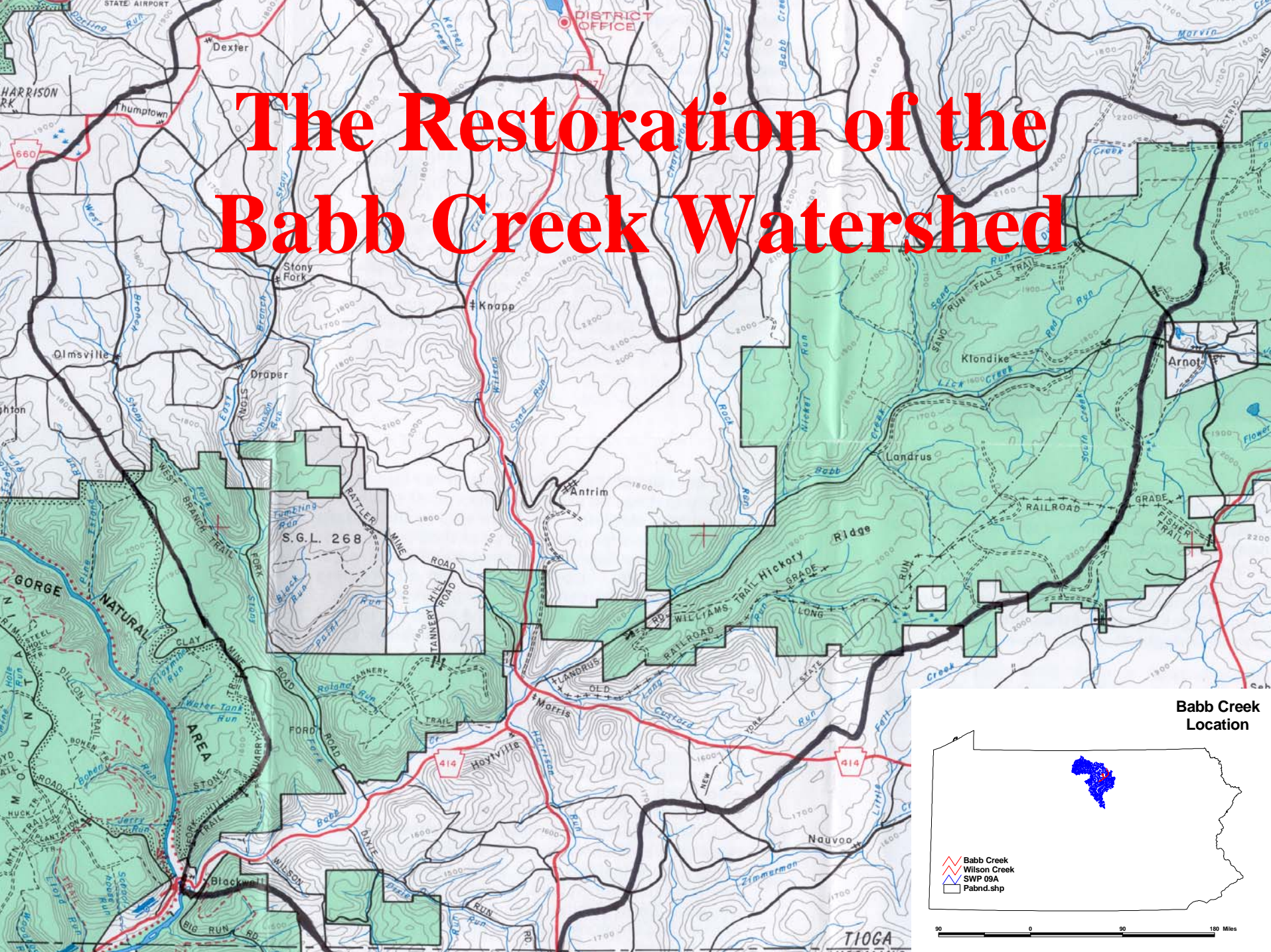
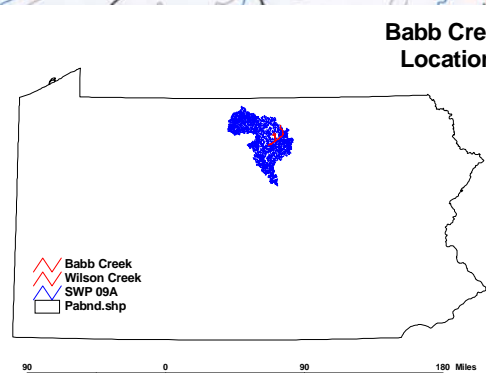


# The Restoration of the Babb Creek Watershed



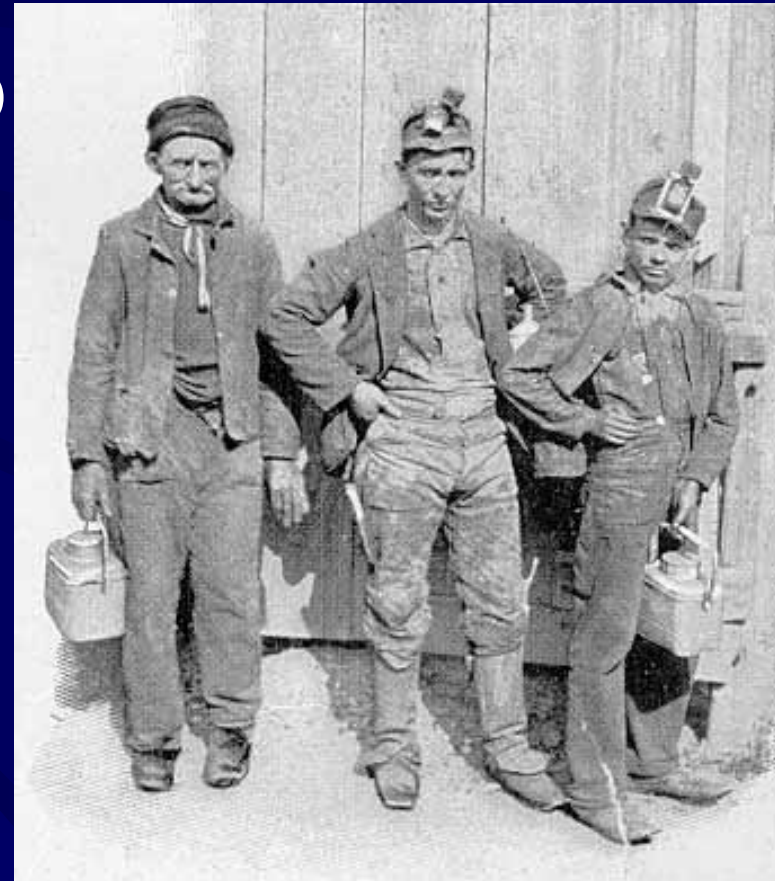
Babb Creek Location





# Babb Creek Watershed History

- 1782 Discovery of Coal in Blossburg.
- 1865-1895 Development of Railroads in the Watershed.
- Mining of Coal in the Watershed
  - 1865 Arnot Mines (population 4,000 1880)
  - Klondike Mine
  - 1872 Antrim No. 1 Mine
  - 1888 Bear Run Mine and town of Landrus
  - 1895 Anna S Mine
  - Early 1900s Rattler Mine
  - 1950s-1980s various surface mining operations

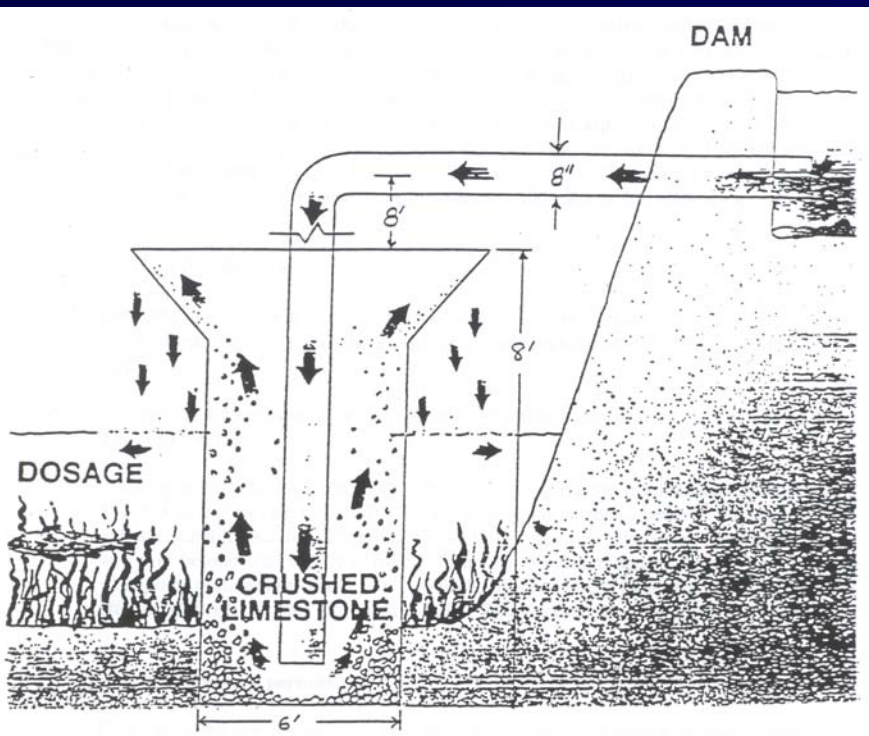


# 1990 Watershed Status

- Babb Creek was dead and sterile.
- Stream Survey showed no fish and very little macroinvertebrate life in the main stem of Babb Creek and in Lick Creek.
- Pollution Plume observed in Pine Creek for 5 miles to Cedar Run.
- DEP contacted and asked for assistance.
- PEDF took on task of cleaning up the watershed.



# 1990 Lick Creek Diversion Wells



The first treatment devices in the watershed were constructed to treat acidity in Lick Creek.





# 1990 Antrim Treatment Plant

An aerial photograph of the 1990 Antrim Treatment Plant. The facility is situated in a cleared, sandy area with some sparse vegetation. It features several large, rectangular treatment ponds with greenish-brown water. A central yellow structure, likely a smokestack or ventilation stack, stands out against the landscape. A network of dirt roads and paths connects the various ponds and the central building. In the background, a line of trees marks the edge of the cleared area.

The Antrim Mining Company constructed a treatment plant to treat the Antrim No. 1 and Backswitch Discharges.

# 1996 Arnot Treatment System



A large SAPS and buried limestone drain were constructed using a state grant.





# 1998 Red Run Diversion Wells



Additional diversion wells were constructed by volunteers. The treatment raises the pH from 4.0 to 6.5.



# 1998 Klondike Treatment System

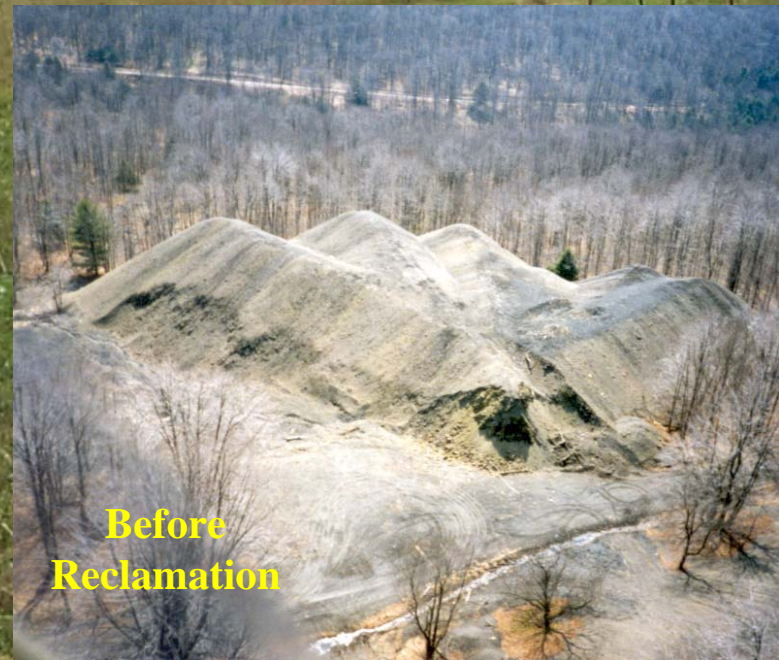
The Klondike Treatment System was excavated by DEP's BAMR construction crew, the materials were purchased through a state grant and the work was done by Signor Bros. Construction.





# 1999 Klondike Refuse Pile Reclamation

Coal mine refuse at the Klondike Mine was reclaimed by the Babb Creek Watershed Assoc. using topsoil and tannery sludge materials.



**Before  
Reclamation**



# New Antrim Treatment Plant

A photograph of the New Antrim Treatment Plant. The facility includes several industrial buildings with brown and white siding, situated on a grassy hillside. In the foreground, there is a large, circular concrete aeration tank with a metal walkway and railings. The background is filled with a dense forest of green trees under a clear blue sky. 

Before going out of business, the Antrim Mining Company constructed a more economical treatment plant and established a \$1.5 million treatment trust for its operation. The plant is operated by the Babb Creek Watershed Association under agreement with DEP.



# Babb Creek is coming back to life

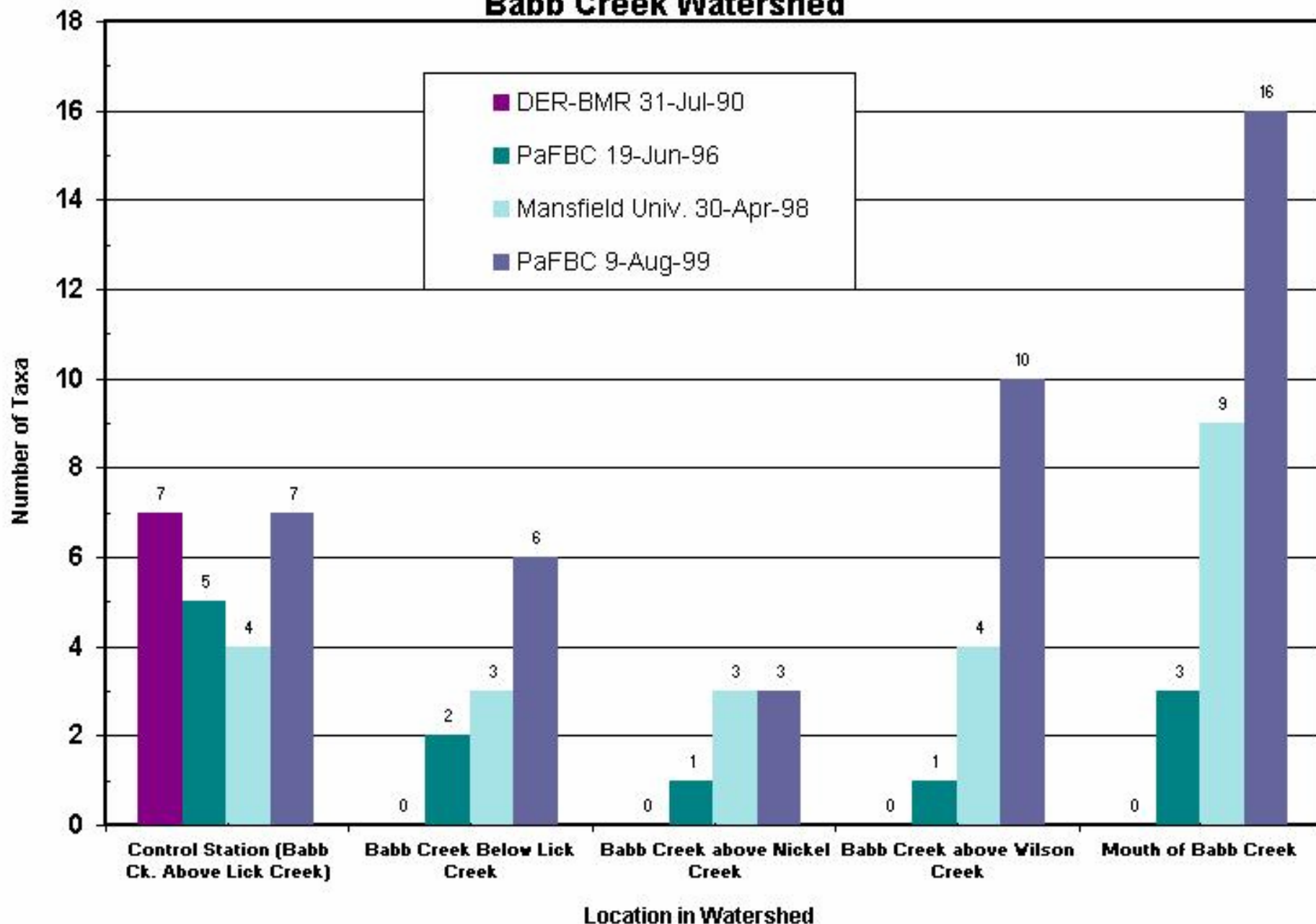


Stream surveys of the fish  
and macroinvertebrate life  
show the recovery of the  
stream through time.



# Total Fish Taxa Babb Creek Watershed

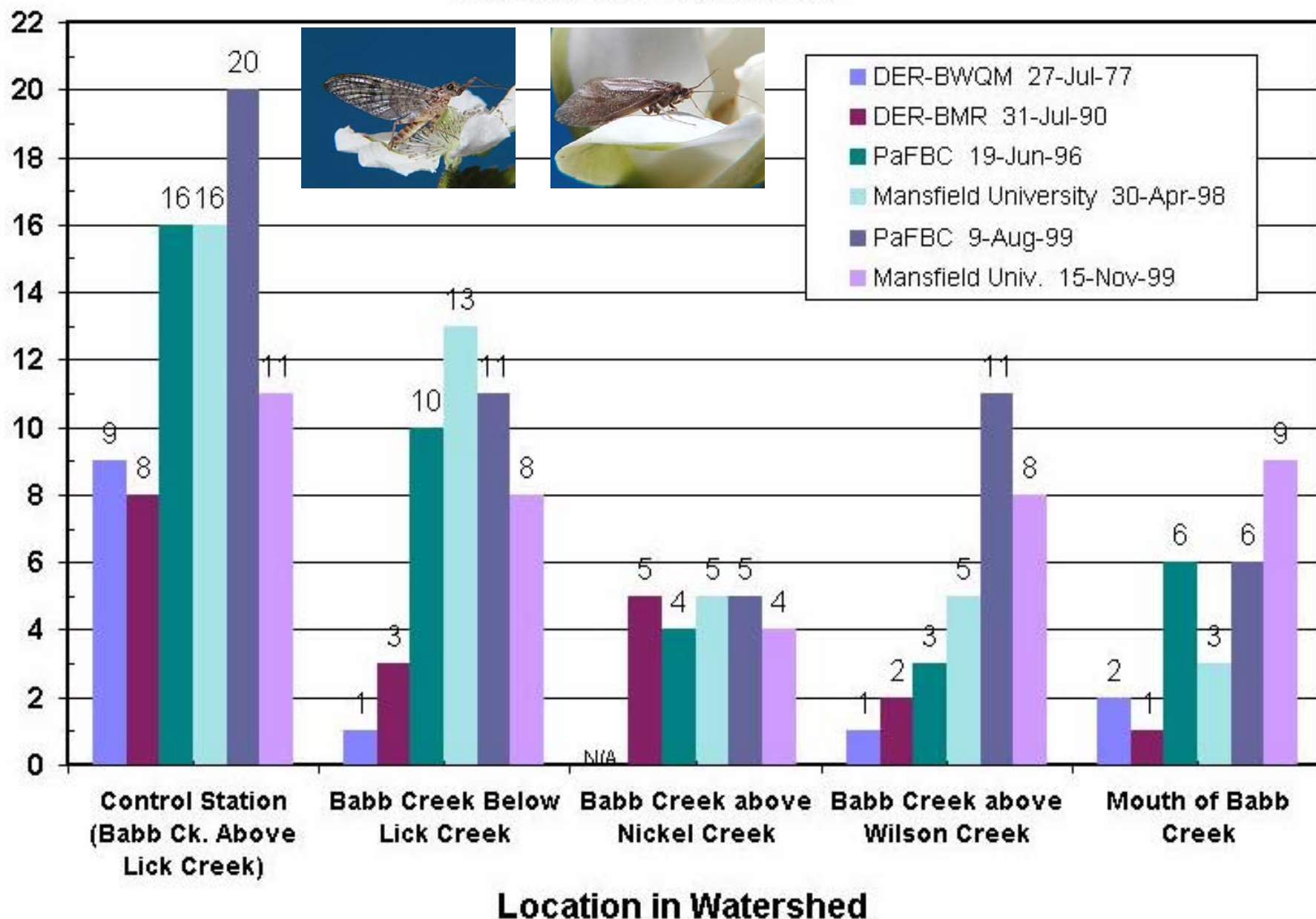
## Babb Creek Watershed





# Total EPT (Mayfly, Stonefly, and Caddisfly) Taxa Babb Creek Watershed

Number of Taxa





# 2000 Bear Run Treatment Systems



In 2000 two large vertical flow ponds were constructed to treat the Bear Run Mine pollution.



# 2000 Railroad Grade Removal and Reclamation

Approximately 3,000 feet of railroad grade composed of coal and coal refuse were removed by Signor Brothers Contracting through a DEP mining permit. The stream was eroding the material and causing siltation in Babb Creek.



**Before  
Reclamation**



# 2002 State Yard Treatment System



A passive treatment system including vertical flow ponds, a settling basin, and manganese treatment were constructed with a DEP Growing Greener Grant.




# 2002 Rattler Mine Revegetation



Over 90 Acres of abandoned mine land at the Rattler Mine were revegetated using biosolids. The project was funded by an OSM grant, BCWA funds, Game Commission resources, and other grants and donations.



A photograph of a man in a dark shirt, light blue jeans, and a baseball cap standing next to a piece of yellow machinery in a wooded area. The machinery has a large blue hose connected to it. The background shows a dirt path leading into a forest with trees and fallen leaves on the ground.

A new approach of injecting limestone sand slurry into the abandoned Rattler underground mine workings is being done as part of a Growing Greener Grant.

2002-2003 Rattler Mine  
Limestone Injection

09 23 2003



# 2003 Rattler Mine Treatment Systems (3)



Passive treatment at three sites is also being accomplished through Growing Greener and OSM funding.



# 2003 Anna S Treatment Project



Passive treatment of the Anna S discharges and Hunters Drift is being done as part of a \$2.5 million project funded by Growing Greener and OSM.



**13 Years later...**

**Many projects have been implemented by the Babb Creek Watershed Association, State Government, the Federal Government, Industry, Academia, and many volunteers and Babb Creek is coming back to life.**

**13 Years later...**

**Many projects have been implemented by the Babb Creek Watershed Association, State Government, the Federal Government, Industry, Academia, and many volunteers and Babb Creek is coming back to life.**



# Babb Creek Restoration Efforts

- Passive treatment is in place at the Arnot No. 2 Mine (2 systems), the Klondike Mine, the Bear Run Mine, the Anna S Mine, and the Rattler Mine.
- Diversion Wells have been constructed at Lick Run, Red Run and the Klondike Mine.
- Abandoned Mine Lands and Coal Refuse has been reclaimed at the Klondike Mine, the State Yard near Arnot, the Railroad Grade Project, the Bear Run Mine, and at the Rattler Mine.
- The Antrim Treatment Plant is being operated very diligently by Denny Walbridge under the direction of the Babb Creek Watershed Association.



# Babb Creek Recovery Evidence

- The section of Pine Creek that was polluted by Babb Creek was officially removed from the 303(d) list of impaired streams.
- Lick Creek is a recovering fishery.
- Shallow headwater ponds are supporting panfish.
- Wild trout are reproducing in Babb Creek near Landrus.
- Sixteen types of fish were found at the mouth of Babb Creek.
- The restaurant in Morris is now called “The Babb Creek Inn”.
- Kids are fishing Babb Creek again
- Pine Creek Anglers have complained about the Babb Creek restoration efforts because some hatches have been too prolific and fish have too many ‘real’ flies to eat and don’t take the ‘artificial’ flies.
- Some of Pine Creek’s insect hatches including the ‘Green Drake’ have returned after being absent for many years.



# Thanks to all of the Watershed Partners:

- **Babb Creek Watershed Association**
  - **Board of Directors:** Bob McCullough, Jim Barr, Bob Ross, Steve Schlesing, Bill Beacom, Morgan Bradley, Ron Evans, Tom Finkbiner, Ron Signor, and Joe Tibolla.
  - **Treatment Plant Operator:** Denny Walbridge
- **Special Mention and Remembrance of:**
  - Phil Stillerman, BCWA and PHPG
  - Jack Sherwood, Tioga State Forester



# Partners cont.

- Pine Creek Headwaters Protection Group
- Arnot Sportsmens Club
- Slate Run Tackle Shop
- National Wild Turkey Federation
- Ducks Unlimited
- Ruffed Grouse Society
- Trout Unlimited



## Partners cont.

- Signor Brothers Contracting
- Antrim Mining Co.
- Waste Management Co.
- Stott Mining Company
- Hedin Environmental
- VAPCO Engineering
- E.M. Brown Inc.
- Gannett Fleming



## Partners cont.

- Pennsylvania Department of Environmental Protection
- Pennsylvania Department of Conservation and Natural Resources
- Pennsylvania Game Commission
- Pennsylvania Fish and Boat Commission
- Office of Surface Mining-Appalachian Clean Streams Initiative



# Partners cont.

- Penn State University
- Mansfield University



## Partners cont.

- And many other volunteers and groups that worked together to help remove some of the scars of the past and bring Babb Creek back to life.



