



West Virginia Mine Drainage Task Force Annual Symposium

Morgantown Marriott Waterfront May 5-6, 2026

WELCOME! West Virginia Mine Drainage Task Force
1997 1979 to TODAY! (47 years) 2025



Bem-vindos



Order & Progress



“Love as principle,
order as foundation,
progress as goal”

-Auguste Comte



West Virginia
Mine Drainage
Task Force



Civil & Environmental
Consultants, Inc.



Friends of the Cheat



CHEMCO SYST





**West Virginia
Mine Drainage
Task Force**



Civil & Environmental Consultants, Inc.

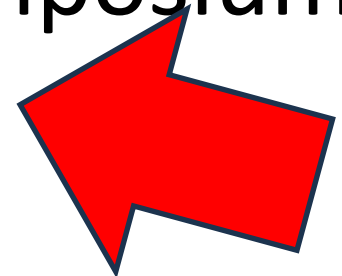
"A 30,000 Foot-High View of 30 Years of AMD Watershed Improvement in Several Appalachian States"

Presented at the

43rd Annual WV Mine Drainage Task Force Symposium

Charleston, WV Coliseum & Convention Center April 16-17, 2025

Ben B. Faulkner, Senior Consultant, WVMDDTF Chairman





● Registration Now Open

PAST
SYMPOSIUM
PROCEEDINGS

DATABASE
OF
PRESENTATIONS

2026 West Virginia Mine Drainage Task Symposium

The Task Force wishes to document the improvement of Appalachian AMD-Influenced Streams in the last 30 years

In EXCEL, use Control F to search for “long-term” of “dosing”

B7593 : X ✓ fx 2024

Find and Replace

Find Replace

Find what: long-term No Format Set Format...

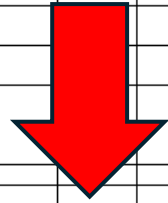
Within: Sheet Match case

Search: By Rows Match entire cell contents

Look in: Formulas Options <<

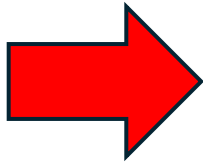
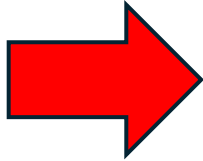
Find All Find Next Close

| Item # | Year | Form/Media | Conf. | Authors | Title (no guarantees that links | ISSN | AHA! Paper |
|--------|------|------------------|----------------------------|---|---|------|--------------------|
| 7575 | 2024 | Website download | Tailings & Mine Waste 2024 | Juan Carlos Ayes-Zamudio, Akhter Hossain and Tony Freiman | Tailings Characterization for Flow Li Evaluation at a Large Tailings Storage Advanced Laboratory Testing | | |
| 7576 | 2024 | Website download | Tailings & Mine Waste 2024 | John Thuysbaert, Joe Piccolo-Lawrance, Joseph Quinn and Romain Girard | Improving Tailings Deposition: A Dro Survey Validation Framework for En Management | | |
| 7577 | 2024 | Website download | Tailings & Mine Waste 2024 | Virginie Queiroz Rezende Pinto, Daniel Bernardes Raposo, Milena Fernandes Xavier Matos, Elias Silva de Sousa and Alexandre Cristino Correa dos Santos | Risk Management for Access to Dam Level Control: Control Levels (OMS) Plan | | |
| 7578 | 2024 | Website download | Tailings & Mine Waste 2024 | Camilla Rodrigues, Marc Lambert and Ben Witten | Passive Seismic and Interferometry Techniques in Dam Decharacterization Monitoring | 2345 | Monitor & Risk Mgt |
| 7579 | 2024 | Website download | Tailings & Mine Waste 2024 | Leonardo Probst Simoes, Braulio Rodrigues, Sean Allen, Jake Lloyd, Vitor Almeida, Jhonimar Santos and Denis Rafael Valentim | New Wireless Technology for Tailings Monitoring | 2357 | Monitor & Risk Mgt |
| 7580 | 2024 | Website download | Tailings & Mine Waste 2024 | Anjan Kundu | UPLOAD - ANALYSE - ACT: Artificial Intelligence-assisted Faster, Seamless, and Almost Real-time Tailings Dam Construction Quality Assurance is Knocking at our Doorstep | 2367 | Monitor & Risk Mgt |
| 7581 | 2024 | Website download | Tailings & Mine Waste 2024 | Wing-Keat (Wayne) Wong, Greg Puro and Lucas Lobato Ribeiro | Vale Base Metals Modernization of Instrumentation Monitoring System for Dam Safety at Canada Tailings Storage Facilities | 2373 | Monitor & Risk Mgt |
| 7582 | 2024 | Website download | Tailings & Mine Waste 2024 | Élyse Gaudreau, Ajinkya Koleswar, Kenny Yue, Pablo Blanco, Riccardo Tortini and Giacomo Falorni | Assessing SAR, InSAR and Multispectral Optical Data for Mapping Supernatant Pond Evolution | 2383 | Monitor & Risk Mgt |
| 7583 | 2024 | Website download | Tailings & Mine Waste 2024 | Zhen Ran Yung, Qing Zhan, Stephen Darmawan and Rudy Moniaga | The Application of a 3D Inclinometer in Monitoring the Performance of a TSF near an Active Mine Pit | 2397 | Monitor & Risk Mgt |
| 7584 | 2024 | Website download | Tailings & Mine Waste 2024 | Vincent Le Borgne, Adam Dulmage, Josh Sun, Evan Davison, Divya Sekha Vaka and Skevi Perdikou | Integration of Multi-Sensing Technologies for the Monitoring of Tailing Storage Facilities | 2407 | Monitor & Risk Mgt |
| 7585 | 2024 | Website download | Tailings & Mine Waste 2024 | Felipe Bolivar Domingos, Alessandra Mazon and Jefferson Barbosa | Integrated Analysis of Dam Surface Displacement Monitoring | 2419 | Monitor & Risk Mgt |
| 7586 | 2024 | Website download | Tailings & Mine Waste 2024 | David Slack, Roque Obusan, Yasmin Byrne, Dora de Melo and Jason DeJong | Enhancing Safety and Reducing Environmental Impact through Development of a Robotic Hybrid CPT Rig | 2433 | Site Investigation |
| 7587 | 2024 | Website download | Tailings & Mine Waste 2024 | Veronique Nell and Andrea Krupa | Tailings Facility Surveying Leveraging Complementary Technologies | 2447 | Site Investigation |
| 7588 | 2024 | Website download | Tailings & Mine Waste 2024 | Dharma Wijewickreme and Ana Valverde | Potential of X-ray Micro-CT Imaging for Mine Tailings Deposit Characterization | 2457 | Site Investigation |
| 7589 | 2024 | Website download | Tailings & Mine Waste 2024 | Garret M. Martin, Christopher A. Bareither and Joseph Scalia IV | Influence of Density on Predicting Saturation in Filtered Tailings using an Electromagnetic Sensor | 2467 | Site Investigation |
| 7590 | 2024 | Website download | Tailings & Mine Waste 2024 | Arno Talmon, Wiebe Boomsma, Bas Nieuwboer, Samir Rustamov, Menno Jaspers, Sven van Asperen and Miguel de Lucas Pardo | Testing of an Autonomous Rheometer for Optimized Tailings Thickeners Operation | 2485 | Site Investigation |



Read Me - Disclaimer Papers by Year Color Key to Papers by Year ICARD ASSMR ASMR-ASRS ASMR-ASRS Journal Reclamation Matters Reclamation Sciences (Journal) WV AMD T F Tailings&Mine Waste Mine ... +

1996



| | |
|-------------------------|--|
| a.m. | REGISTRATION |
| 8:25 – 8:30 a.m. | WELCOME AND OPENING REMARKS Morning Moderator Ben Faulkner Environmental Consultant Bratton Farm Princeton, WV |
| 8:30 – 9:00 a.m. | “ACID MINE DRAINAGE TREATMENT IN GREENS RUN BY AN ANOXIC LIMESTONE DRAIN” Troy Titchenell Anker Energy Morgantown, WV |
| 9:00 – 9:30 a.m. | “CARBON DIOXIDE PRETREATMENT OF AMD FOR LIMESTONE DIVERSION WELLS” Barnaby Watten National Biological Survey Wellsboro, PA |
| 9:30 – 10:00 a.m. | “THE NORTH BRANCH OF THE POTOMAC RIVER: RESULTS OF TWO YEARS OF LIME DOSING” Joseph Mills Maryland Department of Environment Frostburg, MD |
| 10:00 – 10:30 a.m. | BREAK |
| 10:30 – 11:00 a.m. | “EARLY RESULTS FROM CALCIUM CARBONATE NEUTRALIZATION OF TWO WEST VIRGINIA RIVERS ACIDIFIED BY MINE DRAINAGE” Peter Zurbuch WV Division of Natural Resources Elkins, WV |
| 11:00 – 11:30 a.m. | “ACID MINE DRAINAGE TREATMENT WITH OPEN LIMESTONE CHANNELS” Paul Ziemkiewicz, Director National Mine Land Reclamation Center Morgantown, WV |
| 11:30 a.m. – 12:00 noon | “TREATMENT OF ACID MINE DRAINAGE WITH A COMBINED WETLAND/ANOXIC LIMESTONE DRAIN: COMPARISON OF LABORATORY VERSUS FIELD RESULTS” Alan Sexstone, Associate Professor West Virginia University Morgantown, WV |
| 12:00 noon | ADDITION |

1997

9:00 – 9:15 a.m. “AMD REGULATORY AND POLICY IMPACTS ON CURRENT MINING ACTIVITIES IN WEST VIRGINIA” John Ailes, Chief Office of Mining and Reclamation West Virginia Division of Environmental Protection Nitro, WV

Home About Links Symp

9:15 – 9:40 a.m. “OSM’S INITIATIVES, DIRECTIONS, AND APPROACHES TO ACID MINE DRAINAGE CONTROL AND TREATMENT” Kathrine Henry, Acting Director Office of Surface Mining Washington, DC

9:40 – 10:00 a.m. “OSM POLICIES IN WEST VIRGINIA” Roger Calhoun Office of Surface Mining Charleston, WV

10:00 – 10:30 a.m. BREAK

10:30 – 11:00 a.m. [“ACID MINE DRAINAGE INVENTORY IN WEST VIRGINIA”](#) Ben Faulkner Bratton Farms Princeton, WV

11:00 – 11:30 a.m. [“AMD INVENTORY IN CHEAT RIVER WATERSHED”](#) Sheila Vukovich and Greg Adolfson West Virginia Division of Environmental Protection Nitro, WV

11:30 – 12:00 noon [“MANGANESE TOXICITY TO AQUATIC ORGANISMS”](#) Tiff Hilton and Rob Norman WOPEC, Inc. Lewisburg, WV

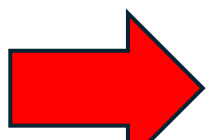
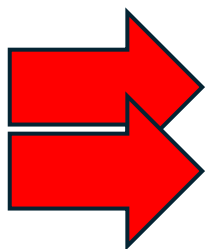
12:00 – 1:20 p.m. LUNCH

1:20 – 1:30 p.m. REGROUP Afternoon Moderator: Bruce Leavitt CONSOL, Inc. Pittsburgh, PA

1:30 – 2:00 p.m. “1997 Legislative ISSUES RELATED TO MINING AND RECLAMATION” Ben Greene, President West Virginia Mining & Reclamation Association Charleston, WV

2:00 – 2:30 p.m. “AMD IN THE MONONGAHELA BASIN” Bruce Leavitt CONSOL, Inc. Pittsburgh, PA

2:30 – 3:00 p.m. [“WATER QUALITY CHANGES AND COSTS OF REMINING IN WEST VIRGINIA AND PENNSYLVANIA”](#) Bob Hedin, Ben Faulkner, and Jeff Skousen Hedin Environmental Pittsburgh, PA



It is good to look back...

Statement of Mutual Intent Strategic Plan

for the

Restoration and Protection of Streams
and Watersheds Polluted by Acid Mine
Drainage from Abandoned Coal Mines

1995 Progress Report



SIGNATORIES/SUPPORTERS OF THE STATEMENT OF MUTUAL INTENT

USDI, Office of Surface Mining
 U.S. Environmental Protection Agency -
 West Virginia Division of Environmental Protection
 Pennsylvania Department of Environmental Protection
 Pennsylvania Fish and Boat Commission
 Headwaters RC&D Council and Headwaters Program
 Maryland Department of Environmental and Natural Resources
 Ohio Department of Natural Resources
 International Association of Fish & Wildlife Managers
 Stoneycreek & Conemaugh Rivers Improvement Authority
 Southern Allegheny Conservancy
 Southern Allegheny R C & D
 Western Pennsylvania Coalition for Abandoned Mine Lands
 USDI, Bureau of Land Management
 USDI Assistant Secretary for Land & Minerals Management
 USDI, National Biological Service
 USDA, Natural Resources Conservation Service
 Trout Unlimited
 National Fish & Wildlife Foundation
 National Mined Land Reclamation Center
 Heinz Endowments
 Blacklick Creek Watershed Association
 Citizens' Coal Council
 USDI, Bureau of Mines
 USDI, Fish & Wildlife Service
 Ohio River Valley Water Sanitation Commission
 Sierra Club
 Pennsylvania Environmental Defense Fund
 Pennsylvania Organization for Watersheds and Rivers
 The Conemaugh Valley Conservancy
 The Casselman River Task Force
 The Loyalhanna Creek Watershed Association
 The Loyalhanna Abandoned Mine Drainage Coalition
 The Office of Congressman John P. Murtha, 12th. Distr. PA
 The Office of Congressman Frank Mascara, 20th. Distr. PA

| | 1995 | | |
|----|---------|-----------|-------|
| | NO FISH | SOME FISH | TOTAL |
| OH | 258 | 349 | 607 |
| PA | 1714 | 1525 | 3239 |
| WV | 592 | 548 | 1140 |
| VA | 17 | 0 | 17 |
| MD | 42 | 110 | 152 |

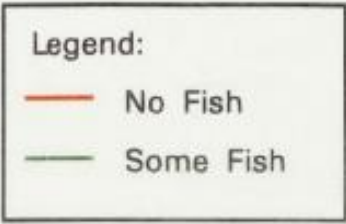
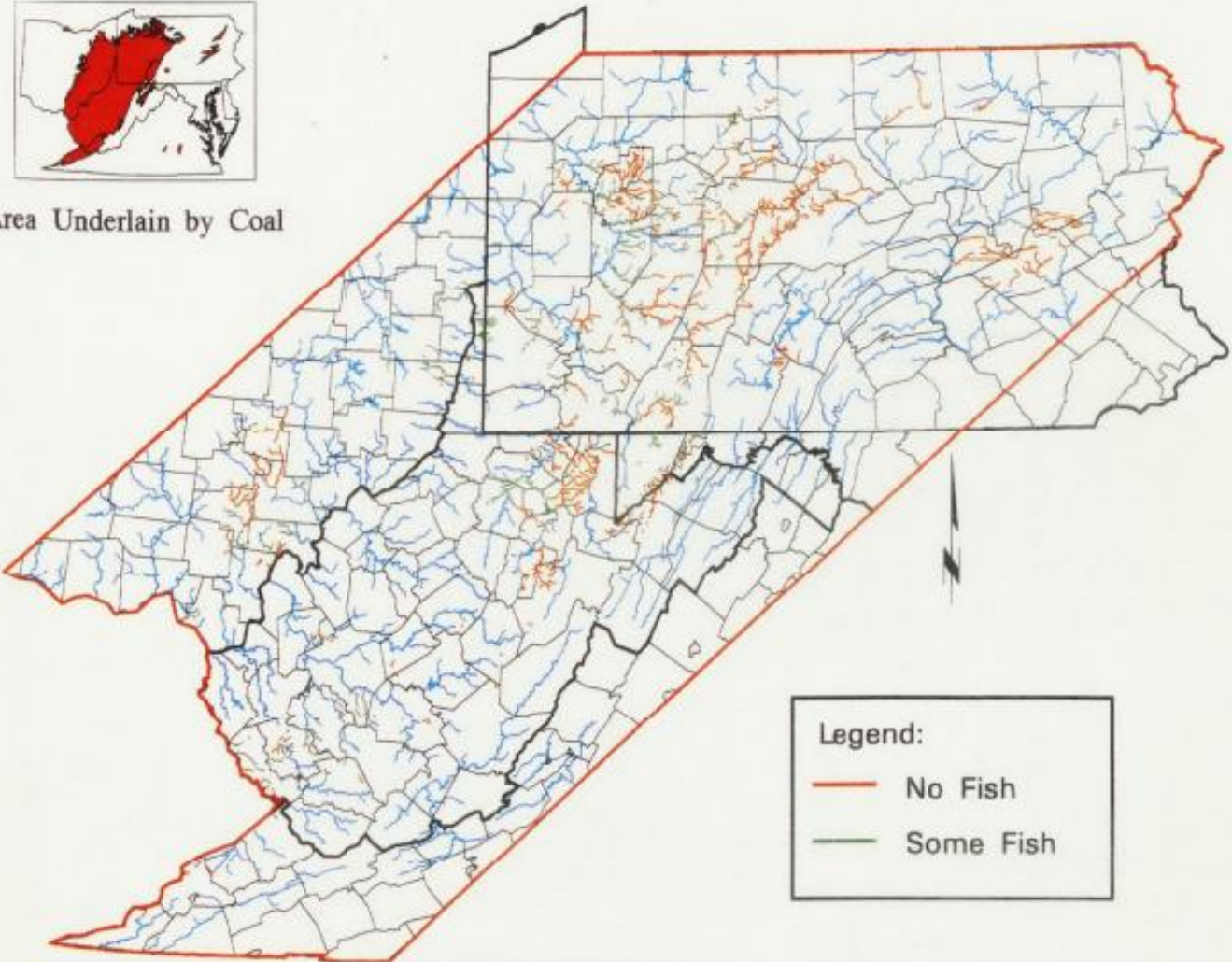
1996 Progress Report
promised data from:

KENTUCKY
TENNESSEE
ALABAMA
ILLINOIS
INDIANA

Streams with Fisheries Impacted by Acid Mine Drainage in MD, OH, PA, VA, WV (Based on EPA Fisheries Survey - 1995)



Area Underlain by Coal



| | 1995 | | |
|----|---------|-----------|-------|
| | NO FISH | SOME FISH | TOTAL |
| OH | 258 | 349 | 607 |
| PA | 1714 | 1525 | 3239 |
| WV | 592 | 548 | 1140 |
| VA | 17 | 0 | 17 |
| MD | 42 | 110 | 152 |

Characterization of AMD-Impacted Streams (Metals and pH Only) based on State Fisheries Biologists BPJ:

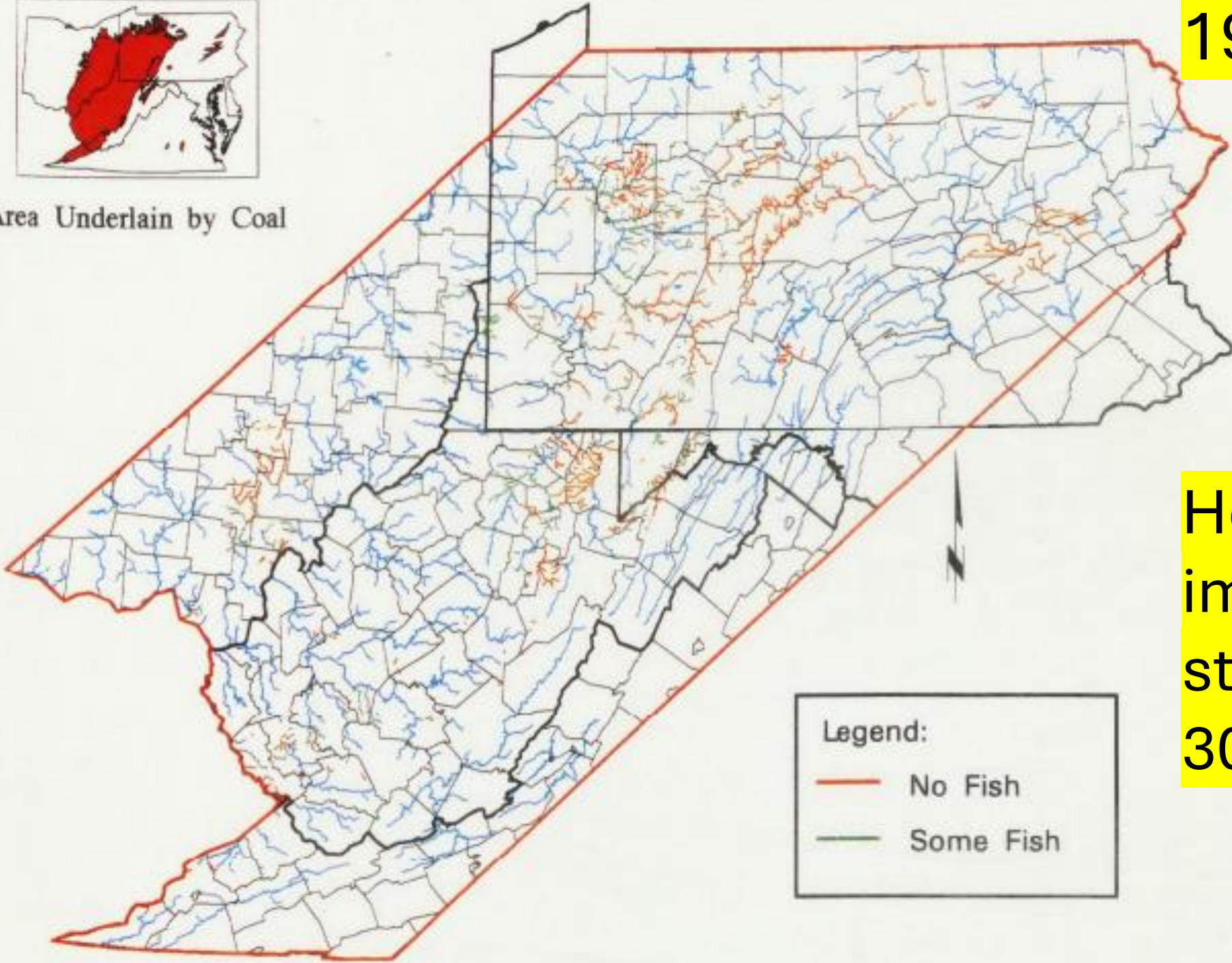
No Fish ~
(except at springs or trib mouths)

Some Fish ~
(reduced species and/or populations)



Area Underlain by Coal

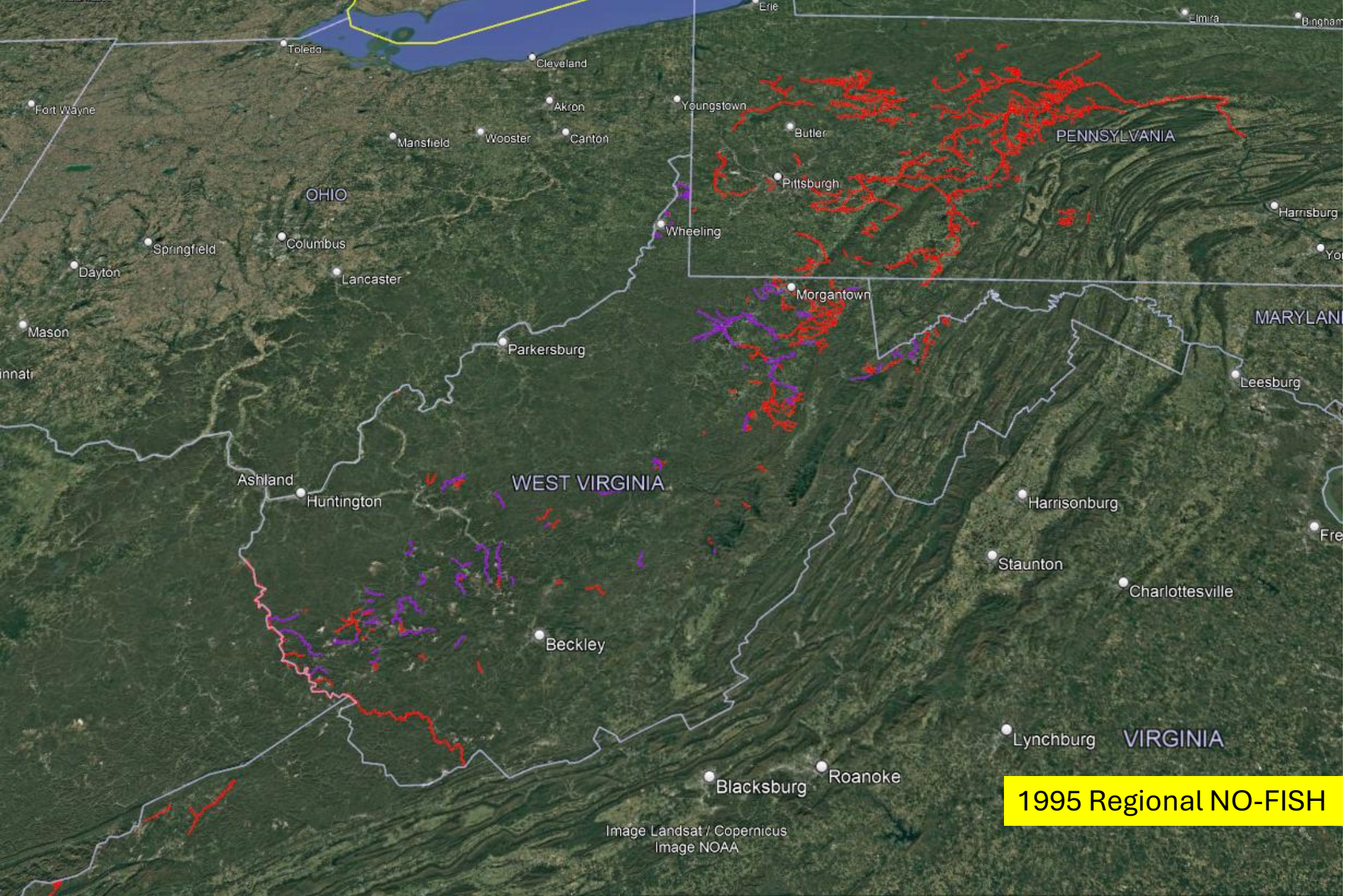
1995 “a baseline”



How have we improved these streams in the last 30 years?

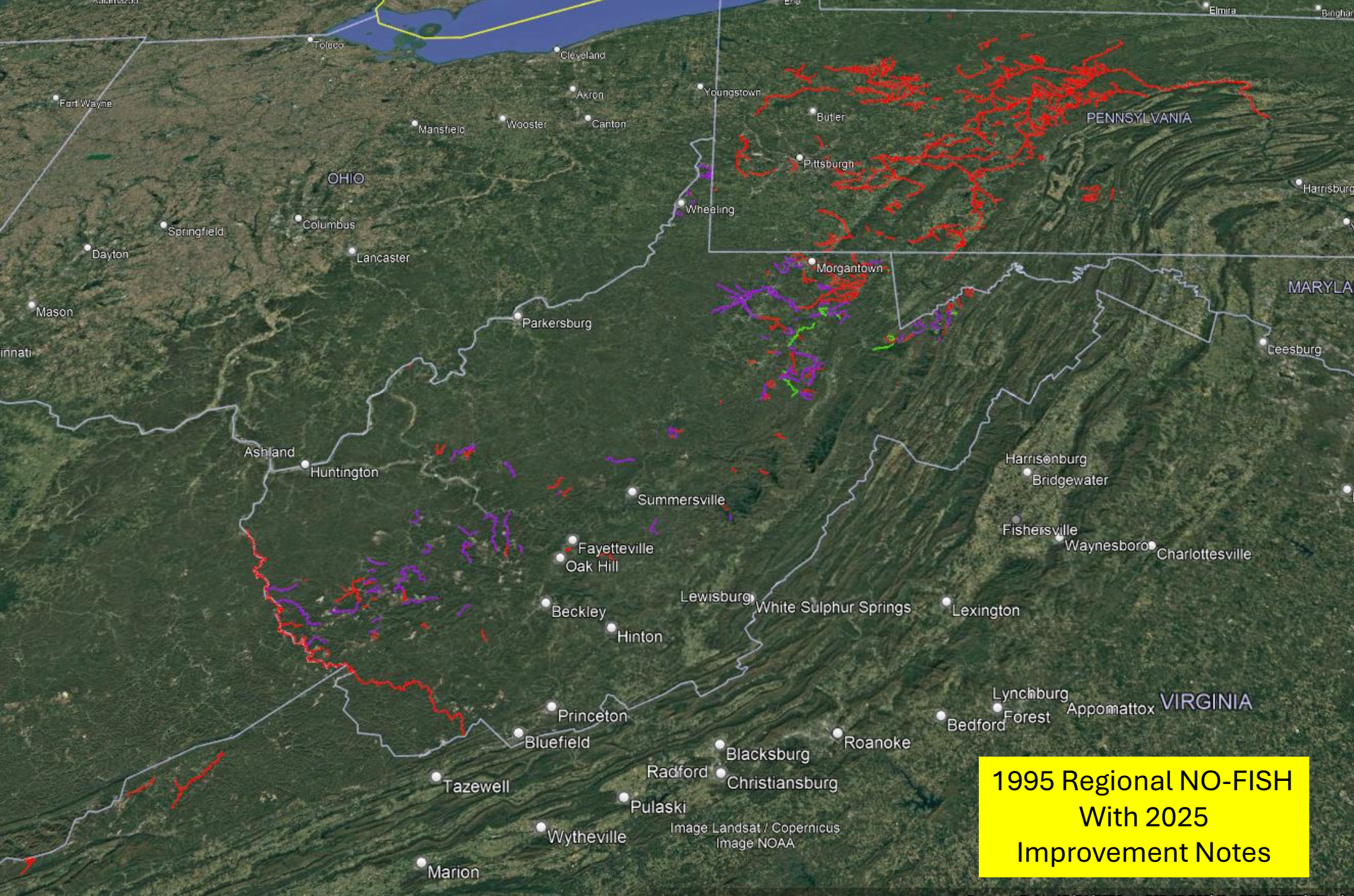
| Stream Miles Impacted | | | | | | | | | |
|-----------------------|---------|-----------|-------|--|---|-----------|----------|-------|----------|
| | 1995 | | | | 2025 | | | | IMPROVED |
| | NO FISH | SOME FISH | TOTAL | | NO FISH | SOME FISH | GOOD AQL | TOTAL | NO FISH |
| OH | 258 | 349 | 607 | | 130 | 477 | | 607 | -50% |
| PA | 1714 | 1525 | 3239 | | | | | | |
| WV | 592 | 548 | 1140 | | 239 | 626 | 275 | 1140 | -60% |
| VA | 17 | 0 | 17 | | indicated 2 of their 9 streams now had fish, mileage not calculated | | | | |
| MD | 42 | 110 | 152 | | | | | | |
| KY | ? | ? | ? | | | | | | |
| TN | ? | ? | ? | | | | | | |
| AL | ? | ? | ? | | | | | | |
| IL | ? | ? | ? | | | | | | |
| IN | ? | ? | ? | | | | | | |
| TOTAL | 2519 | 2596 | 5115 | | | | | | |

Note: the WV Stream miles was adjusted from 1100 to align with 2025 mapping. 29% of WV Some Fish improved in 2025



1995 Regional NO-FISH

Image Landsat / Copernicus
Image NOAA

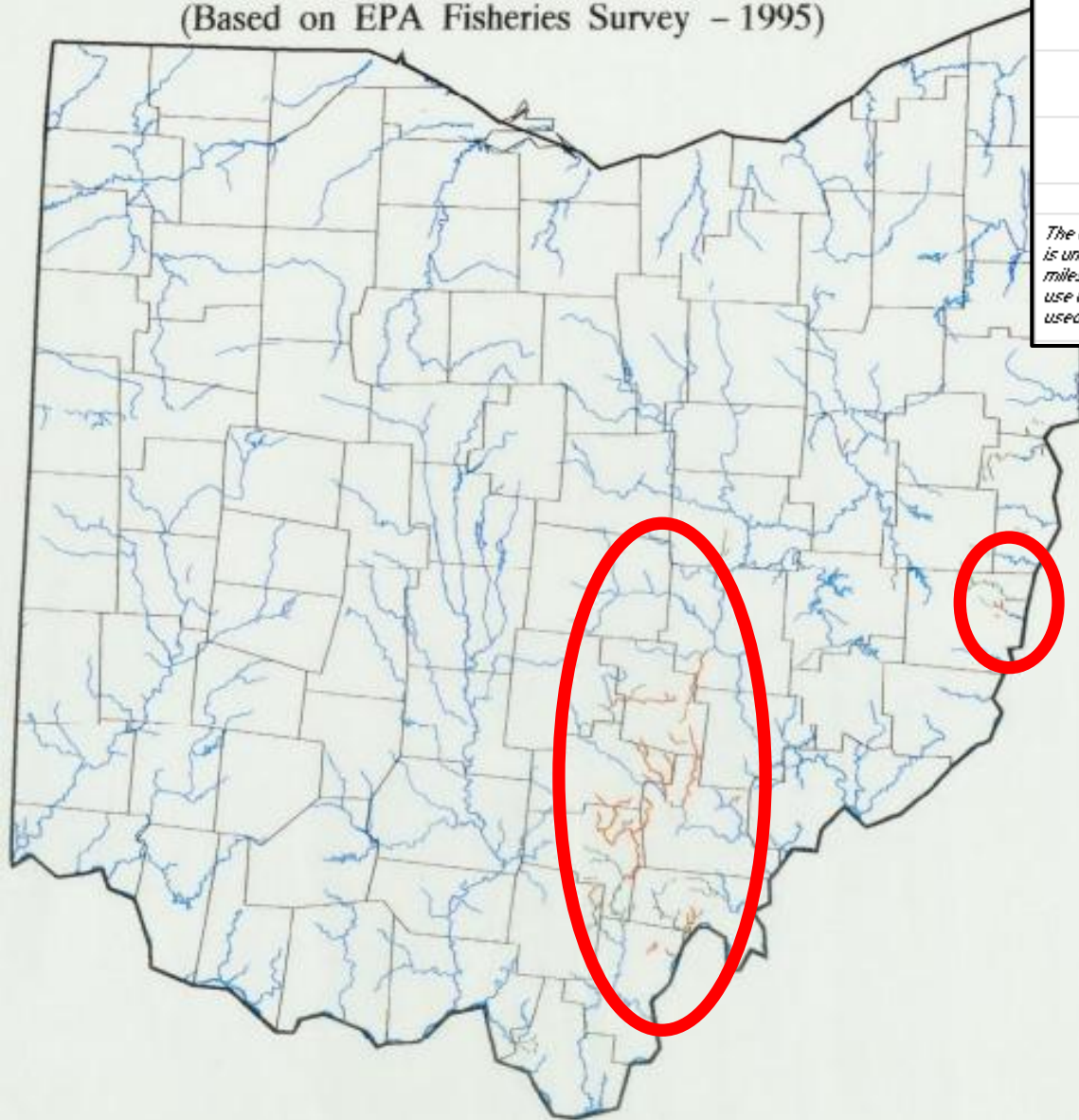


1995 Regional NO-FISH
With 2025
Improvement Notes

Image Landsat / Copernicus
Image NOAA

Streams and Fisheries Impacted by Acid Mine Drainage in Ohio

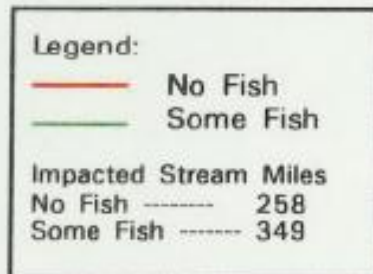
(Based on EPA Fisheries Survey - 1995)



| | | Stream Miles Impacted | | | | | |
|------|--|-----------------------|-----------|-------|---------|-----------|-------|
| | | 1995 | | | 2025 | | |
| | | No Fish | Some Fish | Total | No Fish | Some Fish | Total |
| Ohio | | 258 | 349 | 607 | 130 | 477 | 607 |

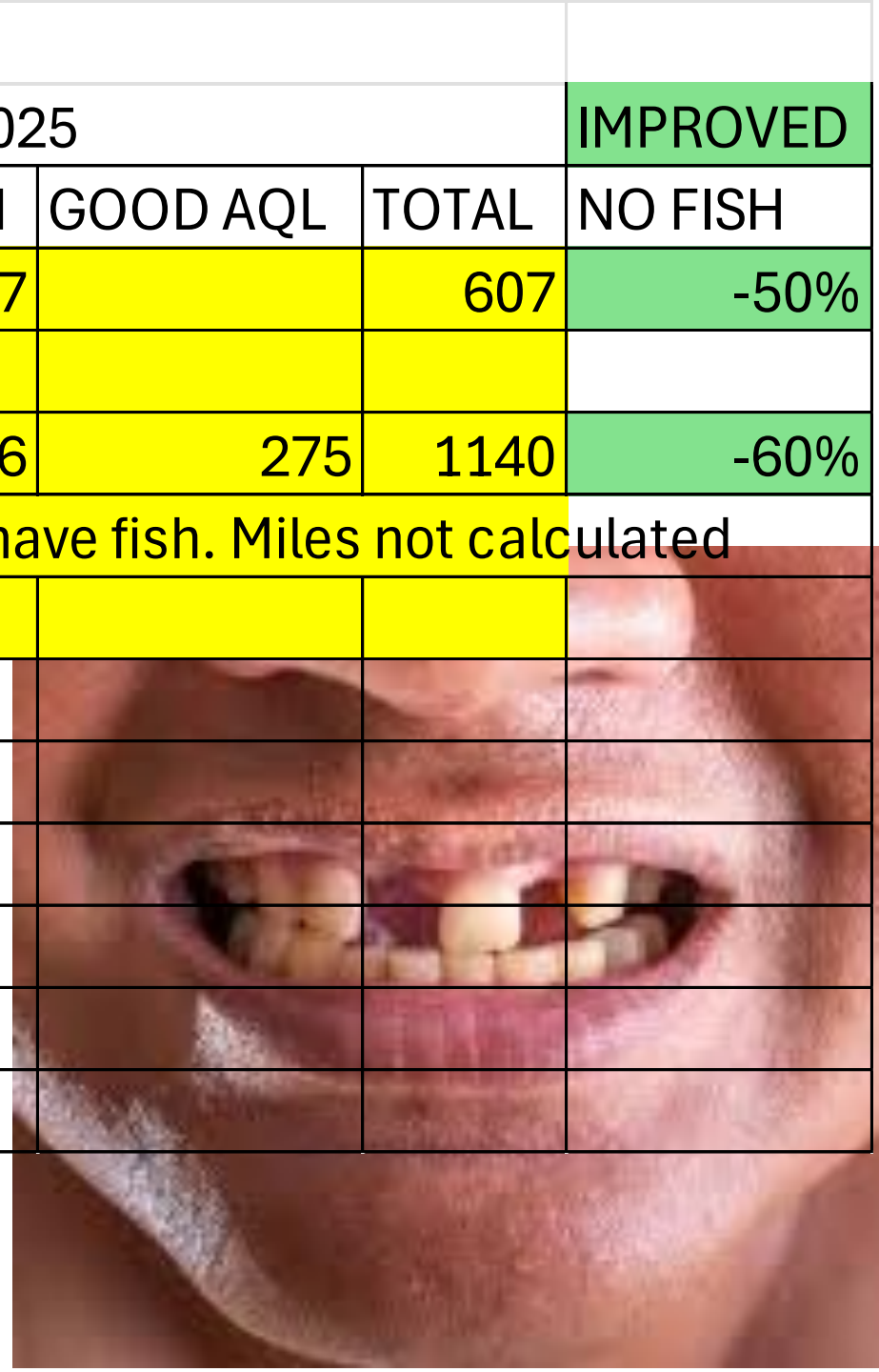
The Ohio AMD program uses state biological water quality standards to assess baseline conditions and document improvements or recovery of AMD impaired streams. It is unknown what data was used to determine the number of stream miles with "no fish" and "some fish" in the 1995 report, and it likely did not represent all the impaired stream miles. The estimated stream miles for 2025 are mainly based on 6 AMD/T watersheds, a lack of understanding of how the 1995 stream miles were estimated, and did not use the typical methodology used in the Ohio AMD program to assesses biological recovery. Therefore, the 2025 should be considered a "rough guess" and should not be used as a comprehensive assessment of biological recovery in Ohio AMD impacted streams or the overall success of the Ohio AMD program.

NOW HALF THOSE MILES WITH NO FISH IN 1995 HAVE FISH!



Stream Miles Impacted

| | 1995 | | | | 2025 | | | | IMPROVED |
|-------|---------|-----------|-------|--|--|-----------|----------|-------|----------|
| | NO FISH | SOME FISH | TOTAL | | NO FISH | SOME FISH | GOOD AQL | TOTAL | NO FISH |
| OH | 258 | 349 | 607 | | 130 | 477 | | 607 | -50% |
| PA | 1714 | 1525 | 3239 | | | | | | |
| WV | 592 | 548 | 1140 | | 239 | 626 | 275 | 1140 | -60% |
| VA | 17 | 0 | 17 | | 2 of 9 streams NOW have fish. Miles not calculated | | | | |
| MD | 42 | 110 | 152 | | Minus 120 | | | | |
| KY | ? | ? | ? | | | | | | |
| TN | ? | ? | ? | | | | | | |
| AL | ? | ? | ? | | | | | | |
| IL | ? | ? | ? | | | | | | |
| IN | ? | ? | ? | | | | | | |
| TOTAL | 2519 | 2596 | 5115 | | | | | | |



For the Fish...

I thank these good folks:

| Authors | Position | form |
|--------------------|---|------------------------|
| Frank Borsuk | USEPA Wheeling Office | Personal Communication |
| Jeff Calhoun | Ohio Department of Natural Resources, Division of Mineral Resources Management | Personal Communication |
| Martin Christ | WVDEP Environmental Resources Specialist 2, Division of Water and Waste Management, - Watershed Improvement Branch Fairmont | Personal Communication |
| Joseph Cocco | Pennsylvania Department of Environmental Protection Bureau of Abandoned Mine Reclamation | Personal Communication |
| Jacob Culp | Environmental Biologist Supervisor, Kentucky Division of Water, Water Quality Branch, Monitoring Section | Personal Communication |
| James Gusek | WVMDTaskForce.com Resources - ResearchGate accessed 2025-04 | web access |
| Jason Hill | Virginia Department of Environmental Quality. Water Monitoring and Assessment Manager | Personal Communication |
| Michael Lookenbill | Pennsylvania Department of Environmental Protection, Bureau of Clean Water, Env. Program Manager, Water Quality Division | Personal Communication |
| Megan Maggard | WVDEP Technical Analyst Associate, Division of Water and Waste Management DWWM-WQSAS Mon. Unit | Personal Communication |
| Maria Morresi | USEPA GIS Analyst US EPA Mid-Atlantic Region Applied Science & Quality Assurance Branch (3LS10) | Personal Communication |
| Dan Murray | Tennessee Department of Environment and Conservation, Division Of Mineral and Geologic Resources | Personal Communication |
| Mindy Neil | Assistant Director, WVDEP-DWWM, Water Quality Standards and Assessment Section | Personal Communication |
| Ryan Pack | WVDEP Environmental Resources Program Manager 2, Division of Water and Waste Management DWWM-WQSAS Mon. Unit | Personal Communication |
| Rob Rice | WVDEP Deputy Cabinet Secretary, DLR & HSER | Personal Communication |
| Erik Schafer | Natural Resource Planner IV, Maryland Dept. of the Environment, Land & Minerals AML Division | Personal Communication |
| Terry Schmidt | EarthRes, a Division of RESPEC | Personal Communication |
| Mel Shafer | Water Research Scientist, West Virginia Water Research Institute, West Virginia University | Personal Communication |
| Kaabe Shaw | Ohio Department of Natural Resources, Division of Mineral Resources Management | Personal Communication |
| Dustin Smith | WV DNR District 1 Fish Biologist | Personal Communication |
| Dustin Smith | Evaluation of a Re-established Walleye Population within a Hydropower Reservoir Recovering from Acidification - 2018 | WVU Ph.D Dissertation |
| Dustin Smith | North American Journal of Fisheries Management. 2022 American Fisheries Society. ISSN:1548-8675 online | Journal Article |
| David Thorne | WV DNR Elkins Fish Biologist | Personal Communication |
| Dave Turner | Tennessee Department of Environment and Conservation, retired | Personal Communication |
| Dave Wellman | WV DNR District 1 Fish Biologist | Personal Communication |
| Authors | WVMDTaskForce.com Symposium - Past Symposium Proceedings accessed 2025-04 | web access |