Data Dashboard Nutrients Applied and Expected Application Module

WTWG Presentation

September 5, 2024

Ruth Cassilly, University of Maryland

Kaylyn Gootman, PhD, Environmental Protection Agency

Presentation Outline

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II. Expected Audience

III. How can you use it?

Part 2: Nutrients Applied and Expected Application Module

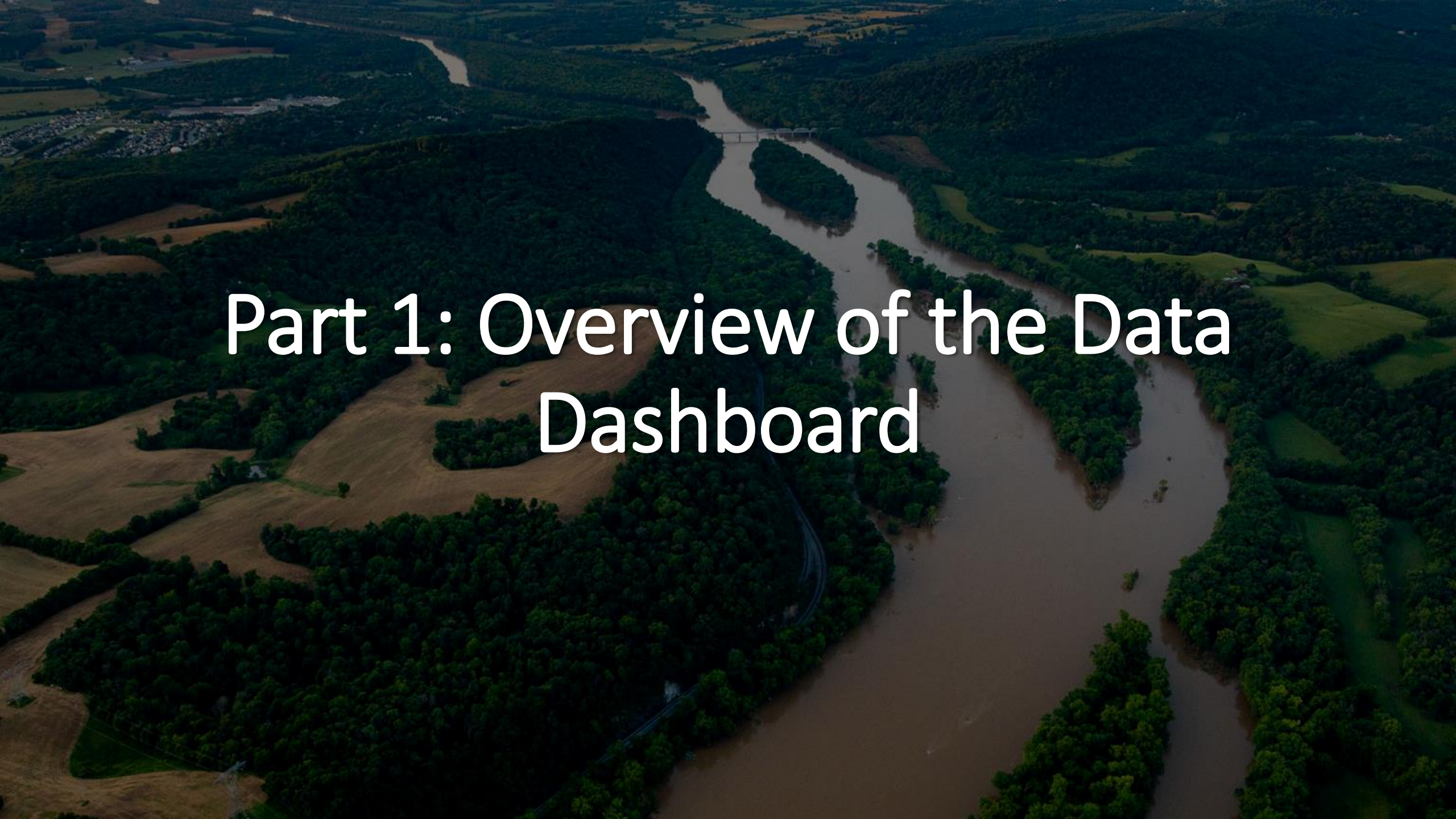
I. Purpose and Audiences

II. Terminology

III. Ideas for Data Visualization

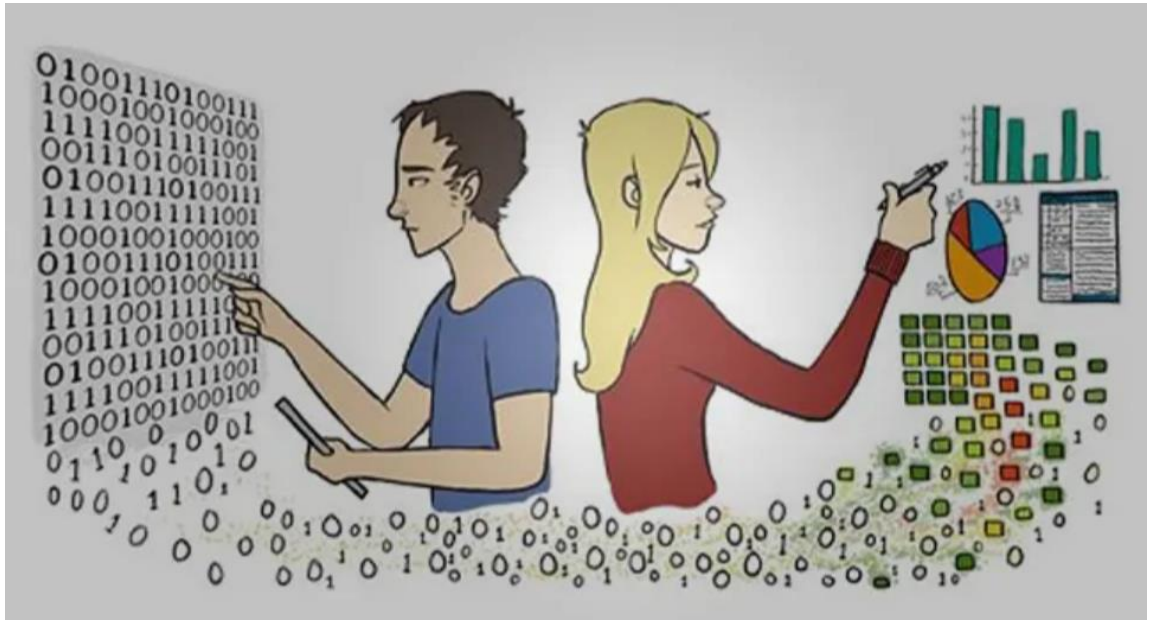
Part 3: Discussion

I. Questions for the WTWG Members



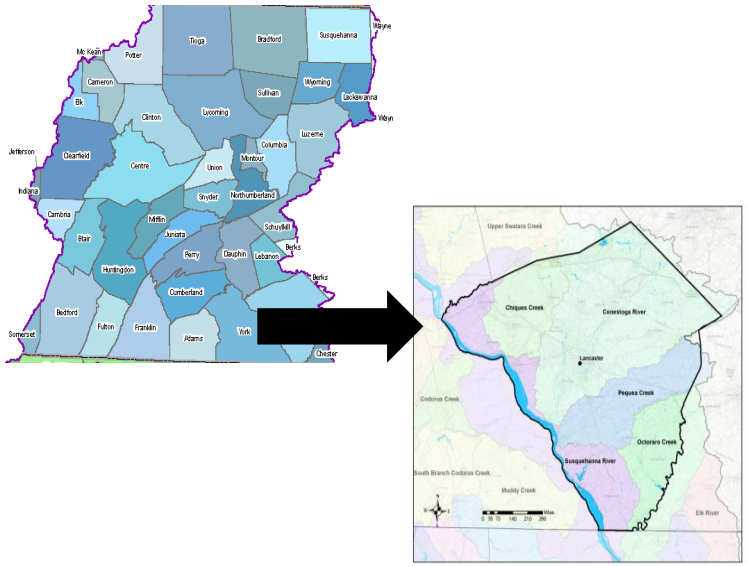
Part 1: Overview of the Data Dashboard

Chesapeake Bay Watershed Data Dashboard



The “Data Dashboard” is an online tool that provides accessibility and visualization of a large amount of scientific data and technical information to help guide water quality and watershed planning efforts.

Chesapeake Bay Watershed Data Dashboard

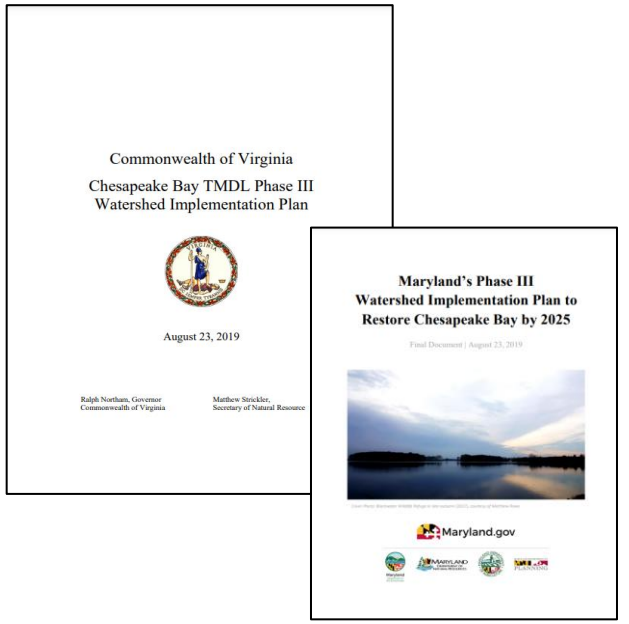


Informs restoration efforts for environmental managers and planners at both state and local levels.

What are you trying to do?
Understand **status of local water quality** and change over time

Example Topics
Current water quality and trends of freshwater rivers and streams
Current water quality and trends of tidal waters
Current status, trends, and explanations for tidal submerged aquatic vegetation

Provides guidance on how and why the information should be used.



Assists with watershed restoration plan development and implementation.

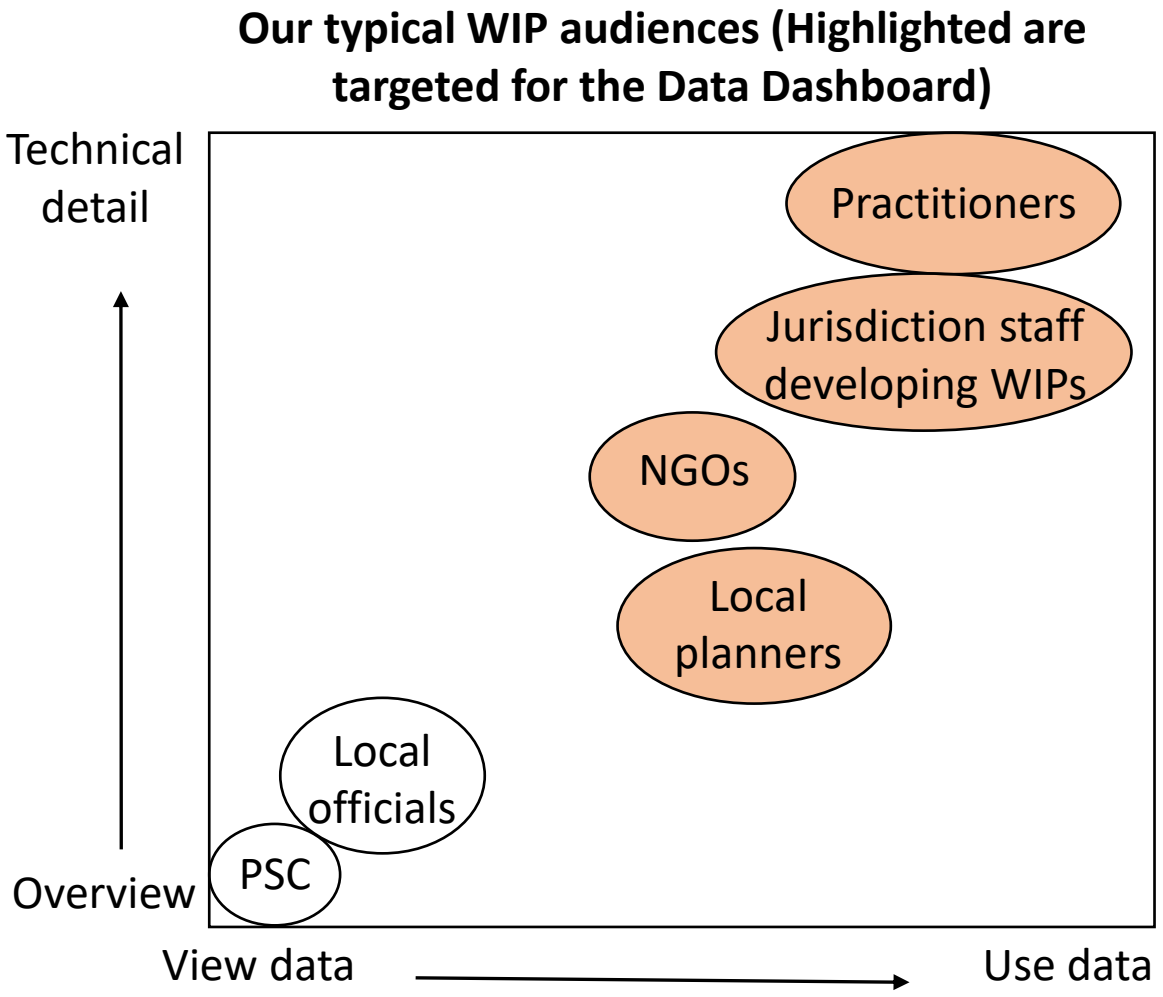
https://gis.chesapeakebay.net/wip/dashboard/

Expected Data Dashboard Audiences

Anyone seeking information that can aid in their planning process for water quality restoration.

Possible users include:

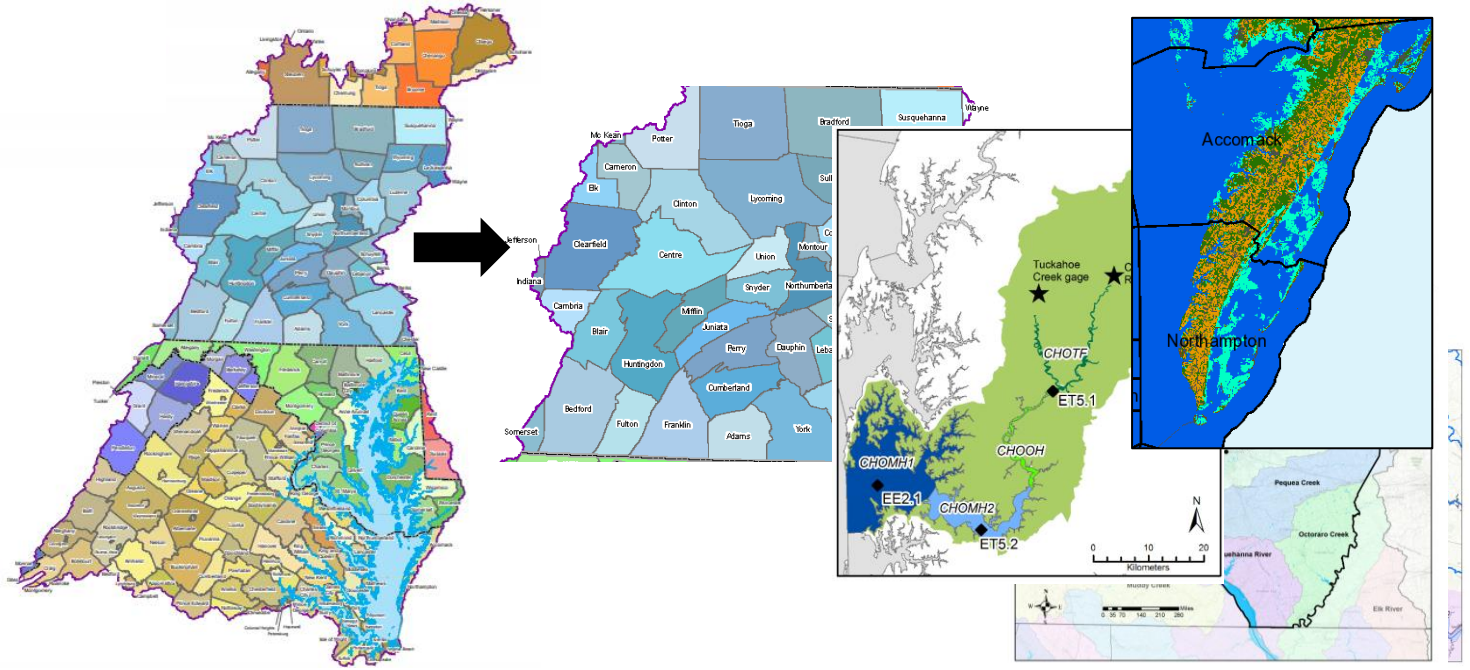
- State agency staff
- NGO partners
- Local planners (e.g. municipality level, soil conservation district level, county level, etc.)
- Watershed organizations

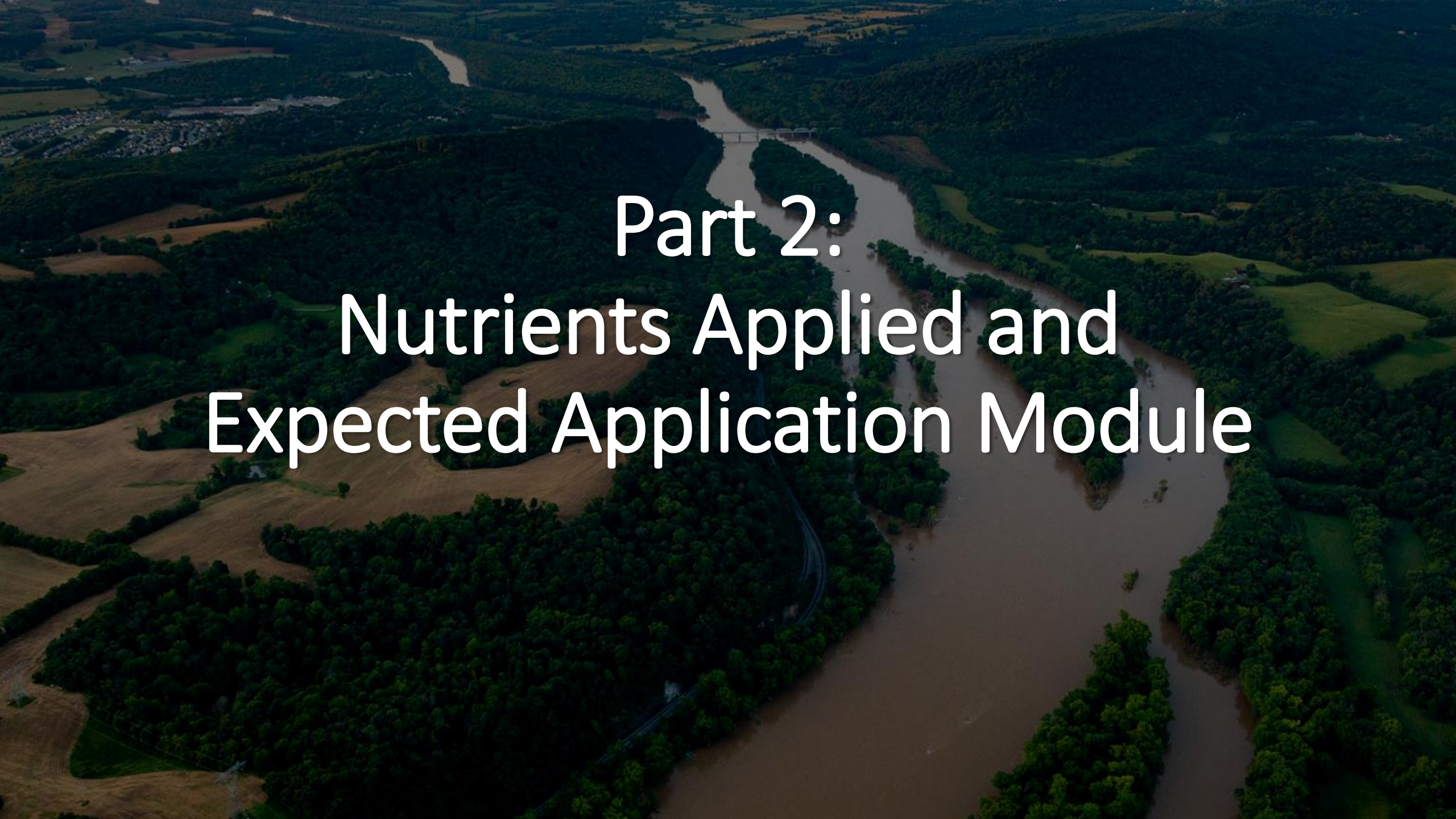


What can you do with it?

The Dashboard contains information that can be useful to many different users involved in restoration and conservation planning including local planners, state agencies, watershed groups, etc. Some uses include:

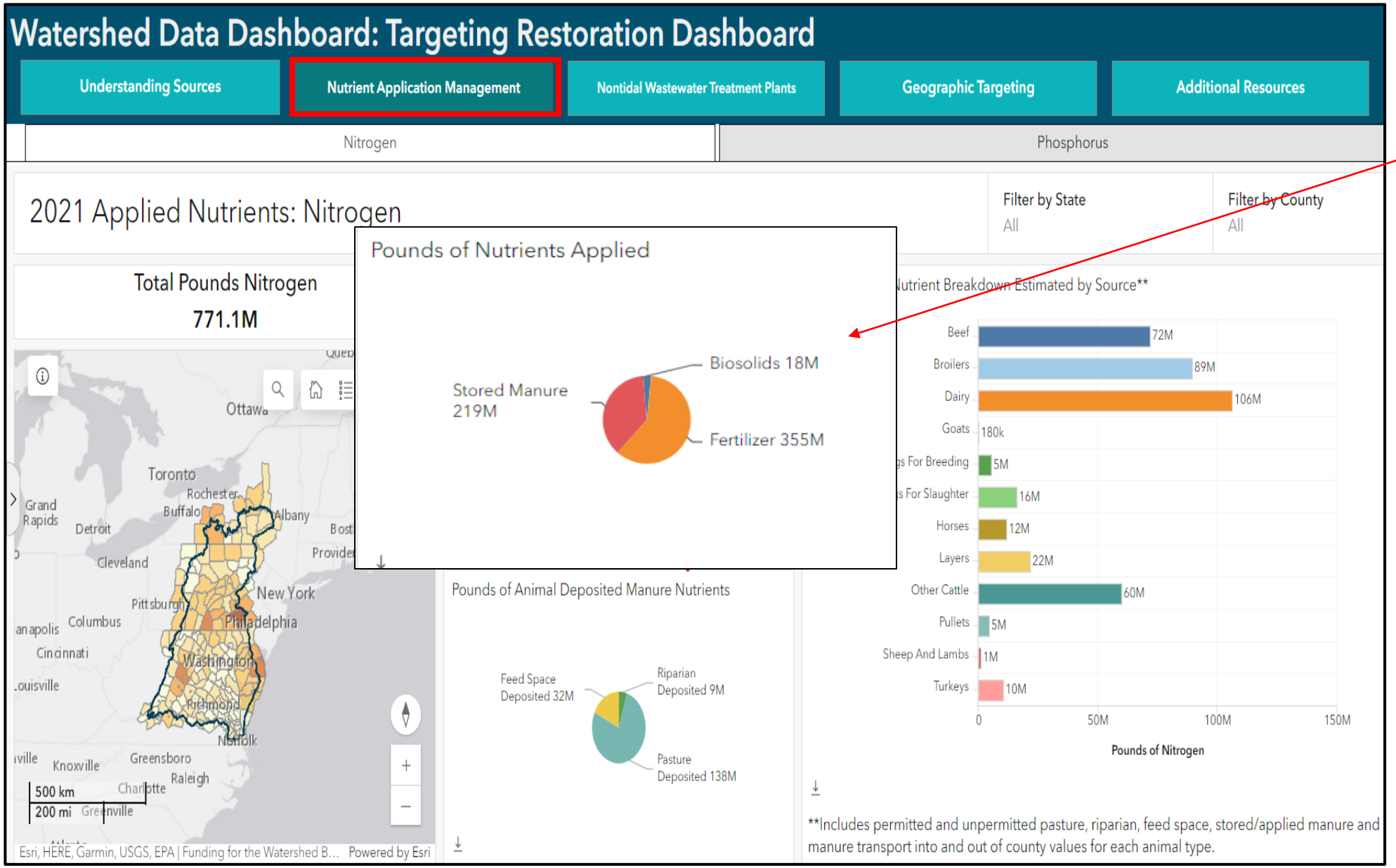
- Targeting restoration and conservation efforts geographically, by sector, or by practice
- Support Chesapeake Assessment Scenario Tool (CAST) scenario development
- Outreach and communication of water quality information
- Building local watershed stories to engage with stakeholders





Part 2: Nutrients Applied and Expected Application Module

Where will this be located on the Dashboard?



The new module would break down the nutrients applied in greater detail and compare those amounts to the *Expected* and *Recommended Nutrient Applications*- which are based on the crop and pasture data for each county

Purpose and Audiences

Purpose

Planning support for anyone with a stake in water quality restoration

Potential Audiences

State and federal agency staff

NGO partners

Local planners (e.g., municipality level, soil conservation district level, county level, etc.)

Watershed organizations

Phase II of Beyond 2025 Conversations

Introduced Terminology

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- **Expected Application (pounds)**
  - Indicates the amount of nitrogen a crop or set of crops is expected to receive for an entire county. It is calculated for each crop type using this equation: **#acres of crop x yield/acre (NASS Annual data C-23) x *Expected Application Rate**

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- **Recommended Application (pounds)**
  - Indicates the amount of nitrogen a crop or set of crops is expected to receive for an entire county under 100% nutrient management. It is calculated for each crop type using this equation: #acres of crop x yield/acre x ***Recommended Application Rate**

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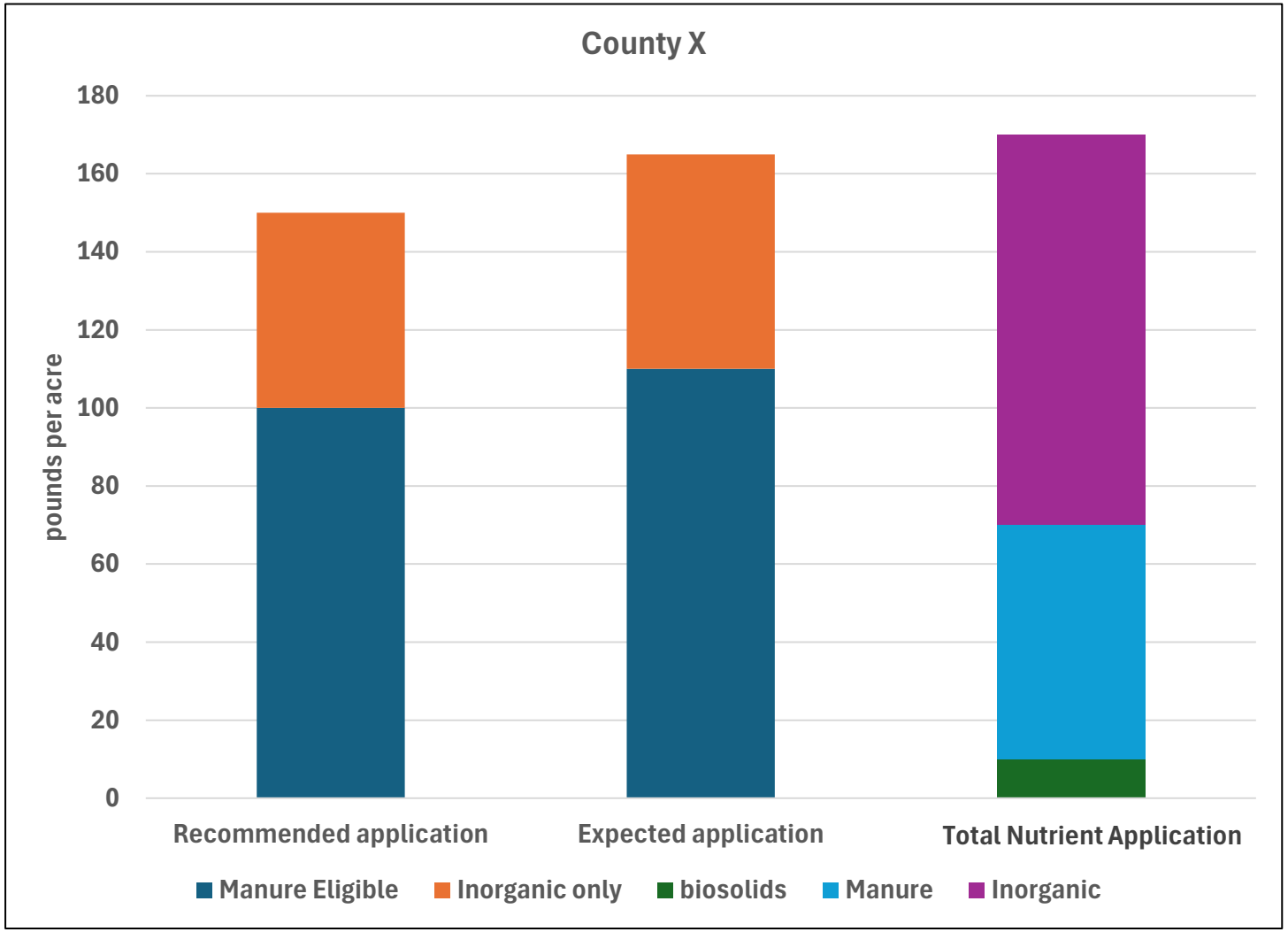
- **Recommended Application Rate (pounds/acre)**
  - The Nutrient Management Application Goal per Acre supplied by the jurisdictional land grant university (LGU)- it describes the amount of nitrogen needed per yield unit or acre for each crop type and assumes nutrient management is practiced.

Additional Terminology:

- **Percent Expected Application Met**
  - Is equal to the *Total Plant Available Nutrients Applied/Expected Application*

- **Percent Organic Expected Application Met**:
  - Is equal to the *Plant Available Organic Nutrients Applied/Organic Eligible Expected Application*

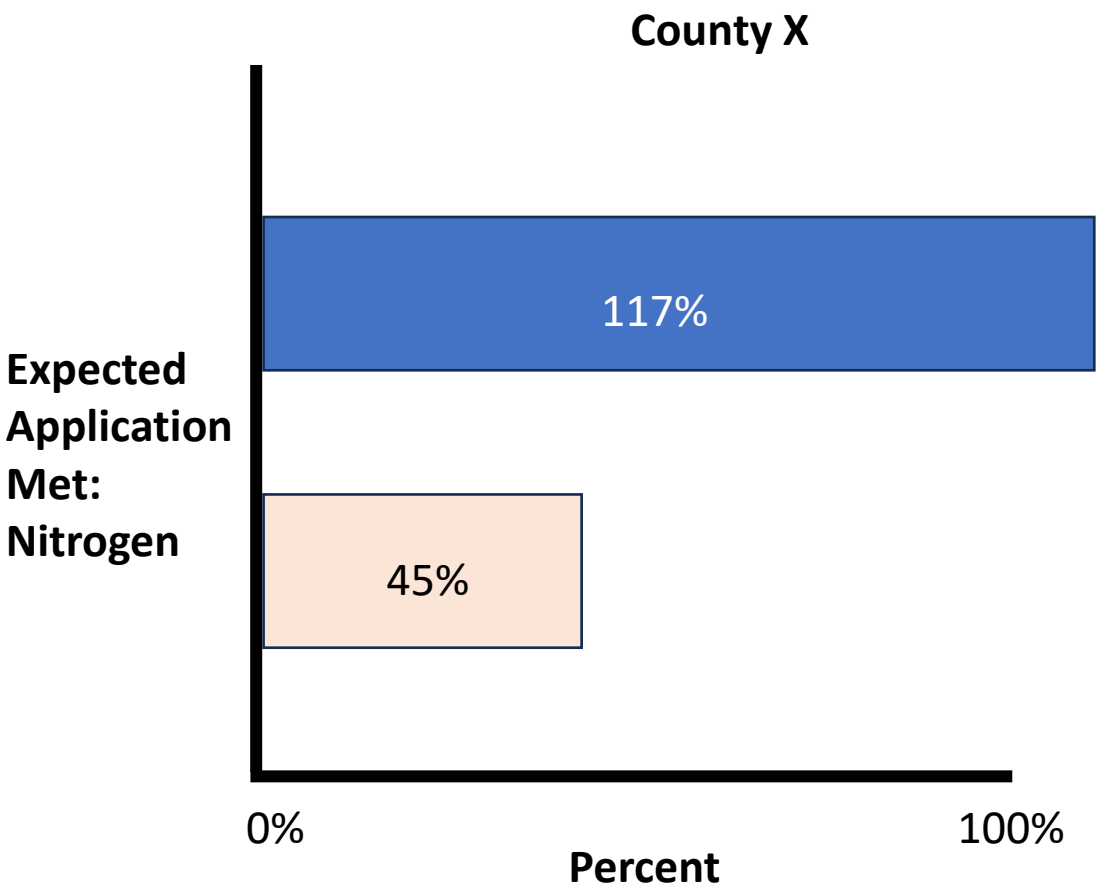
Ideas for Visualization: Compare the Recommended Application, the Expected Application and the Total Nutrients Applied



	Recommended Application	Expected Application	Total Nutrient Application
Manure Eligible	100	110	
Inorganic only	50	55	
Biosolids			10
Manure			60
Inorganic			100

1. **Recommended Application**: All acres under nutrient management
2. **Expected Application**: Factors in what is not in nutrient management
3. **Total Nutrient Application**: CAST calculated nutrient application based on fertilizer sales, animal population and jurisdictional biosolids data

Ideas for Visualization: show the percent of Expected Application met



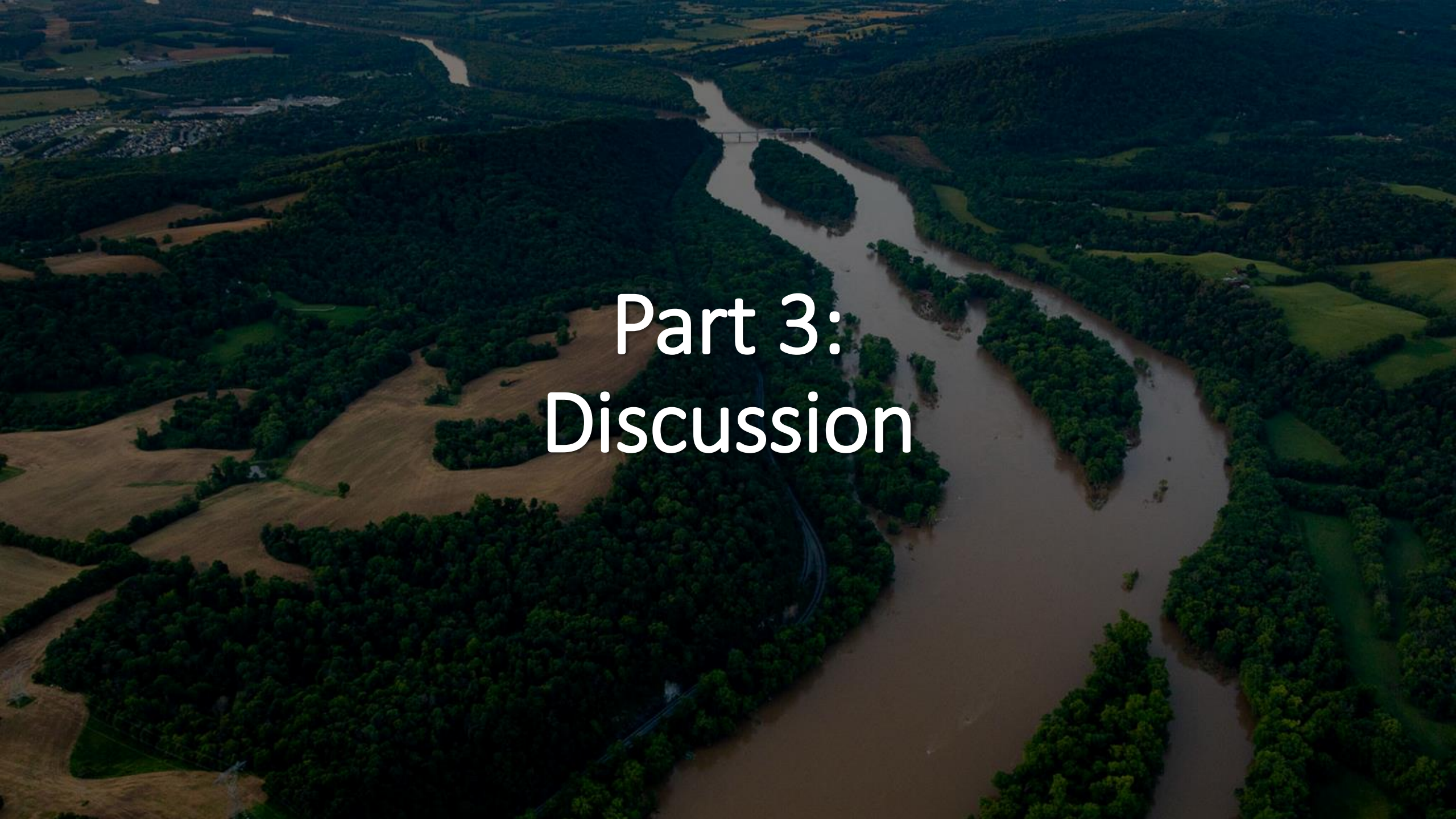
Total Expected Application Met = Total Plant Available Nutrients Applied / Total Expected Application *100

Organic Expected Application Met = Plant Available Organic Nutrients Applied / Organic Eligible Expected Application*100

Legend

Total Expected Application Met

Organic Expected Application Met



Part 3: Discussion

Questions for the WTWG Members

Is what we are putting together helpful/useful?

Who do you see using these module?

Does this make sense to you?

Terms? Categories we are comparing?

How might you use these module?

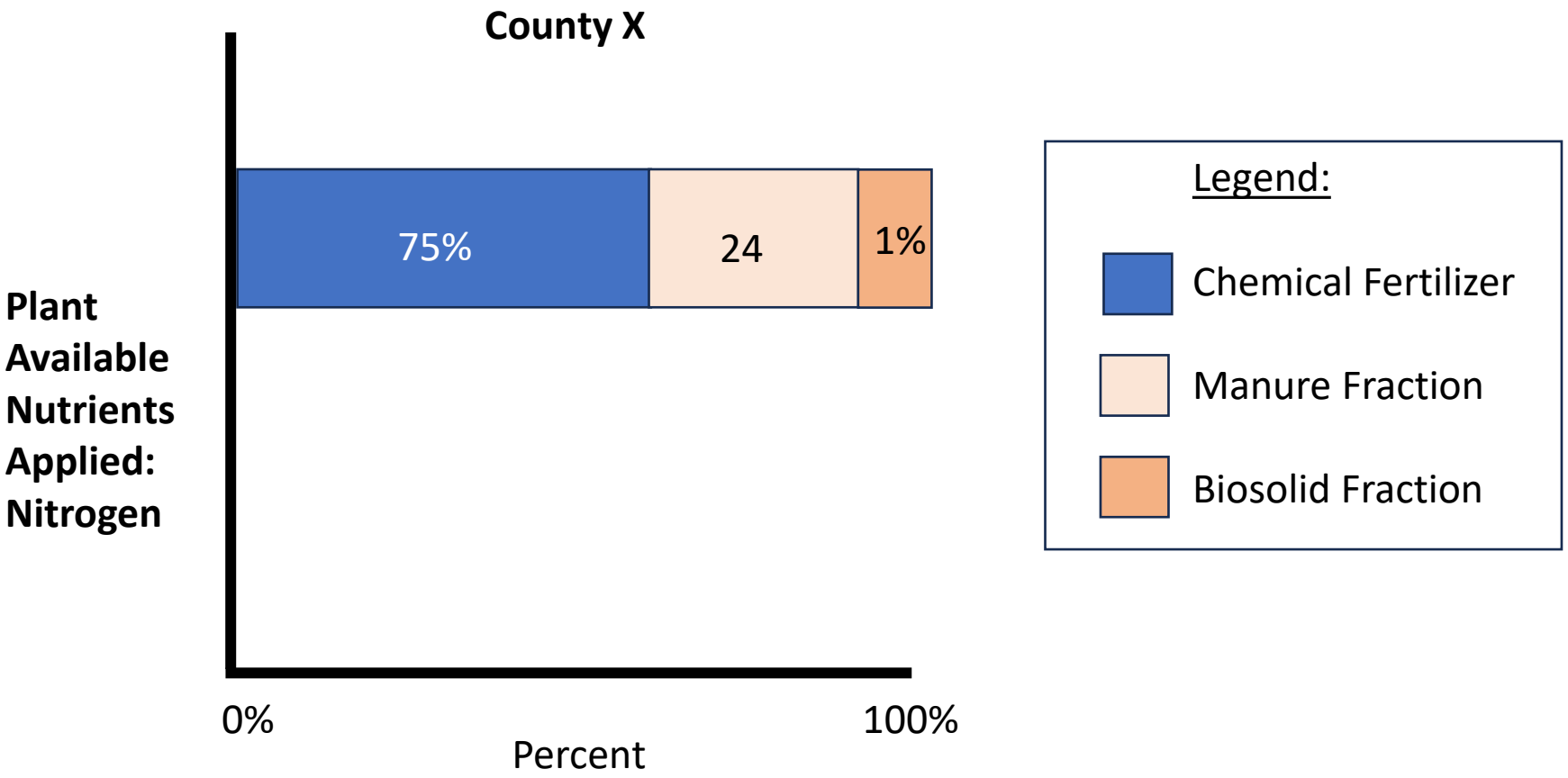
How might this Dashboard be more useful?

Contact Information

Ruth Cassilly
Science, Analysis, and Implementation Branch
Nonpoint Source Policy Analyst
University of Maryland, Chesapeake Bay Program Office
rcassilly@chesapeakebay.net

Kaylyn S. Gootman, PhD (she/her/hers)
Science, Analysis, and Implementation Branch
Environmental Protection Agency, Region 3
Chesapeake Bay Program Office
gootman.kaylyn@epa.gov

Ideas for Visualization: show the breakdown of Plant Available Nutrients Applied- possibly add organic eligible Expected Application



How Fixation is affected by Total Nutrients Applied:

N Fixation Applied: The nitrogen fixed (made available in the soil) by leguminous plants (such as soybeans) for plant uptake

The amount of fixation estimated varies depending on the type of leguminous crop and the amount of nitrogen available from the soil (residual) and applied to the crop. The higher the amount of nitrogen available from these two sources, the lower nitrogen fixation will be.

Expected Application	Indicates the amount of nitrogen a crop or set of crops is expected to receive for an entire county. It is calculated for each crop type using this equation: #acres of crop x yield/acre x *Assumed Application Rate. (unit: pounds)
Recommended Application Rate	The Nutrient Application Goal per Acre is supplied by the jurisdictional land grant university (LGU). It describes the amount of nitrogen needed per yield unit or acre for each crop type and assumes nutrient management is practiced. (unit: lbs./acre)
*Expected Application Rate	The Recommended Application Rate is adjusted for a factor to account for acres not under nutrient management (unit: lbs./acre)
Recommended Application	Indicates the amount of nitrogen a crop or set of crops is expected to receive for an entire county under 100% nutrient management. It is calculated for each crop type using this equation: #acres of crop x yield/acre x Nutrient Management Application Goal per Acre. (unit: pounds)
Total Nutrients Applied	Is the sum of all nutrients applied, fertilizer, biosolids and manure (plant available and unavailable)
Organic Eligible Expected Application	The amount of the Expected Application that can be met with organic nutrient sources, manure and/or biosolids
Organic Nutrients Applied	Total nutrients applied from biosolids and manure
Plant Available Organic Nutrients Applied	Sum of manure and biosolid nutrients applied that are plant available
Manure Eligible Expected Application	Portion of the Expected Application that is manure eligible, must be both land use manure eligible and crop type manure eligible
Manure Nutrients Applied	Total manure nitrogen pounds applied, after accounting for feed space, storage and pasture losses, direct deposition and manure best management practices
N Fixation Applied	The nitrogen fixed by leguminous plants that is available for plant uptake . The amount of fixation estimated varies depending on the type of leguminous crop and the amounts of nitrogen available from the soil (residual) and applied to the crop. The higher the amount of nitrogen available from these two sources, the lower nitrogen fixation will be.
Plant Available Manure Nutrients Applied	Portion of manure applied available for plant uptake, after processes such as volatilization and mineralization have occurred
Biosolids Nutrients Applied	Total biosolid nitrogen pounds applied
Plant Available Biosolids Nutrients Applied	Portion of biosolids applied available for plant uptake, after processes such as volatilization and mineralization have occurred
Fertilizer Nutrients Applied	The fertilizer nitrogen pounds applied to agricultural land after reported nutrient management practice acres have been applied, 100% is plant available
Total Plant Available Nutrients Applied	Is the sum of plant available nutrients applied from fertilizer, biosolids and manure
Percent Expected Application Met	Is equal to the Total Plant Available Nutrients Applied/Expected Application
Percent Organic Expected Application Met	Is equal to the Plant Available Organic Lbs. Applied/Organic Eligible Expected Application