Watershed Planning in the Pequea

Meeting Federal Standards through Local Approaches

Brian Gish, AICP
PA Senior Watershed Planner

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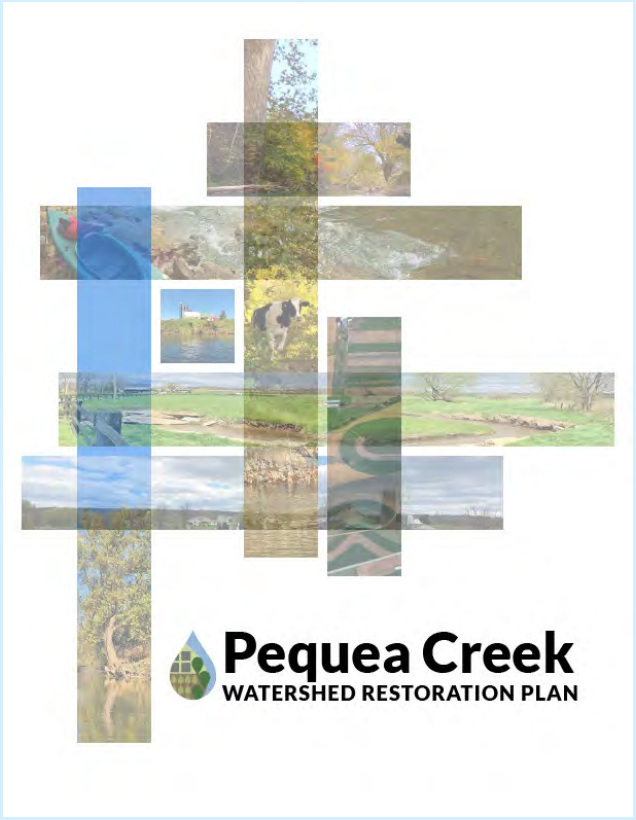
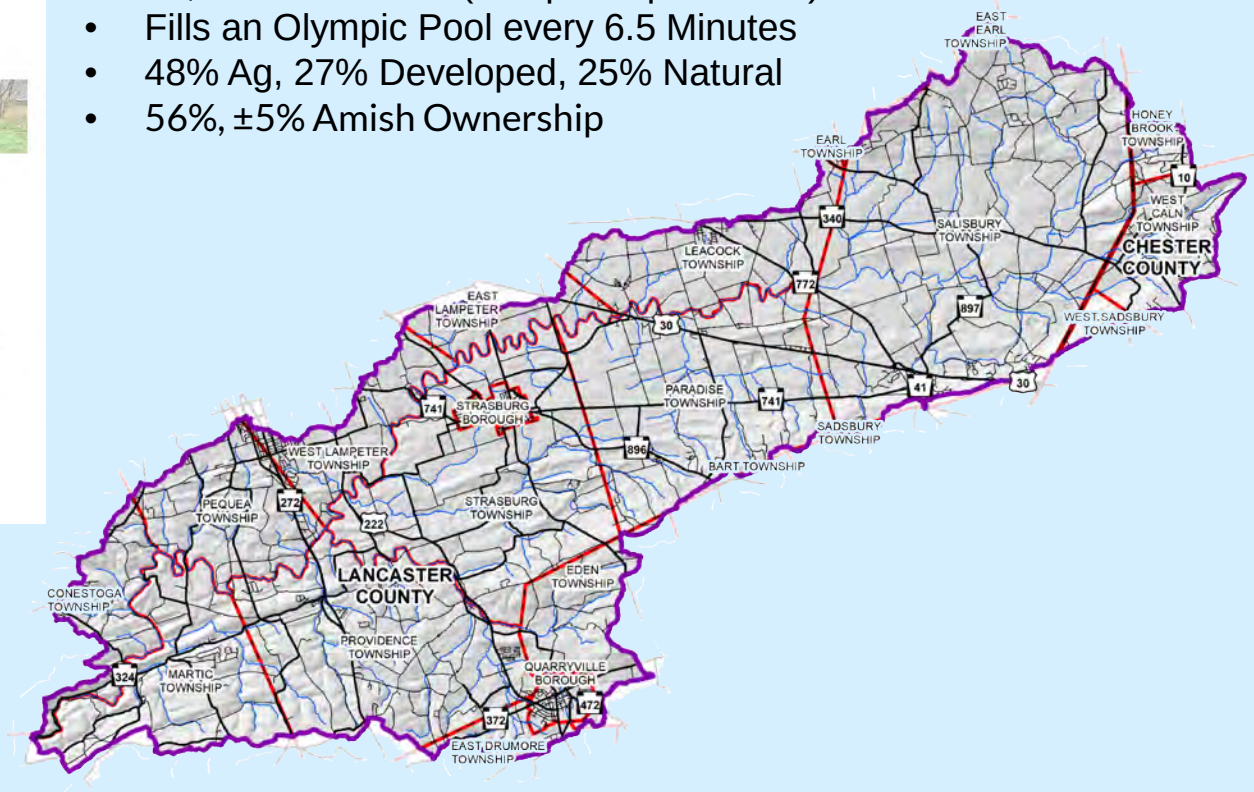


- 153 Square Miles
- 240.5 Stream Miles
- 207 Miles Aquatic Life Impairments
- Watershed Roughly 25 Miles by 8 Miles
- 2 Counties, 18 Municipalities
- 50,000 Inhabitants (325 per Square Mile)
- Fills an Olympic Pool every 6.5 Minutes
- 48% Ag, 27% Developed, 25% Natural
- 56%, ±5% Amish Ownership



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Watershed Overview

(…or the right way, the wrong way, and the Pequea)








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Our Organization








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Pennsylvania Presence

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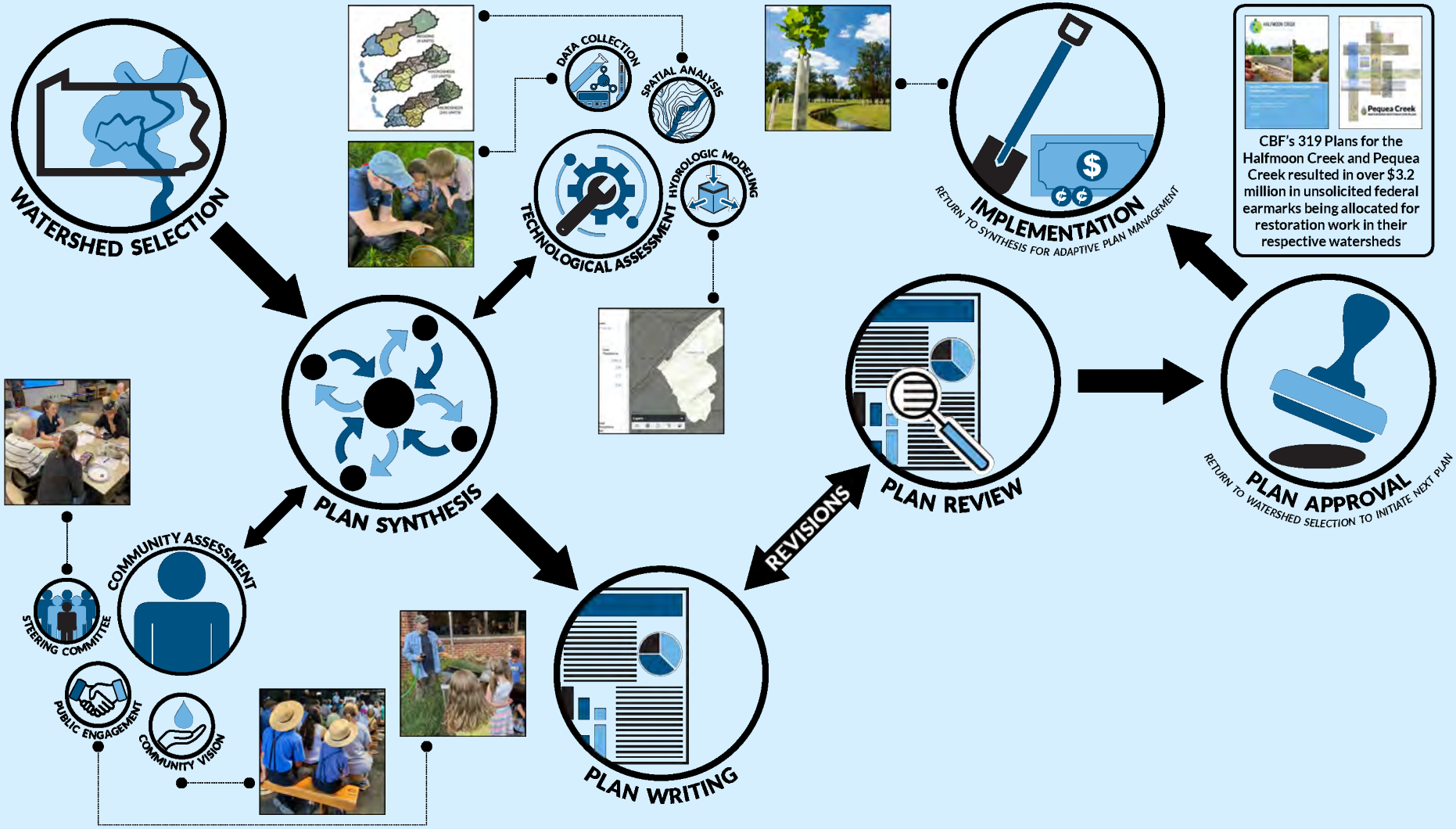
Pennsylvania 319 Team



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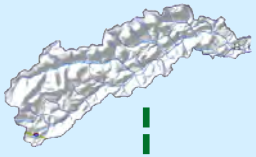
CBF's Watershed Planning Process

Round Two

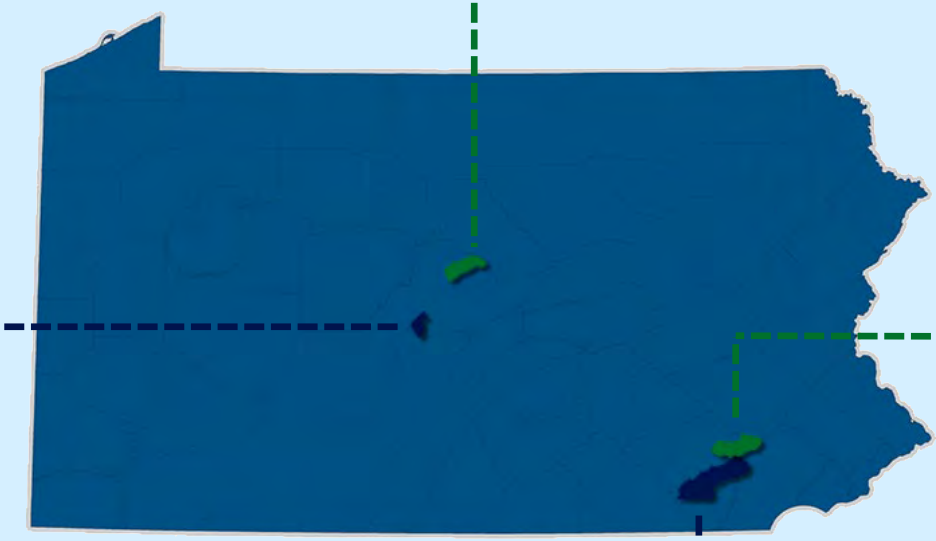
2021 - present



Marsh Creek
45 Square Miles
Centre County

Upper Conestoga River
66 Square Miles
Lancaster County,
Berks County,
Chester County

Halfmoon Creek
24 Square Miles
Centre County,
Huntingdon County



Round One

2018 -2021

Pequea Creek
153 Square Miles
Lancaster County,
Chester County

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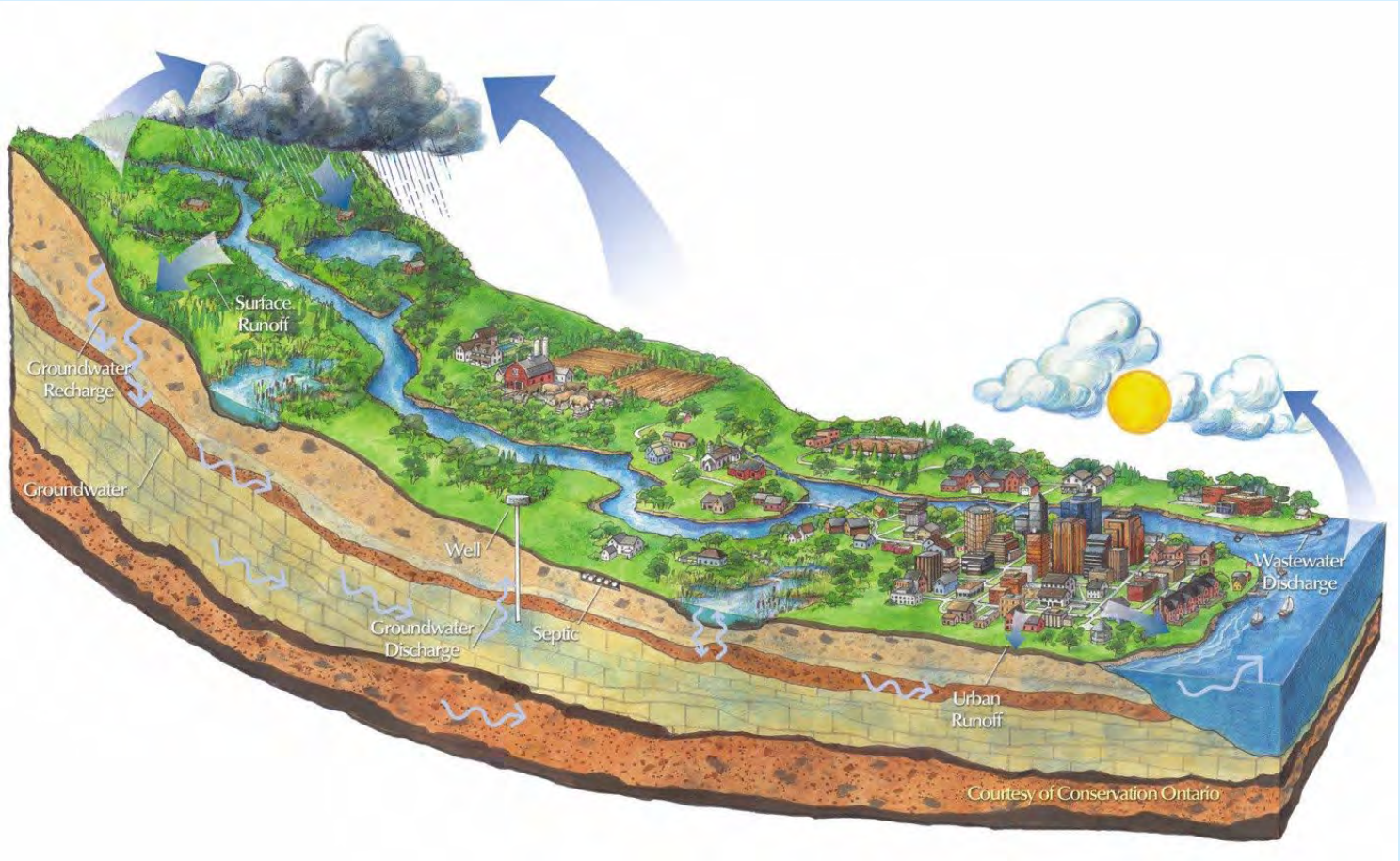
Our Watersheds

PLAN SYNTHESIS



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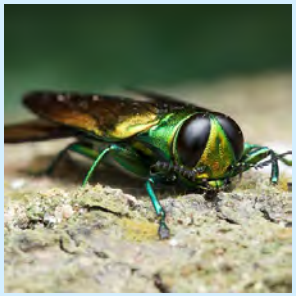
Tributary & Community Focus

PLAN SYNTHESIS











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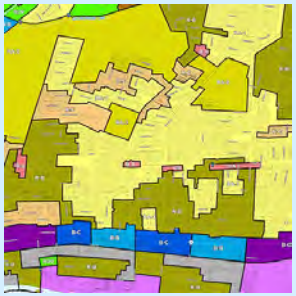
Watershed Concerns & Issues

PLAN SYNTHESIS



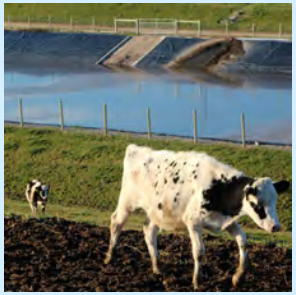










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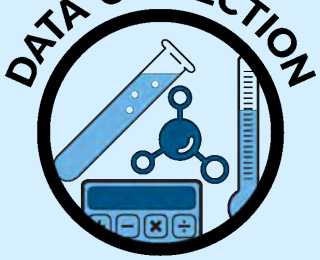
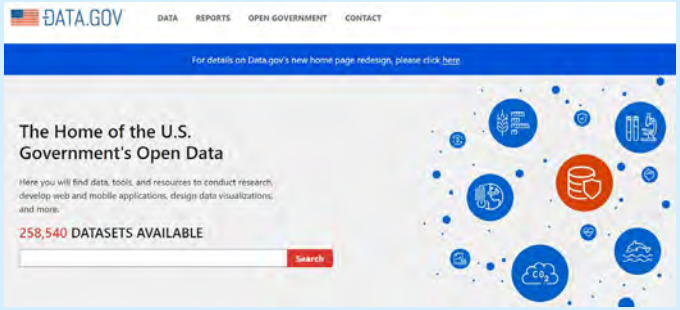
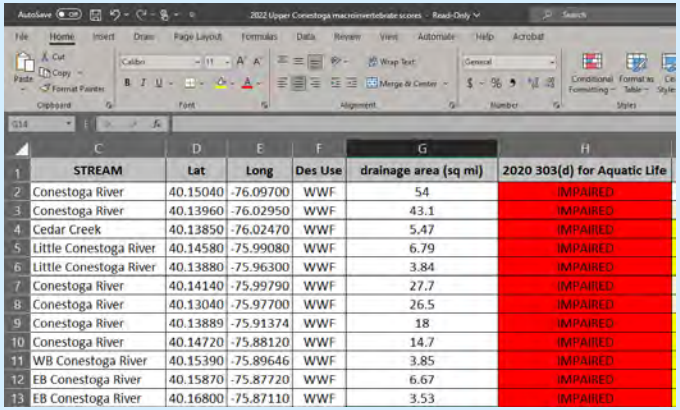
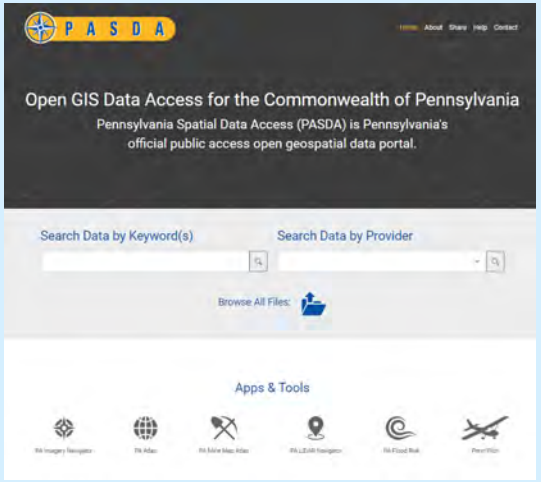
Holistic Solutions

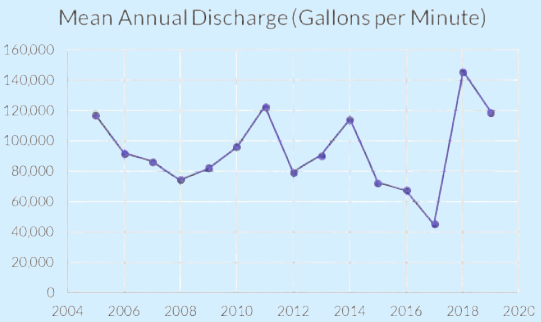






	C	D	E	F	G	H
1	STREAM	Lat	Long	Des Use	drainage area (sq mi)	2020 303(d) for Aquatic Life
2	Conestoga River	40.15040	-76.09700	WWF	54	IMPAIRED
3	Conestoga River	40.13960	-76.02950	WWF	43.1	IMPAIRED
4	Cedar Creek	40.13850	-76.02470	WWF	5.47	IMPAIRED
5	Little Conestoga River	40.14580	-75.99080	WWF	6.79	IMPAIRED
6	Little Conestoga River	40.13880	-75.96300	WWF	3.84	IMPAIRED
7	Conestoga River	40.14140	-75.99790	WWF	27.7	IMPAIRED
8	Conestoga River	40.13040	-75.97700	WWF	26.5	IMPAIRED
9	Conestoga River	40.13889	-75.91374	WWF	18	IMPAIRED
10	Conestoga River	40.14720	-75.88120	WWF	14.7	IMPAIRED
11	WB Conestoga River	40.15390	-75.89646	WWF	3.85	IMPAIRED
12	EB Conestoga River	40.15870	-75.87720	WWF	6.67	IMPAIRED
13	EB Conestoga River	40.16800	-75.87110	WWF	3.53	IMPAIRED





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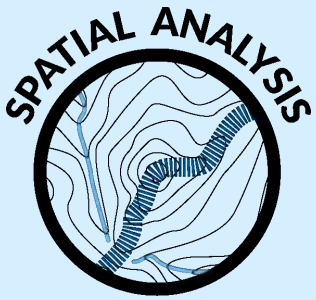
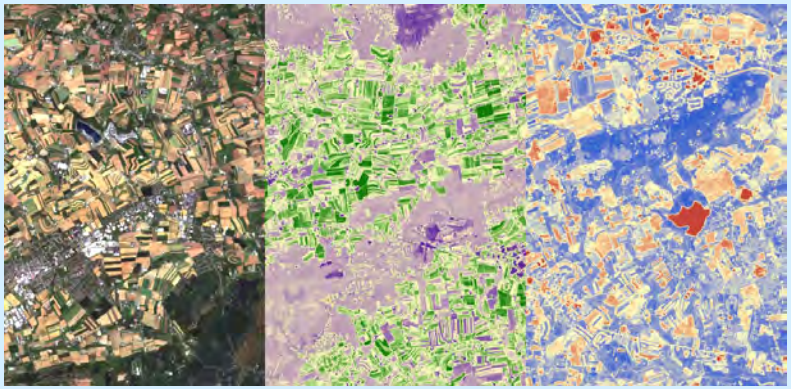
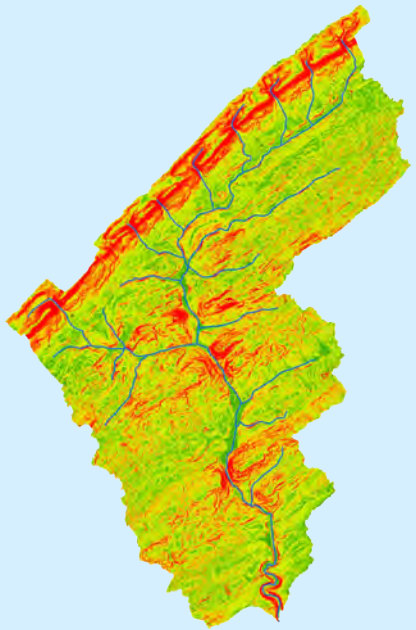
Data Collection







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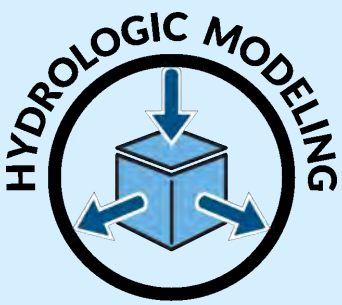
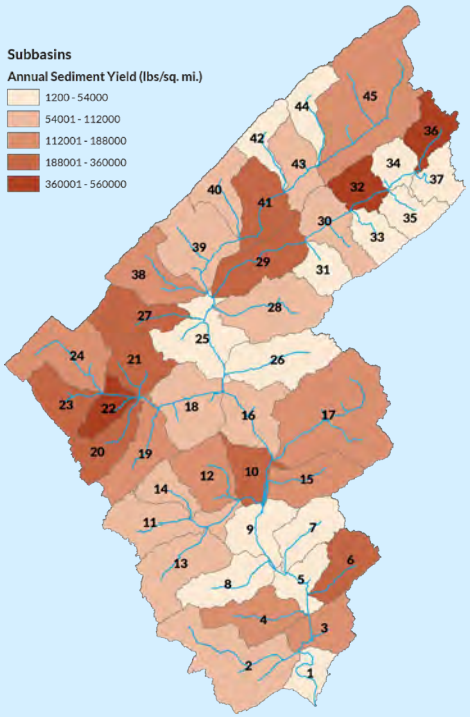
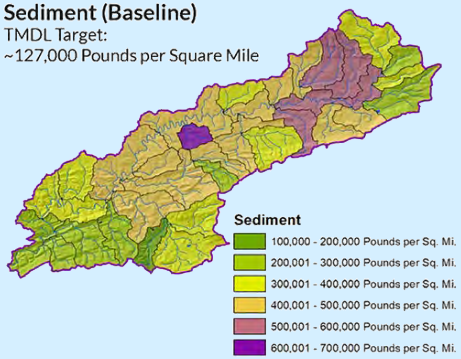
Geospatial Analysis

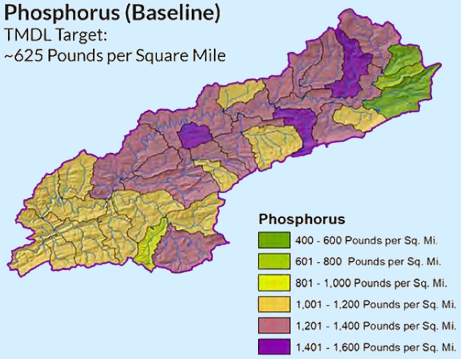




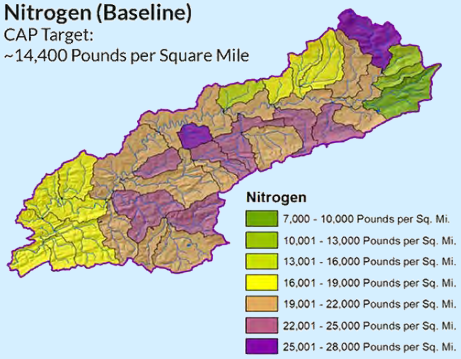
Sediment (Baseline)
TMDL Target:
~127,000 Pounds per Square Mile

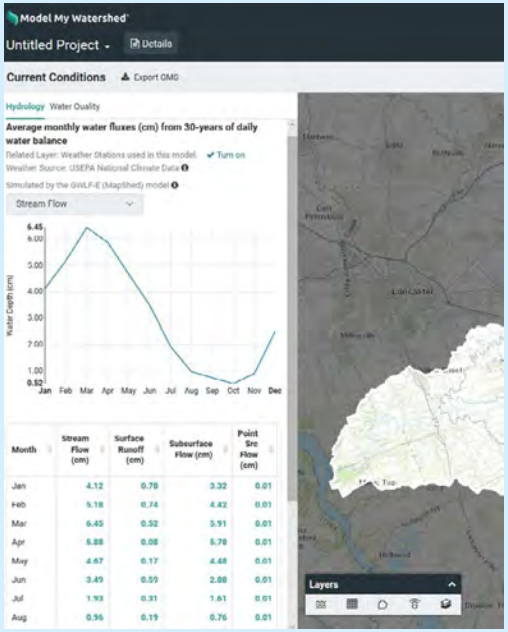


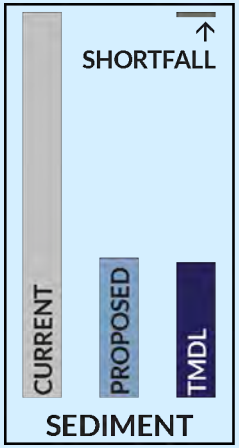
Phosphorus (Baseline)
TMDL Target:
~625 Pounds per Square Mile

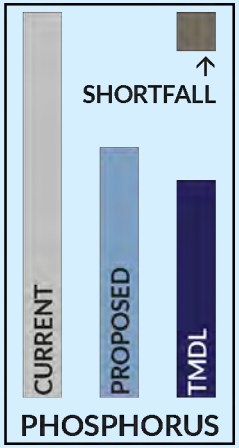


Nitrogen (Baseline)
CAP Target:
~14,400 Pounds per Square Mile









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Hydrologic Modeling

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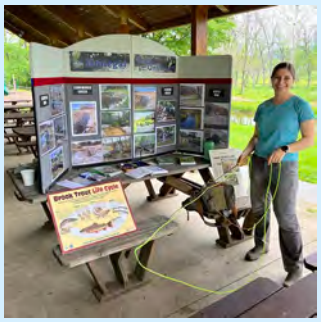
Steering Committee



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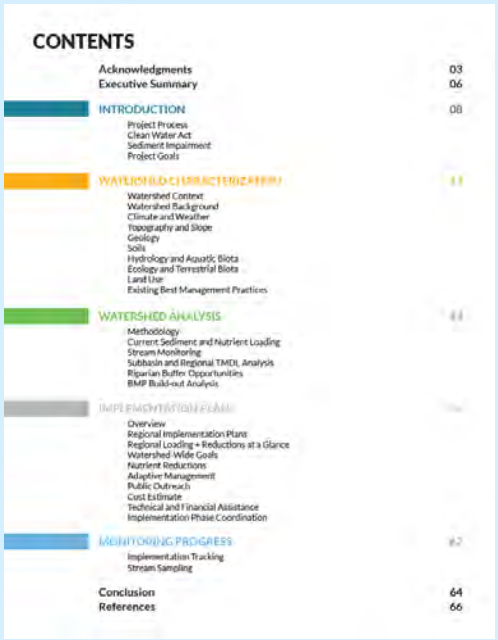
Public Engagement

Quantitative + Qualitative = Success



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The Nine EPA Requirements	We Determine
Pollution Causes + Sources	Goals
Pollutant Loading + Load Reductions	Values
Management Measures to Reduce Load	Priorities
Implementation Assistance	Focus
Information/Education Component	Engagement
Project Schedule	Strategies
Interim, Measurable Milestones	Format
Indicators to Measure Progress	Partnerships
Monitoring Component	Buy-in

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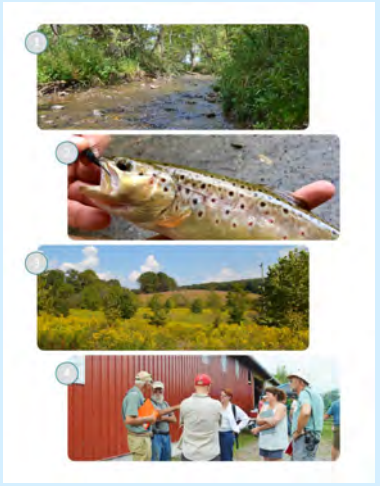
A Focus on Content

PLAN WRITING



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A Focus on Design

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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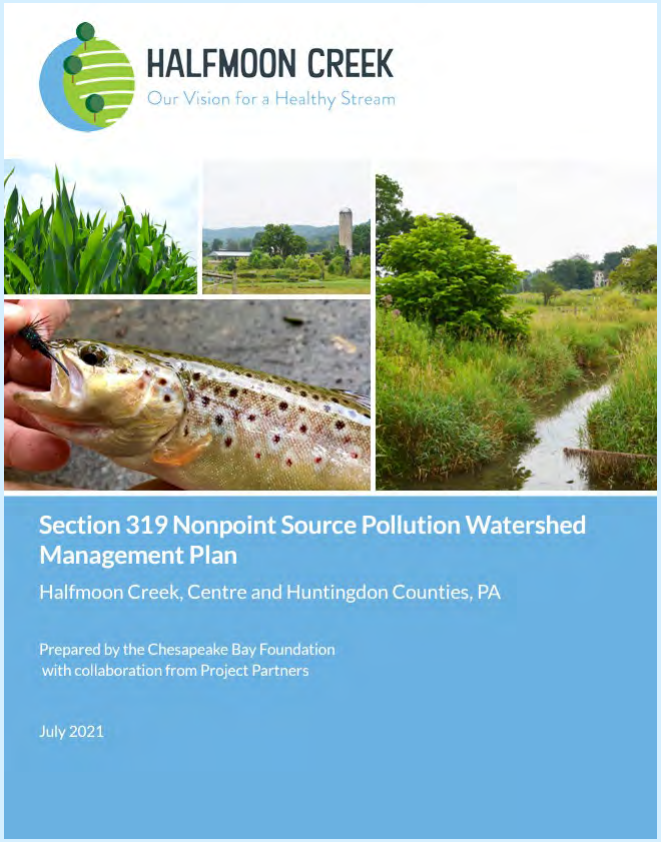
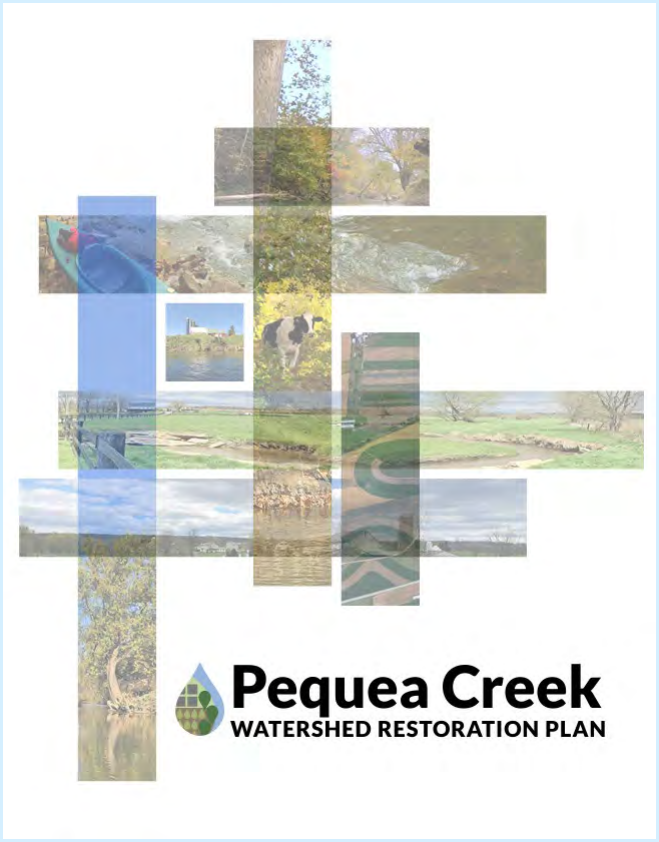
Plan Review





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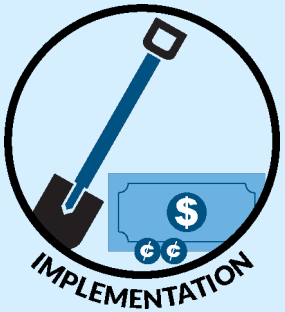
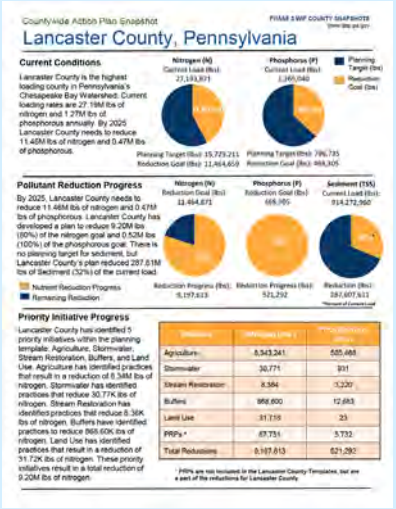
Plan Approval





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Plan Implementation

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CBF's Watershed Planning Process

The Nine EPA Requirements	We Determine
Pollution Causes + Sources	Goals
Pollutant Loading + Load Reductions	Values
Management Measures to Reduce Load	Priorities
Implementation Assistance	Focus
Information/Education Component	Engagement
Project Schedule	Strategies
Interim, Measurable Milestones	Format
Indicators to Measure Progress	Partnerships
Monitoring Component	Buy-in

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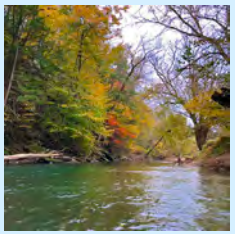
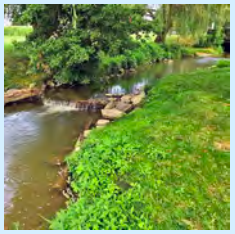
Having a Dialogue with EPA

Watershed-Wide

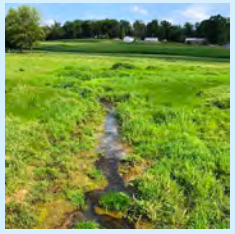
Regions

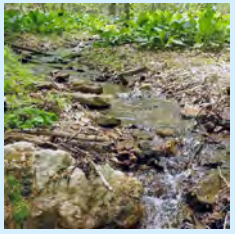


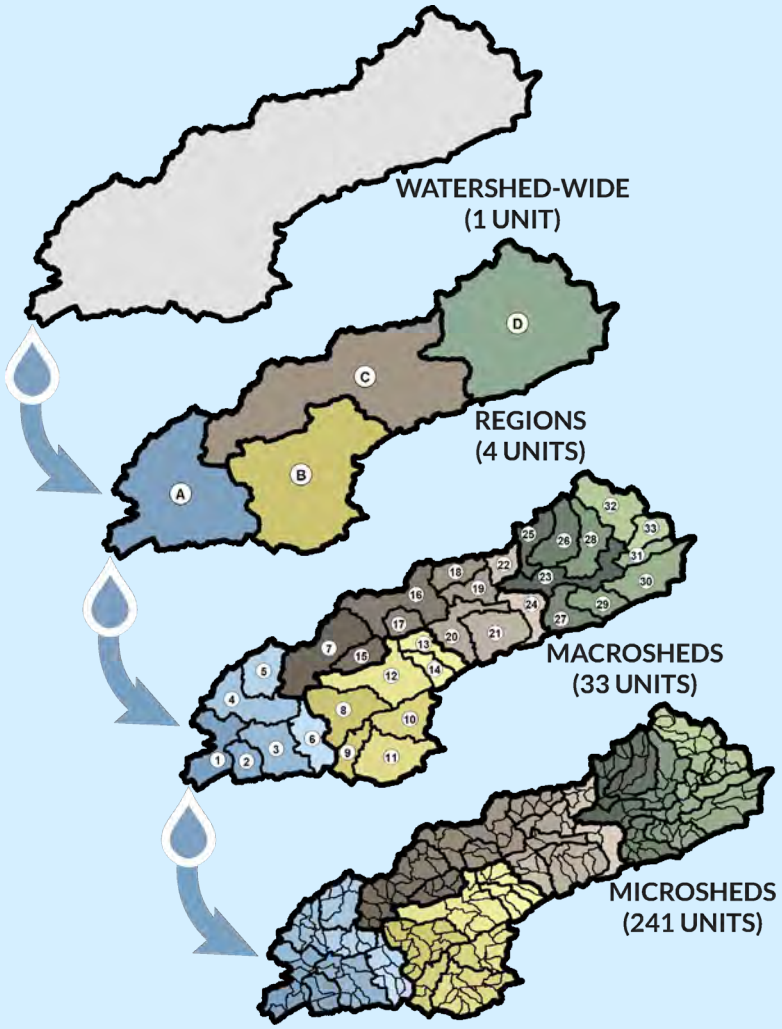
Macrosheds



Microsheds







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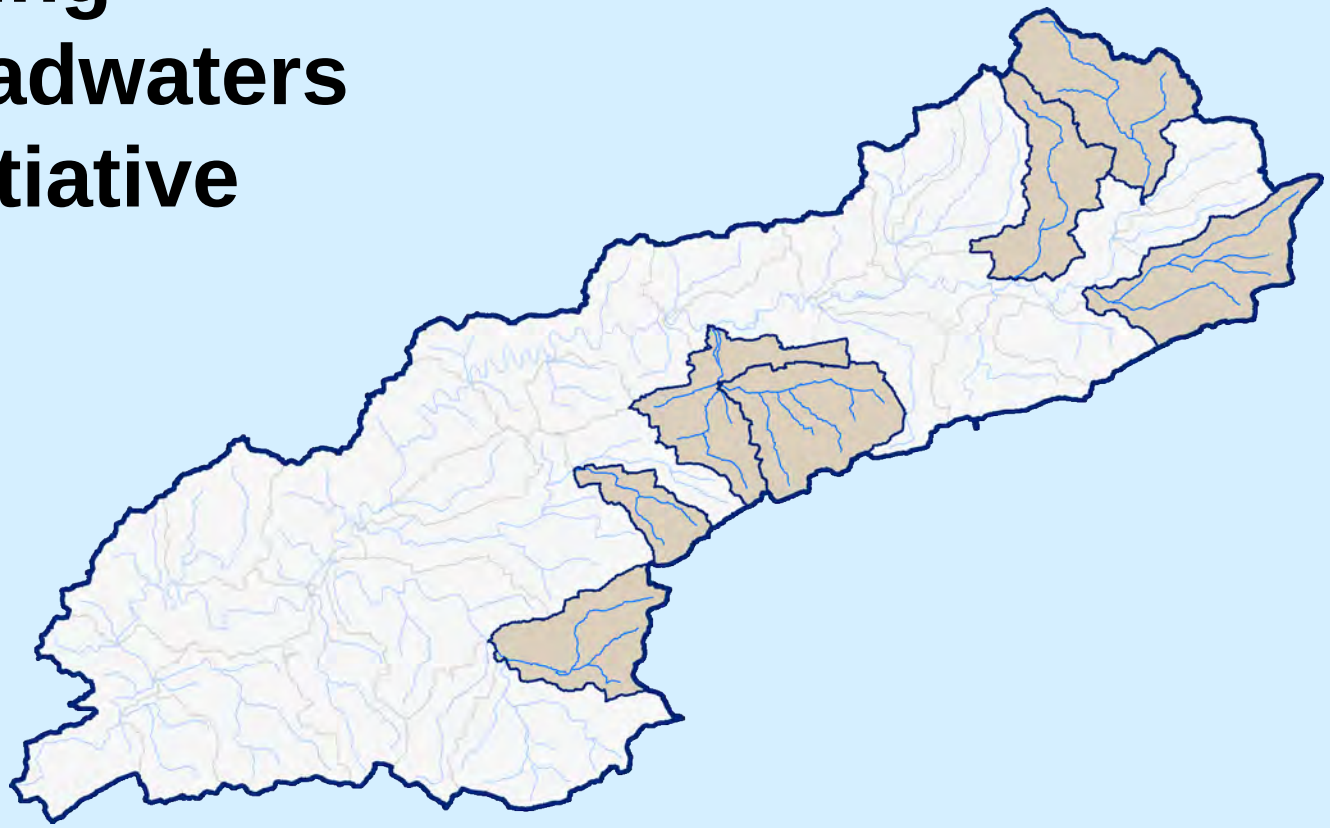
The Tiered Approach

TIER I
PRIORITY PRESERVATION AREAS
(3 Basins, 9% of Pequea Creek Watershed, 5% of Resource Allocation)

TIER II
NEAR-TERM RESTORATION AND DELISTING AREAS
(7 Basins, 23% of Pequea Creek Watershed, 80% of Resource Allocation)

TIER III
LONG-TERM RESTORATION AND OUTREACH AREAS
(23 Basins, 68% of Pequea Creek Watershed, 15% of Resource Allocation)

Near Delisting
Healthy Headwaters
Existing Initiative



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The Tiered Approach

2022 Pennsylvania Integrated Water Quality Report

Clean Water Act Section 303(d) List and 305(b) Report

```
Open "C:\QB64\Projects\Integrated_2024\List_05-2024.csv" For Input As #1
Open "C:\QB64\Projects\Integrated_2024\List_05-2024_Parsed.csv" For Output
Line Input #1, Temp
Print #2, "Use_Category,Status,Stream_Name,COMID,HUC08_ID,HUC08_Name,Count
Dim Shared RecordID, ReachCode(2), Tally, CS, Count As Long
Dim Shared Miles(2) As Double
Dim Shared COMID$(2), LastCOMID$, UseCategory$(2), Status$(2), ImpCategory
Dim Shared CauseSource$(2, 11)
IsFirst = 1
CS = 0
While Not EOF(1)
    'For F = 1 To 100
    Input #1, UseCategory$(2), Status$(2), StreamName$(2), COMID$(2), HUC0
    If Status$(2) = "Unassessed" Then UseCategory$(2) = "Unassessed"
    If IsFirst = 1 Then LastCOMID$ = COMID$(2): LastUseCategory$ = UseCate
    'Print "LastCOMID$="; LastCOMID$; ", COMID$(2)="; COMID$(2); ", LastUs
    'Input Temp$
    If LastCOMID$ = COMID$(2) And LastUseCategory$ = UseCategory$(2) Then
        CS = CS + 1
        CauseSource$(1, CS) = Cause$
        CauseSource$(2, CS) = Source$
        IsFirst = 0
    Else
        Print #2, UseCategory$(1); ","; Status$(1); ","; StreamName$(1); "
        Print #2, MuniType$(1); ","; Zip$(1); ","; DesUse$(1); ",";
        For CS = 1 To 10
            Print #2, CauseSource$(1, CS); ","; CauseSource$(2, CS); ",";
            CauseSource$(1, CS) = "": CauseSource$(2, CS) = ""
        Next CS
        Print #2, CauseSource$(1, 11); ","; CauseSource$(2, 11)
        CauseSource$(1, 11) = "": CauseSource$(2, 11) = ""
        CauseSource$(1, 1) = Cause$: CauseSource$(2, 1) = Source$
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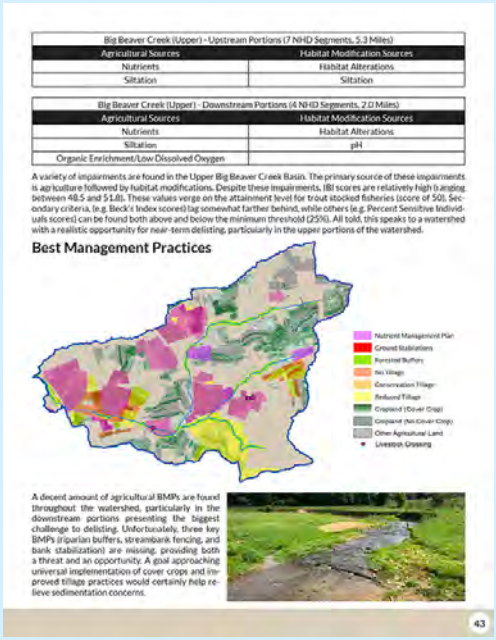


Big Beaver Creek (Upper) - Upstream Portions (7 NHD Segments, 5.3 Miles)	
Agricultural Sources	Habitat Modification Sources
Nutrients	Habitat Alterations
Siltation	Siltation

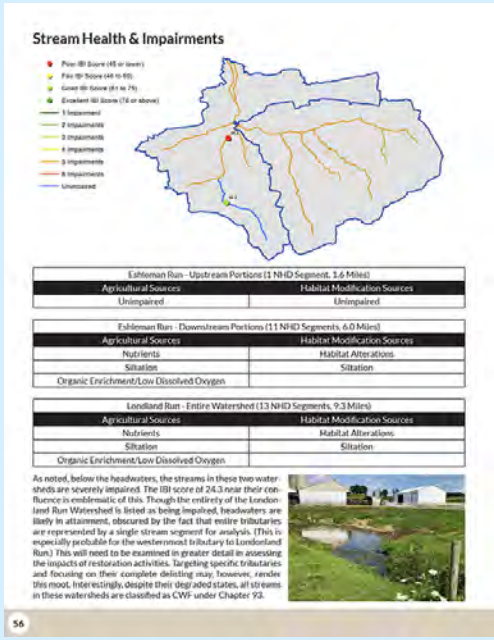
Big Beaver Creek (Upper) - Downstream Portions (4 NHD Segments, 2.0 Miles)	
Agricultural Sources	Habitat Modification Sources
Nutrients	Habitat Alterations
Siltation	pH
Organic Enrichment/Low Dissolved Oxygen	

A variety of impairments are found in the Upper Big Beaver Creek Basin. The primary source of these impairments is agriculture followed by habitat modifications. Despite these impairments, IBI scores are relatively high (ranging between 48.5 and 51.8). These values verge on the attainment level for trout stocked fisheries (score of 50). Secondary criteria, (e.g. Beck's Index scores) lag somewhat farther behind, while others (e.g. Percent Sensitive Individuals scores) can be found both above and below the minimum threshold (25%). All told, this speaks to a watershed with a realistic opportunity for near-term delisting, particularly in the upper portions of the watershed.

Best Management Practices

A decent amount of agricultural BMPs are found throughout the watershed, particularly in the downstream portions presenting the biggest challenge to delisting. Unfortunately, three key BMPs (riparian buffers, streambank fencing, and bank stabilization) are missing, providing both a threat and an opportunity. A goal approaching universal implementation of cover crops and improved tillage practices would certainly help relieve sedimentation concerns.

43



Stream Health & Impairments

Eshleman Run - Upstream Portions (1 NHD Segment, 1.6 Miles)	
Agricultural Sources	Habitat Modification Sources
Unimpaired	Unimpaired

Eshleman Run - Downstream Portions (11 NHD Segments, 6.0 Miles)	
Agricultural Sources	Habitat Modification Sources
Nutrients	Habitat Alterations
Siltation	Siltation
Organic Enrichment/Low Dissolved Oxygen	

Londland Run - Entire Watershed (13 NHD Segments, 9.3 Miles)	
Agricultural Sources	Habitat Modification Sources
Nutrients	Habitat Alterations
Siltation	Siltation
Organic Enrichment/Low Dissolved Oxygen	

As noted, below the headwaters, the streams in these two watersheds are severely impaired. The IBI score of 24.3 near their confluence is emblematic of this. Though the entirety of the Londland Run Watershed is listed as being impaired, headwaters are likely in attainment, obscured by the fact that entire tributaries are represented by a single stream segment for analysis. (This is especially probable for the westernmost tributary to Londonland Run.) This will need to be examined in greater detail in assessing the impacts of restoration activities. Targeting specific tributaries and focusing on their complete delisting may, however, render this moot. Interestingly, despite their degraded states, all streams in these watersheds are classified as CWF under Chapter 93.

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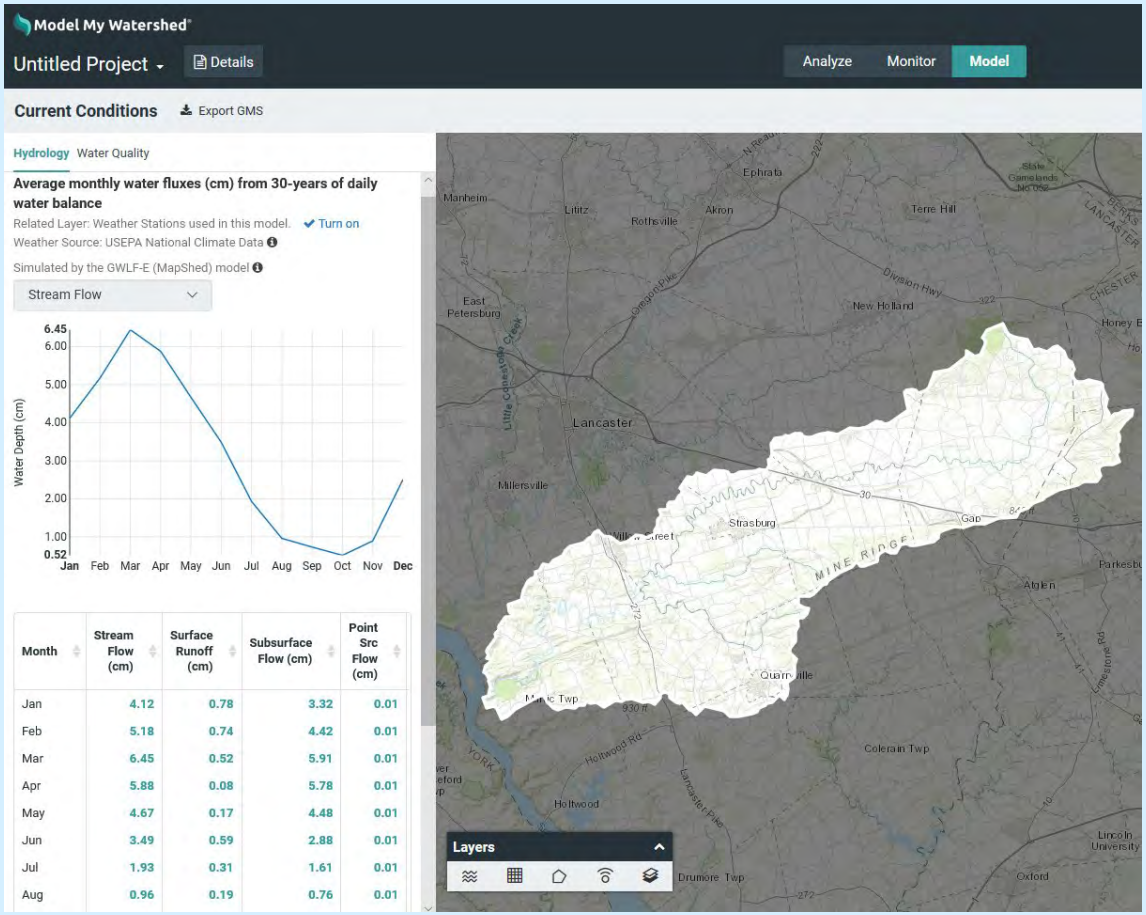
Pollution Causes + Sources



Land Cover

Landcover Preset: Land Use/Cover 2019 (NLCD19)

Hay / Pasture (ha)	5948.9
Cropland (ha)	17542.1
Wooded Areas (ha)	9462
Wetlands (ha)	91.8
Open Land (ha)	98.5
Barren Areas (ha)	68.1
Low-Density Mixed (ha)	2235.7
Medium-Density Mixed (ha)	874.1
High-Density Mixed (ha)	222.6
Low-Density Open Space (ha)	3525.7

Total: 40,069.5 ha

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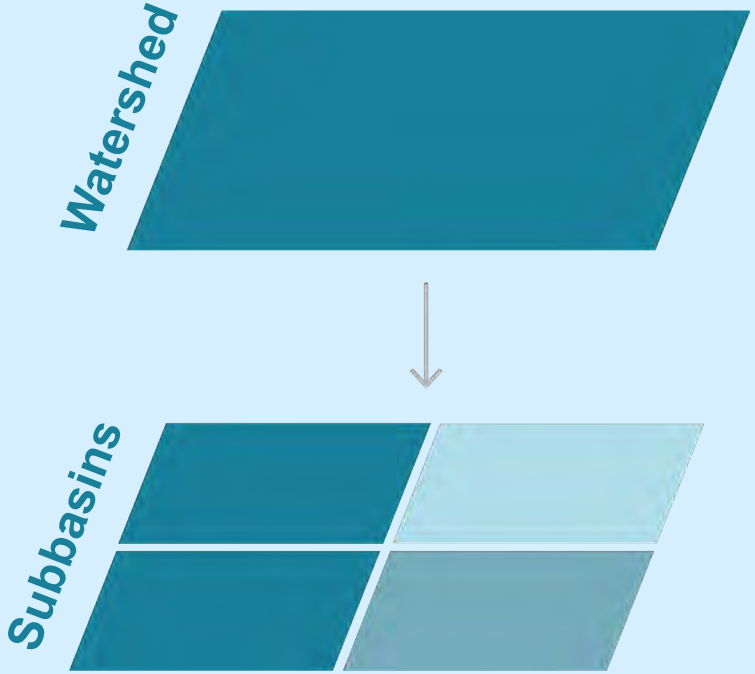
Pollutant Loading + Load Reductions



- Methodology developed in collaboration with David Arscott (Stroud Center) and Barry Evans (Penn State)

- Divided the watershed into smaller **subbasins** to identify "hotspots" for N, P, and sediment loading

Pollutant Loading + Load Reductions

Baseline (0%)

Existing (40%)

Buildout (100%)

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Management Measures to Reduce Load

Baseline (0%)

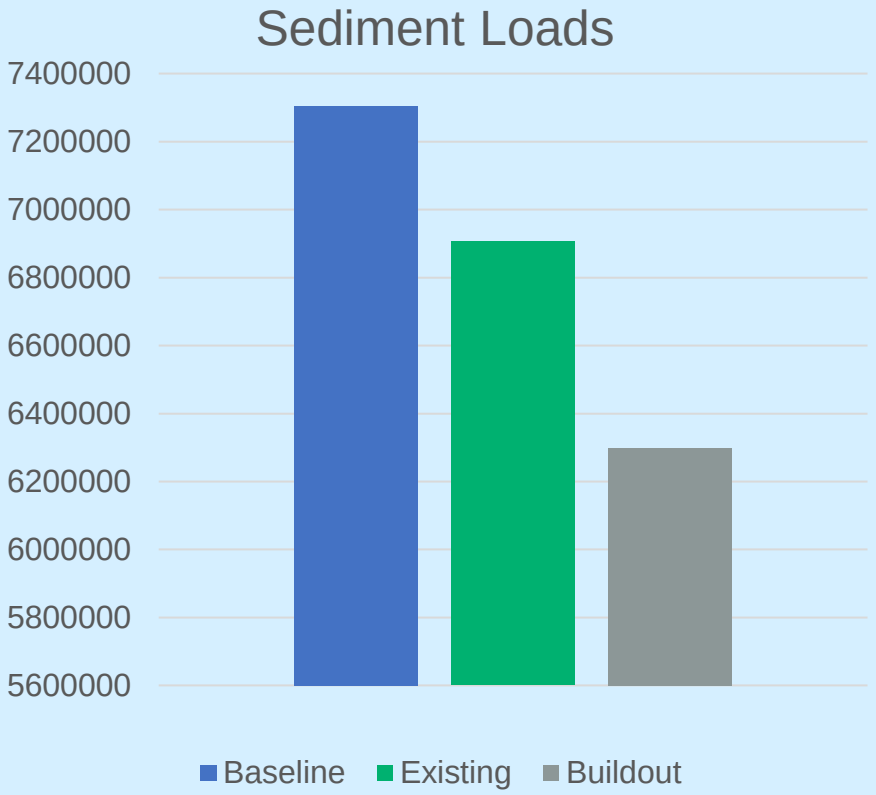
Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	7,305,158.3	278,115.6	18,458.0
Loading Rates (kg/ha)	1,027.84	39.13	2.60
Mean Annual Concentration (mg/L)	280.02	10.66	0.71
Mean Low-Flow Concentration (mg/L)	1,291.39	15.24	2.96

Existing (40%)

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	6,905,924.4	278,382.8	17,941.2
Loading Rates (kg/ha)	971.67	39.17	2.52
Mean Annual Concentration (mg/L)	264.84	10.68	0.69
Mean Low-Flow Concentration (mg/L)	1,309.58	15.48	2.99

Buildout (100%)

Sources	Sediment	Total Nitrogen	Total Phosphorus
Total Loads (kg)	6,299,798.8	278,327.4	17,217.1
Loading Rates (kg/ha)	886.38	39.16	2.42
Mean Annual Concentration (mg/L)	241.70	10.68	0.66
Mean Low-Flow Concentration (mg/L)	1,322.13	15.69	3.01



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Management Measures to Reduce Load

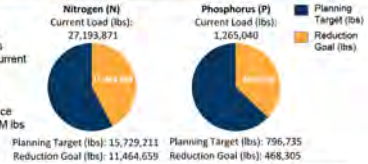
Countywide Action Plan Snapshot

PHASE 3 WIP COUNTY SNAPSHOTS
www.dep.pa.gov

Lancaster County, Pennsylvania

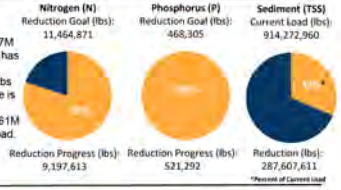
Current Conditions

Lancaster County is the highest loading county in Pennsylvania's Chesapeake Bay Watershed. Current loading rates are 27.19M lbs of nitrogen and 1.27M lbs of phosphorous annually. By 2025 Lancaster County needs to reduce 11.46M lbs of nitrogen and 0.47M lbs of phosphorous.



Pollutant Reduction Progress

By 2025, Lancaster County needs to reduce 11.46M lbs of nitrogen and 0.47M lbs of phosphorous. Lancaster County has developed a plan to reduce 9.20M lbs (80%) of the nitrogen goal and 0.52M lbs (100%) of the phosphorous goal. There is no planning target for sediment, but Lancaster County's plan reduced 287.61M lbs of Sediment (32%) of the current load.



Priority Initiative Progress

Lancaster County has identified 5 priority initiatives within the planning template: Agriculture, Stormwater, Stream Restoration, Buffers, and Land Use. Agriculture has identified practices that result in a reduction of 8.34M lbs of nitrogen. Stormwater has identified practices that reduce 30.77K lbs of nitrogen. Stream Restoration has identified practices that reduce 8.36K lbs of nitrogen. Buffers have identified practices to reduce 868.60K lbs of nitrogen. Land Use has identified practices that result in a reduction of 31.72K lbs of nitrogen. These priority initiatives result in a total reduction of 9.20M lbs of nitrogen.

Initiative	Nitrogen (lbs.) *	[illegible]
Agriculture	8,343,241	505,468
Stormwater	30,771	931
Stream Restoration	8,364	3,220
Buffers	868,600	12,683
Land Use	31,718	23
PRPs *	67,751	5,732
Total Reductions	9,197,613	521,292

*PRPs are not included in the Lancaster County Templates, but are a part of the reductions for Lancaster County.

Eshleman Run			Reductions (Tons)		
BMPS	Additional Amount Proposed		Sediment	Phosphorus	Nitrogen
Cover Crops	394.1 Acres	80%	145.2	0.5	0.0
No Tillage	495.7 Acres	50%	198.0	0.1	-0.2
Nutrient Management	645.6 Acres	75%	0.0	0.2	4.8
Animal Waste Management	1,137 AUs	60%	0.0	0.2	1.0
Forested Buffers	2.4 Miles	40%	179.4	0.1	3.1
Stream Fencing	2.3 Miles	35%	20.1	0.1	0.2
Streambank Stabilization	0.4 Miles	5%	48.0	0.1	0.1
Legacy Sediment	0.10 Miles	1%	169.2	0.2	0.2
Scenarios			Loading (Tons)		
Total Proposed Reduction			760.0	1.5	9.3
Current Loading			1,068.3	3.2	53.3
Proposed Loading			308.3	1.7	44.0
Loading Goal			309.3	1.5	34.8
Percent Above/Below Goal			0%	-16%	-26%

Eshleman Run					Cost / Pound / Year		
BMPS	Proposed	Cost per Unit	Years	Total Cost	S	P	N
Cover Crops	394.1 Acres	$47.35/ac/yr	10	$186,588	$0.06	$19.93	$377.84
No Tillage	495.7 Acres	$19.21/ac/yr	10	$95,226	$0.02	$31.88	-
Nutrient Management	645.6 Acres	$22.31/ac/yr	10	$144,049	-	$33.43	$1.50
Planning		$17.73/ac	1	$11,446	-	-	-
Maintenance		$20.54/au/yr	10	$132,603	-	-	-
Animal Waste Management	1,137 AUs	$117.07/au/yr	10	$1,331,006	-	$388.35	$69.56
Planning		$901.09/au	1	$1,024,487	-	-	-
Maintenance		$26.96/au/yr	10	$306,519	-	-	-
Forested Buffers	2.4 Miles	$10,985/mi/yr	10	$259,692	$0.07	$127.43	$4.13
Planning		$49,241/mi	1	$116,413	-	-	-
Maintenance		$6,061/mi/yr	10	$143,280	-	-	-
Stream Fencing	2.3 Miles	$19,958/mi	1	$45,124	$0.11	$21.58	$14.23
Streambank Stabilization	0.4 Miles	$1,995,840/mi	1	$734,382	$0.77	$694.63	$249.19
Legacy Sediment	0.10 Miles	$1,848,000/mi	1	$184,800	$0.05	$47.51	$37.77
Total	-	$298,087/yr	10	$2,980,868	$0.24	$85.57	$3.28

Londonland Run			Reductions (Tons)		
BMPS	Additional Amount Proposed		Sediment	Phosphorus	Nitrogen
Cover Crops	348.8 Acres	80%	128.4	0.3	0.1
No Tillage	475.6 Acres	50%	132.9	0.1	0.0
Nutrient Management	388.9 Acres	75%	0.0	0.1	2.9
Animal Waste Management	1,184 AUs	60%	0.0	0.2	0.9
Forested Buffers	2.8 Miles	35%	129.5	0.1	3.3
Stream Fencing	2.7 Miles	35%	27.7	0.1	0.2
Streambank Stabilization	0.5 Miles	5%	40.8	0.0	0.1
Legacy Sediment	0.10 Miles	1%	169.2	0.2	0.2
Scenarios			Loading (Tons)		
Total Proposed Reduction			628.4	1.1	7.7
Current Loading			943.6	3.4	56.8
Proposed Loading			315.2	2.3	49.1
Loading Goal			379.2	1.9	42.7
Percent Above/Below Goal			17%	-19%	-15%

Londonland Run					Cost / Pound / Year		
BMPS	Proposed	Cost per Unit	Years	Total Cost	S	P	N
Cover Crops	348.8 Acres	$47.35/ac/yr	10	$165,145	$0.06	$26.57	$98.88
No Tillage	475.6 Acres	$19.21/ac/yr	10	$91,370	$0.03	$37.25	-
Nutrient Management	388.9 Acres	$22.31/ac/yr	10	$86,773	-	$30.28	$1.52
Planning		$17.73/ac	1	$6,895	-	-	-
Maintenance		$20.54/au/yr	10	$79,878	-	-	-
Animal Waste Management	1,124 AUs	$117.07/au/yr	10	$1,315,620	-	$420.72	$69.58
Planning		$901.09/au	1	$1,012,644	-	-	-
Maintenance		$26.96/au/yr	10	$302,976	-	-	-
Forested Buffers	2.8 Miles	$10,985/mi/yr	10	$309,842	$0.12	$209.69	$4.73
Planning		$49,241/mi	1	$138,893	-	-	-
Maintenance		$6,061/mi/yr	10	$170,949	-	-	-
Stream Fencing	2.7 Miles	$19,958/mi	1	$54,746	$0.10	$28.57	$14.89
Streambank Stabilization	0.5 Miles	$1,995,840/mi	1	$952,710	$1.17	$1,193.93	$435.87
Legacy Sediment	0.10 Miles	$1,848,000/mi	1	$184,800	$0.05	$47.51	$37.77
Total	-	$316,101/yr	10	$3,161,005	$0.28	$69.84	$3.12

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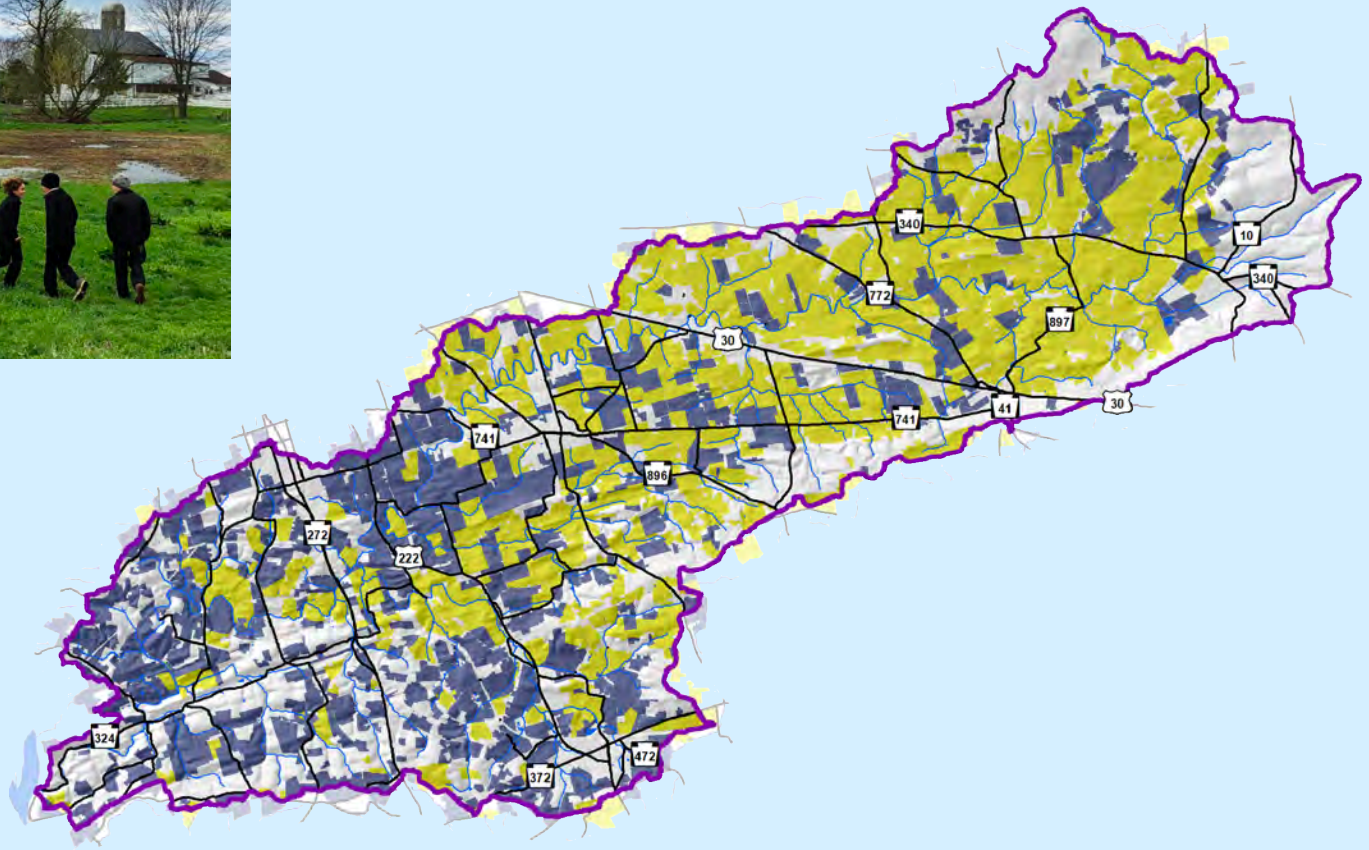
Management Measures to Reduce Load



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Management Measures to Reduce Load

Collective Action for Clean Water:
A Partners & Resources Inventory, Analysis, and Recommended Integrated Funding Delivery Strategy for Lancaster County

PennState College of Agricultural Sciences

Penn State Agriculture & Environment Center

March 2021

TECHNICAL & FINANCIAL ASSISTANCE

A wide range of funding and expertise will be required to implement the recommendations in this plan. And though approval of this plan will make grants available through the EPA's 319 Program, the scope and scale of restoration work in the Pequea far exceeds resources available from this one source. For this plan's goals to become realities, numerous programs and partnerships will need to leveraged.

To aid in implementation of the Lancaster CAP, as well as achieving the Lancaster Clean Water Partners' goal of "clean and clear local streams by 2040," the Pennsylvania State University did a comprehensive funding and resource analysis for projects and BMPs in local watersheds. Their report detailed both funding and technical resources currently being utilized, as well a comprehensive list of additional opportunities. This chapter contains an abridged list from the report, with more detailed information found in the complete report, included in the plan appendix. (See "Collective Action for Clean Water: A Partners & Resources Inventory, Analysis, and Recommended Integrated Funding Delivery Strategy for Lancaster County," Penn State Agriculture & Environment Center, March 2021.)

Currently Utilized Technical Assistance & Funding Resources

Partners (Staff Capacity)
- Lancaster Clean Water Partners
- Lancaster Farmland Trust
- Chesapeake Bay Foundation
- Chesapeake Conservancy
- Alliance for the Chesapeake Bay
- Pequea Creek Watershed Assoc.
- Lancaster County Conservation District
- TeamAg
- Red Barn
- Stroud Water Research Center
- Salisbury Township
- Other Pequea municipalities
- Lancaster Conservancy
- Donegal TU
- US Fish & Wildlife Service

Funding Programs
- USDA Natural Resource Conservation Service Programs (NRCS)
  Environmental Quality Incentives Program (EQIP)
  Conservation Stewardship Program (CSP)
  Wetland Reserve Easement Program (WRE)
- USDA Farm Service Agency Conservation Service Programs
  Conservation Reserve Enhancement Program
- DCNR Lancaster County Buffers Partnership
- Lancaster County Buffer Bonus (Growing Greener)
- Multifunctional Buffers (PACD)
- CBF Keystone Ten Million Trees (K10) Partnership
- Ag Planning Reimbursement
- PA Infrastructure Investment Authority (PENNVEST)
- Resource Enhancement and Protection Program (REAP)
- Dirt & Gravel Road Program
- Conservation Excellence Grants
- PA Soil Health Coalition (National Fish & Wildlife Federation)
- Subsurface Application of Manure
- Lancaster Farmland Trust (LFT) Farm Conservation Grants
- Farm Stewardship Program (FSP) Buffer Programs (Stroud)
- EPA Most Effective Basin Funding
- Capital Resource Conservation & Protection Grazing Program
- CBF Accelerating Buffers (National Fish & Wildlife Federation)

Photo Credit: Lancaster Newspapers

Potential Technical Assistance & Funding Resources

Resources for Agricultural Best Management Practices

Partners (Staff Capacity)
- USDA NRCS
- USDA FSA
- US EPA
- PA DEP
- State Conservation Commission
- PENNVEST
- Lancaster County Conservation District
- Lancaster Farmland Trust
- Alliance for the Chesapeake Bay
- Chesapeake Bay Foundation
- Stroud Water Research Center
- Penn State University
- TeamAg, Inc.
- Red Barn Consulting

Funding Programs
- NRCS Environmental Quality Incentives Program (EQIP)
- NRCS Conservation Innovation Grants (CIG)
- NRCS Conservation Stewardship Program (CSP)
- Section 319 Program
- EPA Chesapeake Bay Program Funds (CBIG & CBRAP)
- Clean Water State Revolving Loan Fund
- EPA Most Effective Basin Funding
- EPA's SWG and INSR grants (currently administered by NFWF)
- Growing Greener
- Ag Planning Reimbursement Program (APRP)
- REAP
- PENNVEST
- Act 13 Watershed Restoration and Protection Program
- Exelon Habitat Improvement Project Program (PFBC)
- Exelon Habitat Improvement Project Program (LCCD)
- Conservation Excellence Grants (CEG)
- Susquehanna Riverlands Mini Grants (Lancaster Conservancy)
- Lancaster Clean Water Fund
- Campbell Foundation Grants

Funding from Programmatic Grants
- PA Soil Health Coalition (Stroud NFWF, GG Grants)
- Capital RC&D Grazing Management Program (RC&D NFWF)
- Lancaster County Buffer Bonus Program (ACB GG Grant)
- Farm Stewardship Program (Stroud NFWF Grant)
- LFT Farm Conservation Grants (LFT various funding sources)
- Subsurface Application of Manure (LCCD Campbell Grant)
- Turkey Hill Clean Water Partnership

Resources for Stormwater Best Management Practices

Funding Programs
- Section 319 Program
- EPA Chesapeake Bay Program Funds (CBIG & CBRAP)
- EPA's SWG and INSR grants (currently administered by NFWF)
- Clean Water State Revolving Loan Fund
- Community Development Block Grants
- Growing Greener
- TreeVitalize
- DCNR C2P2
- PENNVEST
- Act 13 Watershed Restoration and Protection Program
- Dirt & Gravel/Low Volume Road Program
- Smart Growth Transportation Program
- LCCWC Stormwater Mini Grants
- Susquehanna Riverlands Mini Grants (Lancaster Conservancy)
- Lancaster Clean Water Fund

Partners (Staff Capacity)
- US EPA
- PA DEP
- PA DCNR
- PENNVEST
- PA DCED
- Lancaster County Conservation District
- Lancaster County Planning Department
- Lancaster County Clean Water Consortium
- Lancaster Conservancy
- Alliance for the Chesapeake Bay
- Chesapeake Bay Foundation
- Penn State University
- LandStudies, Inc.
- RETTEW
- C.S. Davidson
- David Miller/Associates
- Earthbound Artisan

Funding from Programmatic Grants
- Lancaster County Buffer Bonus Program (ACB GG Grant)

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Implementation Assistance

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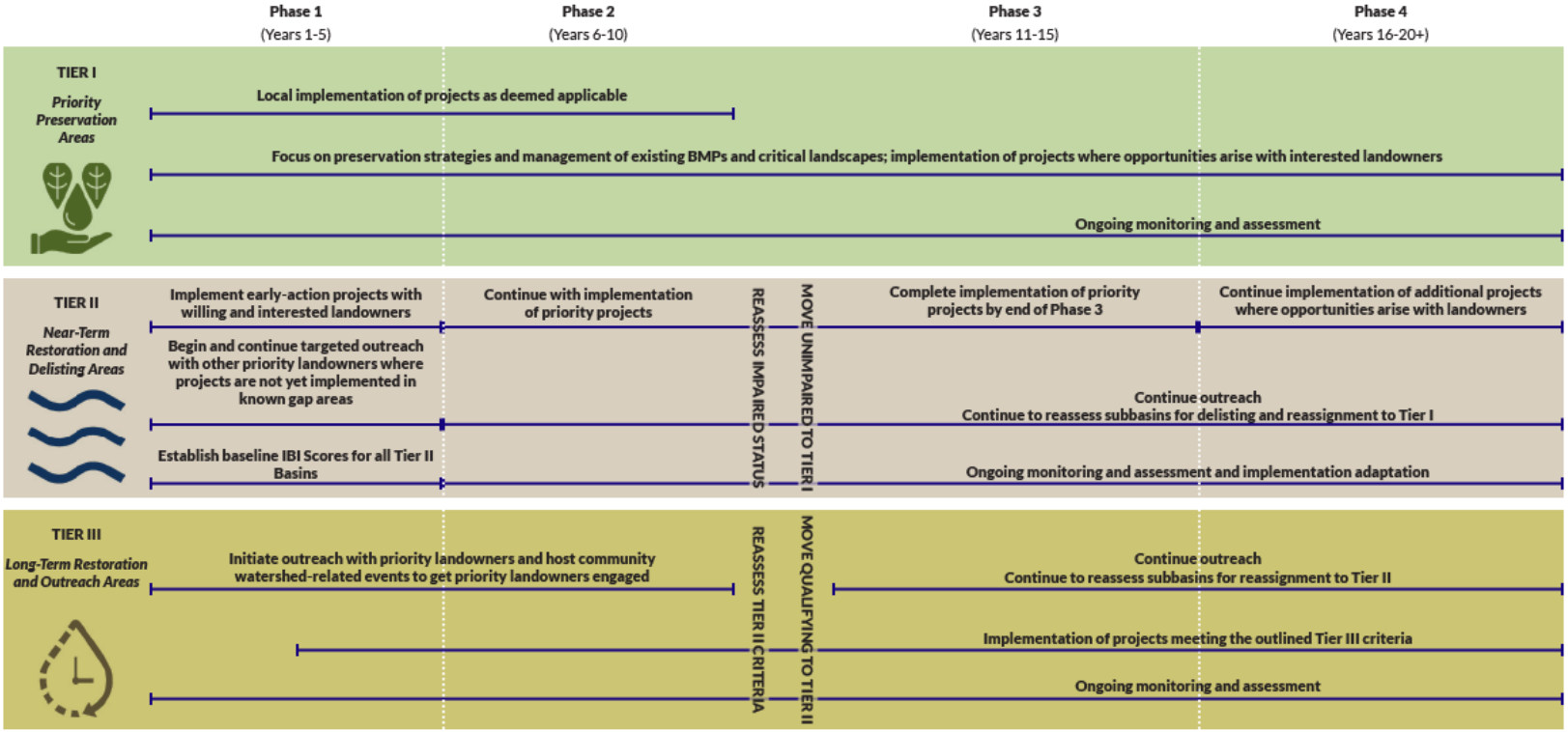
Information/Education Component

PRIORITIZED IMPLEMENTATION TIMELINE



* *Reduction indicator is a calculation of anticipated reductions according to our modeling - not based upon measured reductions in-stream.*

PHASE 1 AQUATIC MILESTONE(S):
- Baseline IBIs for all Tier II basins

PHASE 1 LOADING MILESTONE(S)*:
- 20% Tier II sediment reduction targets (842 tons/year)
- 10% Tier II phosphorus reduction targets (0.8 tons/year)

PHASE 1 ADMIN MILESTONE(S):
- Completion of website

PHASE 2 AQUATIC MILESTONE(S):
- Promote 2 "Near-Delisting" Tier II basins to Tier I (full delisting)
- Promote 2 Tier III basins to Tier II

PHASE 2 LOADING MILESTONE(S)*:
- 50% Tier II sediment reduction targets (2,104 tons/year)
- 25% Tier II phosphorus reduction targets (2.0 tons/year)

PHASE 2 ADMIN MILESTONE(S):
- Complete comprehensive reclassification assessment

PHASE 3 AQUATIC MILESTONE(S):
- Promote 2 remaining "Near-Delisting" Tier II basins to Tier I (full delisting)
- Delist 50% of "Healthy Headwaters" areas streams
- Promote 2 Tier III basins to Tier II

PHASE 3 LOADING MILESTONE(S)*:
- 100% Tier II sediment reduction targets (4,210 tons/year)
- 75% Tier II phosphorus reduction targets (6.1 tons/year)

PHASE 3 ADMIN MILESTONE(S):
- Develop plan components for new Tier II basins

PHASE 4 AQUATIC MILESTONE(S):
- Promote all remaining Tier II basins from original plan to Tier I
- Promote at least 2 Tier III basins to Tier II

PHASE 4 LOADING MILESTONE(S)*:
- 100% Tier II sediment reduction targets (4,210 tons/year)
- 100% Tier II phosphorus reduction targets (8.1 tons/year)

PHASE 4 ADMIN MILESTONE(S):
- Develop plan components for new Tier II basins
- Complete comprehensive reclassification assessment

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Project Schedule & Interim Measurable Milestones

Minimum Mean IBI Score		
Category	Tier III to Tier II	Tier II to Tier I
Warm Water Fishery	≥ 40	≥ 50
Other Designations	≥ 50	≥ 65
All Designations	Two Tier II Criteria Met (One If Near-Term Delisting Met)	≥ 50% Proposed BMP Implementation or Complete Delisting

Criteria 1: Near Delisting Areas (15% Annual Improvement)

	Year															
IBI Score	Initial	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	20	23	26	30	35	40	46	53	61	65+	65+	65+	65+	65+	65+	65+
	30	35	40	46	52	60	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+
	40	46	53	61	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+
	50	58	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+
	60	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+

Criteria 2: Healthy Headwaters Areas (10% Annual Improvement)

	Year															
IBI Score	Initial	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	20	22	24	27	29	32	35	39	43	47	52	57	63	65+	65+	65+
	30	33	36	40	44	48	53	58	64	65+	65+	65+	65+	65+	65+	65+
	40	44	48	53	59	64	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+
	50	55	61	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+
	60	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+

Criteria 3: Existing Initiative Areas (5% Annual Improvement)

	Year															
IBI Score	Initial	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	20	21	22	23	24	26	27	28	30	31	33	34	36	38	40	42
	30	32	33	35	36	38	40	42	44	47	49	51	54	57	59	62
	40	42	44	46	49	51	54	56	59	62	65+	65+	65+	65+	65+	65+
	50	53	55	58	61	64	65+	65+	65+	65+	65+	65+	65+	65+	65+	65+
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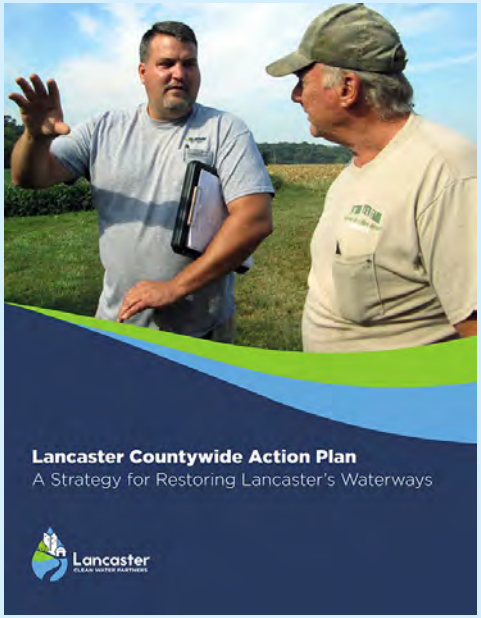
Lancaster Countywide Action Plan
A Strategy for Restoring Lancaster's Waterways
Lancaster


Lancaster Clean Water Partners
Collaborative Watershed Mapping Tool
Data driven restoration and conservation
This tool was created for the Lancaster Clean Water Partners by the Chesapeake Conservancy with assistance from the Watershed Action Team. The layers within the Data Viewer provide spatial information and landscape context to support planning efforts of restoration and conservation professionals in Lancaster County, Pennsylvania. To protect the privacy of the Lancaster County community, parcel information is only accessible through a password-protected version of this tool. Please attend a future meeting of the Watersheds Action Team to learn more about gaining access to parcel data.

BOB CASEY
U.S. Senator for Pennsylvania

ABOUT ISSUES SERVICES NEWS CONTACT MAP

Casey Announces New Funding for Pequea Creek and Halfmoon Creek Watersheds in Appropriations Bill

AUGUST 10, 2021

Washington, D.C. - Today, U.S. Senator Bob Casey (D-PA) is announcing the inclusion of more than $3 million for Pennsylvania watershed projects in the Senate Fiscal Year (FY) 2022 Agriculture, Rural Development, Food and Drug Administration and Related Agencies Appropriations Bill. The Pequea Creek Watershed will receive more than $2 million in congressionally directed spending and the Halfmoon Creek Watershed will receive over $1 million in congressionally directed spending. The Chesapeake Bay Foundation will receive the funding and is working with local partners on these projects.

"The Chesapeake Bay Foundation is doing critical work to clean up our waterways and reduce further pollution in the Chesapeake Bay," **said Senator Casey.** "Funding for these projects will help support Pennsylvania farmers develop practices to keep soil and nutrients out of waterways. This is an important step in ensuring our waterways are clean and we're working towards a more sustainable economy. I will continue to

SAVE THE BAY • SAVE THE BAY • SAVE THE BAY • SAVE THE BAY

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Huzzah!

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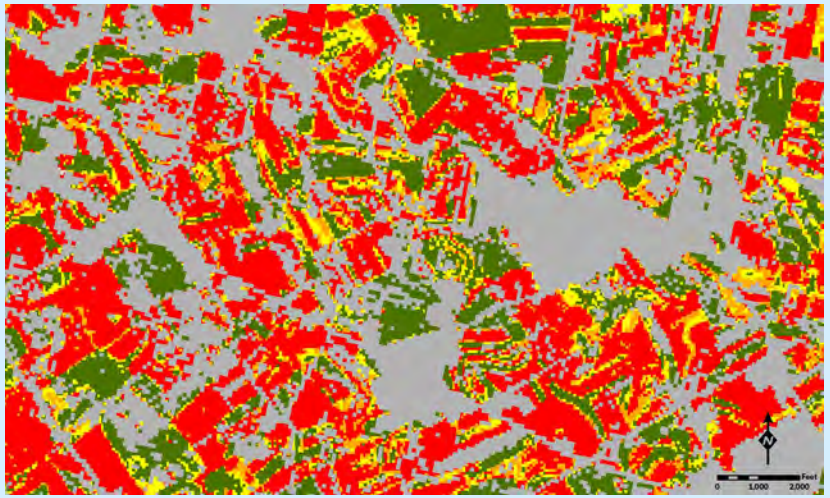
The Future

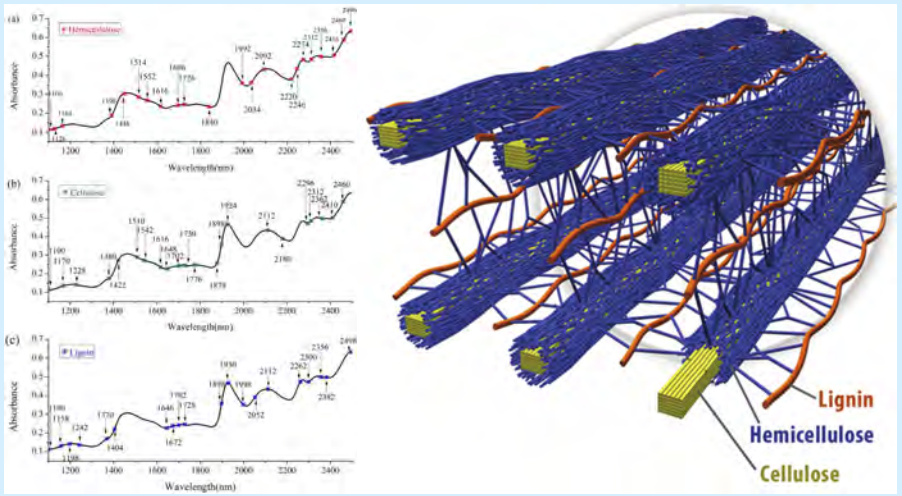
Conventional Tillage
<15% Residue

Reduced Tillage
15%-30% Residue

Conservation Tillage
30%-60% Residue

No Tillage
>60% Residue





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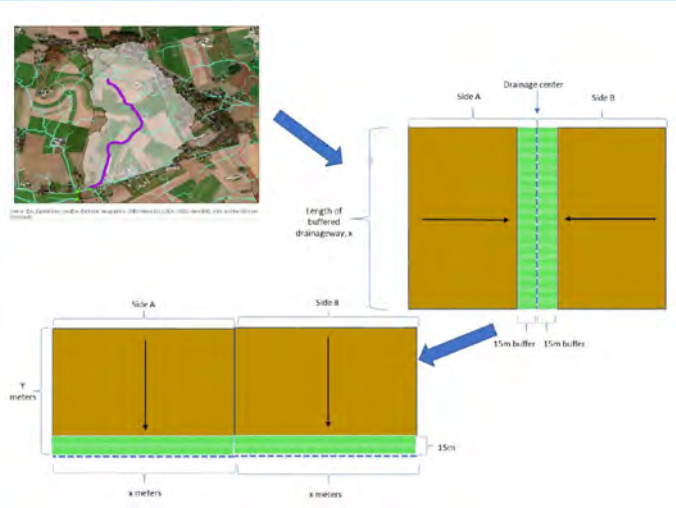
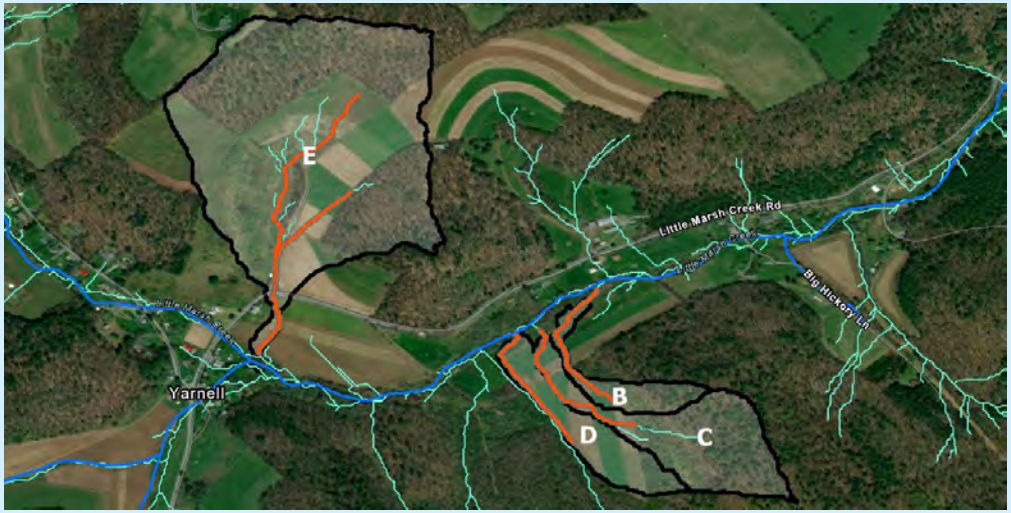
Remote Sensing





Analysis Courtesy of Michael Morris, PA DEP

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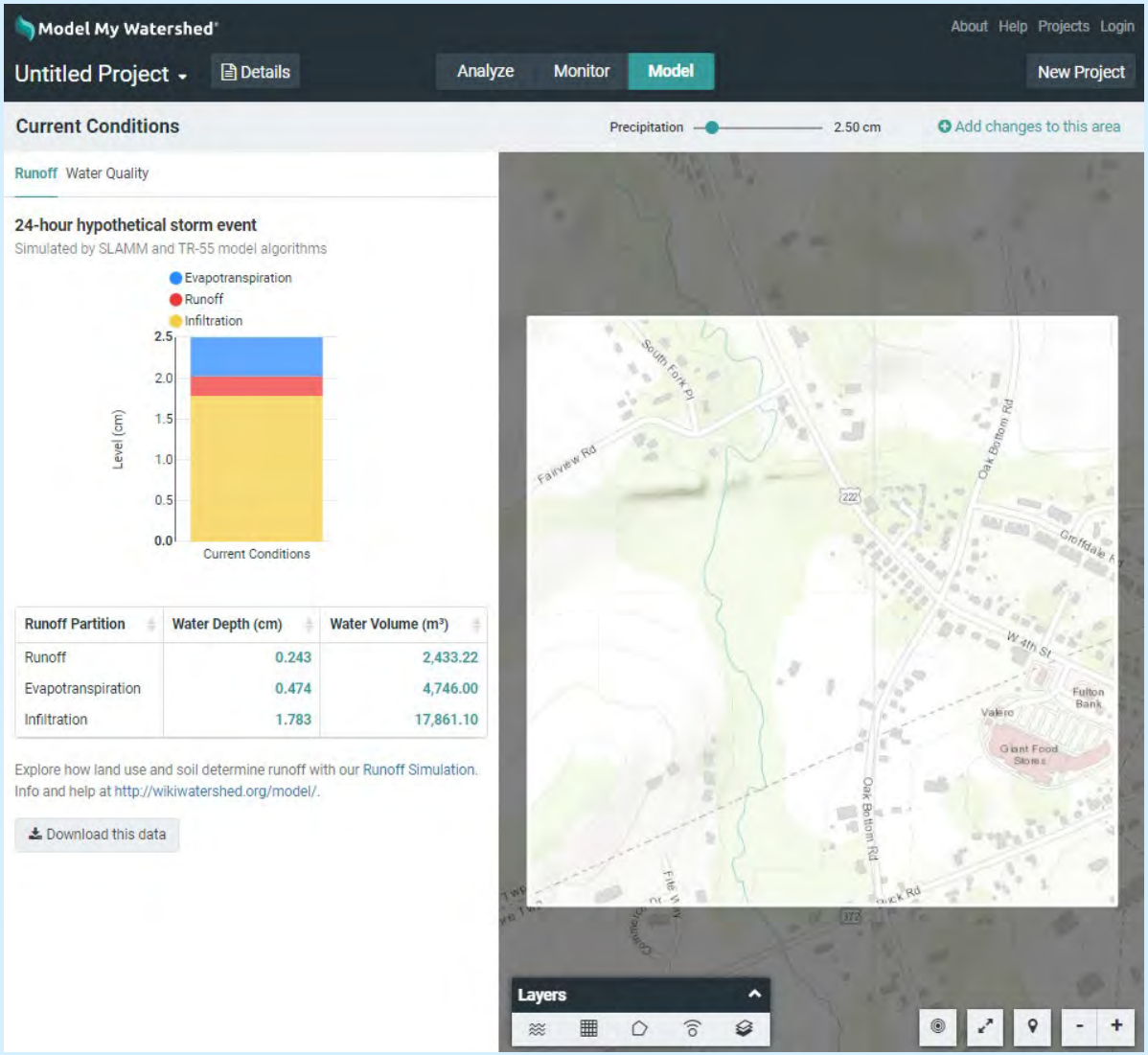
Precision Grass Buffers

SEDIMENT (Pounds per Acre)		TO										
	Initial Loading	Hay / Pasture	Cropland	Cropland with BMPs	Wooded Areas	Wetlands	Open Land	Barren Areas	Low-Density Mixed	Medium-Density Mixed	High-Density Mixed	Low-Density Open Space
FROM Hay / Pasture	133	+0	+1,191	+244	-73	-74	-49	-21	+926	+1,405	+1,118	+883
Cropland	1,324	-1,191	+0	-947	-1,264	-1,265	-1,240	-1,212	-265	+214	-73	-308
Cropland with BMPs	377	-244	+947	+0	-317	-318	-293	-265	+682	+1,161	+874	+639
Wooded Areas	60	+73	+1,264	+317	+0	-1	+24	+52	+999	+1,478	+1,191	+956
Wetlands	59	+74	+1,265	+318	+1	+0	+25	+53	+1,000	+1,479	+1,192	+957
Open Land	84	+49	+1,240	+293	-24	-25	+0	+28	+975	+1,454	+1,167	+932
Barren Areas	112	+21	+1,212	+265	-52	-53	-28	+0	+947	+1,426	+1,139	+904
Low-Density Mixed	1,059	-926	+265	-682	-999	-1,000	-975	-947	+0	+479	+192	-43
Medium-Density Mixed	1,538	-1,405	-214	-1,161	-1,478	-1,479	-1,454	-1,426	-479	+0	-287	-522
High-Density Mixed	1,251	-1,118	+73	-874	-1,191	-1,192	-1,167	-1,139	-192	+287	+0	-235
Low-Density Open Space	1,016	-883	+308	-639	-956	-957	-932	-904	+43	+522	+235	+0

Land Change Analysis



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Storm Event Load Modeling

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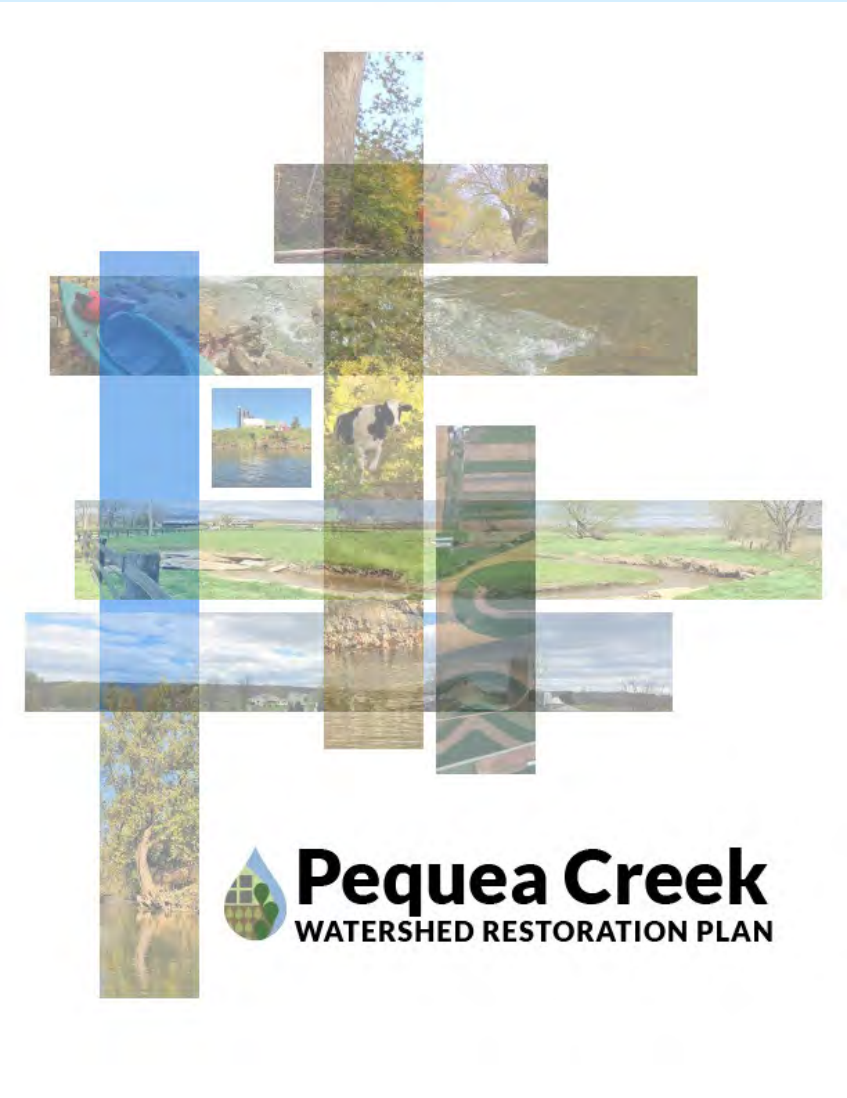
Recap



Brian Gish, AICP
Pennsylvania Senior Watershed Planner
Chesapeake Bay Foundation
1426 North Third Street, Suite 220
Harrisburg, PA 17102
717-200-4529
bgish@cbf.org

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Thank You!