



Watershed Restoration: Scope and Scale



What Are Your Goals?

How Do You Achieve Them?

What Are Your Goals?

- **Reduce:**
 - **Sediment**
 - **Pathogens**
 - **Nitrogen and Phosphorous Pollution**
 - **Flooding & Excessive Runoff**
- **Removal of Impaired Status – Clean Water Act**
- **Wild Trout**



What Are Your Goals?

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What will we do or change?



What will we do or change?

Improved Crop Field Management

Stabilize Roadway

Plant Forest Buffer

Improve Pasture Management

Exclude Livestock From Stream

Stop Barnyard Runoff

Manure Storage



What will we impact?:

- Bacteria
- Sediment
- Water Temp
- Infiltration/Hydrology
- Soil Carbon?
- Macroinvertebrates
- Fish
- Algae



Problem Barnyard



Improved Barnyard



Lititz Run – Before Forest Buffer



Lititz Run - 18 Year Old Forest



We Still Have Work To Do





Other Measurable Outcomes?:

- **Milk Production**
- **Herd Health**
 - **Infectious Disease**
 - **Hoof Problems**

Happy & Healthy Cows



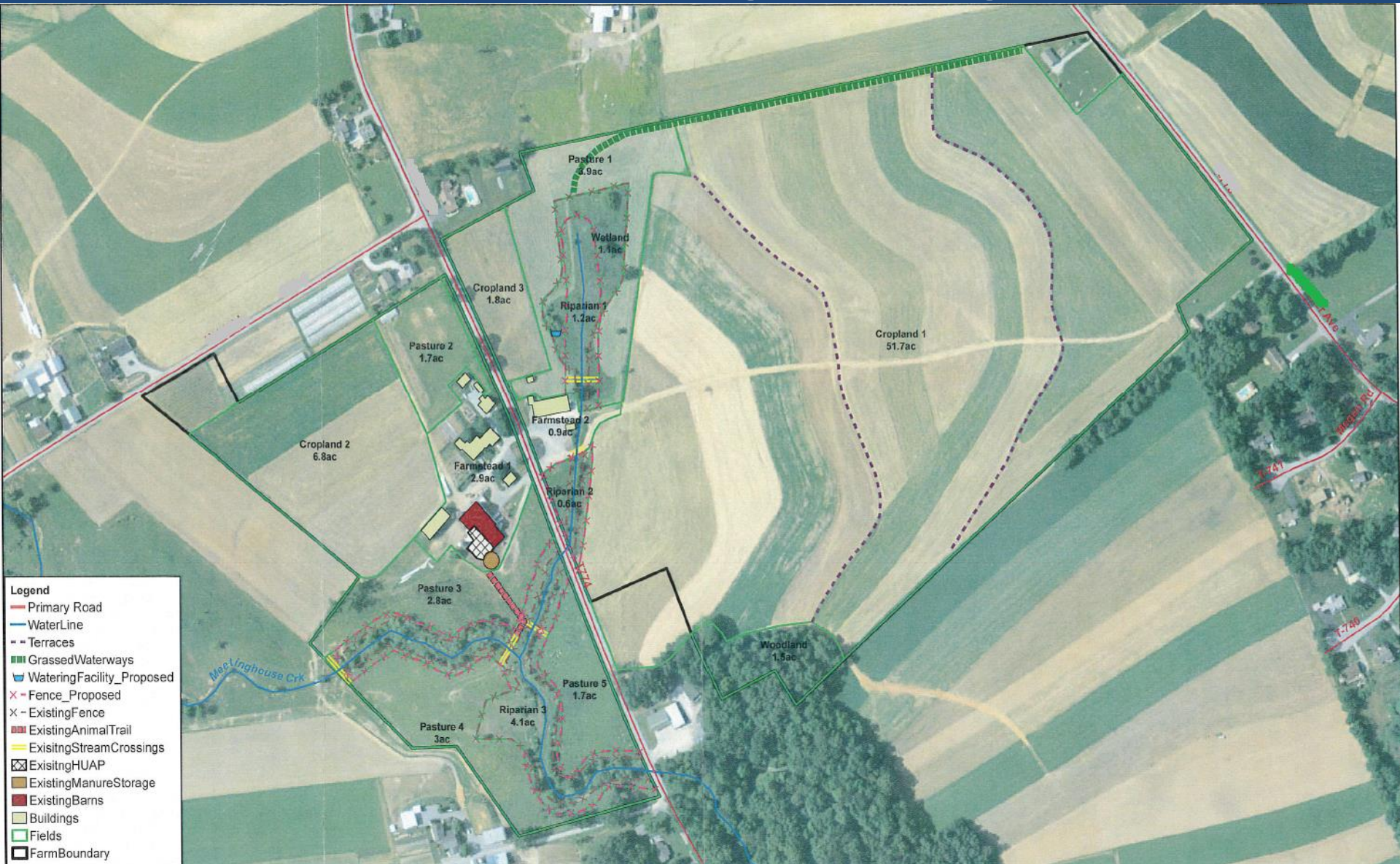


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Typical Farm Project

How Much Change is Enough?



How Many Farms is Enough?

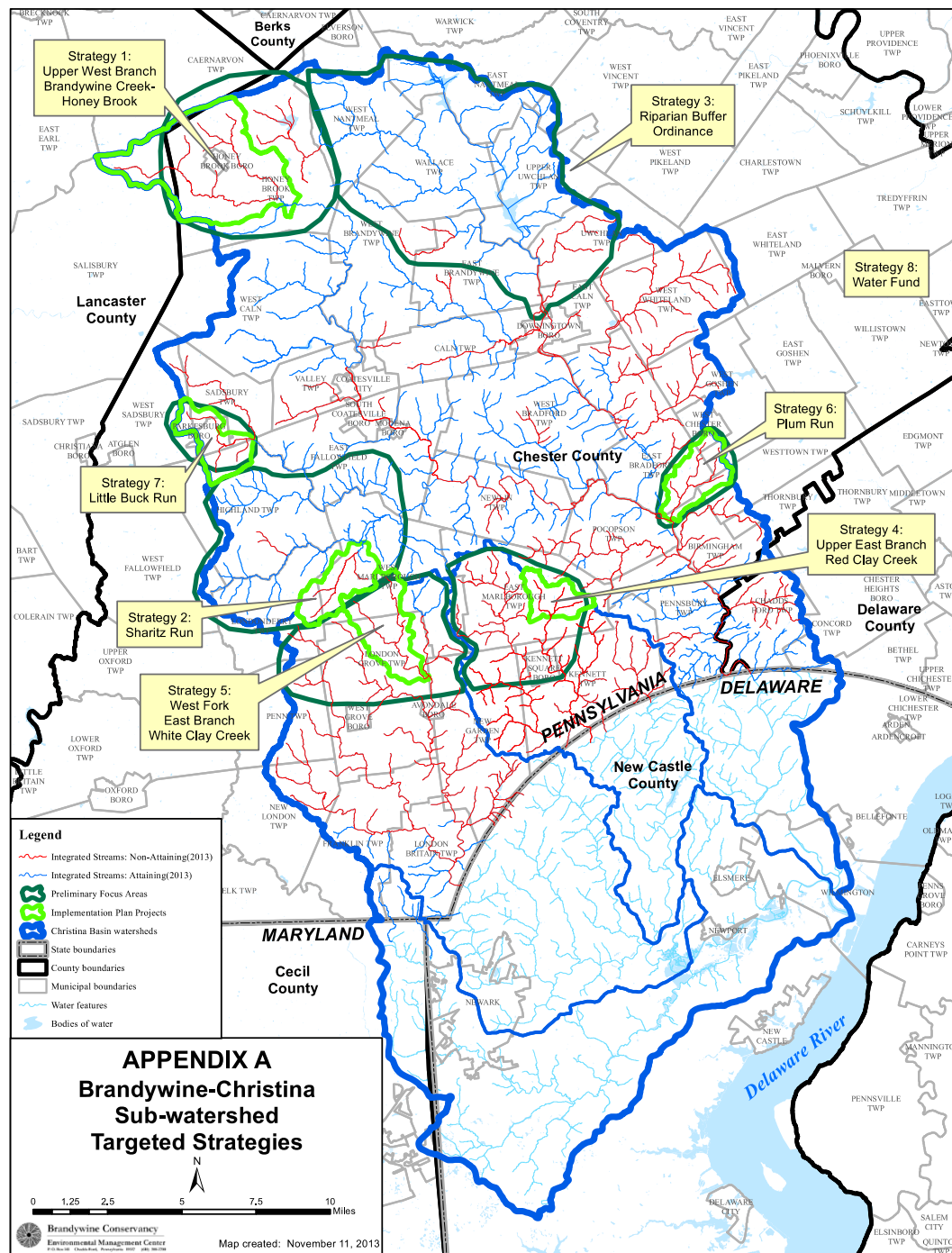


Lancaster Mill Creek Section 1

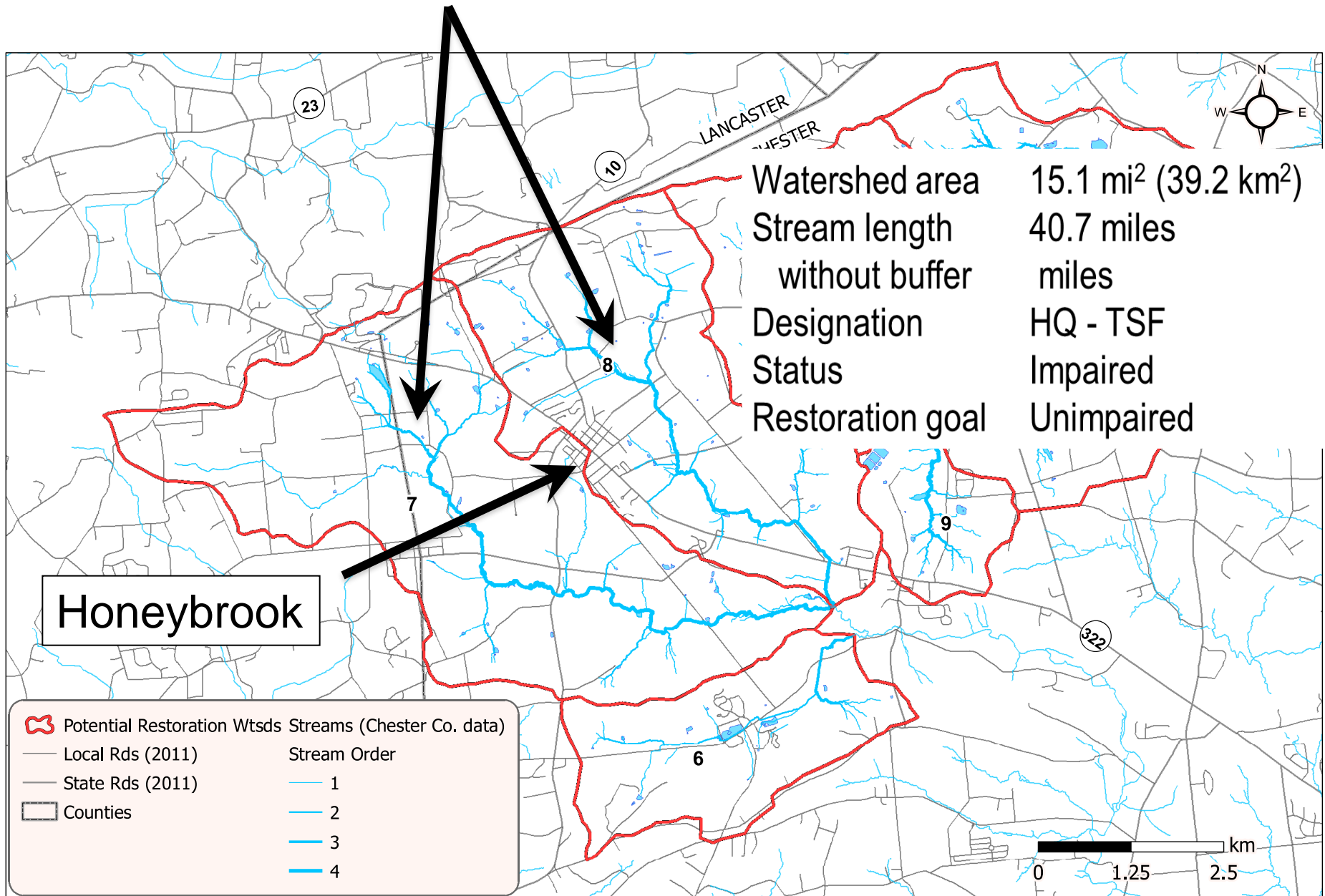


13 Parcels
11 farms





West Branch Brandywine Creek - Honeybrook



Agricultural Conservation Easement Projects

Honey Brook Township, Chester County PA
Salisbury Township, Lancaster County PA

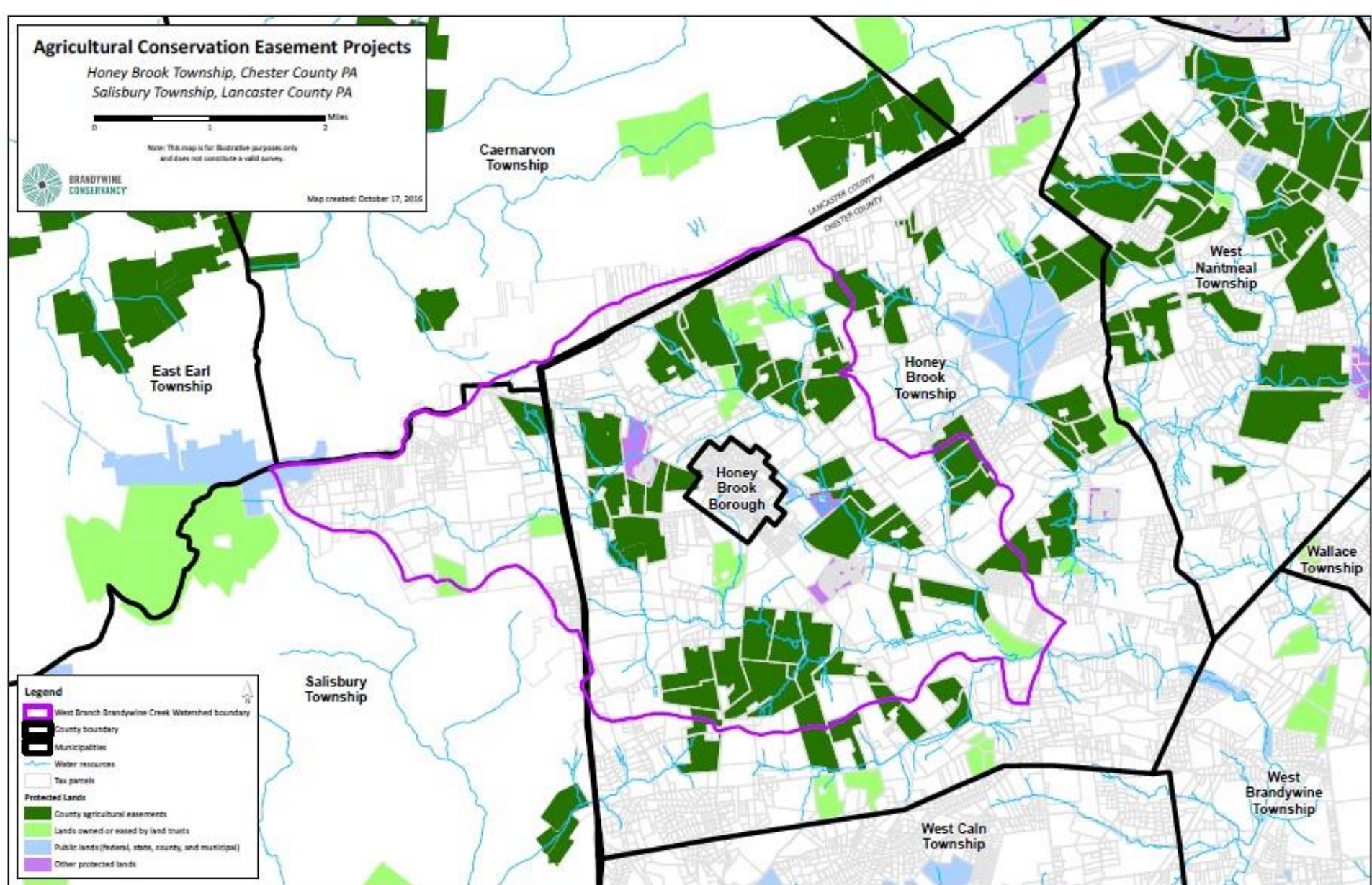
0 1 2 Miles

Note: This map is for illustrative purposes only
and does not constitute a valid survey.

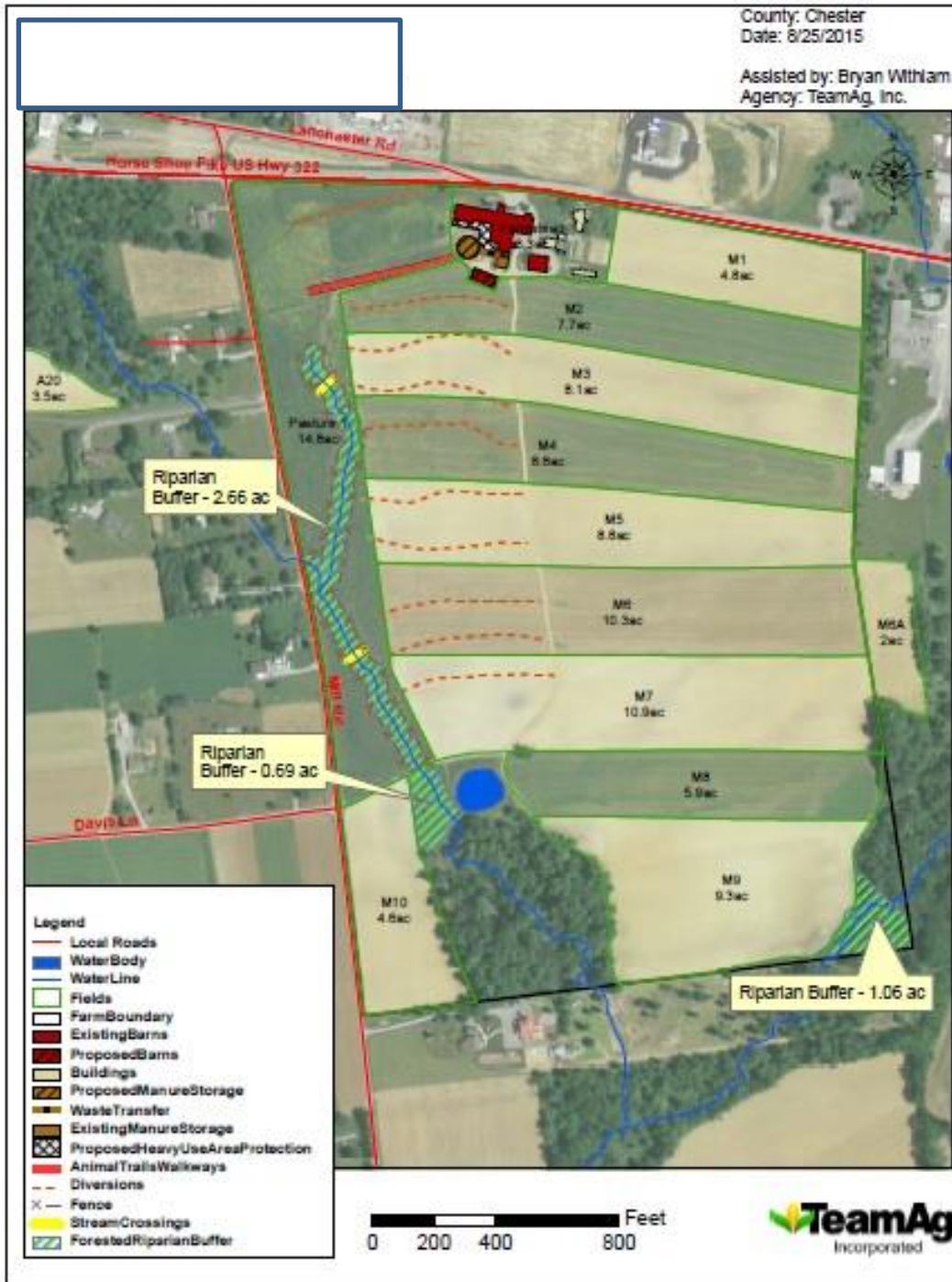


BRANDYWINE
CONSERVANCY

Map created: October 17, 2016



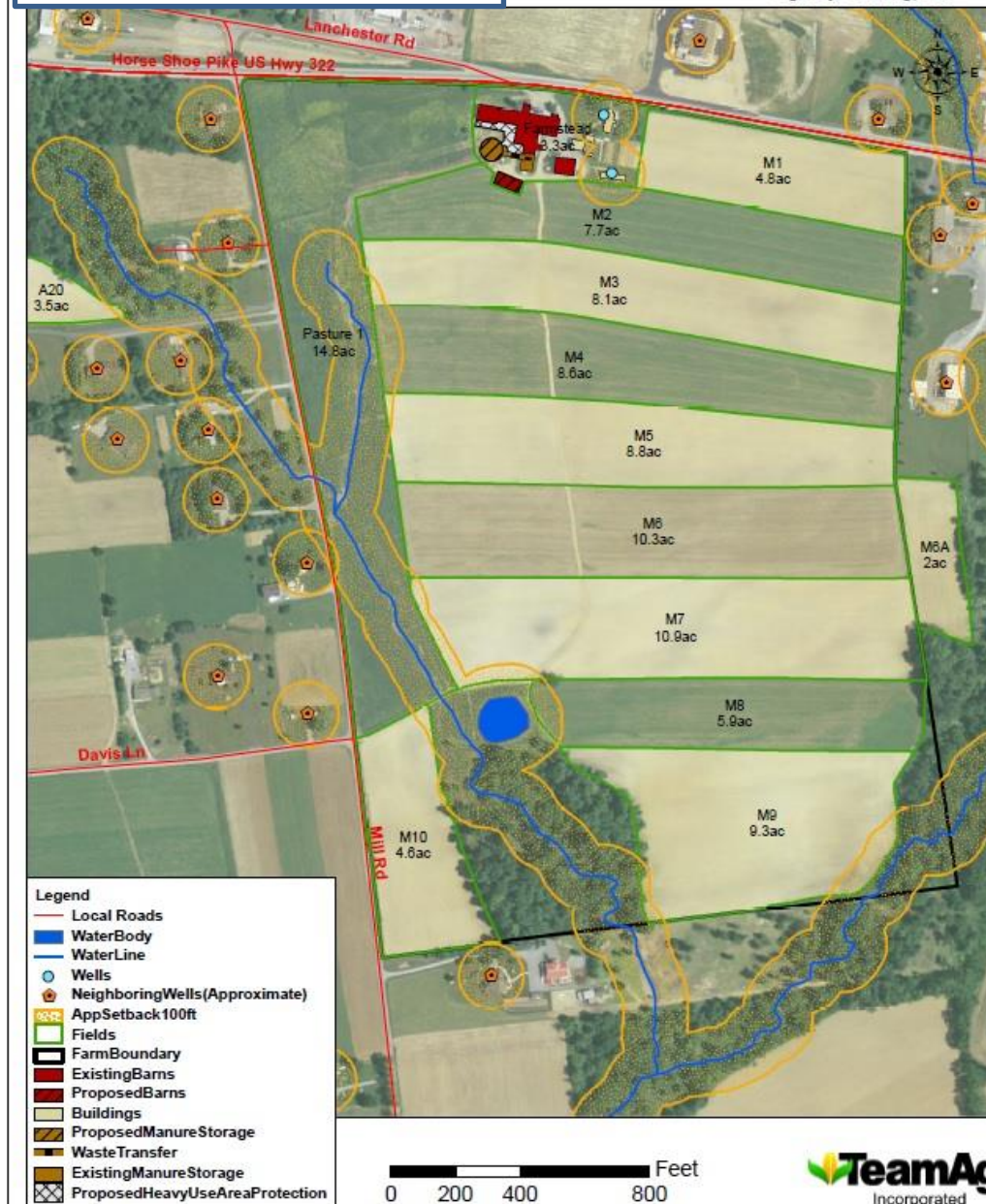
Conservation Plan

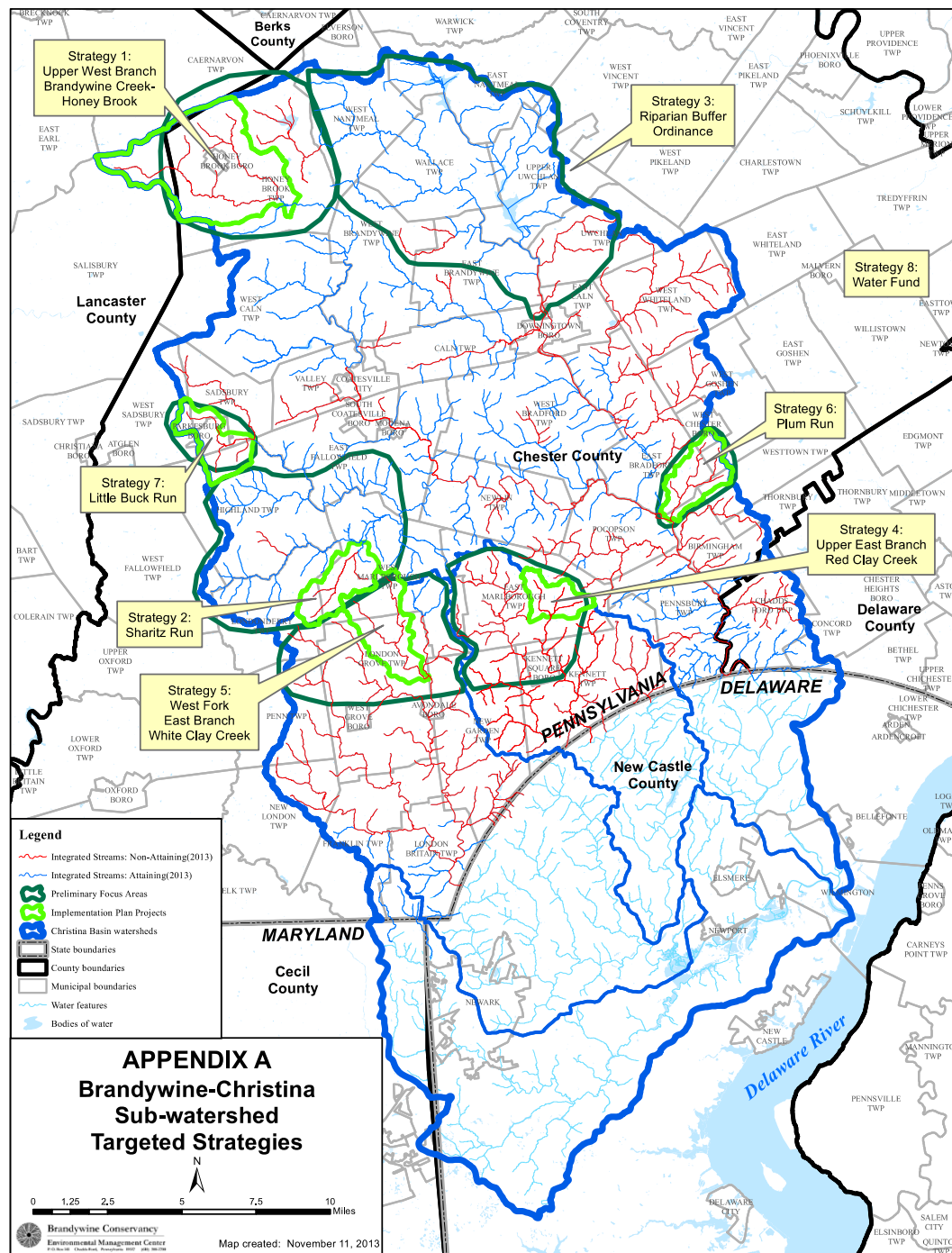


Manure Management Plan

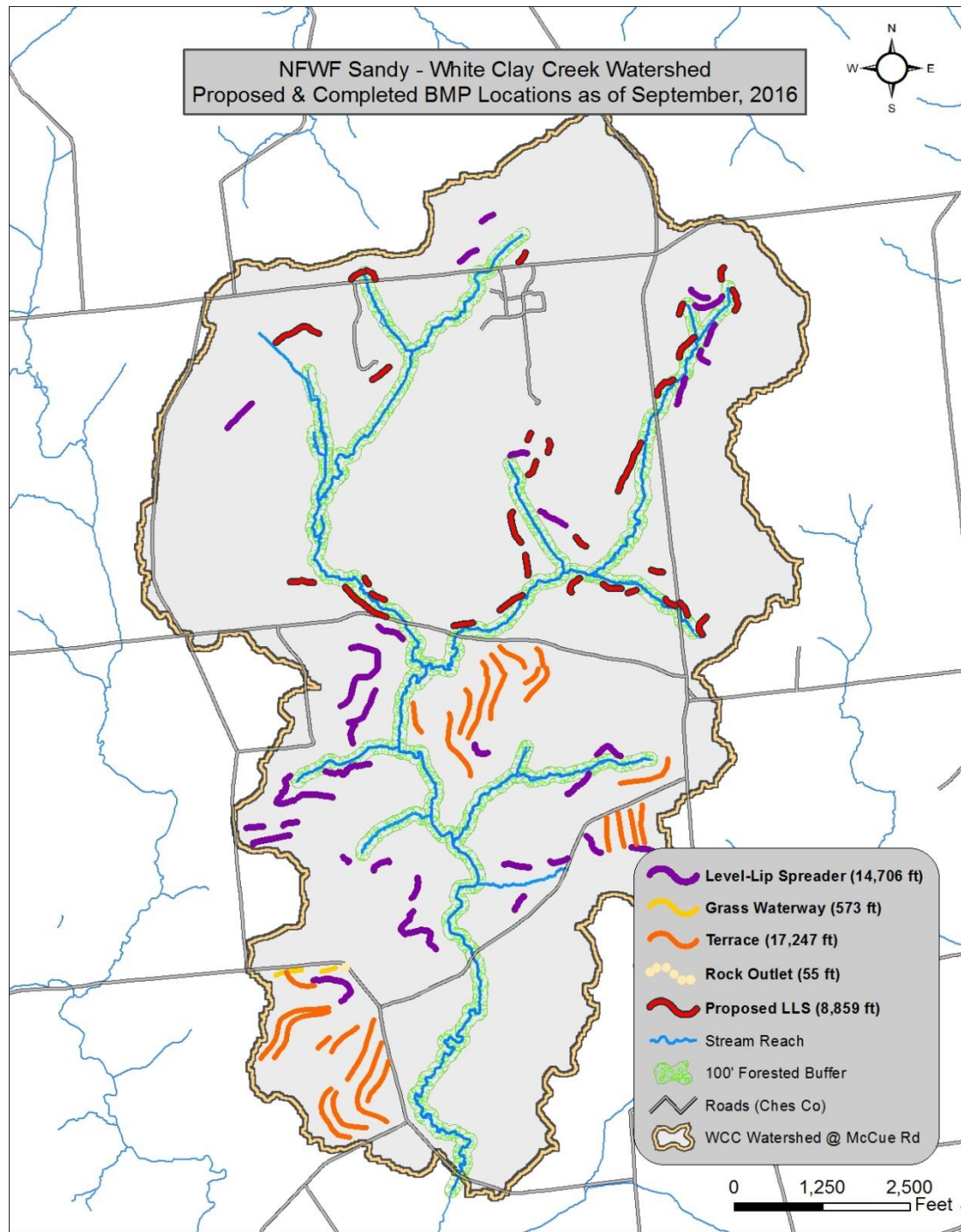
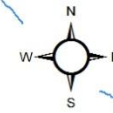
County: Chester
Date: 8/25/2015

Assisted by: Bryan Withiam
Agency: TeamAg, Inc.

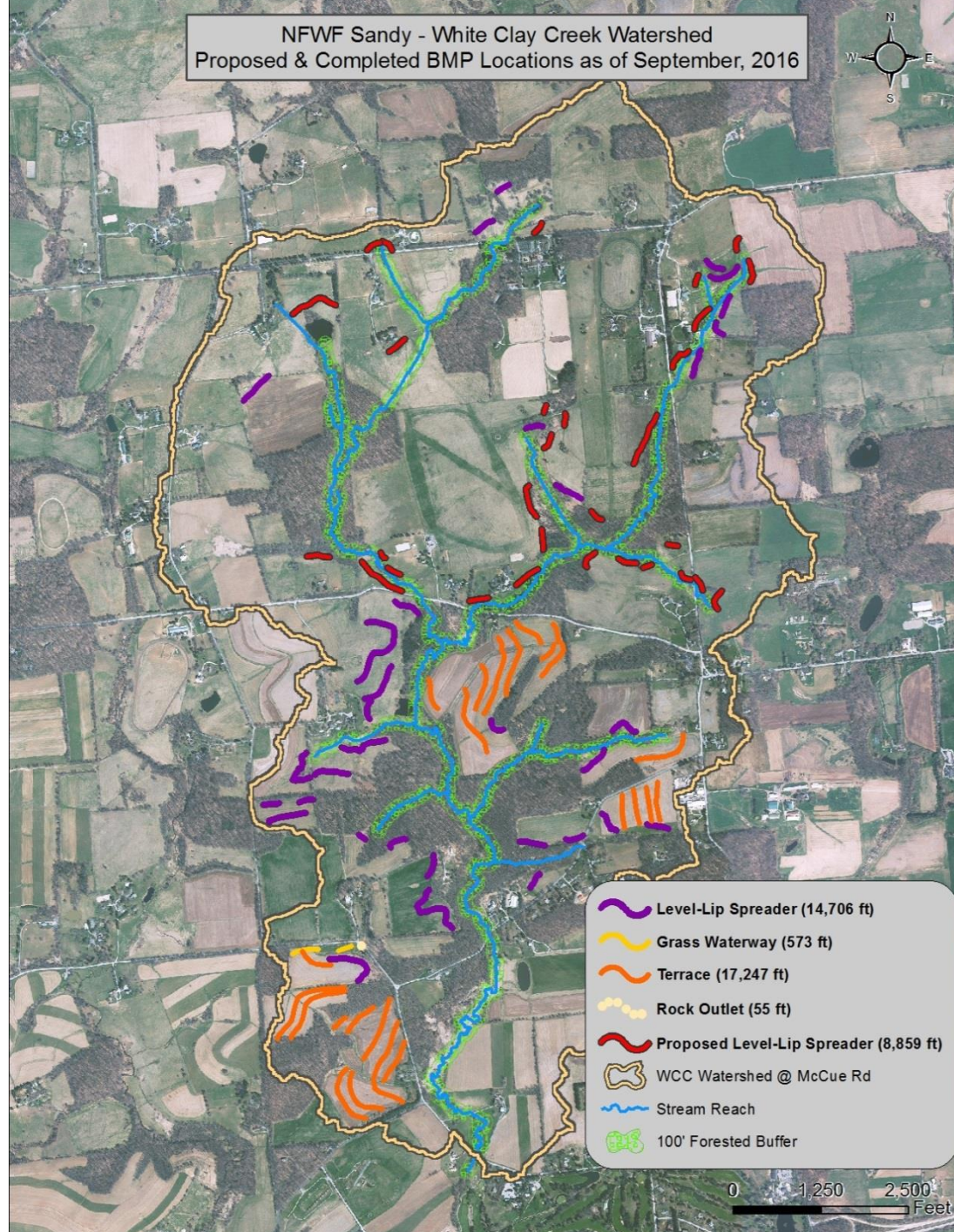




NFWF Sandy - White Clay Creek Watershed
Proposed & Completed BMP Locations as of September, 2016



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“Level-lip spreader” located behind Stroud Water Research Center before construction



Level-lip spreader during construction



Level-lip spreader during construction



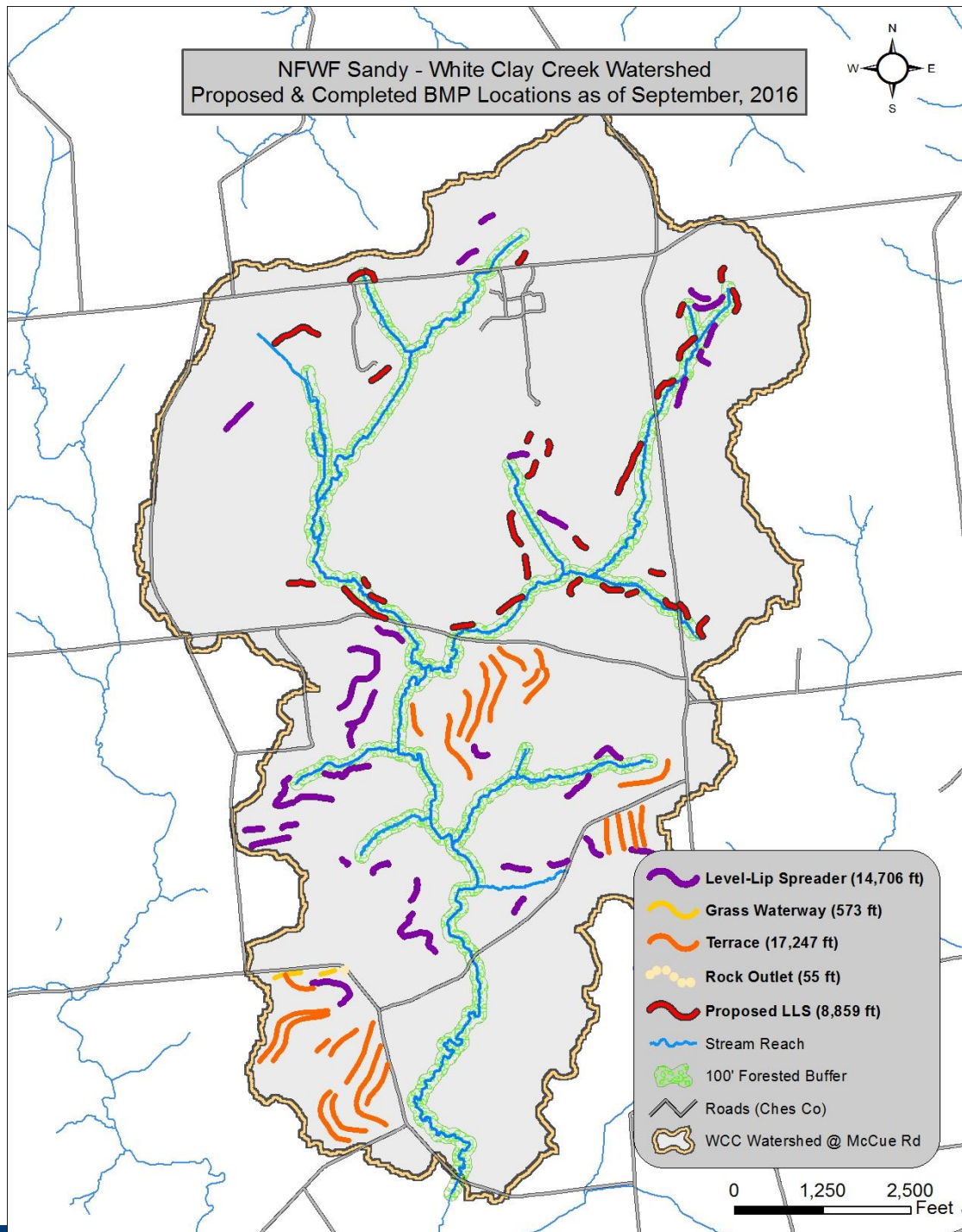
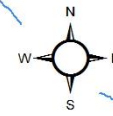
Level lip spreader after construction



“Level-lip spreaders” are shallow conservation swales built along the contour of the slope that collect surface runoff during rainstorms. With most storms the water that is collected will infiltrate into the ground, sediments settle out, and the water flows as groundwater to the stream. In big storms the water will flow over the level-lip evenly into the streamside forest before reaching the stream. Level-lip spreaders help reduce flooding and prevent nutrients and sediments from reaching the stream. These swales are being designed by Chester County Conservation District in partnership with the Stroud Center.



NFWF Sandy - White Clay Creek Watershed
Proposed & Completed BMP Locations as of September, 2016





Planted Apr 2007
Photo Aug 2008

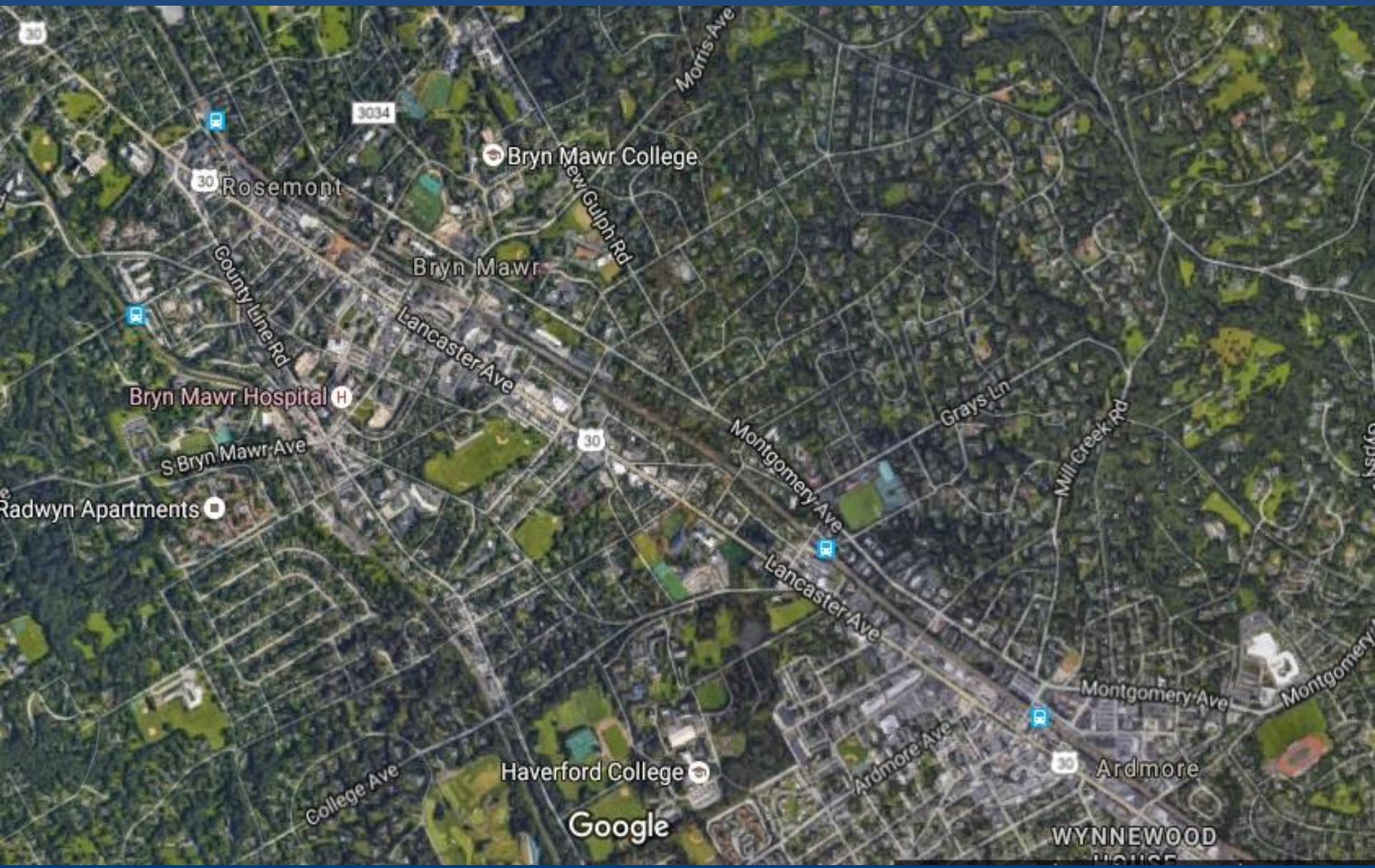




Pristine?



What is possible in a Suburban Watershed?



Management Issues

Water Quality
Water Quantity



We have strengthened the connection between our lives and the stream.





**Invisible
or
unknown
pollutants**

TRUGREEN ChemLawn®

Rain Garden / Infiltration Basin



Buffer Area



Infiltration / Detention Basin



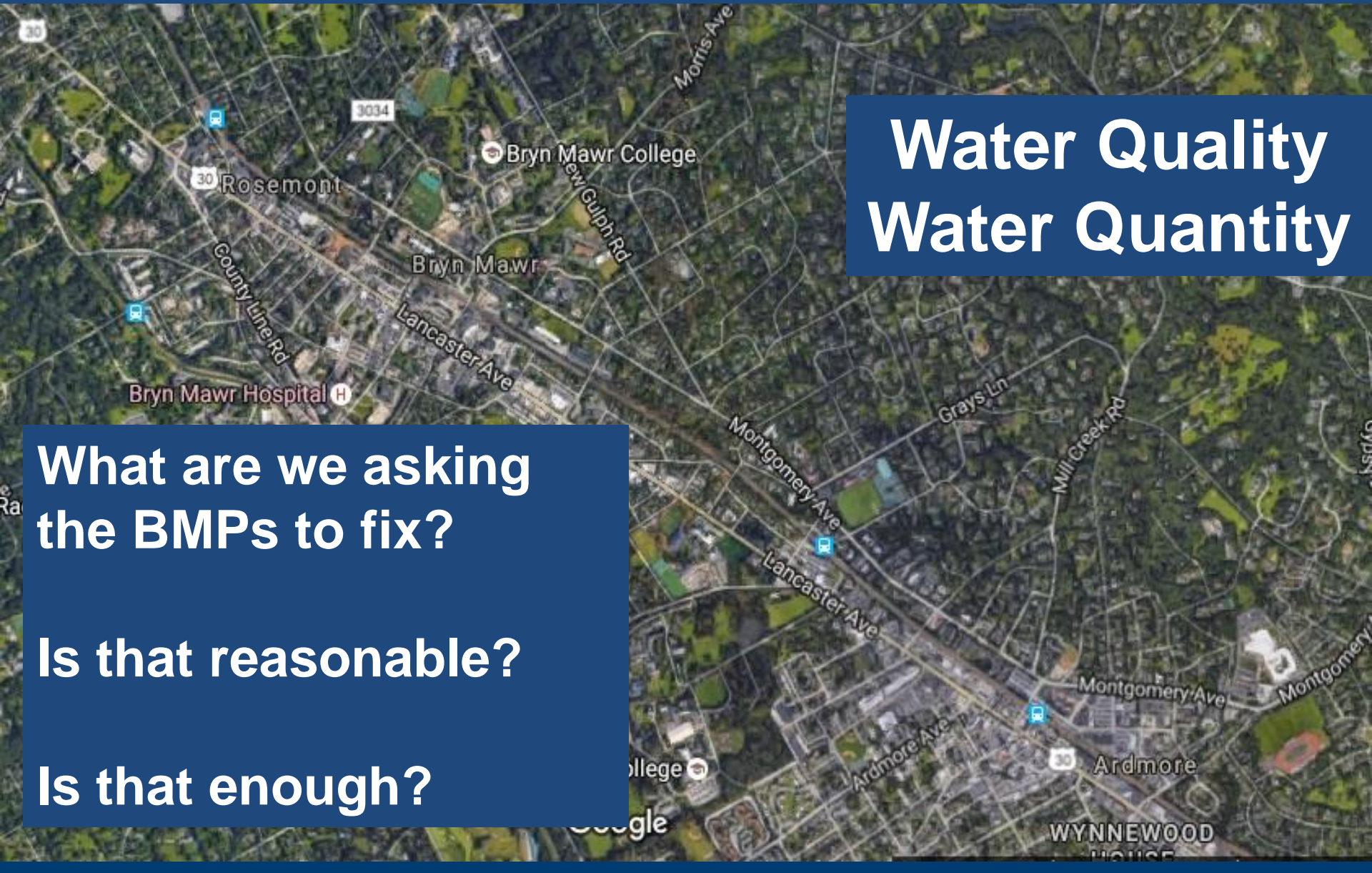
Management Issues

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Water Quantity

**What are we asking
the BMPs to fix?**

Is that reasonable?

Is that enough?



Pristine?





What Are Your Goals?

**How Do You Achieve
Them?**

A photograph of a forest stream. The water flows over large, moss-covered rocks, creating a small waterfall. In the background, a large fallen log lies across the stream. The forest is dense with green foliage and trees.

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Stroud Water Research Center

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