

# Success, Lessons, and Future

## 319 Programs in Mifflin County

April 12, 2016

**PA NPS Program Grantee Meeting**



# Presentation Goals

- Share our experiences (success, lessons, future plans) with the 319 program in Mifflin County to compare with other participants in the 319 program and to discuss project successes and lessons learned to guide future efforts.

# 319 Targeted Watersheds Mifflin County



# Presentation Summary

- Surface Water Assessment 2001
- WIP developed for the Upper Kishacoquillas (UK) Watershed 2005
- WIP developed for Hungry Run (HR) Watershed 2008
- 319 Implementation Grants 2005-2015
- Draft TMDL 2011
- 319 Surface Water Monitoring Grants 2014
- NFWF Outreach and TA Grant 2013 & 2015
- NFWF Grant to update current UK WIP 2015-2016

# Surface Water Assessment

- 2001 PA DEP Surface Water Assessment
  - Portion of Kishacoquillas Creek (UK) added to 303(d) list
    - Excess siltation and nutrients due to agriculture
  - Hungry Run (HR) added to 303(d) list
    - Excess siltation and nutrients due to agriculture

# Watershed Implementation Plans

WIP developed for the UK Watershed in 2005

WIP developed for the HR Watershed in 2008

## **WIP Methodology:**

- BMP data collected from current conservation plans
- Farm data (number of farms were estimated using ArcGIS parcel data and field verification).
- Scenarios were run using PREDICT software
- Farm prioritization

# 319 Implementation Grants (UK)

17 Landowners

\$1.7 MILLION awarded

## **BMPs Installed**

- 12 Manure Storage Structures
- 10 Heavy Use Area projects (typically concrete, curbed and roofed barnyards)
- 13,427 ft. (2.5 miles) of stream fenced creating almost 8 acres of buffer
- 17 stabilized livestock crossings
- 28 in stream fish habitat/bank stabilization structures
- 18 nutrient management plans
- 13 manure management plans
- 12 Ag E & S plans

# 319 Implementation Grants (HR)

6 Landowners

\$1.3 MILLION awarded

## **BMPs Installed**

- 4 Manure Storage Structures
- 4 Heavy Use Area projects
- 4,786 ft. of stream fenced creating 3.3 acres of buffer
- 7 stabilized livestock crossings
- 50 in-stream fish habitat/bank stabilization structures
- 4 nutrient management plans

















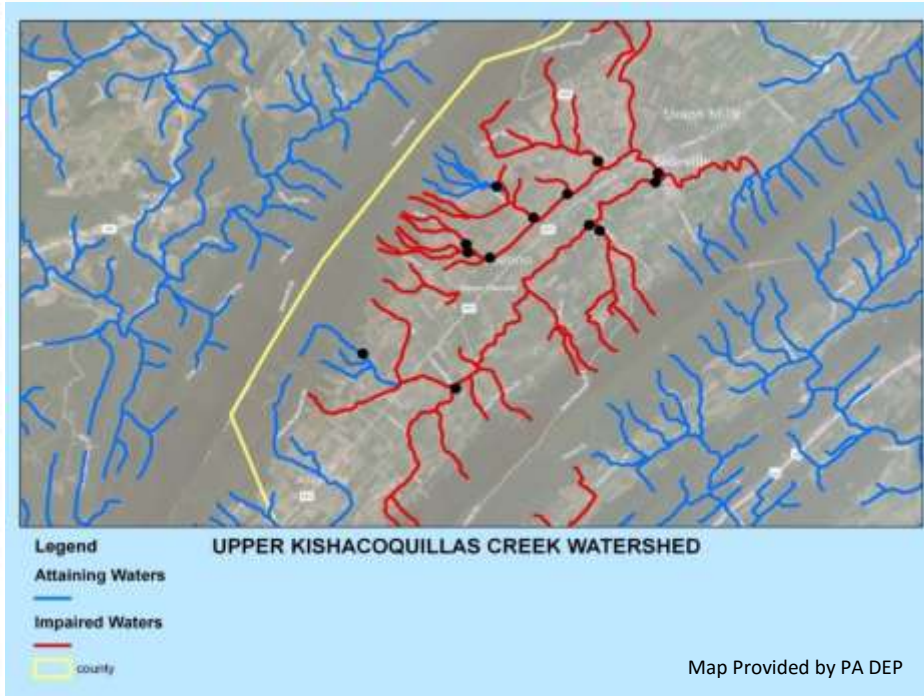
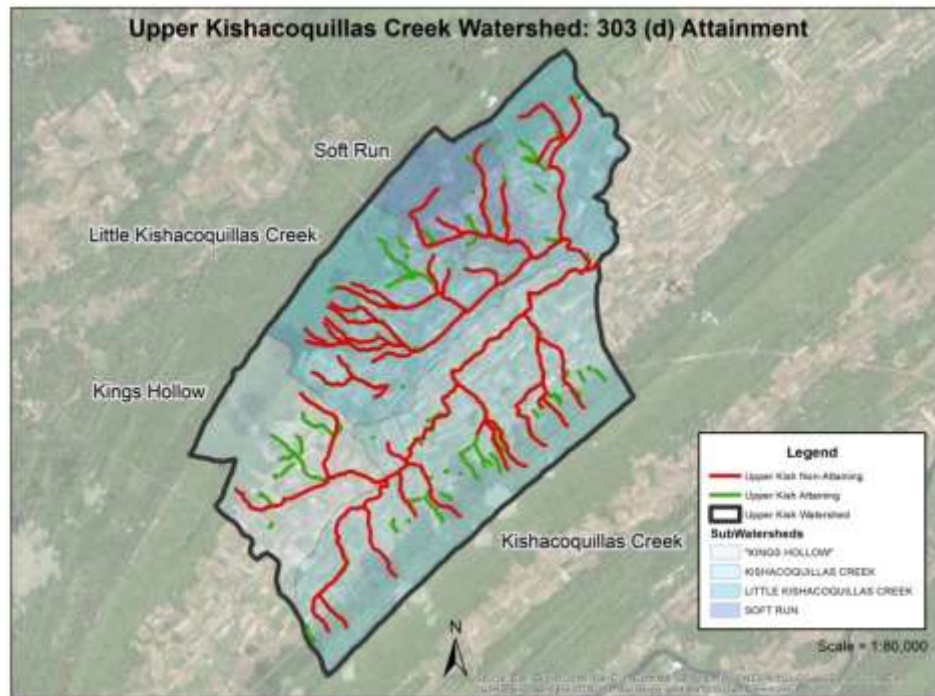


# 319 Surface Water Monitoring Grant

- Grant submitted in 2013 (FFY 2014), program began in spring 2014
  - Two watersheds – Upper Kish (13 sites); Hungry Run (9)
  - Initially funding for two years, extended to three years
  - Submitted another 319 grant (FFY 2016) for three additional years
- Assessment – PA DEP ICE Survey Protocol
  - Field Chemistry
  - Water Chemistry (SAC 018 – 35 tests)
  - Physical Habitat
  - Biological (Macroinvertebrates)

# Upper Kishacoquillas Creek Watershed

## Surface Water Monitoring



Map Provided by PA DEP



# Upper Kishacoquillas Creek Watershed Index of Biotic Integrity (IBI) 2014-15

IBI Attainment/Impairment Benchmarks  
for Aquatic Life Use (ALU)

- 1)  $\geq 63$  - ALU Attainment
- 2) 50 - 63 - Further Evaluation
- 3)  $< 50$  - ALU Impairment

2014: 37.1  
2015: 61.0

2014: 23.1  
2015: 23.0

2014: 24.0  
2015: 32.3

2014: 24.3  
2015: 30.8

2014: 29.9  
2015: 32.6

2014: 27.6  
2015: 30.8

2014: 18.4  
2015: 21.9

2014: 24.4  
2015: 22.3

2014: 20.5  
2015: 26.4

2014: 21.7  
2015: 24.0

2014: 21.6  
2015: 20.6

2014: 74.0  
2015: 79.8

2014: 14.8  
2015: N/A

**Key**  
**Green = Improving**  
**Red = Degrading**



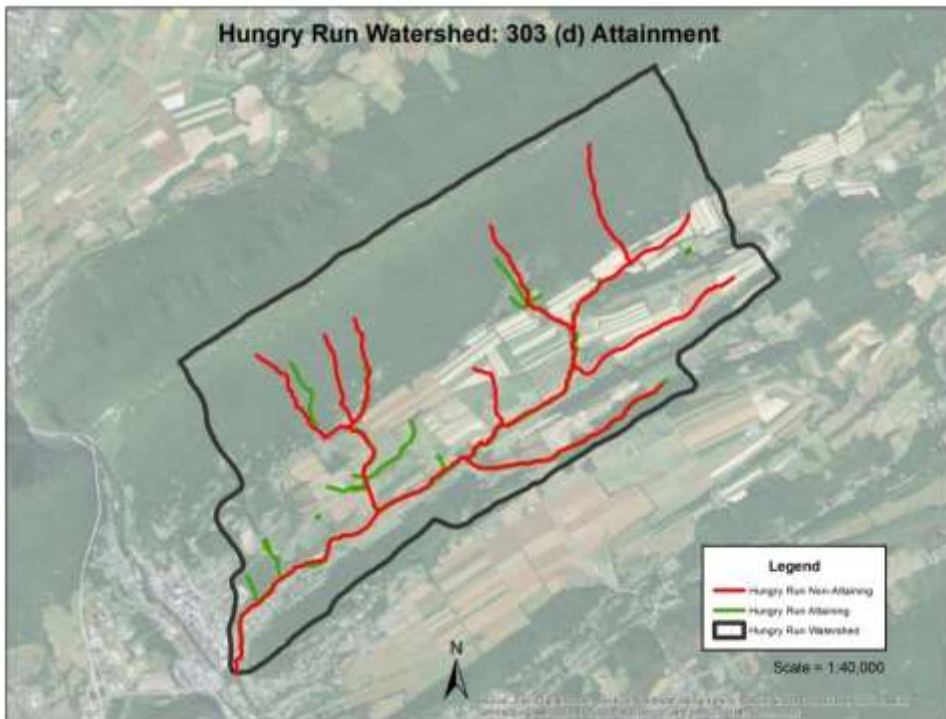
0 0.2 0.4 0.8 1.2 1.6 Miles

Data Source: Mifflin County GIS Dept., PA DEP, Ecomystics,  
Susquehanna University. Map Projection: PA State Plane North



# Hungry Run Watershed

## Surface Water Monitoring



Map Provided by PA DEP

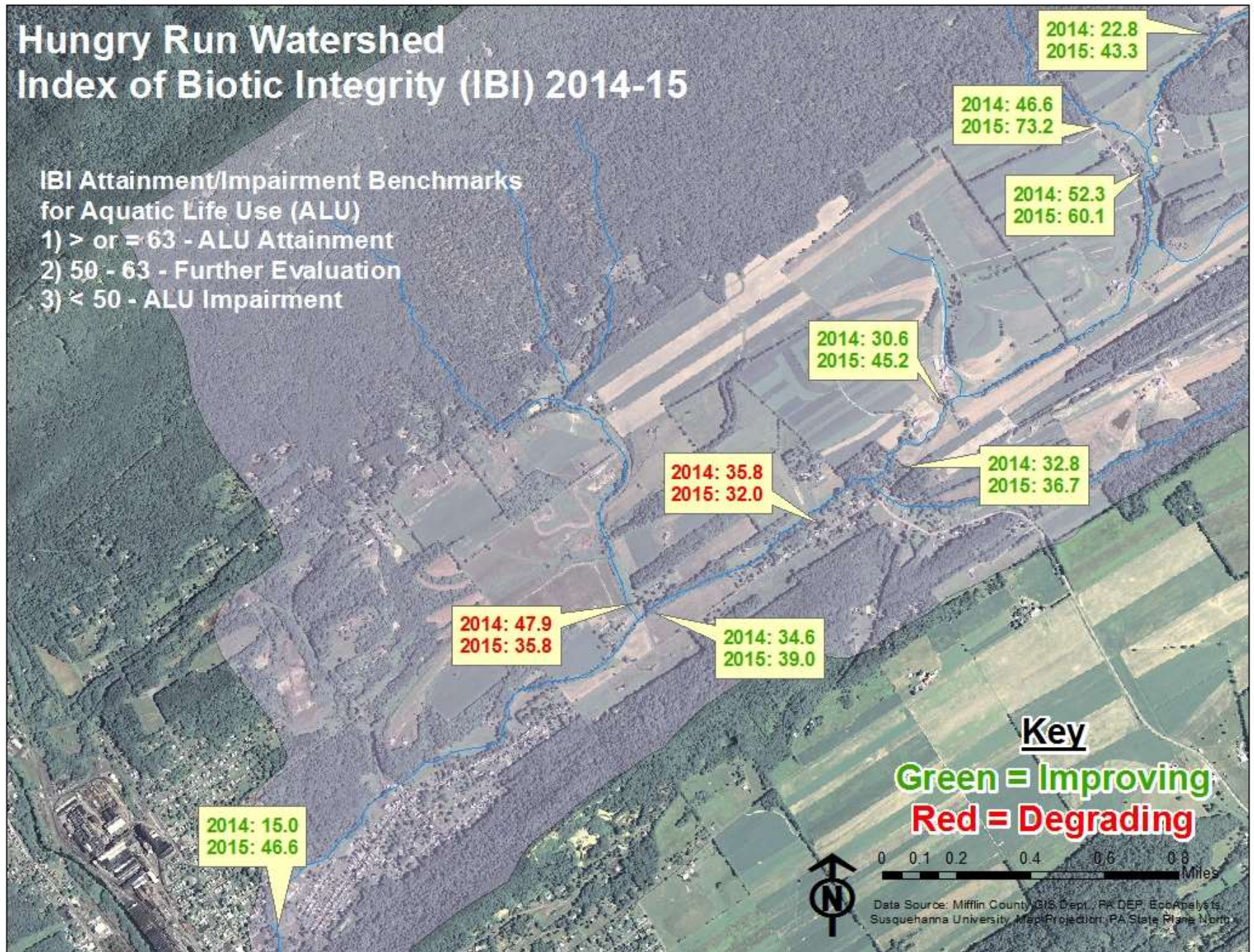


# Hungry Run Watershed

## Index of Biotic Integrity (IBI) 2014-15

### IBI Attainment/Impairment Benchmarks for Aquatic Life Use (ALU)

- 1)  $\geq 63$  - ALU Attainment
- 2) 50 - 63 - Further Evaluation
- 3)  $< 50$  - ALU Impairment





# Surface Water Monitoring

- Looking ahead
  - Continue established program
  - Anticipate funding for fish electroshock sampling
    - Glimpse into fish populations
    - Indicator of success
    - Talking point for potential project landowners
      - Fish are the glamour species
  - Anticipate funding for monitoring equipment
    - Multimeter unit
      - Pre/post project monitoring
      - Additional sampling at established sites throughout year
        - *What are conditions in July?*



# NFWF Outreach and TA Grant

- Received a NFWF Chesapeake Bay Small Watershed Grant for Outreach and Technical Assistance (2013 and 2015)
  - Outreach to “underserved” groups (including Plain Sect)
    - Supports one staff position
    - \$25,000 of implementation money

# Lessons Learned

- Bay Special Projects Grants
- Whole Farm Approach
  - Combining grant monies for one project - Partnerships
- BMP performance over time
- Dealing with Landowners
- Grant applications becoming more specific
  - Precise estimates

# Updating the UK WIP

- Reasons for update
  - Out of date information
  - Limited “core” BMPs listed
  - Significant progress (How far have we come and how far do we need to go?)
  - Changes on the land (property ownership, voluntary BMPs, ag compliance plans).
  - Draft TMDL 2011
  - Impaired watershed expanded
- NFWF Technical Assistance Grant 2015-2016
  - Contracted with BSA/LA and Land Studies to update UK WIP

# Updating the UK WIP

*Decided to use TMDL draft as our guidance for the new WIP...*

1. Reviewed information in old WIP
2. Reviewed draft TMDL
  - Submitted questions to DEP for clarification
3. Compiled current data from the UK watershed
  - a) BMP data
  - b) Farm data
  - c) Animal # estimates (DEP farm visits)
4. Submitted to Land Studies for modeling using MapShed



# Updating the UK WIP

## Modeling Results

- Base model for reference (no inputs or changes)
- Duplicate TMDL model run in Mapshed
  - Upper Kish
  - Reference watershed = Middle Creek
- Ran model with BMP information from UK to estimate reductions to date

# Updating the UK WIP

## Modeling Results

- Base model for reference (no inputs or changes)
- Duplicate TMDL model run in Mapshed
  - Upper Kish
  - Reference watershed = Middle Creek
- Ran model with BMP information from UK to estimate reductions to date
- Pre 2011 w/o animal numbers    Met TMDL targets!!!
- Pre 2011 with animals    Lots of work to do...
- Post 2011 w/o animals    Met TMDL targets!!!
- Post 2011 with animals    Lots of work to do...

**Obvious problem = comparing apples to oranges...!!!!**

# Updating the UK WIP

## Modeling Results

- Decided to incorporate Middle Creek animal info estimates
  - Processed estimates using same methodology
- Results
  - Pre 2011 w/ all animals Met TMDL targets!!!
  - Post 2011 w/ all animals Met TMDL targets!!!

# Now What??

Met TMDL targets?

- We suspect that attaining use has not yet been achieved due to water quality data
  - *Ave. IBI score = 33.79*

Future = Logical solution would be to add BMP's from the Middle Creek watershed

# WIP Update Lessons Learned

- Model and water quality data do not agree
  - Model should be comparable to water quality data, but model needs lots of data!!
- Lots of specific data required for modeling!!!
  - BMP #s, Animal #s
- Need to define a way to measure intermediate success and identify the remaining reductions necessary to meet our goals.

# Question/Comments?