

# Learning from Restoration Mistakes is the Key to Restoration Success

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# KY In-Lieu-Fee Program (FILO)

- 2000: Fund established by KY Legislature
- Staffing
- Partnerships
- Mitigation
  - 900,000 linear feet of stream
  - 70 wetland acres
  - 92 projects approved
    - 35 completed
  - 6,500 acres of land acquired

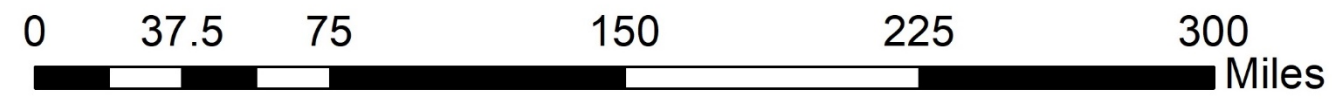
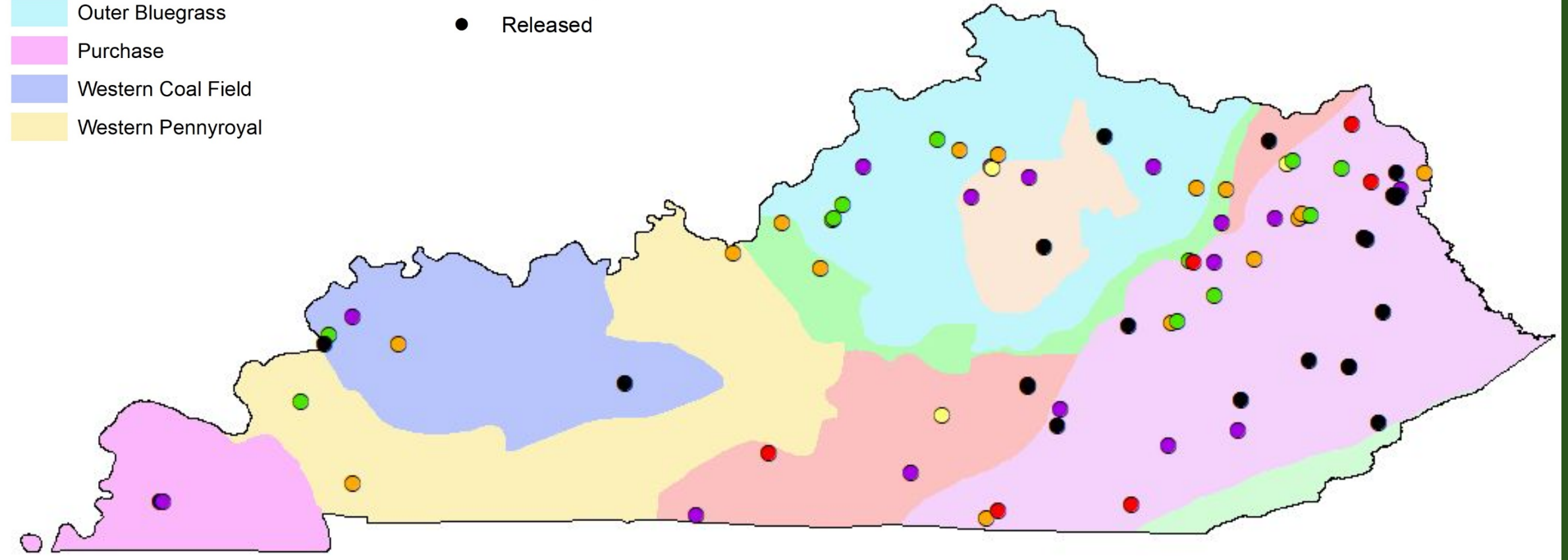
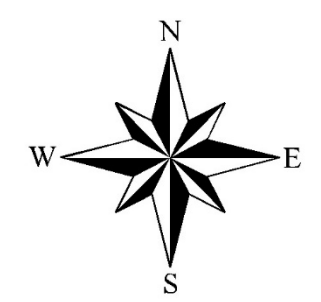


# Physiographic Regions

- Cumberland Escarpment
- Eastern Coal Field
- Eastern Pennyroyal
- Inner Bluegrass
- Knobs
- Outer Bluegrass
- Purchase
- Western Coal Field
- Western Pennyroyal

# Project Status December 2017

- Approved
- Approved/Terminated
- Design/Permit
- Construction
- Monitoring
- Released





# The Early Years

- Small easement sizes
- Project length
- Placement in watershed
- Landowner selection and communication
- Incompatible adjacent land use
- No remedial action plan in-house
- Etc.







Pre-Restoration



MY1



Pre-Restoration



MY2







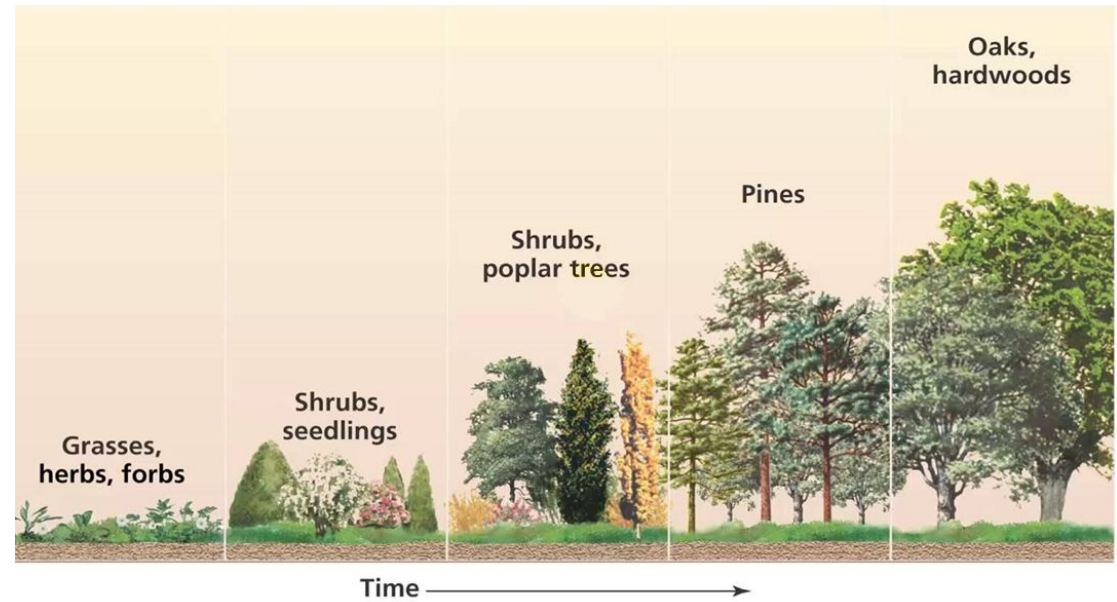
# Vegetation

## • *Issues:*

- Survival and Growth
- Expectations

## • *Solutions:*

- Succession Theory
- Proper Handling and Planting
- Proper Soil Management



MY 2



# Structures



- *Issue:* Failure, says who?

- Landowner
- Regulatory
- FILO

- *Solutions:*

- Experience
- Training
- Data





# Structures

- *Issue:* Structure design
  - Type
  - Size
  - Location/Frequency
- *Solution:* Increased design review
  
- *Issue:* Improper installation
  - Erosion control blanket
  - Sills
  - Footers
- *Solution:* Increased construction oversight





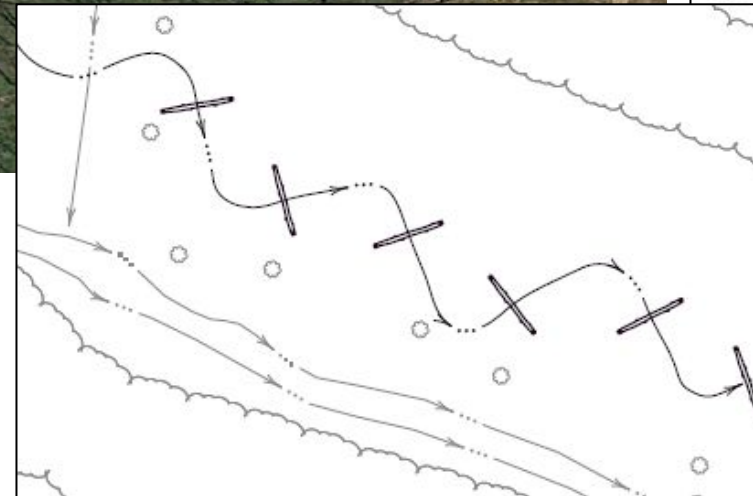
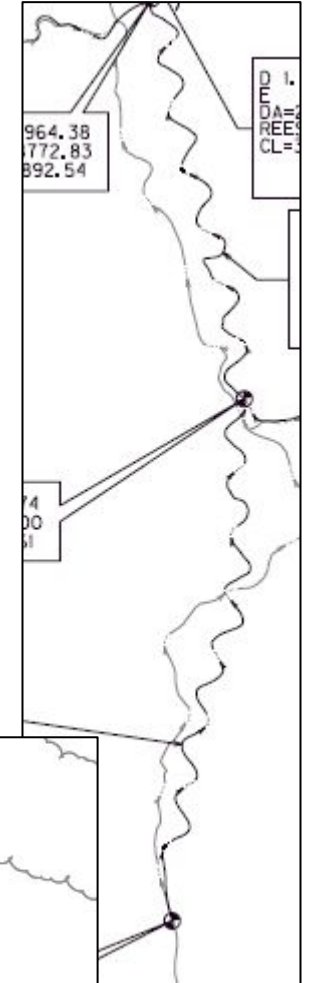
# Design

- *Issue:* Planform

- Location in Valley
- Valley Condition
- Flow Type

- *Solution:* “Micro-design” Approach

- Expensive
- More Natural
- In-Stream Habitat Diversity





# Sediment

• *Issue:* Too Much or Too Little

• *Solutions:*

- In-depth Sediment Studies
- Appropriate Design
- Risk Assessment
- Appropriate Success Criteria





# Lessons Learned

- Time-lag of learning
  - Construction oversight is key
  - Stakeholder education
  - Working group
  - Take more data
  - Monitoring and maintenance staff





# Questions?

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