

Watershed Improvement Projects (\$52,262)

Expected Outputs

- Bogy Run Study- Year 2 (\$4500)
- Fish Passage Study - Year 2 - could supplement with WCRF
- Avondale Borough GSI Implementation (Meliora Report/Community Led Research/PADEP GG)
- West Grove Borough GSI Implementation (Dockstader)
- Implementation of Reforestation/Stewardship Projects: Egypt Run (have maps)
- Land Preservation (earmarked \$10,000)

Potential Outputs

- Upper East Branch above Avondale – project implementation (Clauser Report)
- Reforestation/Stewardship Projects: HOA land
- Historic/Cultural Projects
- Agricultural BMP Support
- Conservation Planning
- Land Stewardship Projects

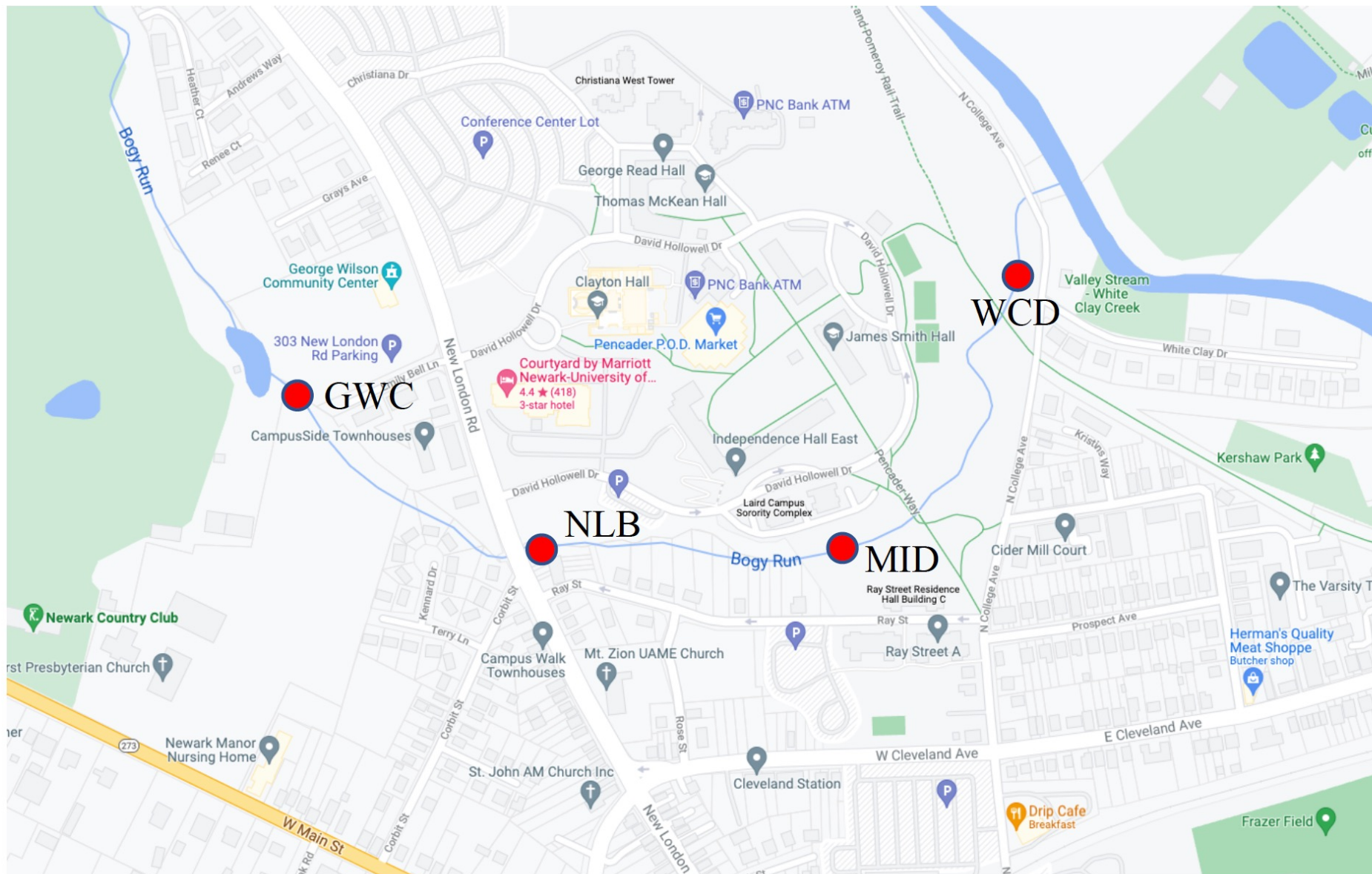
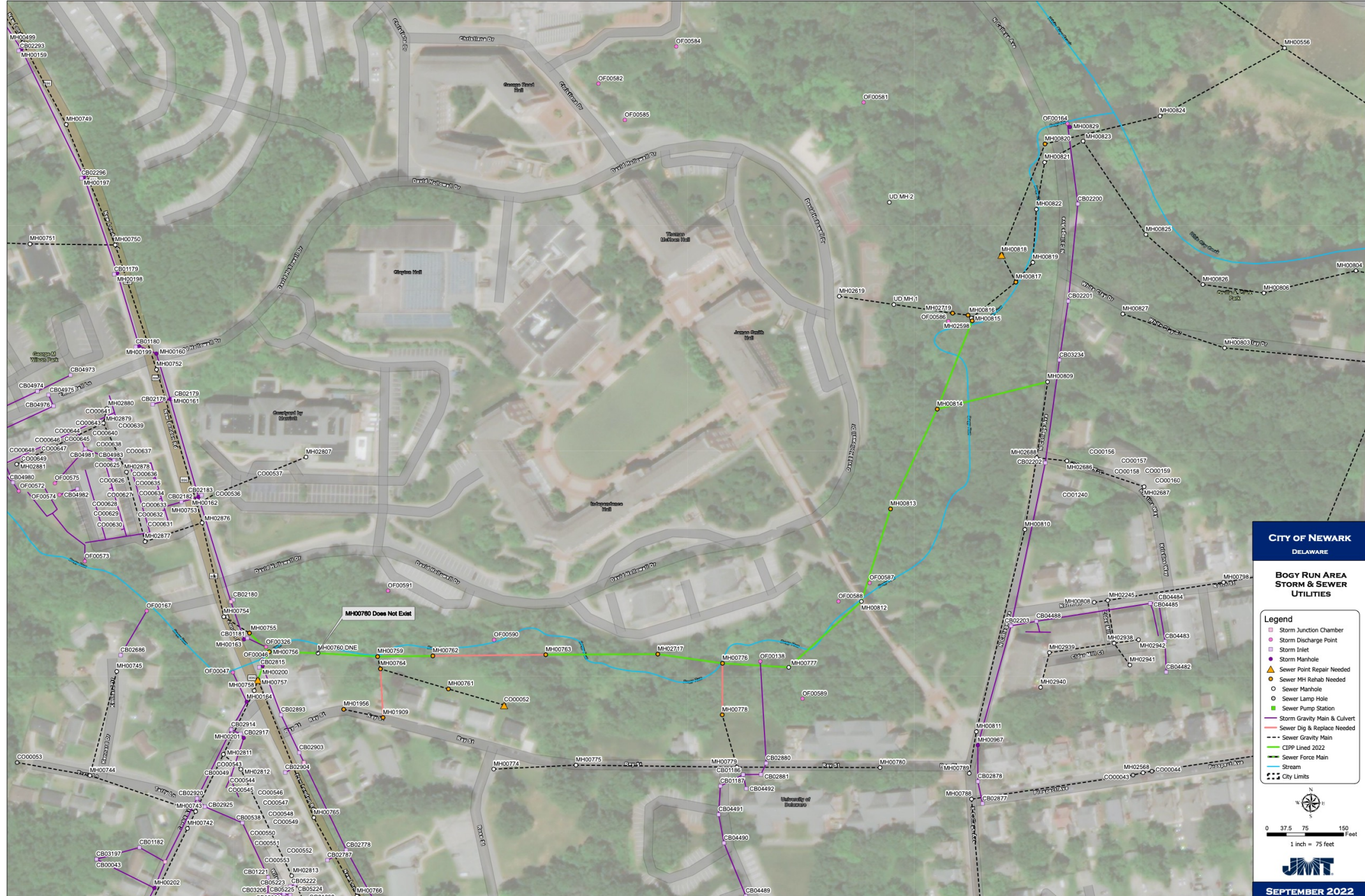


Fig. 1. Sampling sites at Bogy Run, Newark Delaware (●). Four sites from upstream to downstream: GWC (George Wilson Center), NLB (New London Bridge), MID (mid point between NLB and WCD), and WCD (White Clay Drive).



CITY OF NEWARK
DELAWARE

**BOGGY RUN AREA
STORM & SEWER
UTILITIES**

- Legend**
- Storm Junction Chamber
 - Storm Discharge Point
 - Storm Inlet
 - Storm Manhole
 - Sewer Point Repair Needed
 - Sewer MH Rehab Needed
 - Sewer Manhole
 - Sewer Lamp Hole
 - Sewer Pump Station
 - Storm Gravity Main & Culvert
 - Sewer Dig & Replace Needed
 - Sewer Gravity Main
 - CPP Lined 2022
 - Sewer Force Main
 - Stream
 - City Limits

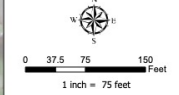


Table 2. Taq-man qPCR results for molecular source tracking of human contaminations at Bogy Run. For easy comparison, results from previous years were included.

Site ID	2018			2019			2020			2021			2022		
	Sample Date	Gene Copy Number	Positive for Human Signal	Sample Date	Gene Copy Number	Positive for Human Signal	Sample Date	Gene Copy Number	Positive for Human Signal	Sample Date	Gene Copy Number	Positive for Human Signal	Sample Date	Gene Copy Number	Positive for Human Signal
WCD	6/14/18	58.51	Positive?	7/5/19	0.00	Negative	6/30/20	975.56	Positive				6/30/22	0.00	Negative
	6/22/18	30121.93	Positive	7/9/19	425.51	Positive	7/6/20	0.00	Negative				7/5/22	0.00	Negative
	6/27/18	3301.93	Positive	7/15/19	0.00	Negative	7/15/20	66.17	Positive?				7/12/22	1.14	Positive?
	7/2/18	79.69	Positive?	7/22/19	167.72	Positive	7/22/20	2744.42	Positive				7/21/22	0.00	Negative
	7/12/18	0.00	Negative	7/29/19	0.00	Negative	7/27/20	180.94	Positive				7/22/22	0.00	Negative
	7/17/18	23170.54	Positive							10/25/21	0.00	Negative	10/31/2022 am	0.00	Negative
										11/18/21	0.00	Negative	10/31/2022 pm	0.00	Negative
													11/4/2022 am	0.00	Negative
													11/4/2022 pm	0.00	Negative
													11/7/2022 am	0.00	Negative
													11/7/2022 pm	0.00	Negative
													11/10/2022 am	0.00	Negative
													11/10/2022 pm	0.00	Negative
													11/15/2022 am	0.00	Negative
													11/15/2022 pm	0.00	Negative
NLB													6/30/22	108.85	Positive
													7/5/22	348605.03	Positive
													7/12/22	195.38	Positive
													7/21/22	269.17	Positive
													7/22/22	59.32	Positive
										10/25/21	27120.06	Positive	10/31/2022 am	0.00	Negative
										11/18/21	3699.31	Positive	10/31/2022 pm	0.00	Negative
													11/4/2022 am	132.55	Positive
													11/4/2022 pm	0.00	Negative
													11/7/2022 am	0.00	Negative
													11/7/2022 pm	1.98	Positive?
													11/10/2022 am	0.00	Negative
													11/10/2022 pm	0.00	Negative
													11/15/2022 am	53.56	Positive
													11/15/2022 pm	0.00	Negative
GWC													6/30/22	0.00	Negative
													7/5/22	0.00	Negative
													7/12/22	0.00	Negative
													7/12/22	0.00	Negative
													7/21/22	0.00	Negative
													7/22/22	0.00	Negative
MID													10/31/2022 am	0.00	Negative
													10/31/2022 pm	0.00	Negative
													11/4/2022 am	0.00	Negative
													11/4/2022 pm	0.00	Negative
													11/7/2022 am	0.00	Negative
													11/7/2022 pm	0.00	Negative
													11/10/2022 am	0.00	Negative
													11/10/2022 am	0.00	Negative
													11/10/2022 pm	0.00	Negative
													11/10/2022 pm	0.00	Negative
													11/15/2022 am	0.00	Negative
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													11/15/2022 pm	0.00	Negative
													11/15/2022 pm	0.00	Negative

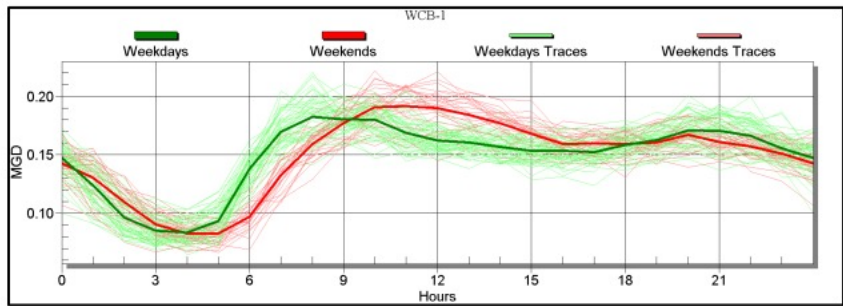
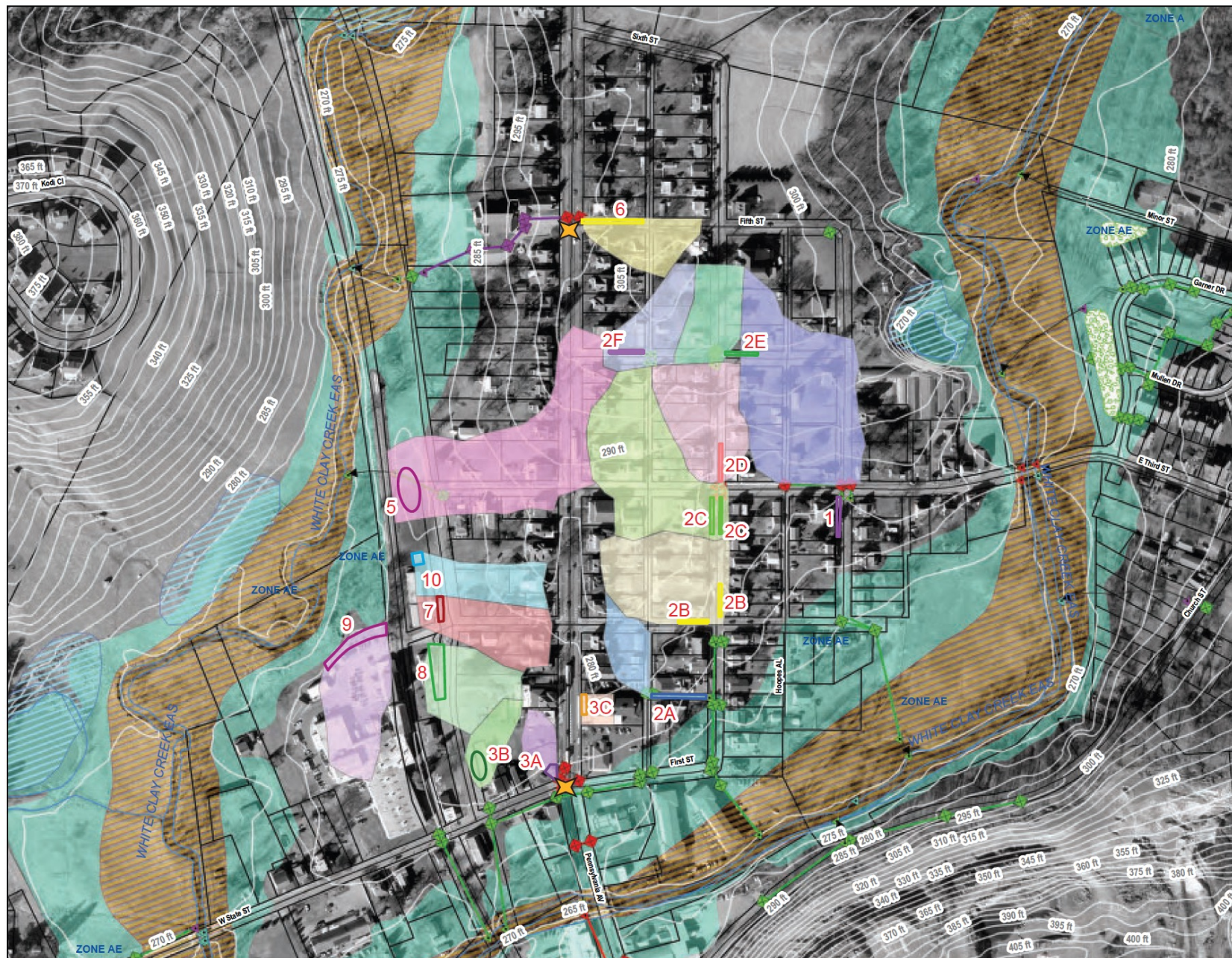


Figure D-5: Dry Day Traces for WC1



Legend

- Roads
- Streams
- Wetlands
- Existing BMPs
- Parcels
- FEMA Flood Hazards**
 - AE, FLOODWAY
 - A, 100-YR FLOODPLAIN
 - AE, 100-YR FLOODPLAIN
 - AO, 100-YR FLOODPLAIN
 - X/0.2 PCT ANNUAL CHANCE FLOOD HAZARD

Outfalls

- Municipal
- Private
- Road
- State

Storm Inlets

- Municipal
- Private
- State

Storm Lines

- Municipal
- Private
- State

Drainage Areas GI Footprints

- | | |
|------|----|
| DA1 | 1 |
| DA10 | 10 |
| DA2A | 2A |
| DA2B | 2B |
| DA2C | 2C |
| DA2D | 2D |
| DA2E | 2E |
| DA2F | 2F |
| DA3A | 3A |
| DA3B | 3B |
| DA3C | 3C |
| DA5 | 5 |
| DA6 | 6 |
| DA7 | 7 |
| DA8 | 8 |
| DA9 | 9 |

★ Potential PennDOT crossing improvement

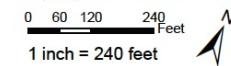



Figure 9: Green Stormwater Infrastructure Opportunities Plan

Table 3: GSI Project Evaluation and Prioritization

GIS NO.	GSI DESCRIPTION	COMMUNITY-LED RESEARCH FACTORS			STORMWATER AND IMPLEMENTATION FACTORS		
		COMMUNITY BEAUTIFICATION	IMPROVED SIDEWALKS	ADJACENT TO POTENTIAL CROSS WALK IMPROVEMENTS	IMPERVIOUS AREA MANAGED (ACRES)	IMPLEMENTATION SIMPLICITY (PUBLIC, ROW, PRIVATE)	COST EFFECTIVENESS (\$/IMPERVIOUS MANAGED)
1	POMEROY PARK RAIN GARDEN	High	Low	Low	High	High	High
2	NEW STREET TREE TRENCH	High	Low	Low	High	High	High
3	PUBLIC WORKS SOUTH RAIN GARDEN	High	Low	Low	High	High	High
4	PUBLIC WORKS NORTH RAIN GARDEN	High	Low	Low	High	High	High
5	5TH & MORRIS TREE TRENCH	High	Low	Low	High	High	High
6	1ST STREET BIORETENTION	High	Low	Low	High	High	High
7	3RD & CHATHAM TREE TRENCH (SOUTH)	High	Low	Low	High	High	High
8	2ND & CHATHAM TREE TRENCH	High	Low	Low	High	High	High
9	3RD & CHATHAM TREE TRENCH (NORTH)	High	Low	Low	High	High	High
10	4TH & CHATHAM TREE TRENCH	High	Low	Low	High	High	High
11	4TH & MORRIS TREE TRENCH	High	Low	Low	High	High	High
12	YOUTH CENTER TREE TRENCH	High	Low	Low	High	High	High
13	POMEROY BIORETENTION	High	Low	Low	High	High	High
14	PRIVATE PROPERTY RETENTIVE GRADING	High	Low	Low	High	High	High
15	BOROUGH HALL POROUS PAVEMENT	High	Low	Low	High	High	High
16	2ND ST ALLEY POROUS PAVEMENT	High	Low	Low	High	High	High

RATING SYSTEM	
HIGH	Dark Blue
MEDIUM	Medium Blue
LOW	Light Blue


 Adding Improved Street Drainage

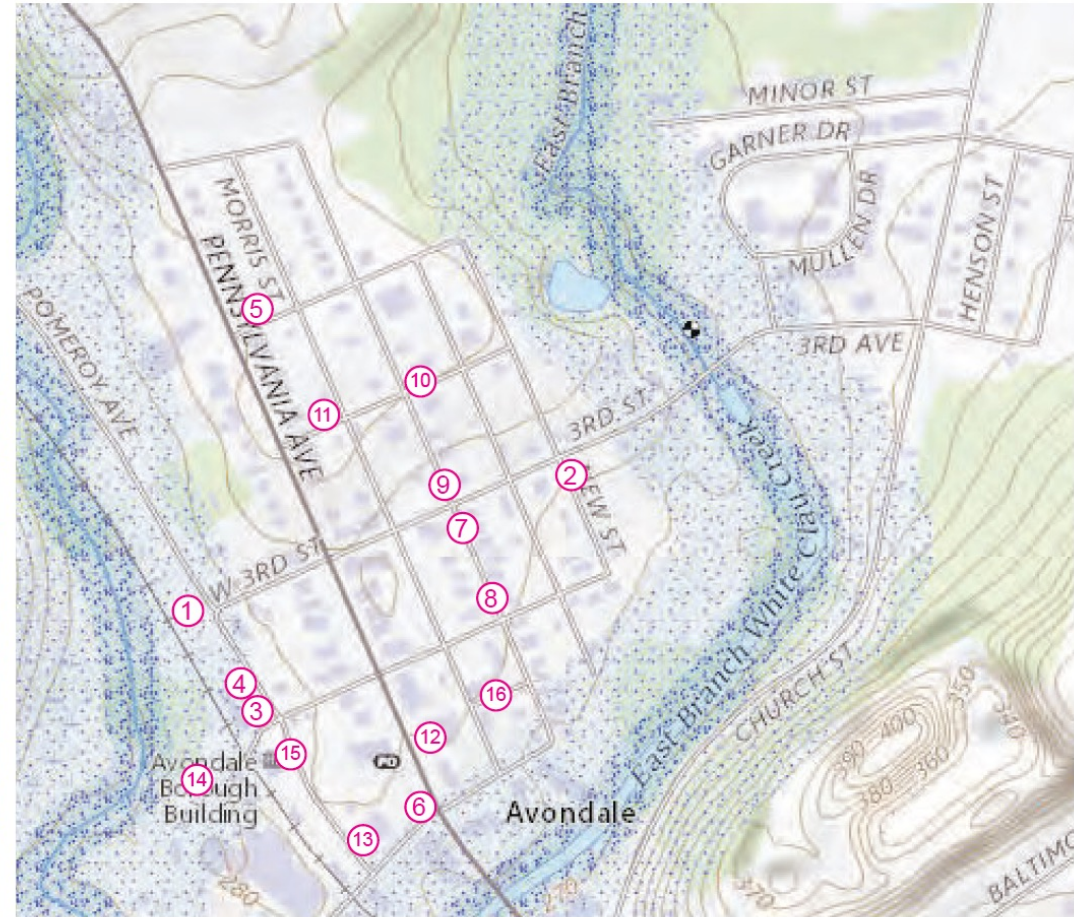


Figure 10: GSI Project Prioritization Map

Avondale GSI Plan Demonstration Project

Project Description:

The Borough of Avondale in Chester County, Pennsylvania, is a small, environmental justice community that experiences frequent flooding and has limited community space. The White Clay Watershed Association (WCWA) Wild and Scenic Program is underdevelopment of a Greening Plan, which includes design and installation of a demonstration green stormwater infrastructure (GSI) project, to improve stormwater management within the White Clay Watershed.

Pomeroy Park, is an open, lawn space that is a localized low point with a small playground and volleyball area owned by the Borough is proposed to serve as the GSI demonstration project. A rain garden is proposed by an existing outfall and will receive runoff from a 3.2 acre watershed of residential lots and right-of-way through surface runoff and daylighting an existing storm sewer. The watershed is 35% impervious, and the rain garden can provide both stormwater management and pollutant load reductions.

The WCWA conducted a community-led research project to understand community needs and priorities and identify how this Greening Plan can provide environmental and community benefits. This demonstration project is an opportunity to retrofit an existing unused open space into a community gathering space with improved landscaping with tree cover and stormwater management through a rain garden.



Along Pomeroy Ave, looking towards the outfall



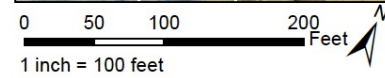
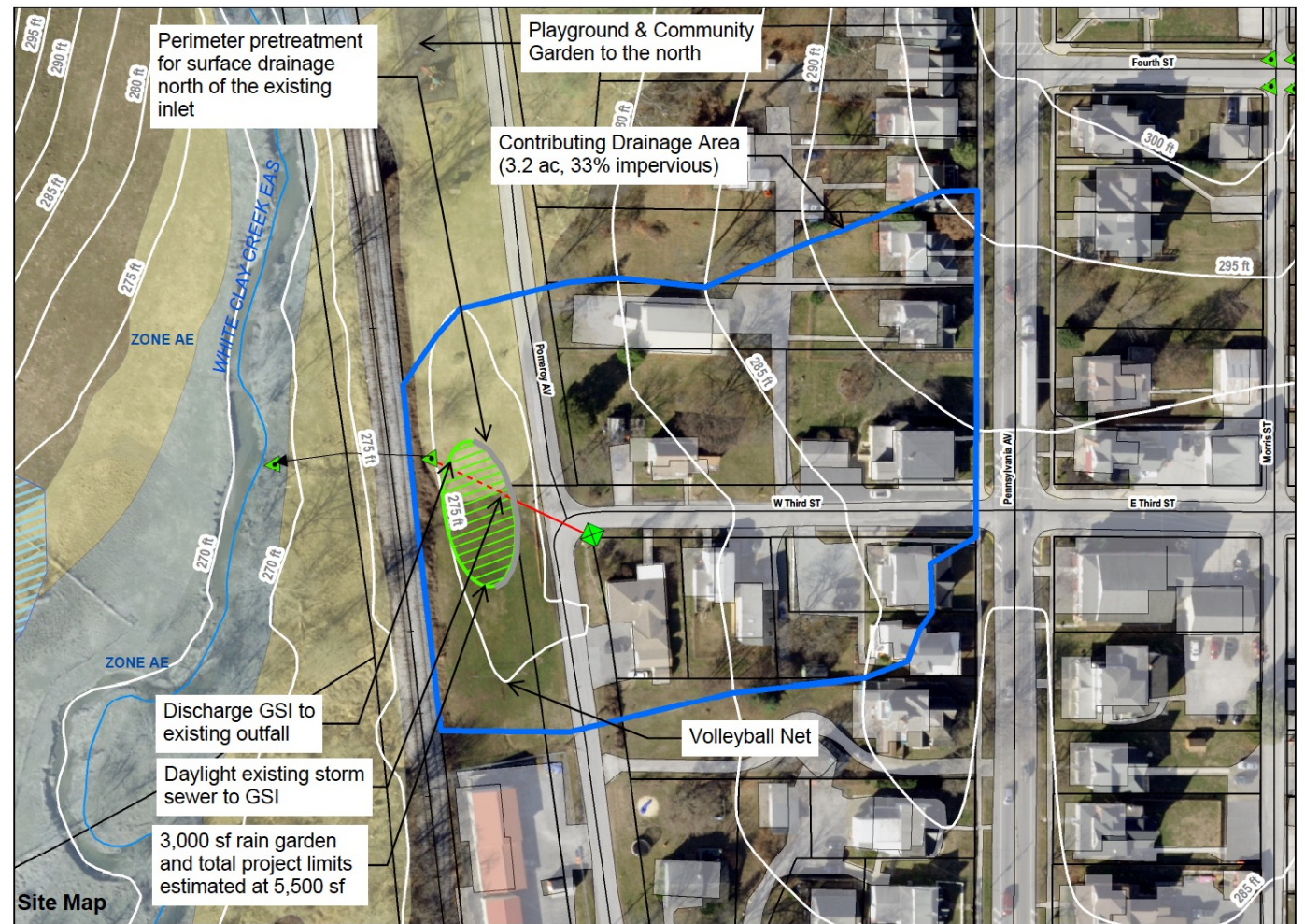
Proposed rain garden area, looking south



Proposed rain garden area, looking north

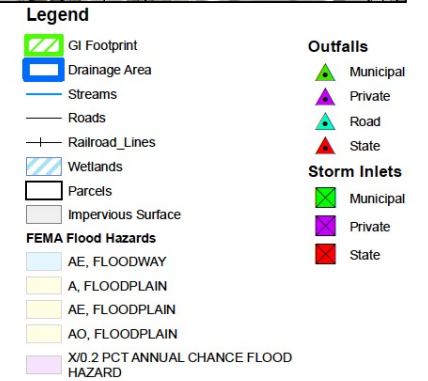
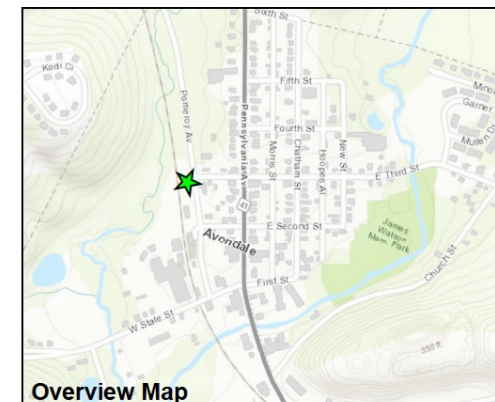


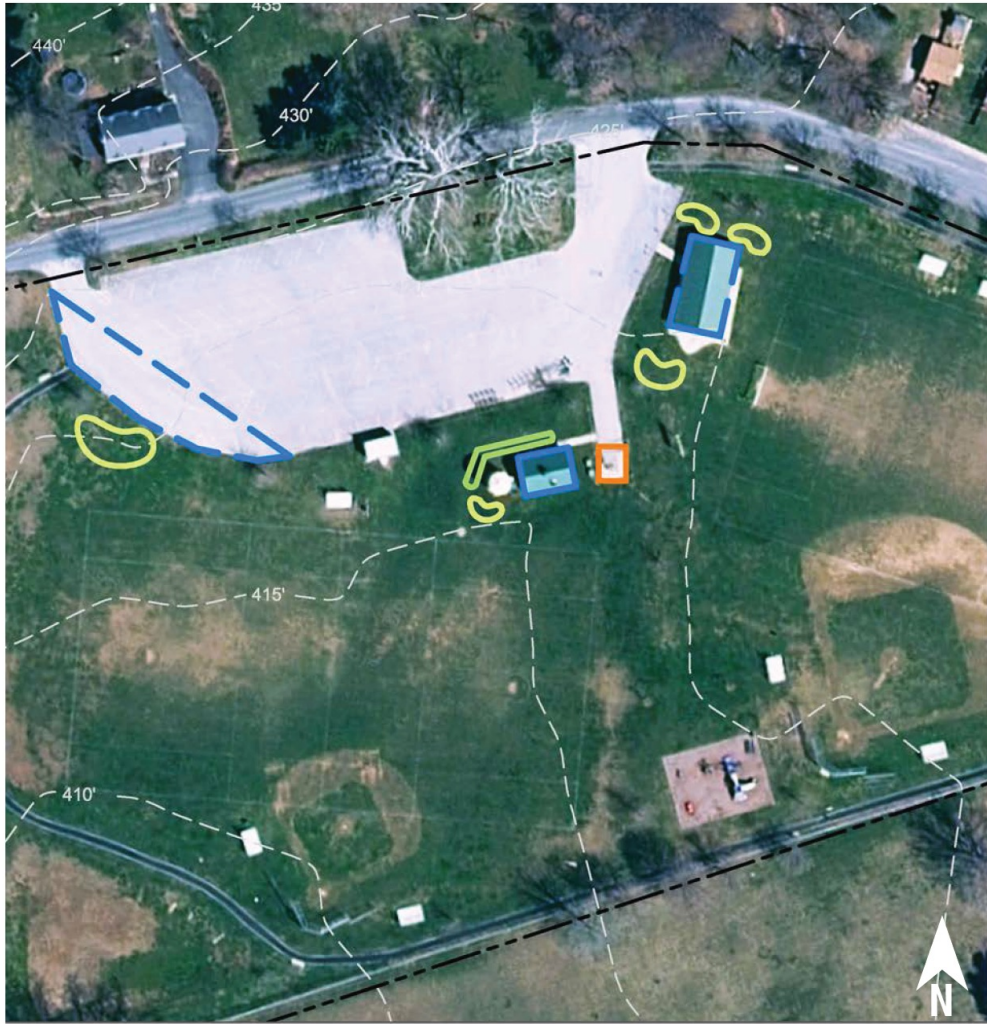
Playground north of the proposed rain garden area









Project Benefits

- ✓ Stormwater Volume Management
- ✓ Stormwater Pollutant Load Reduction
- ✓ Community Gathering Space
- ✓ Educational Outreach
- ✓ Tree Plantings





-  bioretention system
-  bioswale
-  pervious pavement
-  drainage area
-  property line
-  2015 Aerial: NJOIT, OGIS



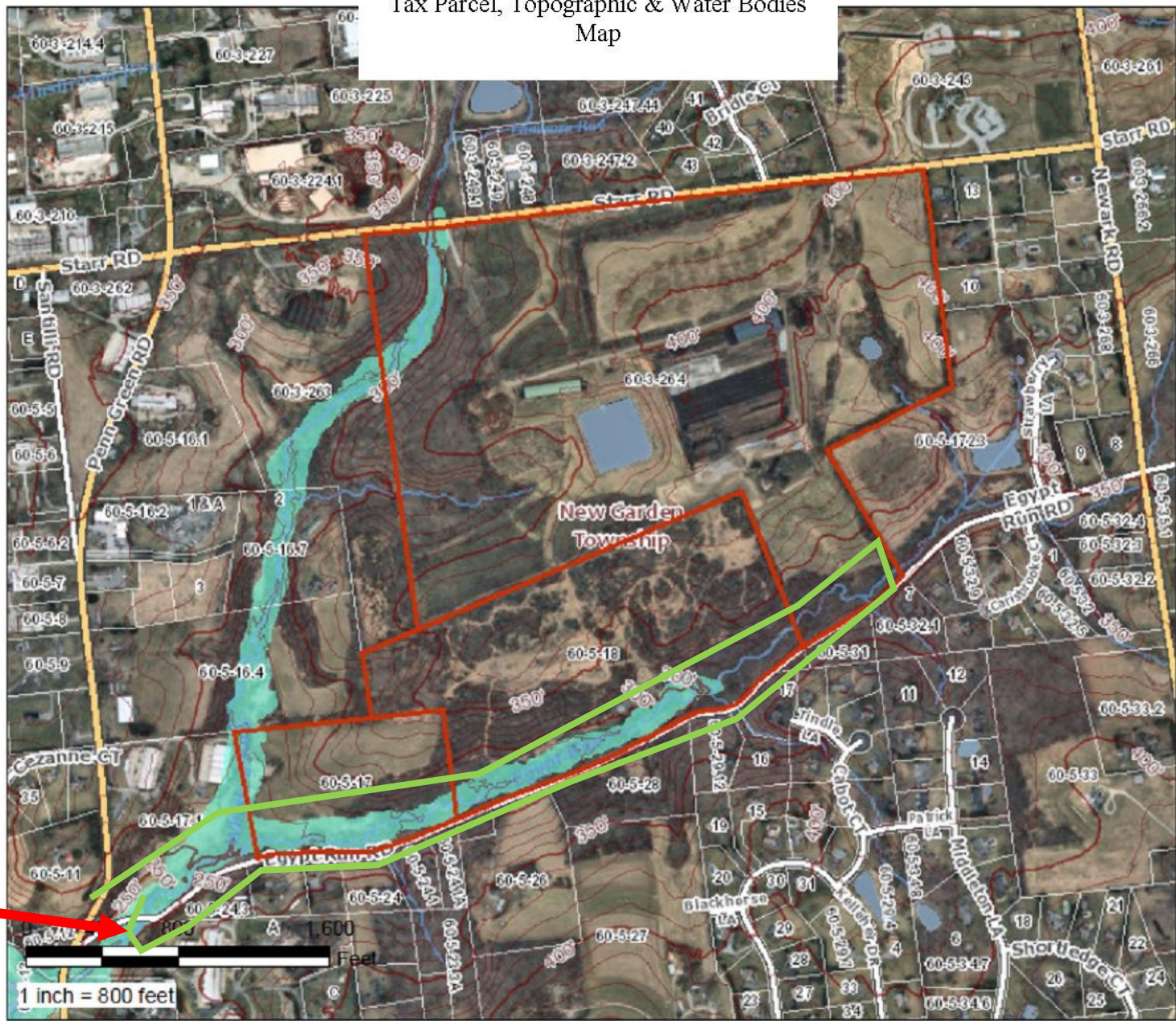
HARMONY PARK

280 West Harmony Road
West Grove, PA 19390

The impervious drainage area from the adjacent building's roof and concrete pad is 2451 square feet, managing 65,313 gallons annually. The garden can potentially remove an estimated 12.64 pounds of total suspended solids (TSS) annually (based on PA DEP Developed Land Loading Rates for PA Counties). Garden is sized for a 2" rain event.

Your Conservation Connection

Laurel Valley Farms, Inc—Soils—Site 2
Tax Parcel, Topographic & Water Bodies
Map



WQ
Station



COUNTY OF CHESTER
PENNSYLVANIA

Find UPI Information

PARD: 6003 02640000
UPI: 60-3-264
Owner: LAUREL VALLEY FARMS INC
Owner2:
Mail Address 1: PO BOX 70
Mail Address 2: LANDENBERG PA
Mail Address 3:
ZIP Code: 19350
Deed Book: 4262
Deed Page: 2071
Deed Recorded Date: 11/1/1997 12:00:00 AM
Legal Desc 1: 55 STARR ROAD
Legal Desc 2: 128.2 AC
Acres: 128.2
LUC: V-10
Lot Assessment: 70250
Property Assessment: 0
Total Assessment: 70250
Assessment Date: 12/15/2021 7:48:09 AM
Property Address: 387 EGYPT RUN RD
Municipality: NEW GARDEN
School District: Kennett Consolidated

Map Created:
Wednesday, June 29, 2022

County of Chester

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