NFWF Metrics & Assessment Pilot Project

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STAC Quarterly Meeting

QUICK LAUNCH

- Program Home
- Applying for Grants
- Applying for Technical Assistance
- Tools for Grantees
- Theme: Freshwater
- Theme: Oceans and Coasts

Chesapeake Estuary | Credit: Mike Land

Chesapeake Bay Stewardship Fund

NFWF's Chesapeake Bay Stewardship Fund is dedicated to protecting and restoring the Bay by helping local communities clean up and restore their polluted rivers and streams. We advance cost-effective and creative solutions with financial and technical assistance.

Working in partnership with government agencies and private corporations, the Stewardship Fund awards $8 million to $12

APPLICATION INFORMATION

2014 Chesapeake Bay Stewardship Fund RFP (Updated: 3/19/2014)

Application Tip Sheet (Updated: 3/19/2014)

Live Recording of the 2014 Applicant Webinar (Updated: 4/2/2014)

2014 Applicant Webinar PDF Version

ANNOUNCEMENTS

3/19/2014
Chesapeake Bay Stewardship Fund 2014 Request for Proposals

1/23/2014
Now accepting applications for Technical Assistance!

11/21/2013
Virginia Organizations Receive Grants to Support Cleaner Waters

10/30/2013
More Than $9 Million Will Support Clean Water in the Chesapeake Bay Region

10/22/2012
Coast Guard investigations help watershed projects flourish

DUE DATES

5/15/2014

National Fish and Wildlife Foundation (NFWF)

- Manages grants for the Chesapeake Bay Stewardship Fund (CBSF) partnership
- Grant Programs include:
  - EPA: Small Watershed Grants (SWG)
  - USDA: Innovative Nutrient and Sediment Reduction (INSR) Grants
  - Previously USDA: Conservation Innovation Grants (CIG)
- Grants are a type of Investment
- NFWF wants to maximize its return on investment

NFWF Metrics & Assessment Project (2009-2013)

- Goals:
  1. To provide feedback to grantees to ensure successful implementation and long-term maintenance of funded conservation and restoration measures
  2. To improve NFWF's consistency and accountability to its funders
  3. Although most projects are funded in the short-term, measure pre-project metrics to leave the door open for post-project monitoring of change.
- Major Task:

  Identify and catalog menus of metrics and protocols for quantifying impacts from 8 categories of projects typically funded by NFWF.

NFWF M&A Pilot Project (2013-2015)

- 6 grantees
- 7 BMPs
  - Forest and grass buffers
  - Livestock exclusion
  - Bank stabilization
  - Urban homeowner BMPs
  - In-stream habitat
  - Channel restoration
- Field worksheets
- Web-based database with online data entry, possibly linked to field-based apps.

Coincident with our Project

- CBP – BMP verification protocol development
- CBP – Expert Panel to define removal rates for stream restoration projects
- CBP – Urban stormwater work group – Homeowner BMP crediting
- FWS – Stream Functions Pyramid publication
- STAC – Stream Restoration Workshop

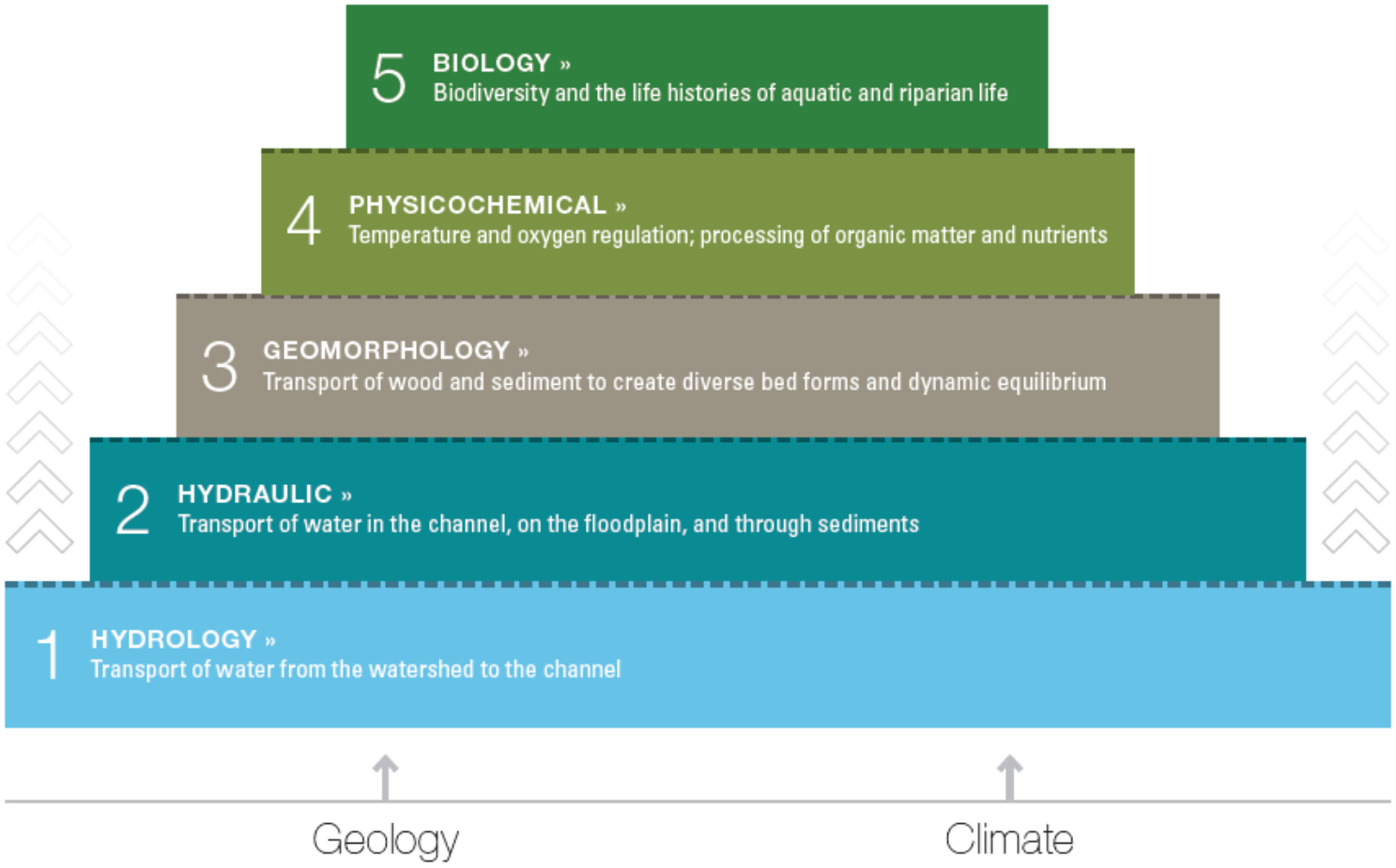
Issues Considered

- Limited funds: implementation vs. monitoring
- Where will short-term monitoring be expected to show improvement?
- How to avoid duplication of paperwork?
- How much data collection is sufficient?
  - Ultimate success?
  - On the right trajectory?
- Are short-term BMPs still effective in the long run?
- Is “pollutant reduction” sufficient? What about “functional lift”?

Streams Function Pyramid

APPENDIX A: STREAM FUNCTIONS PYRAMID

a. OVERVIEW GRAPHIC



General Types of "Metrics"

- Type and extent of BMPs
  - Quantification of installation
- Interim BMP Maturation Metrics
  - Measures of vegetation, geometry, biology that are expected to change in the short-term
- Adaptive management
  - Checklists of maintenance items
- Pollution load reduction estimates
  - Typically simulated or calculated from site characteristics

Metric Information

- Type and extent of BMPs
  - Pre-project
    - Photo documentation
    - Baseline monitoring
      - Livestock access
      - Vegetative cover and composition
      - Geomorphic channel form
      - Water quality
      - Biological inventory
  - BMP Installation
    - Type and extent of BMPs installed
    - Meets BMP specs and/or design criteria
    - Photo documentation

Metric Information (cont.)

- Interim BMP Maturation Metrics
  - Continued monitoring of pre-project interim BMP metrics or site metrics to assess progress
- Adaptive management
  - Checklists to visually inspect and to prompt maintenance of BMPs
  - Photo documentation
- Pollution Load Reduction Estimates
  - Pre-project
  - After installation

Vegetative Buffer Metrics Example

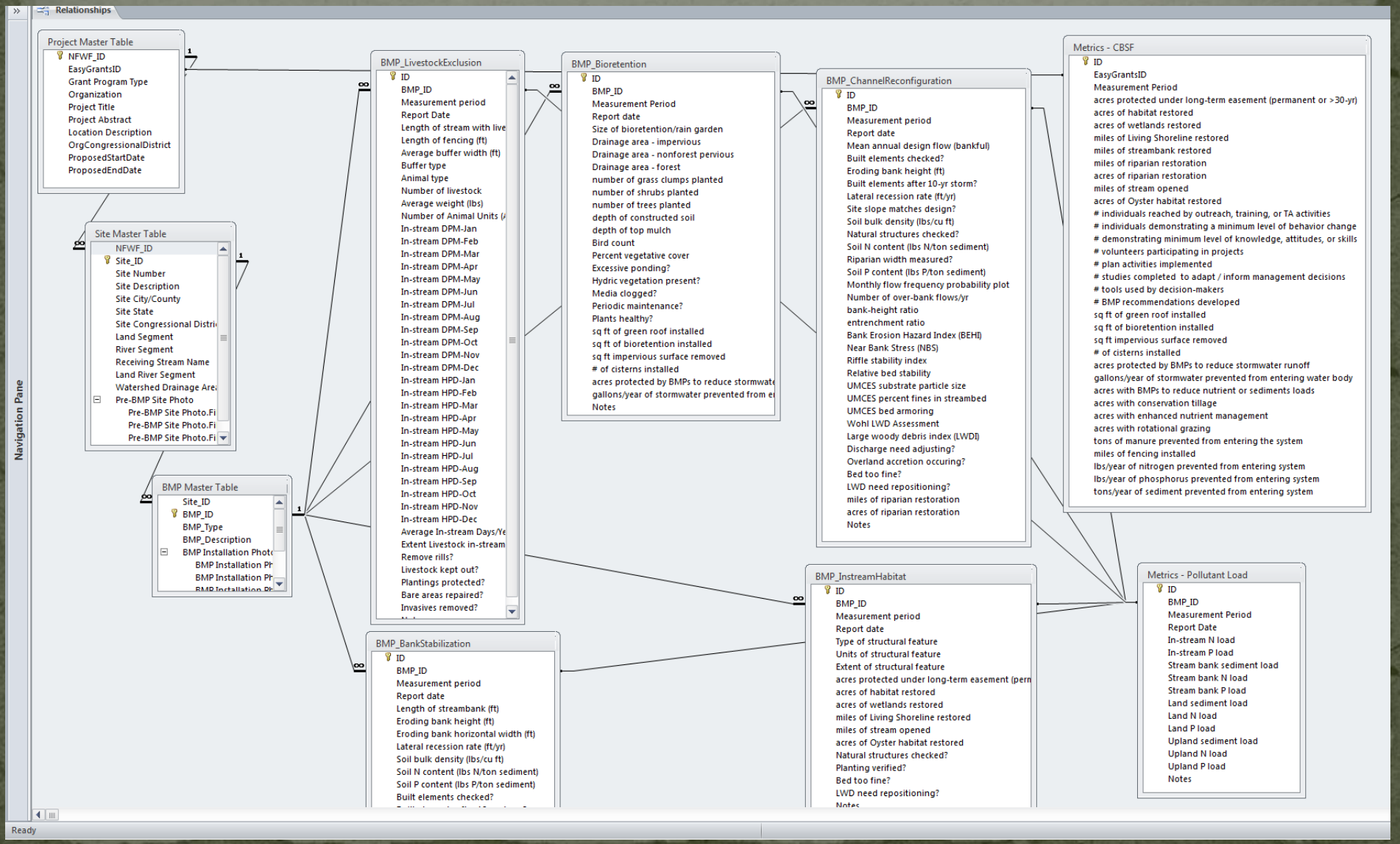
- Interim Metrics (select from the menu)
  - % vegetative cover
  - % native vegetation intact
  - Canopy complexity score
  - Buffer composition - %woody, %shrub, %grass
- Adaptive management
  - Follow a monthly schedule of riparian buffer maintenance (PaCREP and CBF 2007).
  - Is there sediment deposition at the field-buffer strip interface that jeopardizes its function?
  - Are there any concentrated flow paths visible through the buffer?
  - Have bare and/or eroded areas appeared in the buffer?
  - Have noxious weeds and invasive species appeared which have changed the desired species mix?
  - Has tree survival rate been reduced below the planned target tree density?

BMP Extents	Measurement Period	Pre-project						
	Site or Segment No.	1	2	3	4	5	6	
	Report Date							
	Photo documentation before and after installation.							
Interim Metrics	Select several measures from the list below to assist you in gaging progress during the project.							
Hydrologic	Mean annual bankfull flow (cfs)							
	Monthly flow frequency probability plot							
	See USGS, 1981; USEPA, 2013.							
	Number of over-bank flows/yr							

Database Fields	**Measurement Periods**						
BMP Extents	Measurement Period	Installed					
	Site or Segment No.	1	2	3	4	5	6
	Report Date						
	miles of riparian restoration						
	acres of riparian restoration						
	length of berms removed (ft)						
Design Criteria Checklist	Do built elements match design in extent, placement, and type of material - should be reassessed after one flood season?	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
	Do built elements match design in extent, placement, and type of material after a 10-yr storm?	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
	Site slope matches design.	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
	Coir logs, woody debris additions, or other natural structural elements meet all design specifications.	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Database Fields		**Measurement Periods**					
		Installed					
	Site or Segment No.	1	2	3	4	5	6
Adaptive management							
Hydrologic	Does discharge need to be adjusted through dam management, channel adjustments, or riparian plantings? If so, see Sellner et al.,	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Hydraulic	Is overland accretion occurring? If so, see Sellner et al., 2012, p.103.	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Geomorphic	Is the bed composition too fine? If so, see Sellner et al., 2012, p.102.	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N
Biological	Has LWD maintained its planned density? If not, see Sellner et al., 2012,	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Database Structure



Site Metrics

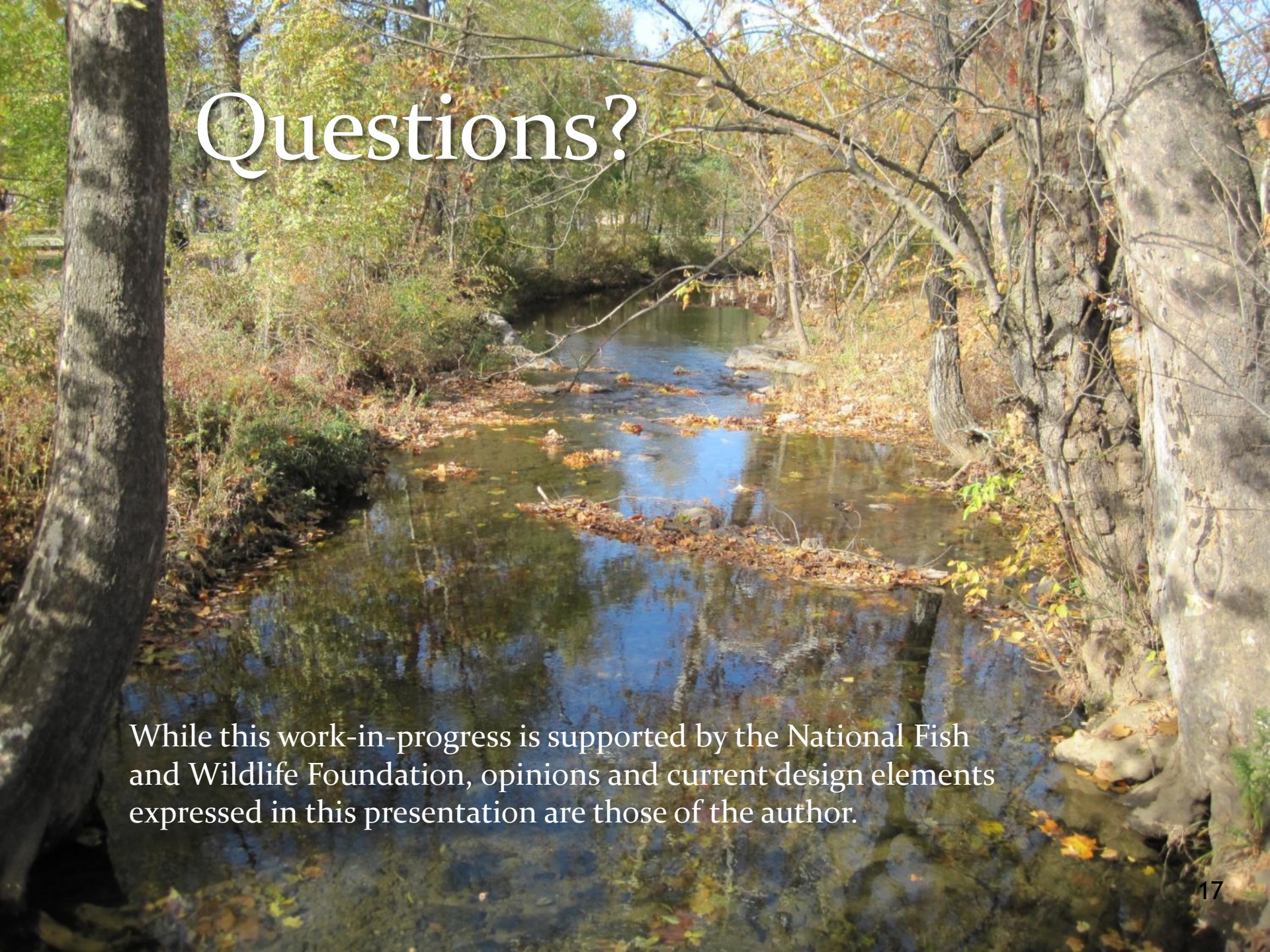
biological metrics table
Site_ID
measurement period
sample date
macroinvertebrate index type
macroinvertebrate index score
periphyton metric type
periphytonmetric score
nutrient criteria visual field assessment s
fish metric type
fish metric score
Indicator species type
Indicator species count
terrestrial species type
terrestrial species count
Notes

habitat metrics table
Site_ID
measurement period
Sample date
RBP bank stability (condition of banks)
RBP bank vegetative protection
RBP channel alteration
RBP channel flow status
RBP embeddedness
RBP epifaunal substrate
RBP riparian vegetative zone width
RBP sediment deposition
RBP velocity/depth combinations
RBP Total Habitat Score
MBSS macroinvertebrate substrata
MBSS shelter for fish
USA In-stream condition Subtotal
USA Floodplain Condition Subtotal
USA Total Reach Habitat Score
Notes

water quality data table
Site_ID
measurement period
Sample date
Water temperature (degC)
Air temperature (degC)
Dissolved Oxygen (mg/L)
pH
Conductivity (µmhos/cm)
Total nitrogen (mg/L)
Total phosphorus (mg/L)
Suspended sediment (mg/L)
Daily flow rate (cfs)
Mean annual bankfull flow (cfs)
Notes

Ongoing Analysis

- Where possible, make grant selection dependent on avoiding known site constraints.
- Premise the interim metrics on at least getting the grantee back on site to visually inspect and perform periodic maintenance on BMP installations.
- Even if no monitoring is planned for the project, collect select pre-project metrics.
- Include interim metrics for a range of technical skills.
- Reduce paperwork and simplify reporting to help grantee focus on implementation efforts.
- Consider “functional lift” as well as “pollutant reduction” as ultimate goals of restoration.


Questions?
While this work-in-progress is supported by the National Fish and Wildlife Foundation, opinions and current design elements expressed in this presentation are those of the author.