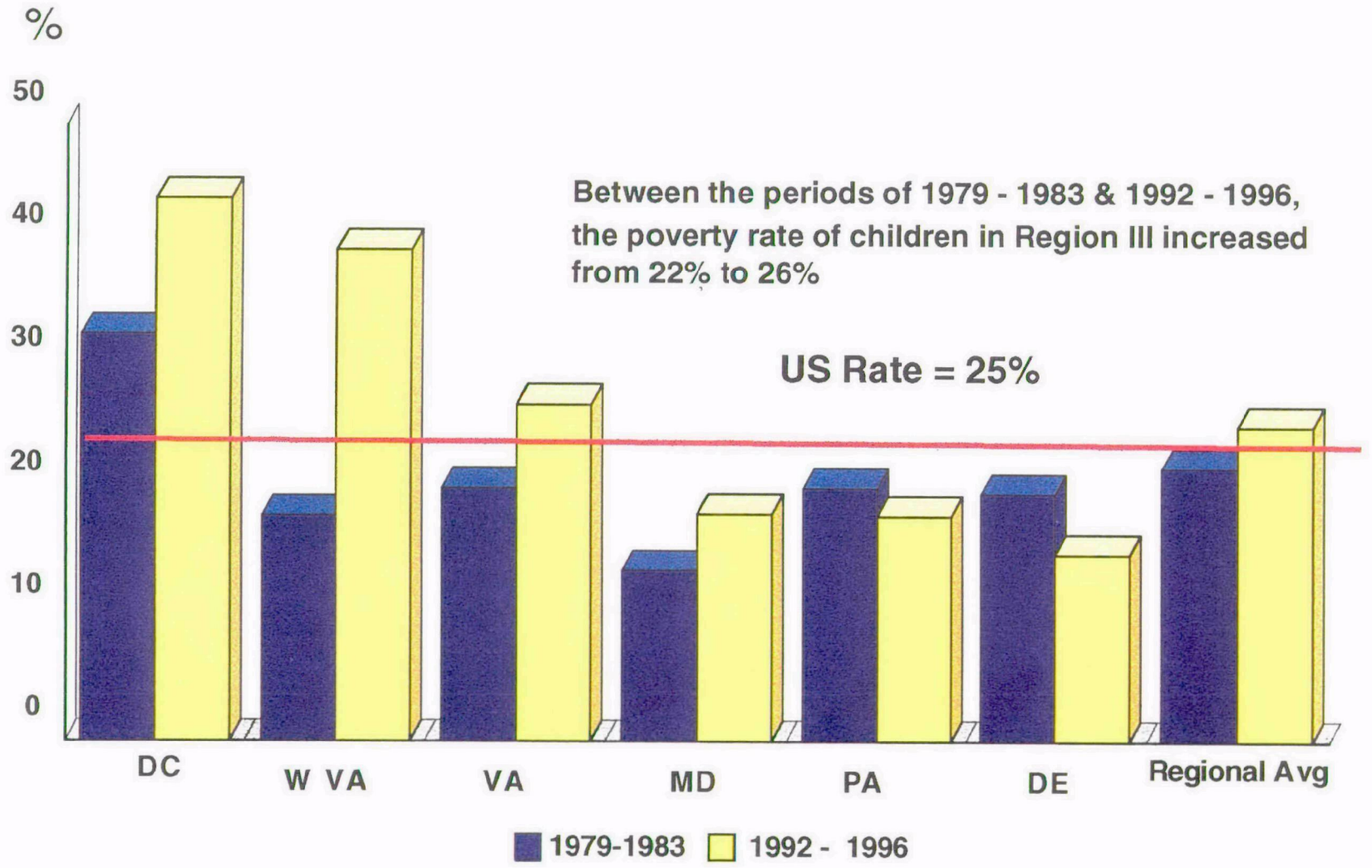
Urban Communities - Reducing the Risk

Region III's Kids



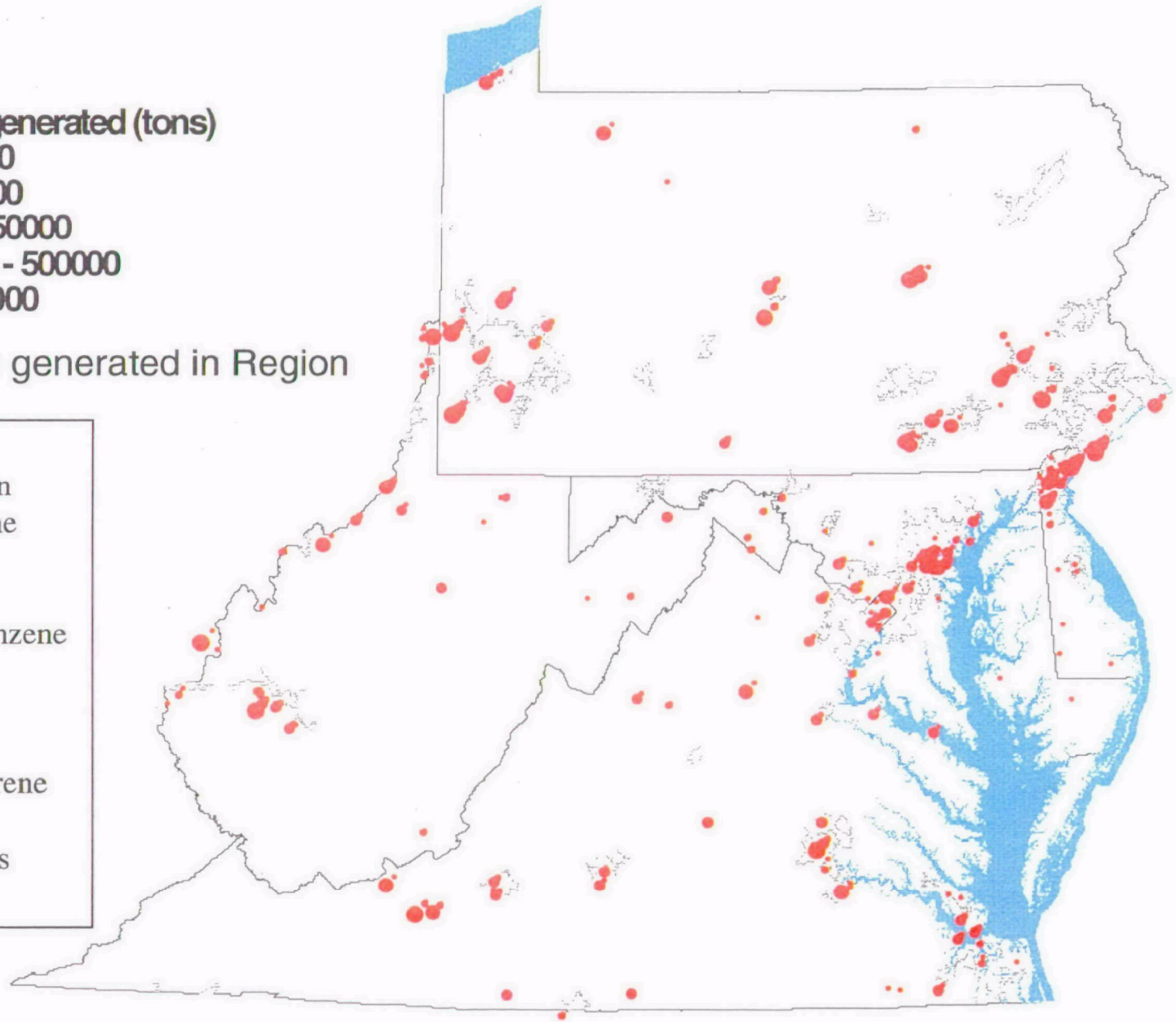
Source: US Census, 1998 estimate

The Percent of Children Living in Poverty is Increasing in Region III



Source: National Center for Children in Poverty

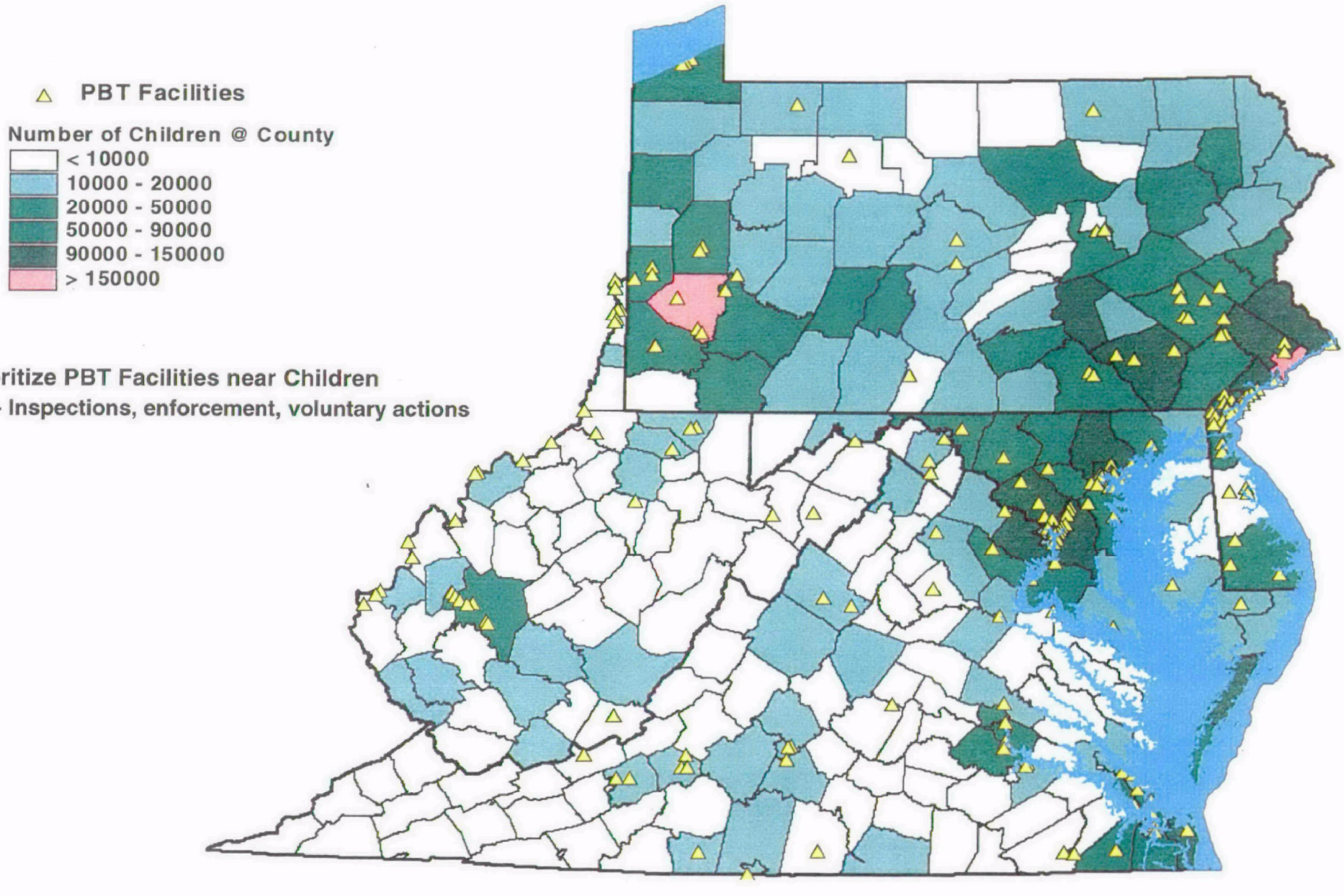
Majority of PBT Generated in Urban Areas



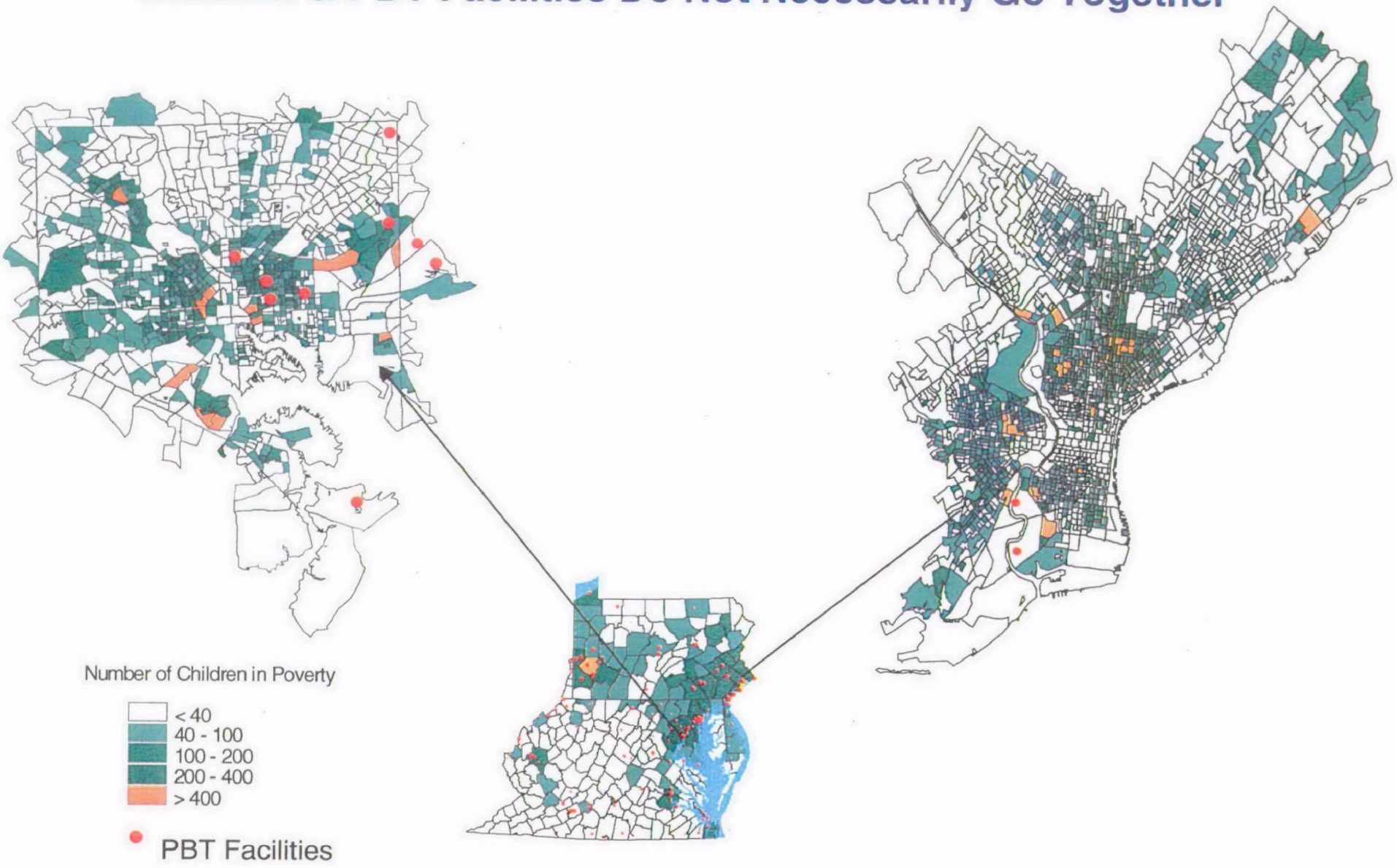
- 8.7 million tons generated in Region

PBTs
- Aldrin/Dieldrin
- Benzo(a)pyrene
- Chlordane
- DDT
- Hexachlorobenzene
- Alkyl-lead
- Mercury
- Mirex
- Octachlorostyrene
- PCBs
- Dioxins/Furans
- Toxaphene

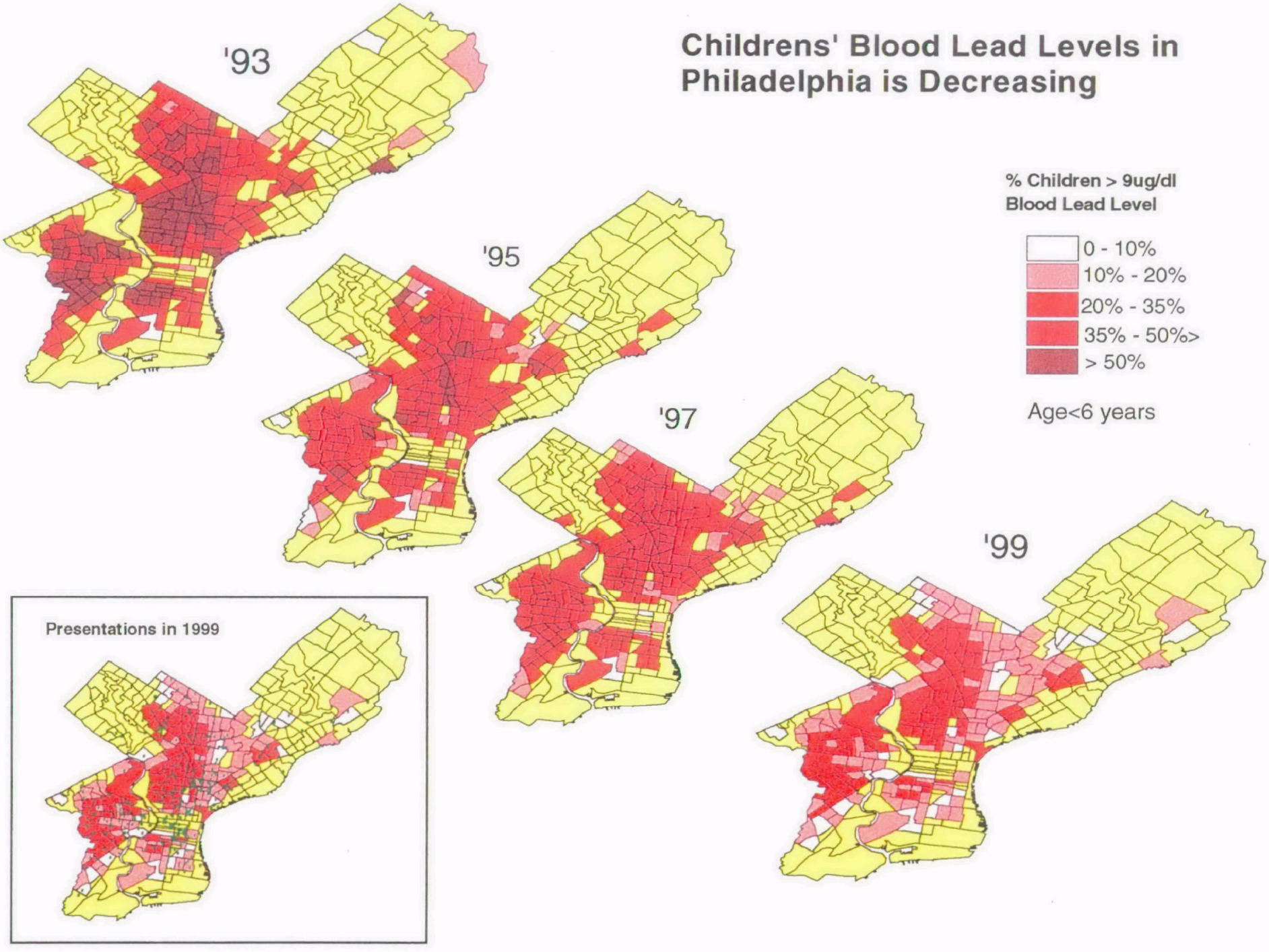
PBT Facilities Near Children in Region III



Children & PBT Facilities Do Not Necessarily Go Together



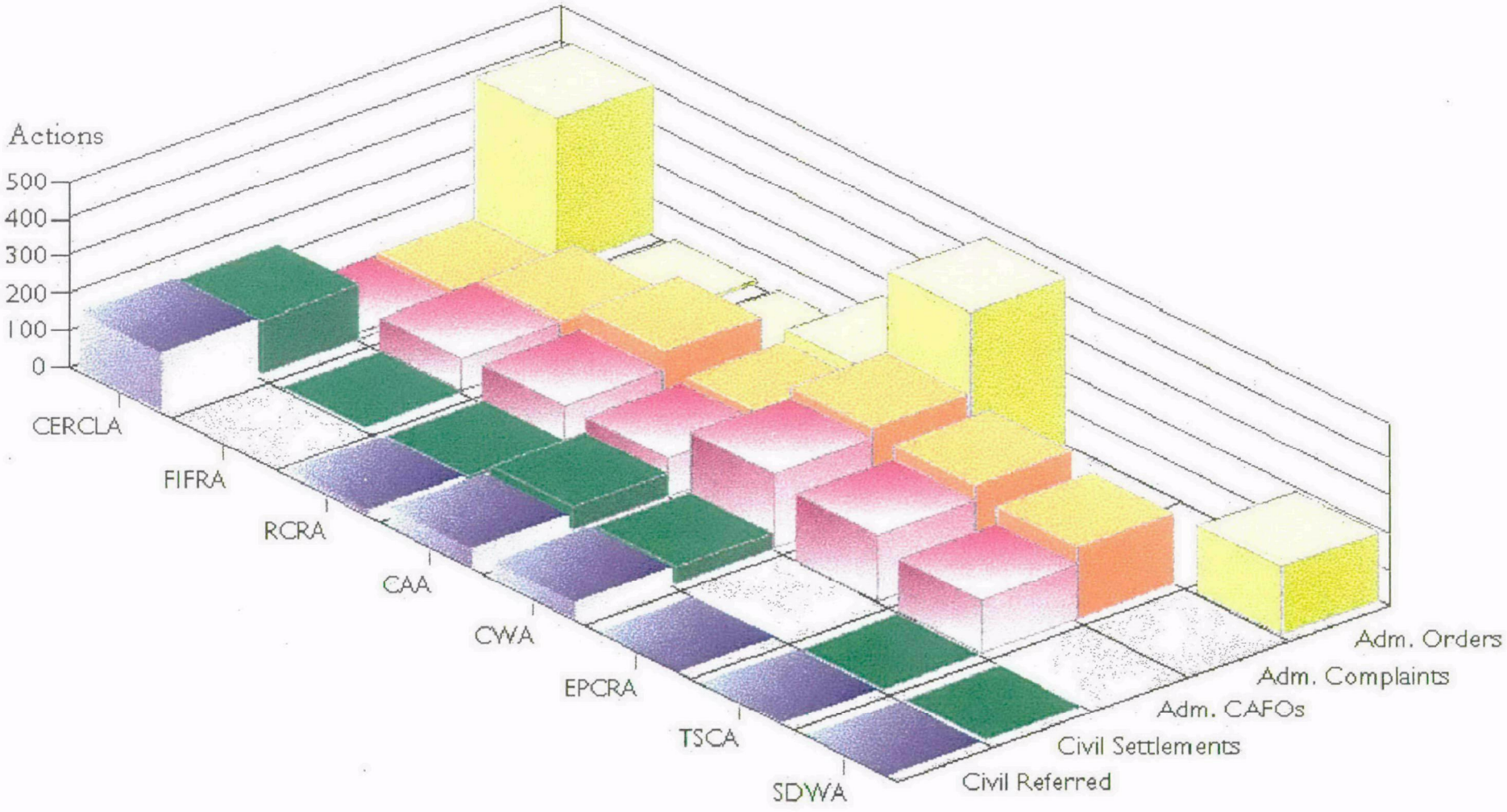
Childrens' Blood Lead Levels in Philadelphia is Decreasing



Environmental Enforcement - Some Ideas

A Look Back... 10 Years of Enforcement

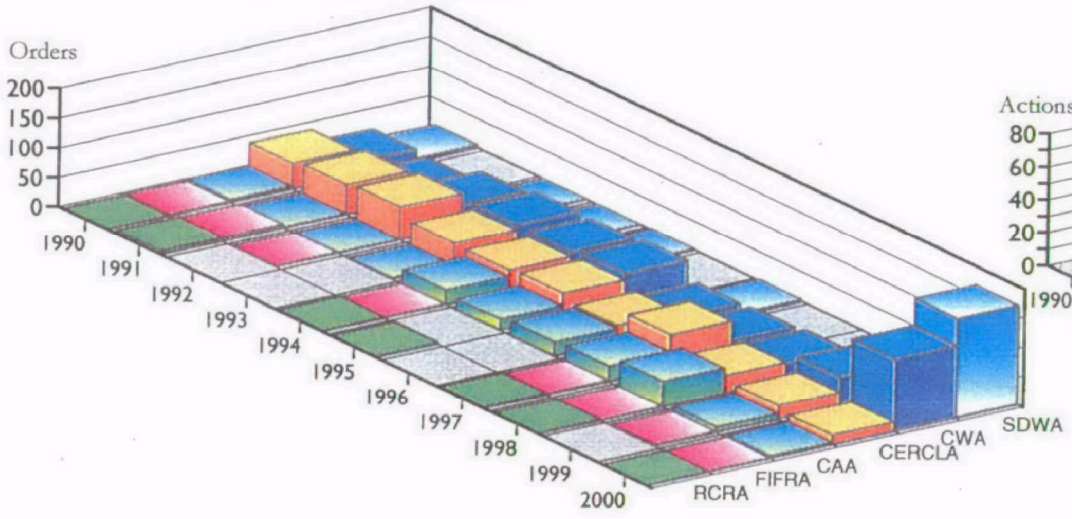
1990-Present (August 2000)



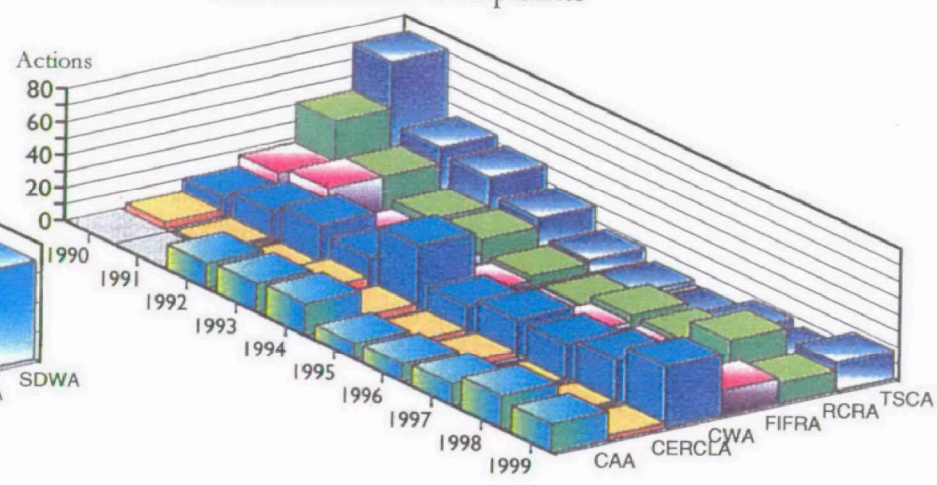
Region 3 Enforcement Actions By Year And Act

1990 - Present (August 2000)

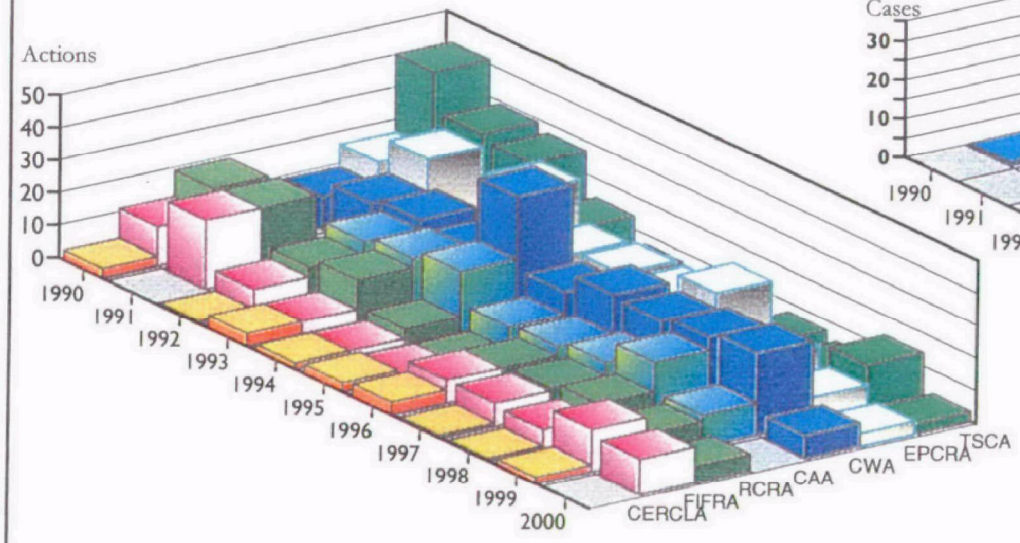
Administrative Orders



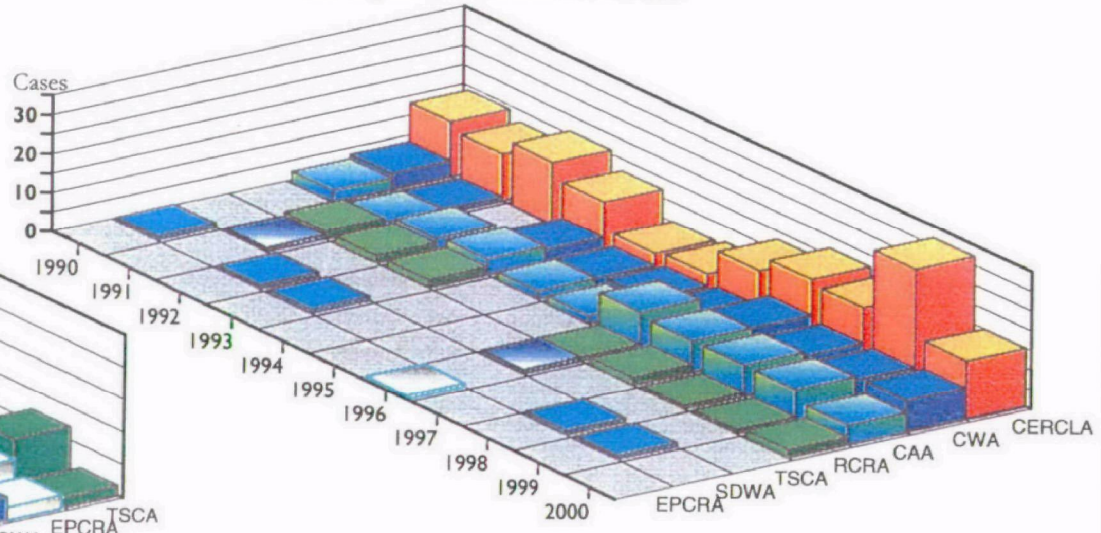
Administrative Complaints



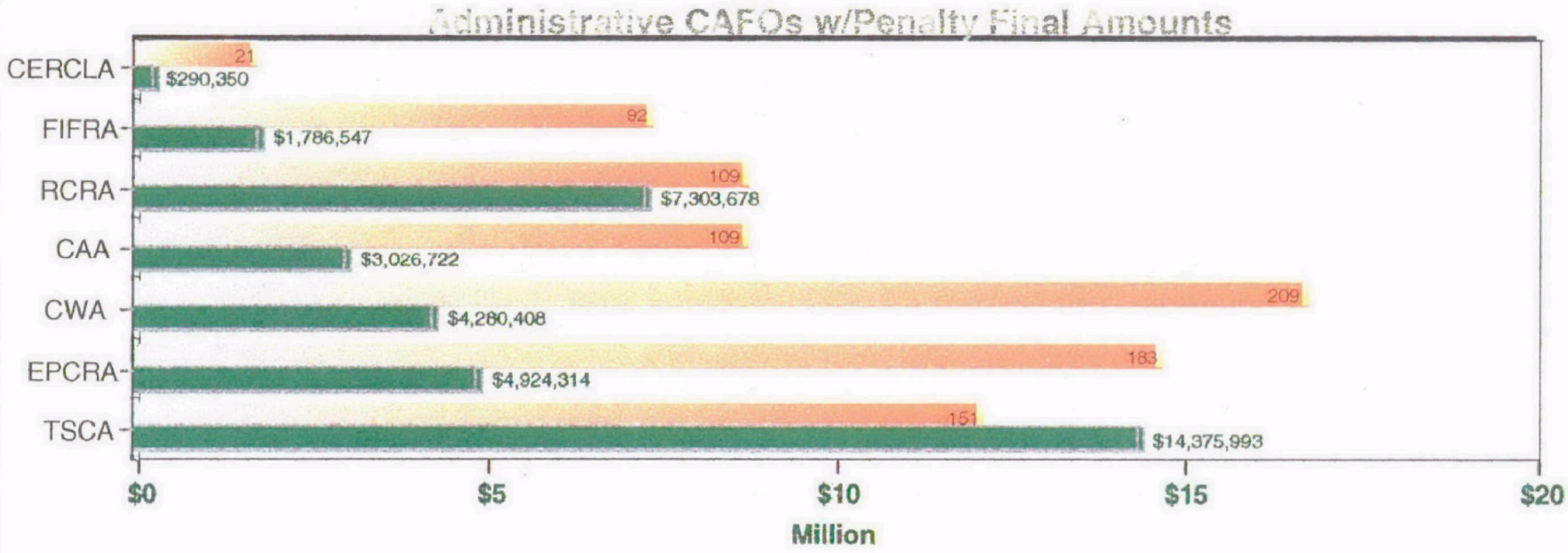
Administrative CAFOs Having Penalty Final Amounts

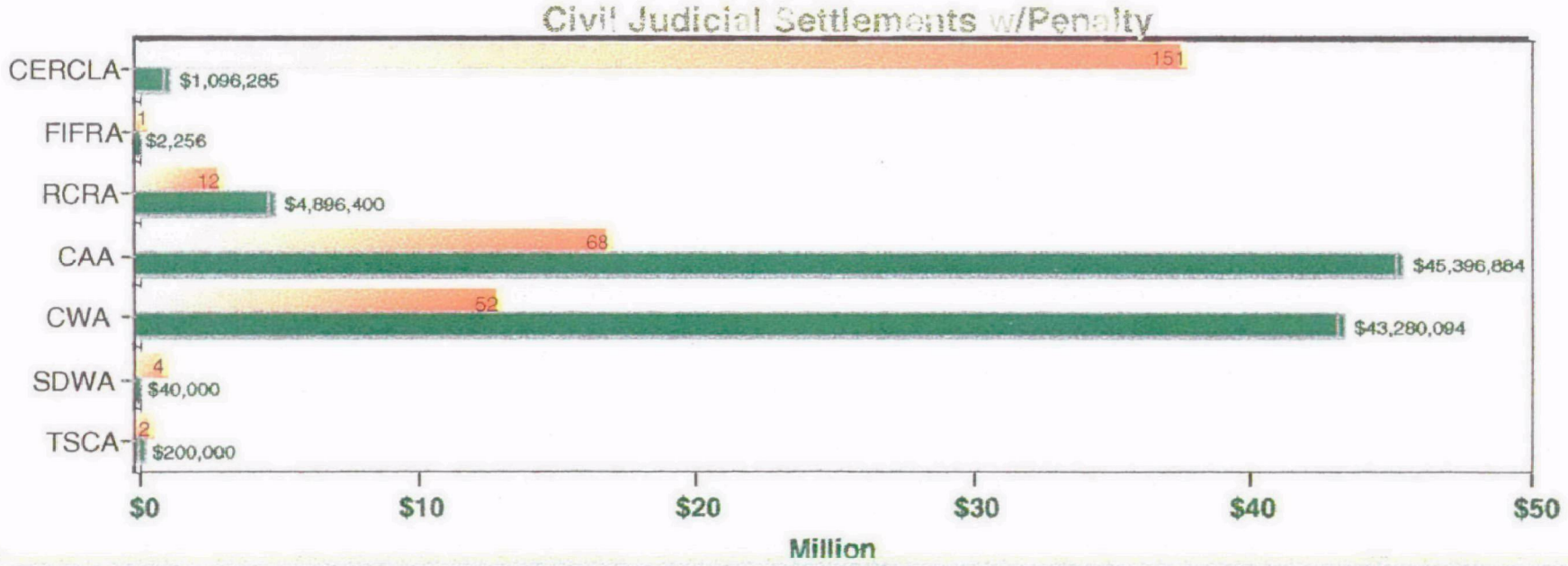


Civil Judicial Referred Cases

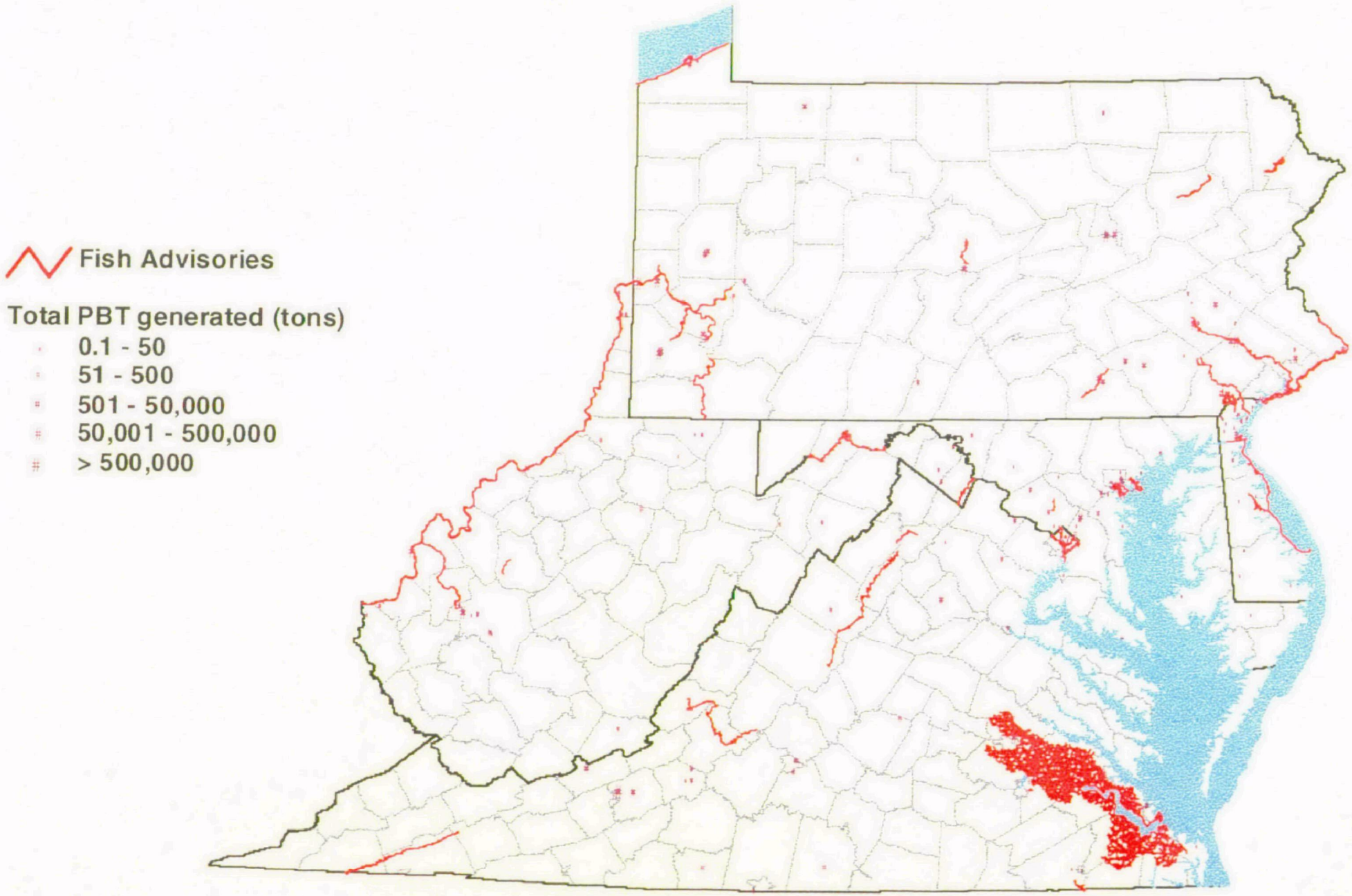


Enforcement $$ - 1990- Present (August 2000)

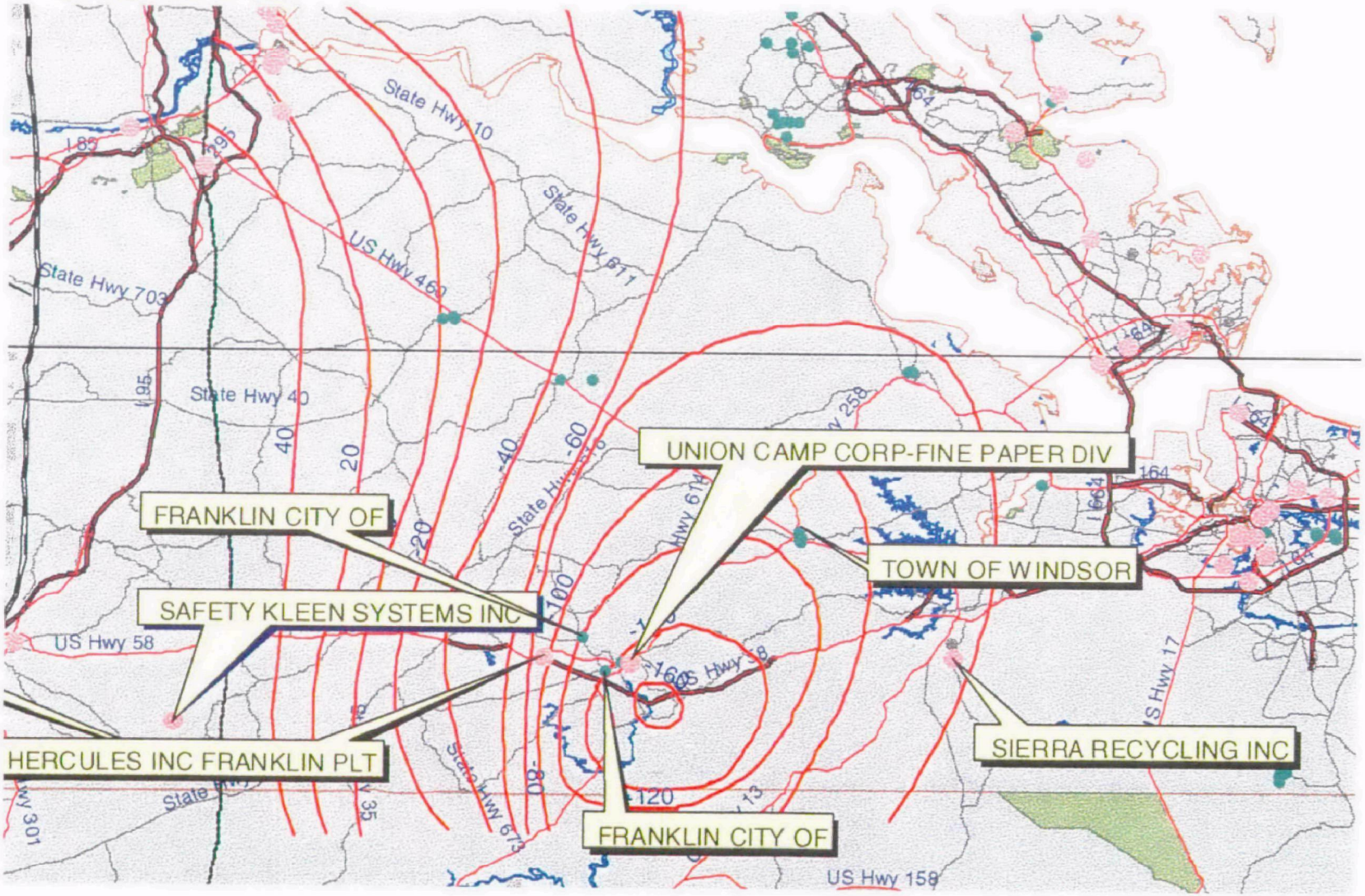




Enforcement Targeting Opportunity: Linking Fish Advisories for Toxics with PBT Facilities



Lower Potomac aquifer, RCRA TSDs and major ground water users



Cross Program Linkages

	AFO/CFO	NON-INDIGENIOUS SP	WETLAND	AMBIENT MONITOR.	WATER QUALITY	SPRAWL	TOXIC WARM SPTS	SEDIMENT SOURCES	PBT	MtBE	LEAD	AIR TOXICS	GROUND WATER	ACID RAP	OZONE RAP	EST. RAP	CLIMATE RAP	URBAN RAP	
AFO/CFO	X		X	X	X	X	X	X					X			X	X		
NON IND SPECIES		X	X	X	X	X											X	X	
WETLANDS	X	X	X	X	X	X										X	X	X	
AMBIENT MONITOR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
WATER QUALITY	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	
SPRAWL	X	X	X	X	X	X		X	X			X	X		X	X	X	X	
TOXIC WARM SPT	X			X	X		X	X	X				X			X			
SED. SOURCES	X			X	X	X	X	X	X							X		X	
PBT				X	X	X	X	X	X		X	X	X			X		X	
MtBE				X	X					X			X					X	
LEAD				X					X		X							X	
AIR TOXICS				X	X	X			X			X		X				X	
GROUND WATER	X			X	X	X	X		X	X			X			X	X	X	

We've Come a Long Way, but There's Still More Work to Do:

Safe & Sustainable Environment for People & Ecosystems are Still Being Stressed

Our traditional approach needs to emphasize cross-program & cross-agency innovative approaches

They often fall outside traditional roles, regulations, & practices needed to solve our new challeges

eg., sprawl, cities/urban, estuaries, air & water toxics, monitoring