THE EADS GROUP

ENGINEERING ARCHITECTURE AND DESIGN SERVICES

Municipal Separate Storm Sewer System (MS4) Pollution Reduction Plan (PRP)

For the Sediment Impaired Surface Waters

Seese Run and Paint Creek

Prepared For:

Windber Borough
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WINDBER BOROUGH
MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)
POLLUTION REDUCTION PLAN

TABLE OF CONTENTS

WINDBER BOROUGH
MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)
POLLUTION REDUCTION PLAN

SECTION A – PUBLIC PARTICIPATION

On behalf of Windber Borough, The EADS Group, Inc. has prepared this Pollution Reduction Plan (PRP) for Windber Borough's Municipal Separate Storm Sewer System (MS4), as required by the Pennsylvania Department of Environmental Protection (PA DEP), in an effort to address the siltation impairments of Seese Run and of Paint Creek, upstream from its confluence with Seese Run. The plan was made available for public review beginning on August 7, 2017 at the Windber Municipal Building, 1401 Graham Avenue, Windber, PA 15963. Windber Borough accepted written comments related to the PRP from any interested member of the public between August 7, 2017 and September 6, 2017. Windber Borough will accepted comments at a public meeting held at 7:00 PM on August 8, 2017, at the Windber Municipal Building. No comments were received during the public review period.

SECTION B – MS4 MAPS

Please refer to Appendix A for Windber Borough's MS4 Maps, which contain the following information:

1. The municipal boundary of Windber Borough
2. The boundary of the Johnstown Urbanized Area within Windber Borough
3. Windber Borough's MS4 components, including the following:
    a. Storm Sewer Mains
    b. Open Channels
    c. Inlets
    d. Manholes
    e. Structural BMPs
    f. Outfalls
    g. Observation Points
4. Identified non-municipal storm sewer facilities
5. The storm sewershed boundary of each outfall to sediment impaired surface waters
6. Surface waters within Windber Borough
7. Aerial imagery
8. PRP Planning Areas

SECTION C – POLLUTANTS OF CONCERN

The PA DEP MS4 Requirements Table (Municipal) (Revised 8/2/2017) identifies the following Impaired Downstream Waters or Applicable TMDL Names for Windber Borough:

1. Seese Run (Pathogens & Siltation)
2. Weaver Run (Metals/pH)
3. Stonycreek River (Cause Unknown)
4. Paint Creek (Metals/pH & Siltation)
5. Kiskiminetas-Conemaugh River Watersheds TMDL (Metals/pH)

The purpose of this PRP is to address contributions of sediment into siltation impaired waters downstream from Windber Borough's MS4 Outfalls. These impaired downstream waters include Seese Run and Paint Creek, upstream from its confluence with Seese Run.

Within this PRP, the terms "sediment", "siltation", and "suspended solids" all refer to inorganic solids.

SECTION D – EXISTING LOADINGS FOR POLLUTANTS OF CONCERN

The first step in the chosen process to estimate the existing pollutant loadings was to determine the storm sewershed boundary, the planning area, and the land cover within each planning area, of each MS4 Outfall to the siltation impaired sections of Seese Run and Paint Creek. Only the portions of the storm sewersheds within Windber Borough are included within the planning areas. Once the planning areas were identified, they were uploaded into the Wikiwatershed Model My Watershed tool to obtain an estimate of the existing land cover within the planning areas. Knowing that the Model My Watershed tool utilizes the National Land Cover Database, the land covers were able to be converted into three categories: undeveloped area, developed pervious area, and developed impervious area. See the following table on Page 3.

Land Cover Type	% Undeveloped Area	% Developed Pervious Area	% Developed Impervious Area
Developed, High Intensity	0	0	100
Developed, Medium Intensity	0	21	79
Developed, Low Intensity	0	51	49
Developed, Open Space	0	81	19
Pasture/Hay	0	100	0
Cultivated Crops	0	100	0
All Other Land Cover Types	100	0	0

The next step was to multiply each land cover type by an associated land loading rate for sediment (TSS) and to then sum those results to obtain the estimated total loading of sediment to each MS4 Outfall from within its planning area in lb/yr. See the following table for the loading rates used within this PRP.

Land Cover Category	TSS Loading Rate (lbs/acre/yr)
Undeveloped Area	234.60
Developed Pervious Area	293.42
Developed Impervious Area	1,845.70

The TSS Loading Rates were obtained from Attachment B of PA DEP's MS4 PRP Instructions (Rev. 3/2017).

The final step was to determine whether or not any reductions in TSS Loading from existing structural Best Management Practices (BMPs) was to be accounted for within any of the planning areas. One existing BMP was analyzed within the planning area of Outfall WB-PC-001, a vegetated open channel (WB-PC-001-EBMP-1). It was estimated that WB-PC-001-EBMP-1 provides a reduction of 22,014.26 lb/yr of sediment from discharging from Outfall WB-PC-001 into Paint Creek.

The existing pollutant loading estimates were completed on August 4, 2017.

The following tables on Page 5 provides the estimated TSS Loading for each MS4 Outfall discharging to each sediment impaired downstream surface water:

Impaired Surface Water No. 1 – Paint Creek (Upper Section)		
Outfall	**Planning Area (acre)**	**Estimated TSS Loading (lb/yr)**
WB-PC-001	83.15	9,434.69
WB-PC-002	7.38	6,777.15
WB-PC-003	28.70	13,846.08
WB-PC-004	1.33	602.43
WB-PC-005	6.27	3,271.98
WB-PC-006	10.38	4,285.26
WB-PC-007	32.43	22,888.01
WB-PC-008	41.49	40,744.75
WB-PC-009	2.72	4,423.07
WB-PC-010	0.41	623.09
Total	**214.26**	**106,896.50**

Impaired Surface Water No. 2 – Seese Run		
Outfall	**Planning Area (acre)**	**Estimated TSS Loading (lb/yr)**
WB-SR-001	8.36	7,063.35
WB-SR-002	4.44	3,080.77
WB-SR-003	14.56	9,896.74
WB-SR-004	2.20	2,663.83
WB-SR-005	1.20	1,544.26
WB-SR-006	1.29	2,030.67
WB-SR-007	2.52	2,754.75
WB-SR-008	0.56	590.26
WB-SR-009	9.81	5,700.05
WB-SR-010	6.77	8,159.82
WB-SR-011	5.35	4,968.91
WB-SR-012	8.61	7,344.98
WB-SR-013	1.55	2,115.21
WB-SR-014	0.34	358.37
WB-SR-015	5.64	7,055.76
WB-SR-016	0.10	184.57
WB-SR-017	12.52	8,717.13
Total	**85.82**	**74,229.43**

Refer to Appendix 2 - Existing Pollutant Loading Analysis for supporting documentation.

SECTION E – SELECTED BMPs TO ACHIEVE THE MINIMUM REQUIRED REDUCTIONS IN POLLUTANT LOADING

Per the DEP MS4 PRP Instructions (Rev. 3/2017), a minimum 10% reduction in sediment loading to siltation impaired surface waters from the planning areas is required to be achieved with proposed BMPs.

The following proposed BMPs and their expected sediment loading reductions have been selected to meet the required TSS loading reduction for Impaired Surface Water No. 1 – Paint Creek:

BMP	BMP Type	TSS Reduction (lb/yr)
WB-PC-PBMP-1	Street Sweeping	1,669.44
WB-PC-PBMP-2	Solids Removal	5,344.83
WB-PC-PBMP-3	Stream Restoration	4,488.00
	Total Reduction	11,502.26
Required Reduction (10% of Existing Estimated TSS Loading)		10,689.65

It is estimated that approximately 10.05 acres of streets can be swept within the Paint Creek Planning Areas. Street sweeping will need to be performed on the following streets within the Paint Creek Planning Areas at least 25 times per year to achieve an expected sediment reduction of 1,669.44 lb/yr to Paint Creek:

1. Railroad Street
2. Stockholm Avenue
3. Somerset Avenue
4. Graham Avenue
5. Cambria Avenue
6. 17th Street
7. 18th Street
8. 19th Street
9. 20th Street
10. 21st Street
11. 22nd Street
12. 23rd Street
13. 25th Street

The maximum amount of the pollution reduction requirement that PA DEP will allow to be met through Storm Sewer System Solids Removal is 50%. 50% of the requirement for the Paint Creek Planning Areas is 5,344.83 lb/yr of sediment. It is estimated that the potential exists for this much sediment to be removed from the Paint Creek Planning Areas yearly throughout the upcoming MS4 Permit Term of five (5) years. However, if it is determined that the estimated amount of yearly sediment removal is less than 5,344.83 lb/yr after the first year of the upcoming permit term, additional BMPs will need to be considered to meet the 10% reduction requirement.

The final proposed BMP for Paint Creek is Stream Restoration. Windber Borough can work with the Paint Creek Regional Watershed Association (PCRWA) to identify the location of a stream restoration project to prevent channel or bank erosion in the upper section of Paint Creek. A stream restoration project of 100 lineal feet of Paint Creek would result in an expected sediment reduction of 4,448.00 lb/yr and therefore bring the total planned reduction for Paint Creek to 11,502.26 lb/yr, thus exceeding the required reduction amount of 10,689.65 lb/yr.

The following proposed BMPs and their expected sediment loading reductions have been selected to meet the required TSS loading reduction for Impaired Surface Water No. 2 – Seese Run:

BMP	**BMP Type**	**TSS Reduction (lb/yr)**
WB-SR-PBMP-1	Street Sweeping	1,400.33
WB-SR-PBMP-2	Solids Removal	3,714.97
WB-SR-PBMP-3	Vegetated Open Channel	2,484.45
	Total Reduction	7,599.76
Required Reduction (10% of Existing Estimated TSS Loading)		7,422.94

It is estimated that approximately 8.43 acres of streets can be swept within the Seese Run Planning Areas. Street sweeping will need to be performed on the following streets within the Seese Run Planning Areas at least 25 times per year to achieve an expected sediment reduction of 1,400.33 lb/yr to Seese Run:

1. Jackson Avenue
2. Graham Avenue
3. Cambria Avenue
4. Stockholm Avenue
5. Hillside Avenue
6. Baumgardner Avenue
7. 17th Street
8. 19th Street
9. 21st Street
10. 22nd Street
11. 24th Street
12. 25th Street
13. 26th Street
14. 28th Street
15. 29th Street

The maximum amount of the pollution reduction requirement that PA DEP will allow to be met through Storm Sewer System Solids Removal is 50%. 50% of the requirement for the Seese Run Planning Areas is 3,714.97 lb/yr of sediment. It is estimated that the potential exists for this much sediment to be removed from the Seese Run Planning Areas yearly throughout the upcoming MS4 Permit Term of five (5) years. However, if it is determined that the estimated amount of yearly sediment removal is less than 3,714.97 lb/yr after the first year of the upcoming permit term, additional BMPs will need to be considered to meet the 10% reduction requirement.

The final proposed BMP for Seese Run is a vegetated open channel within the planning area of Outfall WB-SR-011. It is estimated that approximately 300 feet of vegetated open channel can be located in the downstream section of the planning area within PennDOT right-of-way and would capture the entire storm sewershed before discharging to Seese Run. Windber Borough can work with PennDOT on planning and permitting the project. The project could also potentially decrease the volume and rate of municipal storm runoff entering PennDOT's drainage system. The expected sediment removal resulting from this BMP would be 2,484.45 lb/yr and therefore bring the total planned reduction for Seese Run to 7,599.76 lb/yr, thus exceeding the required reduction amount of 7,422.94 lb/yr.

SECTION F – FUNDING OF PROPOSED BMPs

The following table provides a summary of the proposed BMPs and their estimated fees over the five (5) year permit period:

BMP	BMP Type	Estimated Cost
WB-PC-PBMP-1	Street Sweeping (Paint Creek Areas)	$26,250
WB-PC-PBMP-2	Solids Removal (Paint Creek Areas)	$33,250
WB-PC-PBMP-3	Stream Restoration in Paint Creek	$35,500
WB-SR-PBMP-1	Street Sweeping (Seese Run Areas)	$25,250
WB-SR-PBMP-2	Solids Removal (Seese Run Areas)	$28,000
WB-SR-PBMP-3	Vegetated Swale in WB-SR-011 Area	$12,000
Total Estimated Cost for BMPs (5 Year Permit Term) =		**$158,250**

WB-PC-PBMP-1 (Street Sweeping in the Paint Creek Planning Areas) is estimated to cost Windber Borough **$26,250** over the five (5) year permit period. This is based on an estimated operation time of 100 hr/yr, an employee expense of $20/hr, and half of the estimated annual cost of owning a street sweeper at $6,500/yr (The other half of that expense is applied to the cost of WB-SR-PBMP-1). Windber Borough's street sweeper was purchased in 2016 for $152,000 and has a life expectancy of approximately 25 years with normal maintenance.

WB-PC-PBMP-2 (Solids Removal in the Paint Creek Planning Areas) is estimated to cost Windber Borough **$33,250** over the five (5) year permit period. This is based on an estimated operation time of 0.5 hr/inlet, an operation cost of $140/hr, and an estimated number of inlets cleaned per year of 95. The operation cost includes two (2) employees at $20/hr and an equipment rental of $100/hr.

WB-PC-PBMP-3 (Stream Restoration in Paint Creek) is estimated to cost **$35,500**. This based on an estimated total project cost of $355.00 per lineal foot of stream restoration.

WB-SR-PBMP-1 (Street Sweeping in the Seese Run Planning Areas) is estimated to cost Windber Borough **$25,250** over the five (5) year permit period. This is based on an estimated operation time of $90 hr/yr, an employee expense of $20/hr, and an estimated annual cost of owning a street sweeper at $6,500/yr (The other half of that expense is applied to the cost of WB-PC-PBMP-1).

WB-SR-PBMP-2 (Solids Removal in the Seese Run Planning Areas) is estimated to cost Windber Borough **$28,000** over the five (5) year permit period. This is based on an estimated operation time of 0.5 hr/inlet, an operation cost of $140/hr, and an estimated number of inlets cleaned per year of 80. The operation cost includes two (2) employees at $20/hr and an equipment rental of $100/hr.

WB-SR-PBMP-3 (Vegetated Open Channel in WB-SR-011 Planning Area) is estimated to cost **$12,000**. This is based on an estimated total project cost of $40.00 per lineal foot for the proposed vegetated open channel.

Windber Borough can work with PennDOT and the Paint Creek Regional Watershed Association to obtain funding for the proposed structural BMPs (WB-PC-PBMP-3 & WB-SR-PBMP-3) through Pennvest and/or Growing Greener Grants.

Historically, Windber Borough has funded stormwater related maintenance and improvements with their sewer fund. Income to the sewer fund is generated through sanitary sewer service charges. Windber Borough does not charge a stormwater fee.

SECTION G – OPERATION AND MAINTENANCE OF BMPs

Windber Borough will operate a street sweeper and solids removal equipment to implement the proposed non-structural BMPs.

The process and calculation for sediment removal is planned to be as follows:

1. Sediment is proposed to be removed by utilizing a vacuum truck and is to be properly disposed of at an approved dumpsite.
2. The dry weight (lbs) of sediment collected is to be documented for each annual period.
3. The annual dry weight (lbs) of sediment collected is to be multiplied by 0.9967 to determine the annual sediment concentration removed.

Windber Borough and PennDOT would need to determine who the responsible party would be for maintenance of the proposed vegetated open channel. Maintaining vegetated conditions and removing sediment from the vegetated open channel will be required. The channel should be inspected monthly and after runoff events to ensure that vegetation is established and sediment should be removed as necessary to maintain the designed elevations within the channel.

Appendix 1 – MS4 Maps

Appendix 2 – Existing Pollutant Loading Analysis

Windber Borough - MS4 Polution Reduction Plan - Planning Area Summaries								
Impaired Surface Water No. 1 - Paint Creek (Upper Section)								
Outfall	Planning Area (acre)	Undeveloped Area (acre)	Pervious Area (acre)	Impervious Area (acre)	Existing TSS Reduction (lb/yr)	Total TSS Loading (lb/yr)	Percent of Planning Area	Percent of TSS Loading
WB-PC-001	83.15	64.27	11.90	11.90	22,014.26	9,434.69	38.8%	8.8%
WB-PC-002	7.38	1.84	2.50	3.04	0.00	6,777.15	3.4%	6.3%
WB-PC-003	28.70	14.58	10.07	4.05	0.00	13,846.08	13.4%	13.0%
WB-PC-004	1.33	0.76	0.41	0.17	0.00	602.43	0.6%	0.6%
WB-PC-005	6.27	3.94	1.25	1.07	0.00	3,271.98	2.9%	3.1%
WB-PC-006	10.38	5.08	4.31	0.99	0.00	4,285.26	4.8%	4.0%
WB-PC-007	32.43	13.07	10.25	9.11	0.00	22,888.01	15.1%	21.4%
WB-PC-008	41.49	12.74	9.86	18.89	0.00	40,744.75	19.4%	38.1%
WB-PC-009	2.72	0.00	0.38	2.34	0.00	4,423.07	1.3%	4.1%
WB-PC-010	0.41	0.00	0.09	0.32	0.00	623.09	0.2%	0.6%
Total	**214.26**	**116.28**	**51.03**	**51.87**	**22,014.26**	**106,896.50**	**100%**	**100%**
Paint Creek Required TSS Reduction (10% of Total TSS Loading) (lb/yr) =					**10,689.65**			
Impaired Surface Water No. 2 - Seese Run								
Outfall	Planning Area (acre)	Undeveloped Area (acre)	Pervious Area (acre)	Impervious Area (acre)	Existing TSS Reduction (lb/yr)	Total TSS Loading (lb/yr)	Percent of Planning Area	Percent of TSS Loading
WB-SR-001	8.36	0.00	5.39	2.97	0.00	7,063.35	9.7%	9.5%
WB-SR-002	4.44	1.40	1.84	1.20	0.00	3,080.77	5.2%	4.2%
WB-SR-003	14.56	4.43	6.34	3.79	0.00	9,896.74	17.0%	13.3%
WB-SR-004	2.20	0.00	0.90	1.30	0.00	2,663.83	2.6%	3.6%
WB-SR-005	1.20	0.00	0.43	0.77	0.00	1,544.26	1.4%	2.1%
WB-SR-006	1.29	0.00	0.23	1.06	0.00	2,030.67	1.5%	2.7%
WB-SR-007	2.52	0.00	1.22	1.30	0.00	2,754.75	2.9%	3.7%
WB-SR-008	0.56	0.00	0.29	0.27	0.00	590.26	0.7%	0.8%
WB-SR-009	9.81	4.01	3.83	1.97	0.00	5,700.05	11.4%	7.7%
WB-SR-010	6.77	0.00	2.79	3.98	0.00	8,159.82	7.9%	11.0%
WB-SR-011	5.35	0.00	3.16	2.19	0.00	4,968.91	6.2%	6.7%
WB-SR-012	8.61	0.48	5.01	3.12	0.00	7,344.98	10.0%	9.9%
WB-SR-013	1.55	0.00	0.48	1.07	0.00	2,115.21	1.8%	2.8%
WB-SR-014	0.34	0.00	0.17	0.17	0.00	358.37	0.4%	0.5%
WB-SR-015	5.64	0.00	2.16	3.48	0.00	7,055.76	6.6%	9.5%
WB-SR-016	0.10	0.00	0.00	0.10	0.00	184.57	0.1%	0.2%
WB-SR-017	12.52	2.15	7.04	3.33	0.00	8,717.13	14.6%	11.7%
Total	**85.82**	**12.47**	**41.28**	**32.08**	**0.00**	**74,229.43**	**100%**	**100%**
Seese Run Required TSS Reduction (10% of Total TSS Loading) (lb/yr) =					**7,422.94**			

Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-001	83.15	0.00	83.15	64.27	11.90	6.98
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
77.3%	4.9%	3.8%	11.3%	2.7%	0.0%	100.0%
TSS Loading (lb/acre/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
15,078.90	3,490.85	12,879.20				
Existing BMP in Sewershed						
BMP		BMP Type		Planning Area Treated	Effectiveness Value	TSS Reduction (lb/yr)
WB-PC-001-EBMP-1		Vegetated Open Channel (A Soils)		83.15	70%	22,014.26
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-001	**83.15**			**9,434.69**		

Sewershed Information (Areas in acres)						
BMP	Tributary Area			Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-001-EBMP-1	83.15			64.27	11.90	6.98
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
77.3%	4.9%	3.8%	11.3%	2.7%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
15,078.90	3,490.85	12,879.20				
Sewershed Summary						
BMP	**Planning Area (acres)**			**Total TSS Loading (lb/yr)**		
WB-PC-001-EBMP-1	**83.15**			**31,448.95**		
BMP Type		**Effectiveness Value**		**Total TSS Loading Reduction (lb/yr)**		
Vegetated Swale (A Soils)		**70%**		**22,014.26**		

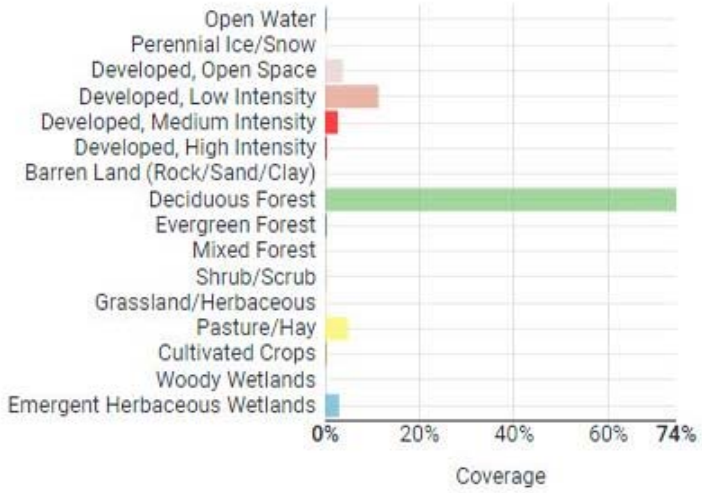
Selected Area 336,878 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Deciduous Forest	247,631.33	74.4
Developed, Low Intensity	37,683.03	11.3
Pasture/Hay	16,149.87	4.9
Developed, Open Space	12,561.01	3.8
Emergent Herbaceous Wetlands	9,869.36	3.0
Developed, Medium Intensity	8,972.15	2.7
Grassland/Herbaceous	0.00	0.0
Evergreen Forest	0.00	0.0
Shrub/Scrub	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Woody Wetlands	0.00	0.0

Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-002	7.38	0.00	7.38	1.84	2.50	3.04
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
24.9%	0.0%	9.4%	43.8%	18.8%	3.1%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
431.11	734.08	5,611.96				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-002	**7.38**			**6,777.15**		

Model My Watershed

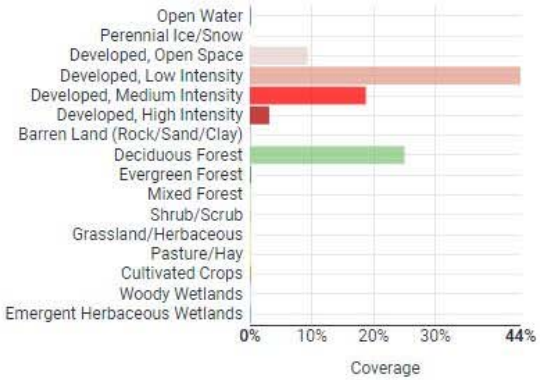
Selected Area 29,888 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

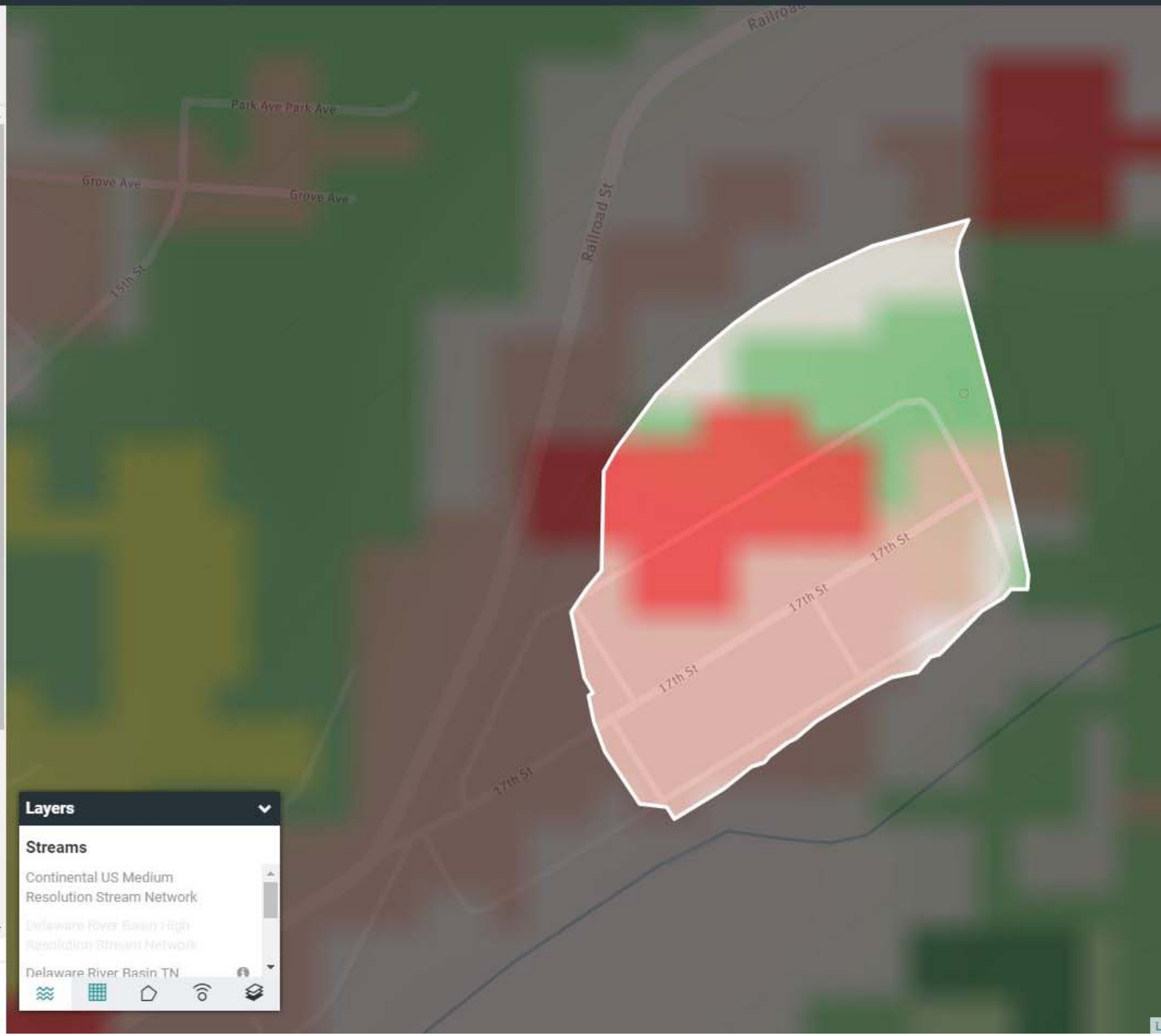
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	12,561.02	43.8
Deciduous Forest	7,177.72	25.0
Developed, Medium Intensity	5,383.29	18.8
Developed, Open Space	2,691.65	9.4
Developed, High Intensity	897.22	3.1
Evergreen Forest	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-003	28.70	0.00	28.70	14.58	10.07	4.05
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
50.8%	9.4%	20.3%	17.2%	2.3%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
3,420.37	2,955.66	7,470.05				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-003	**28.70**			**13,846.08**		

Model My Watershed

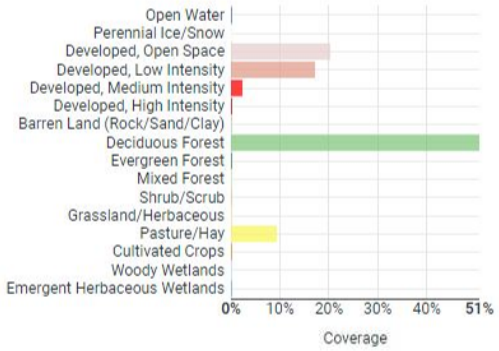
Selected Area 116,264 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

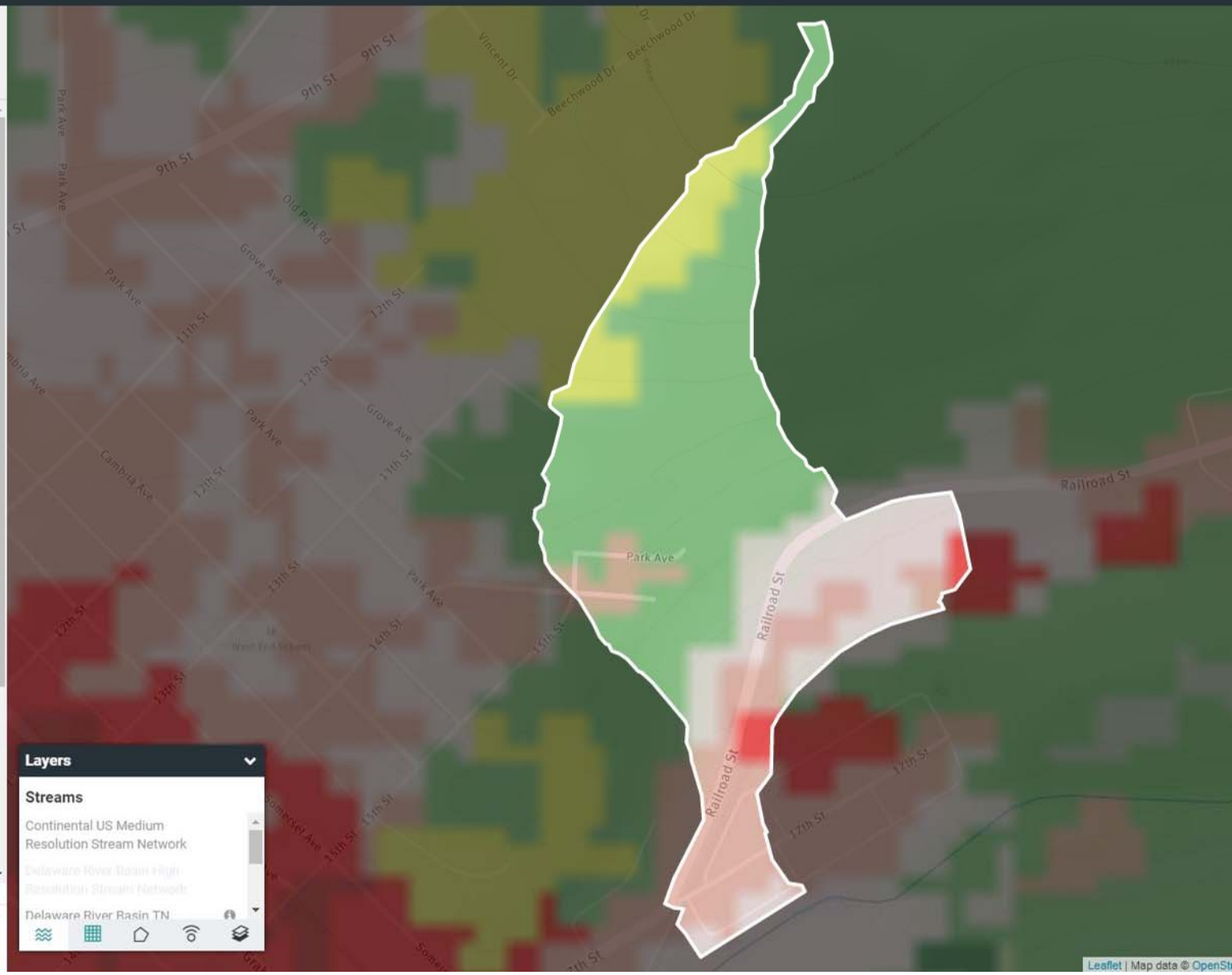
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Deciduous Forest	58,318.98	50.8
Developed, Open Space	23,327.59	20.3
Developed, Low Intensity	19,738.73	17.2
Pasture/Hay	10,766.58	9.4
Developed, Medium Intensity	2,691.65	2.3
Evergreen Forest	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-004	1.33	0.00	1.33	0.76	0.41	0.17
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
57.1%	0.0%	28.6%	14.3%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
178.16	118.87	305.40				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-004	**1.33**			**602.43**		

Model My Watershed

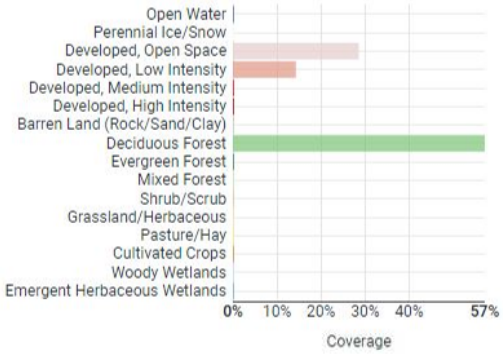
Selected Area 5,378 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

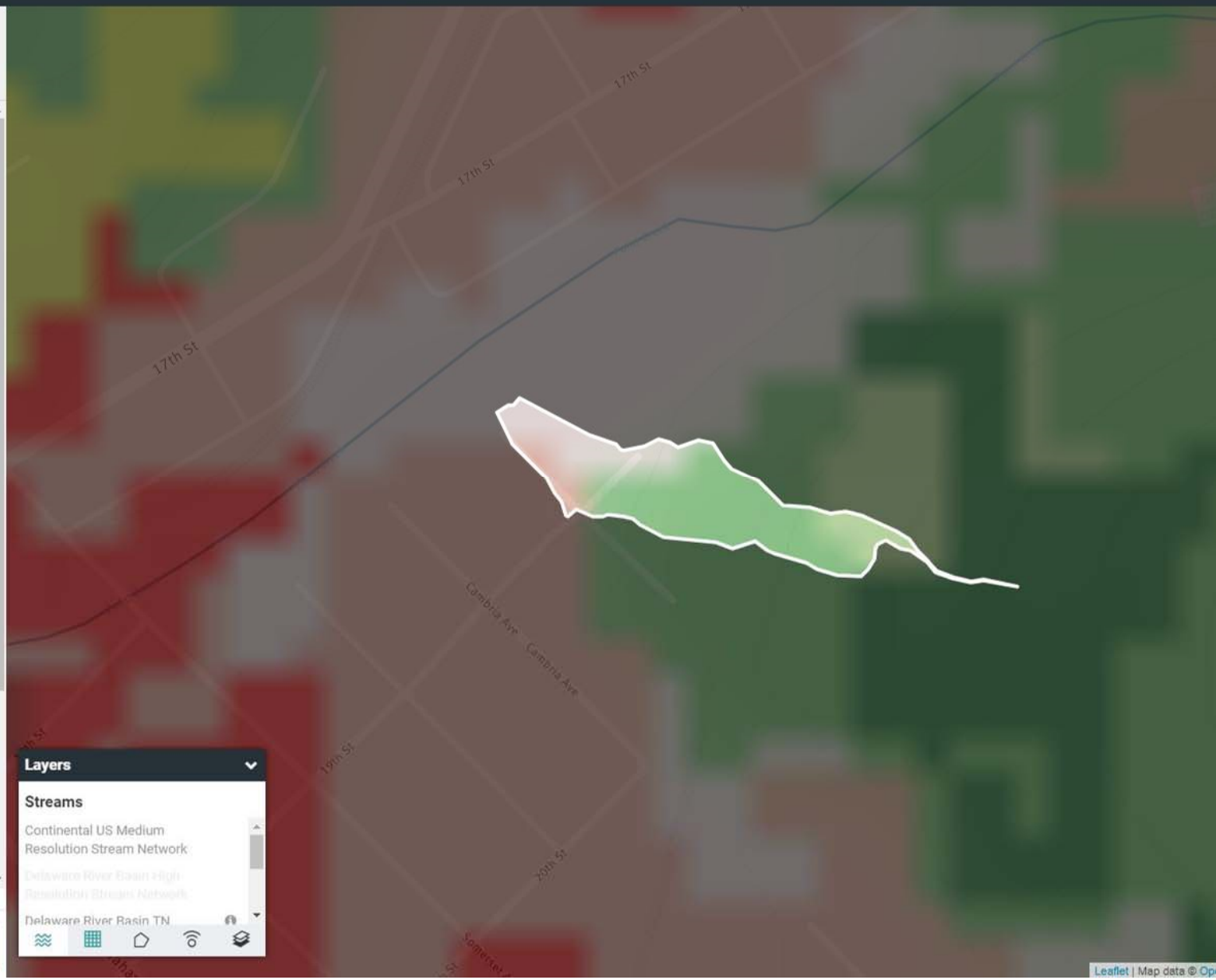
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Deciduous Forest	3,588.86	57.1
Developed, Open Space	1,794.43	28.6
Developed, Low Intensity	897.22	14.3
Evergreen Forest	0.00	0.0
Developed, Medium Intensity	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-005	6.27	0.00	6.27	3.94	1.25	1.07
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
62.9%	0.0%	7.4%	25.9%	3.8%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	6.27	Developed (Impervious)				
925.22	367.97	1,978.79				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-005	**6.27**			**3,271.98**		

Model My Watershed

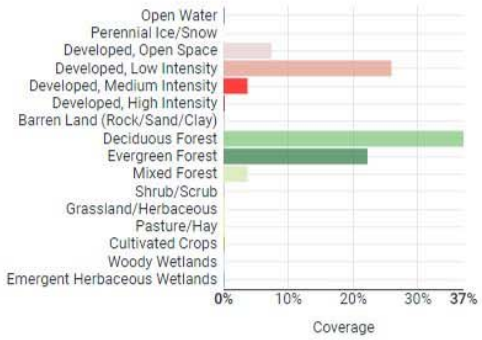
Selected Area 25,404 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

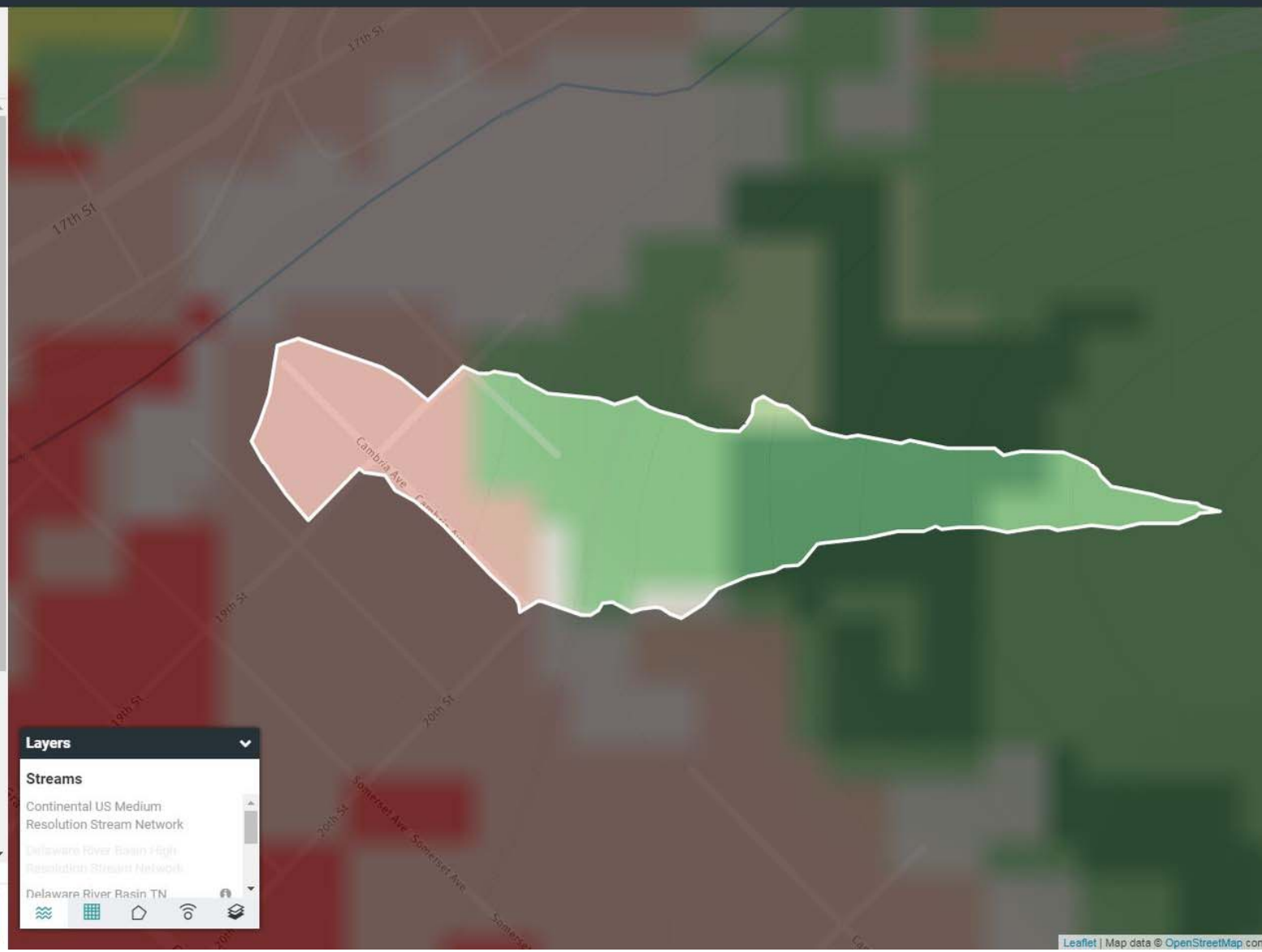
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Deciduous Forest	8,972.16	37.0
Developed, Low Intensity	6,280.51	25.9
Evergreen Forest	5,383.30	22.2
Developed, Open Space	1,794.43	7.4
Developed, Medium Intensity	897.22	3.7
Mixed Forest	897.22	3.7
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Developed, High Intensity	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-006	10.38	0.00	10.38	5.08	4.31	0.99
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
48.9%	27.7%	6.4%	17.0%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
1,190.79	1,265.61	1,828.86				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-006	**10.38**			**4,285.26**		

Model My Watershed

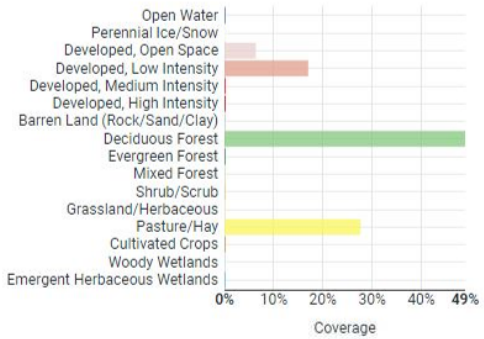
Selected Area 42,038 m^2

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

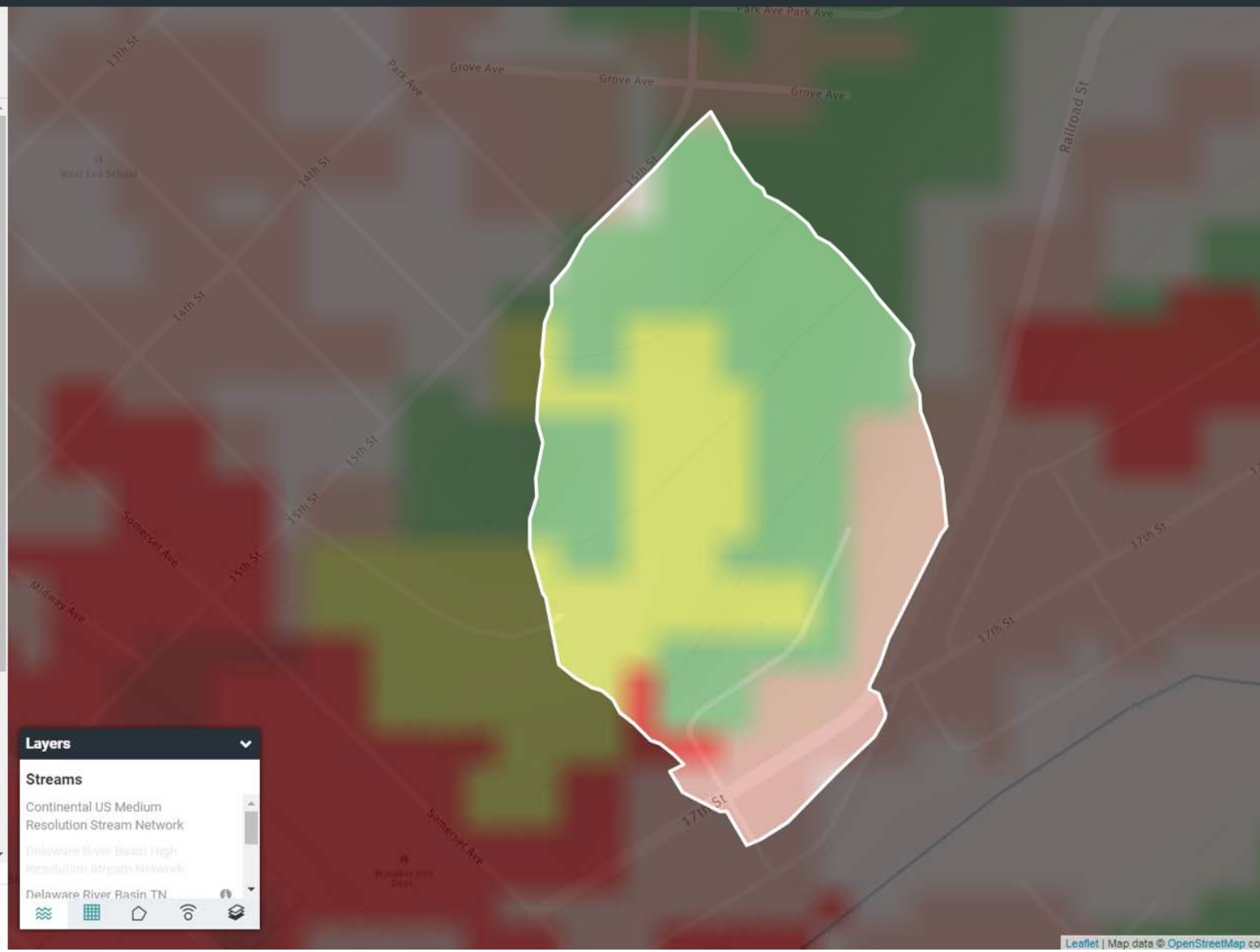
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m^2)	Coverage (%)
Deciduous Forest	20,635.96	48.9
Pasture/Hay	11,663.80	27.7
Developed, Low Intensity	7,177.72	17.0
Developed, Open Space	2,691.65	6.4
Evergreen Forest	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | **Select a model**



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-007	32.43	0.00	32.43	13.07	10.25	9.11
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
40.3%	2.8%	7.6%	41.0%	8.3%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
3,066.06	3,007.79	16,814.16				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-007	**32.43**			**22,888.01**		

Model My Watershed

About

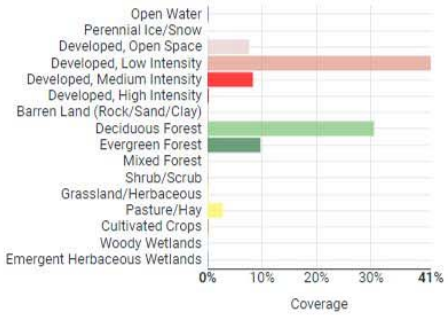
Selected Area 131,380 m²

Land Soil Animals Point Sources Water Quality

Land cover distribution

Related Layer: National Land Cover Database ✖ Turn off

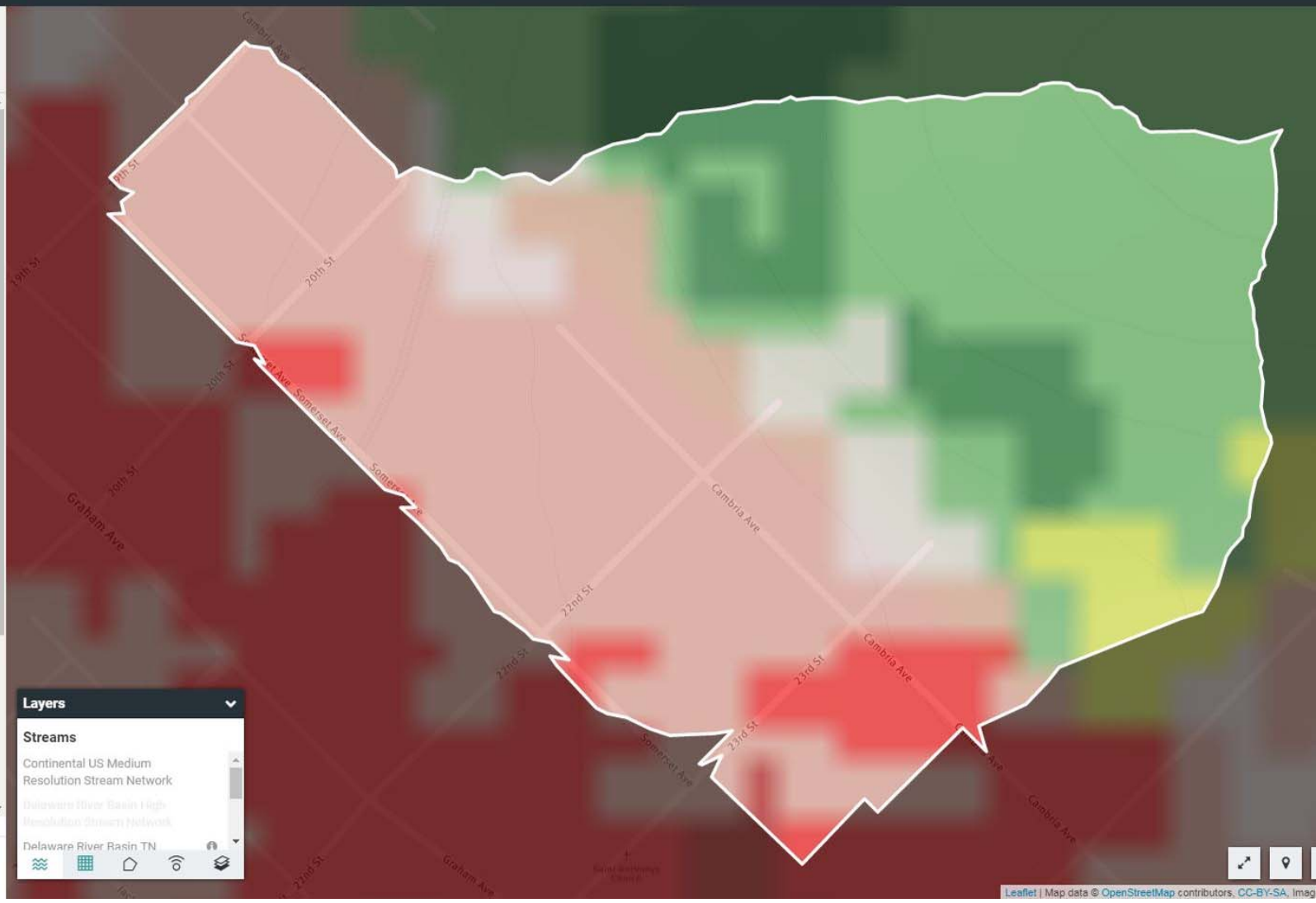
Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	52,935.74	41.0
Deciduous Forest	39,477.50	30.6
Evergreen Forest	12,561.02	9.7
Developed, Medium Intensity	10,766.59	8.3
Developed, Open Space	9,869.38	7.6
Pasture/Hay	3,588.86	2.8
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area

Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-008	41.49	0.00	41.49	12.74	9.86	18.89
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
30.7%	4.8%	4.2%	15.3%	37.0%	8.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
2,988.20	2,894.37	34,862.18				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-008	**41.49**			**40,744.75**		

Model My Watershed

About

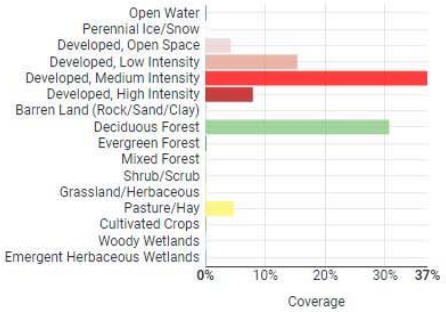
Selected Area 168,089 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Medium Intensity	62,805.13	37.0
Deciduous Forest	52,038.54	30.7
Developed, Low Intensity	26,019.27	15.3
Developed, High Intensity	13,458.24	7.9
Pasture/Hay	8,074.95	4.8
Developed, Open Space	7,177.73	4.2
Evergreen Forest	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model

Layers

Streams

Continental US Medium Resolution Stream Network

Delaware River Basin TN

Graham Ave

17th St

19th St

20th St

21st St

22nd St

Cambria Ave

Jackson Ave

Stadium Dr

Leaflet | Map data © OpenStreetMap contributors, CC-BY-SA, Imager

Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-009	2.72	0.00	2.72	0.00	0.38	2.34
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	9.0%	45.5%	45.5%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	112.89	4,310.18				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-009	**2.72**			**4,423.07**		

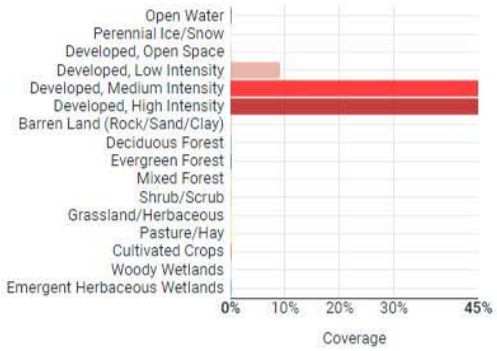
Selected Area 11,032 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Medium Intensity	4,486.08	45.5
Developed, High Intensity	4,486.08	45.5
Developed, Low Intensity	897.22	9.1
Evergreen Forest	0.00	0.0
Developed, Open Space	0.00	0.0
Open Water	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model

Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-010	0.41	0.00	0.41	0.00	0.09	0.32
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	25.26	597.82				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-PC-010	**0.41**			**623.09**		

Model My Watershed

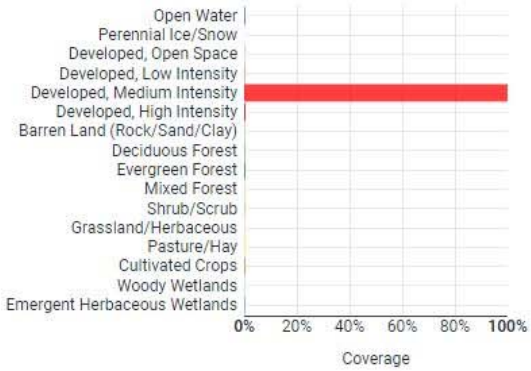
Selected Area 1,660 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

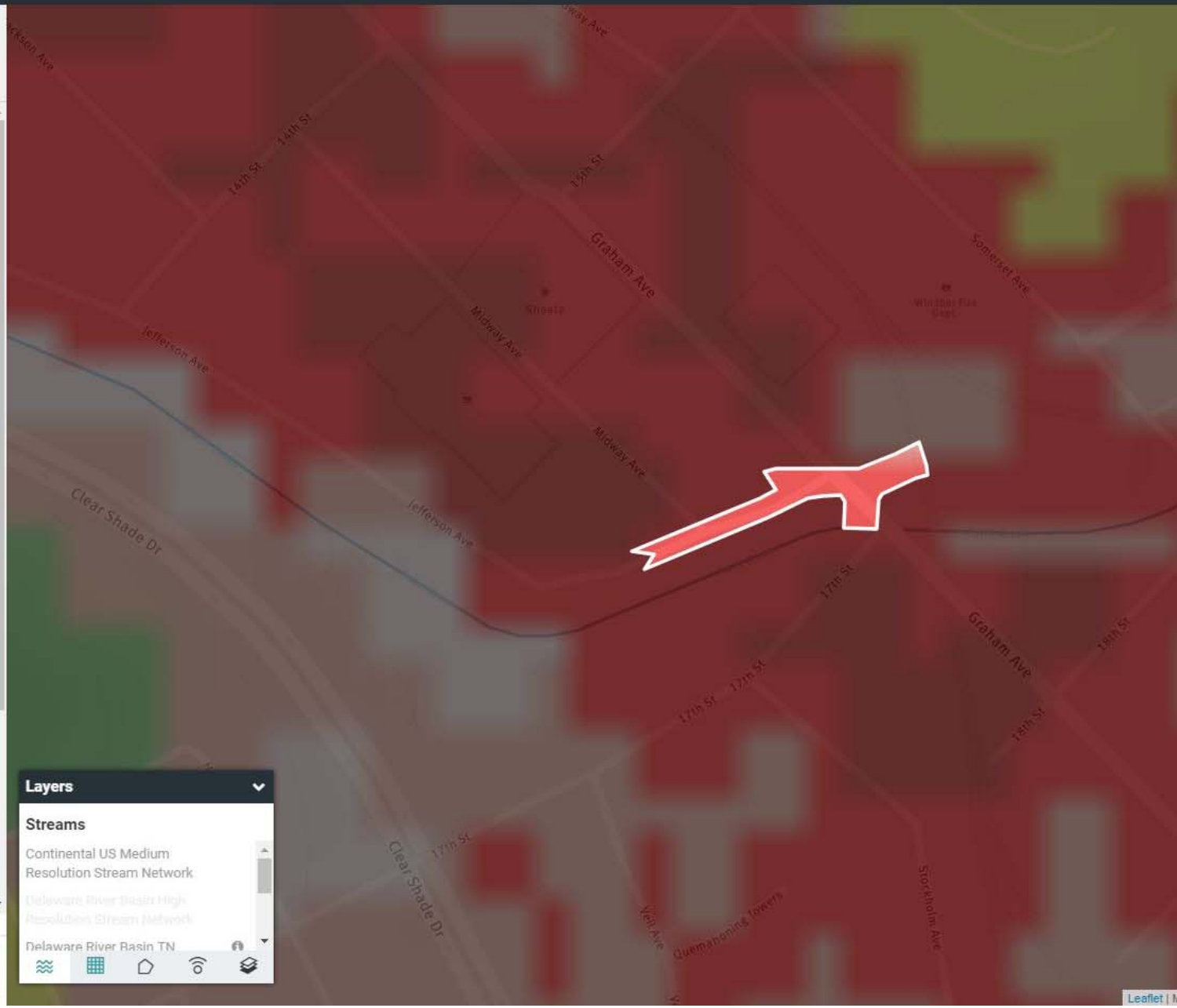
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Medium Intensity	2,691.65	100.0
Evergreen Forest	0.00	0.0
Developed, Open Space	0.00	0.0
Developed, Low Intensity	0.00	0.0
Open Water	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-001	8.36	0.00	8.36	0.00	5.39	2.97
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	2.7%	40.5%	56.8%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	1,581.52	5,481.83				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-001	**8.36**			**7,063.35**		

Model My Watershed

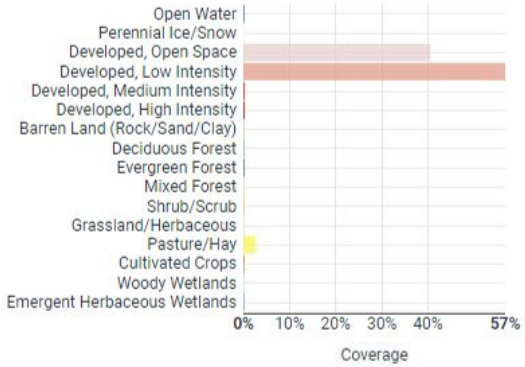
Selected Area 33,885 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

Related Layer: National Land Cover Database ✔ Turn on

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	18,841.55	56.8
Developed, Open Space	13,458.25	40.5
Pasture/Hay	897.22	2.7
Evergreen Forest	0.00	0.0
Developed, Medium Intensity	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model

Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-002	4.44	0.00	4.44	1.40	1.84	1.20
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
31.5%	21.1%	5.3%	31.6%	0.0%	10.5%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
328.11	540.77	2,211.89				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-002	**4.44**			**3,080.77**		

Model My Watershed

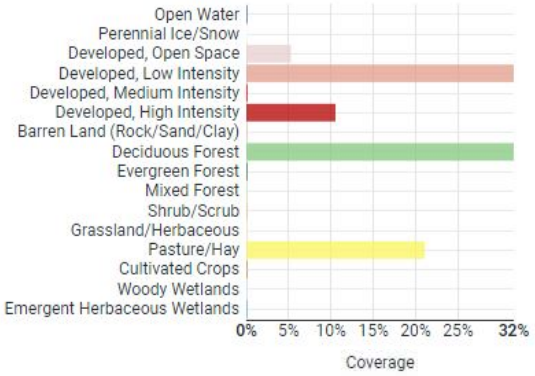
Selected Area 17,986 m^2

Land | Soil | Animals | Point Sources | Water Quality

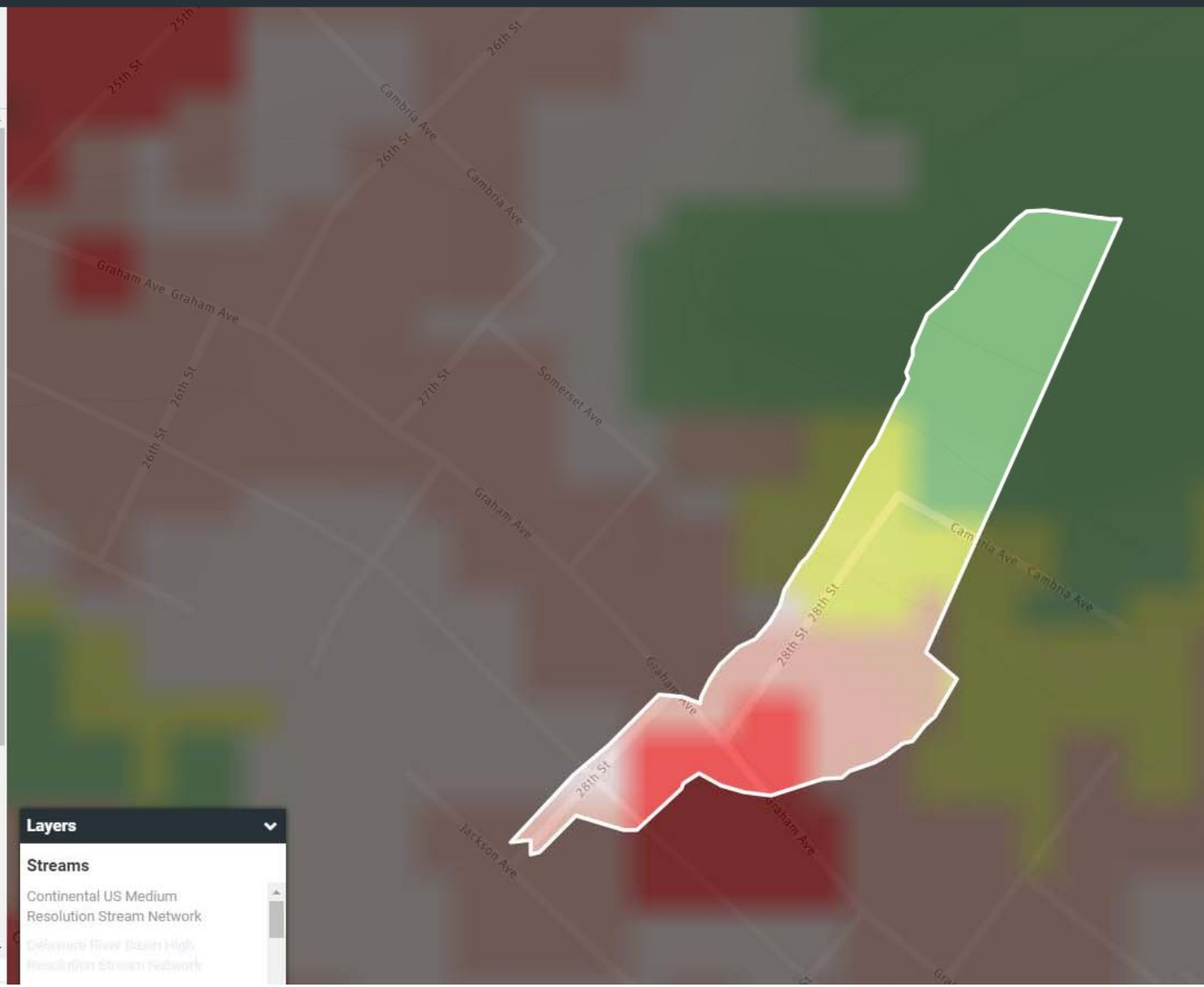
Land cover distribution

Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m^2)	Coverage (%)
Developed, Low Intensity	5,383.30	31.6
Deciduous Forest	5,383.30	31.6
Pasture/Hay	3,588.87	21.1
Developed, High Intensity	1,794.43	10.5
Developed, Open Space	897.22	5.3
Evergreen Forest	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Developed, Medium Intensity	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-003	14.56	0.00	14.56	4.43	6.34	3.79
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
30.4%	1.4%	29.0%	34.8%	4.4%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
1,038.40	1,861.05	6,997.29				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-003	**14.56**			**9,896.74**		

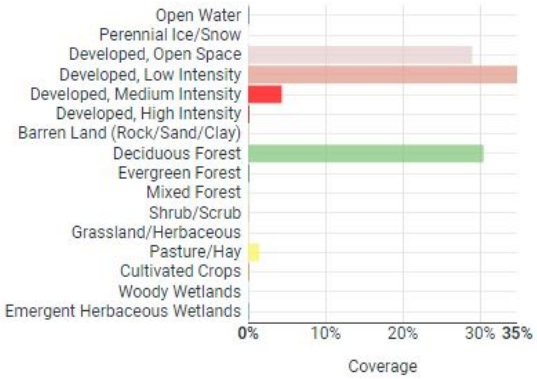
Selected Area 59,006 m^2

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

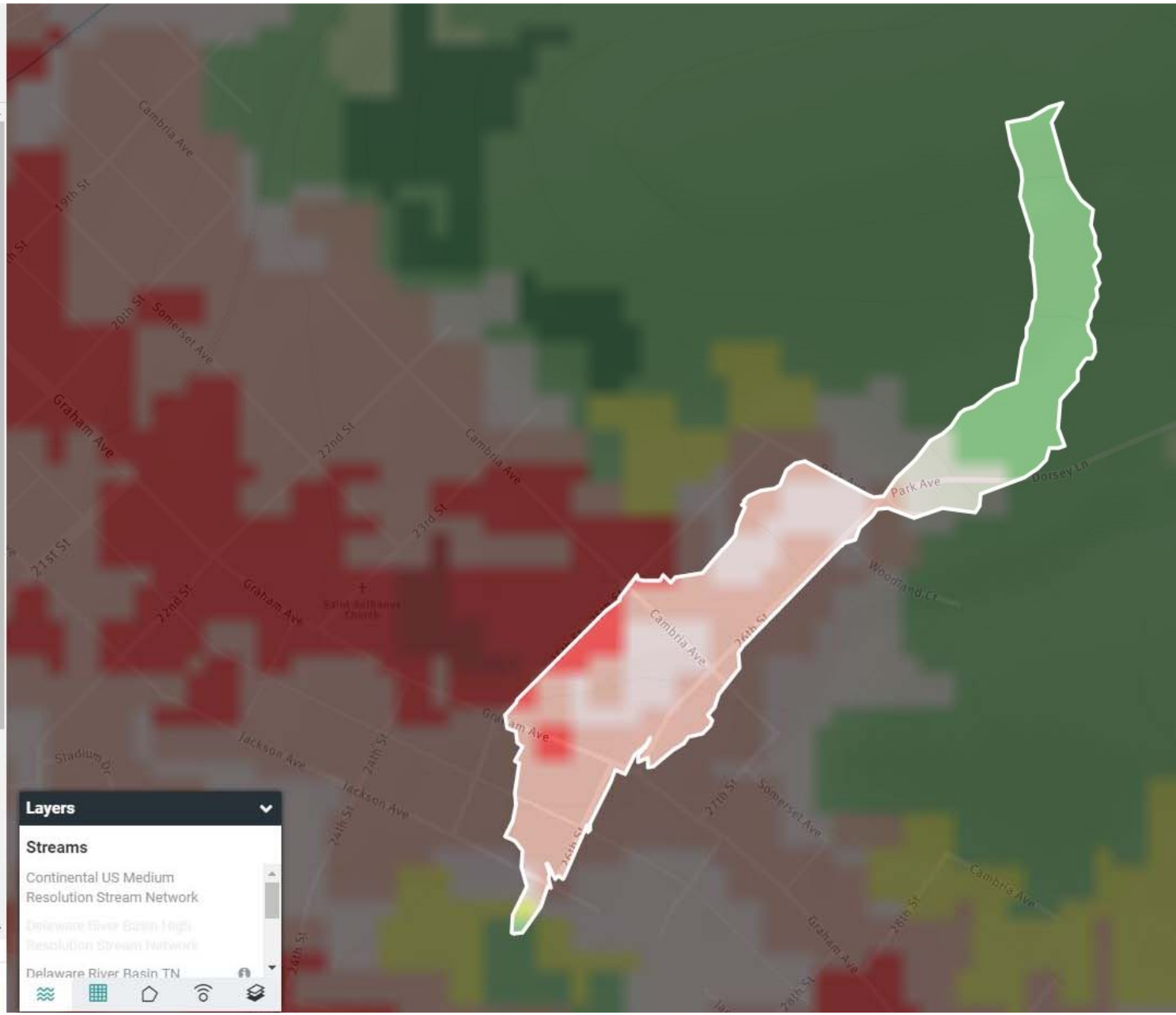
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m^2)	Coverage (%)
Developed, Low Intensity	21,533.19	34.8
Deciduous Forest	18,841.54	30.4
Developed, Open Space	17,944.33	29.0
Developed, Medium Intensity	2,691.65	4.3
Pasture/Hay	897.22	1.4
Evergreen Forest	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-004	2.20	0.00	2.20	0.00	0.90	1.30
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	72.7%	18.2%	9.1%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	264.01	2,399.82				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-004	**2.20**			**2,663.83**		

Model My Watershed

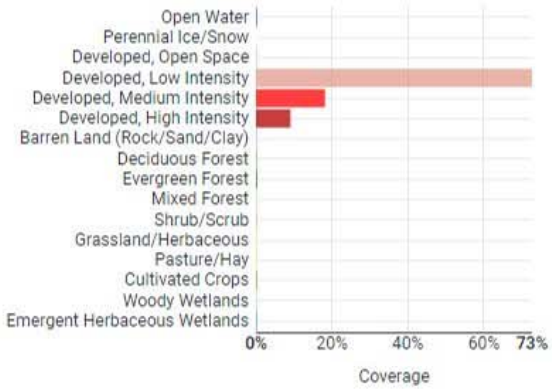
Selected Area 8,916 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

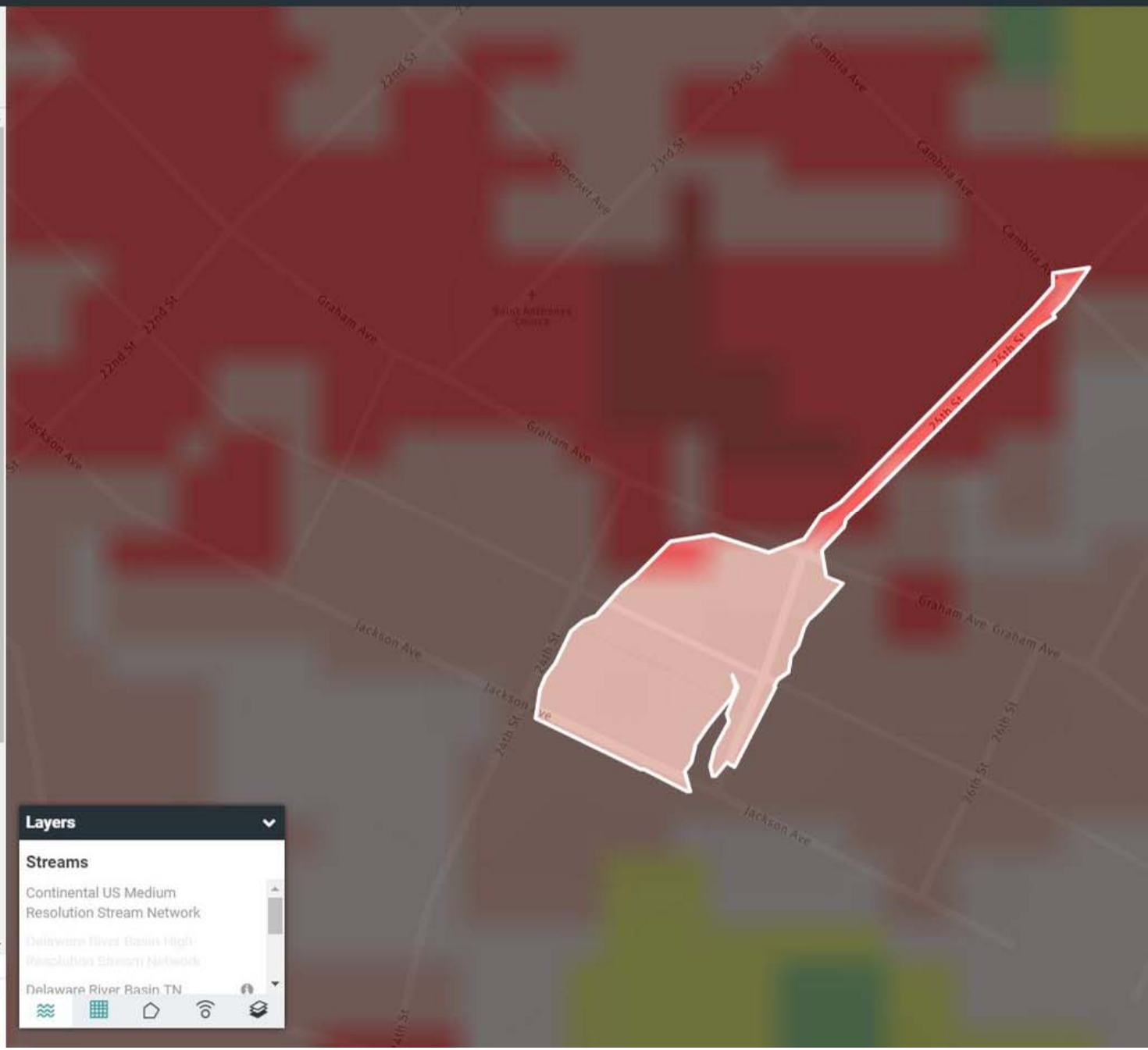
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	7,177.73	72.7
Developed, Medium Intensity	1,794.43	18.2
Developed, High Intensity	897.22	9.1
Evergreen Forest	0.00	0.0
Developed, Open Space	0.00	0.0
Open Water	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-005	1.20	0.00	1.20	0.00	0.43	0.77
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	126.76	1,417.50				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-005	**1.20**			**1,544.26**		

Model My Watershed

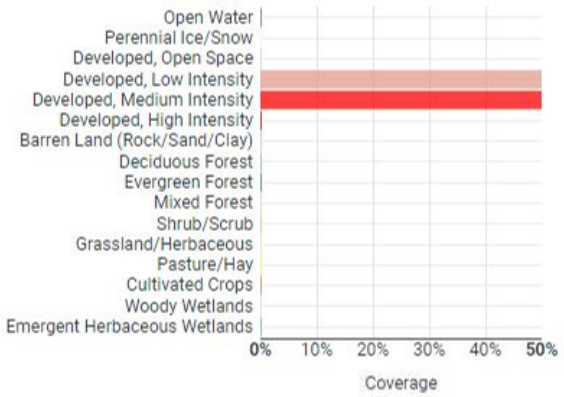
Selected Area 4,867 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	2,691.65	50.0
Developed, Medium Intensity	2,691.65	50.0
Evergreen Forest	0.00	0.0
Open Water	0.00	0.0
Developed, Open Space	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model

Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-006	1.29	0.00	1.29	0.00	0.23	1.06
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	0.0%	83.3%	16.7%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	66.21	1,964.45				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-006	**1.29**			**2,030.67**		

Model My Watershed

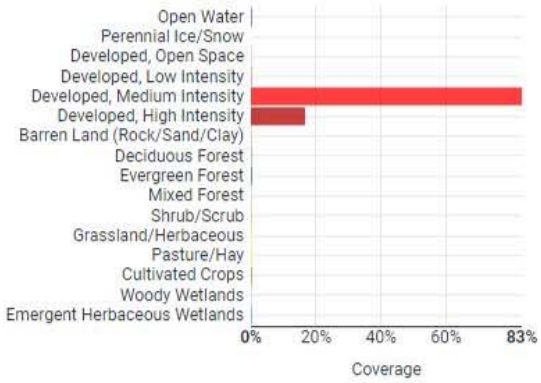
Selected Area 5,236 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

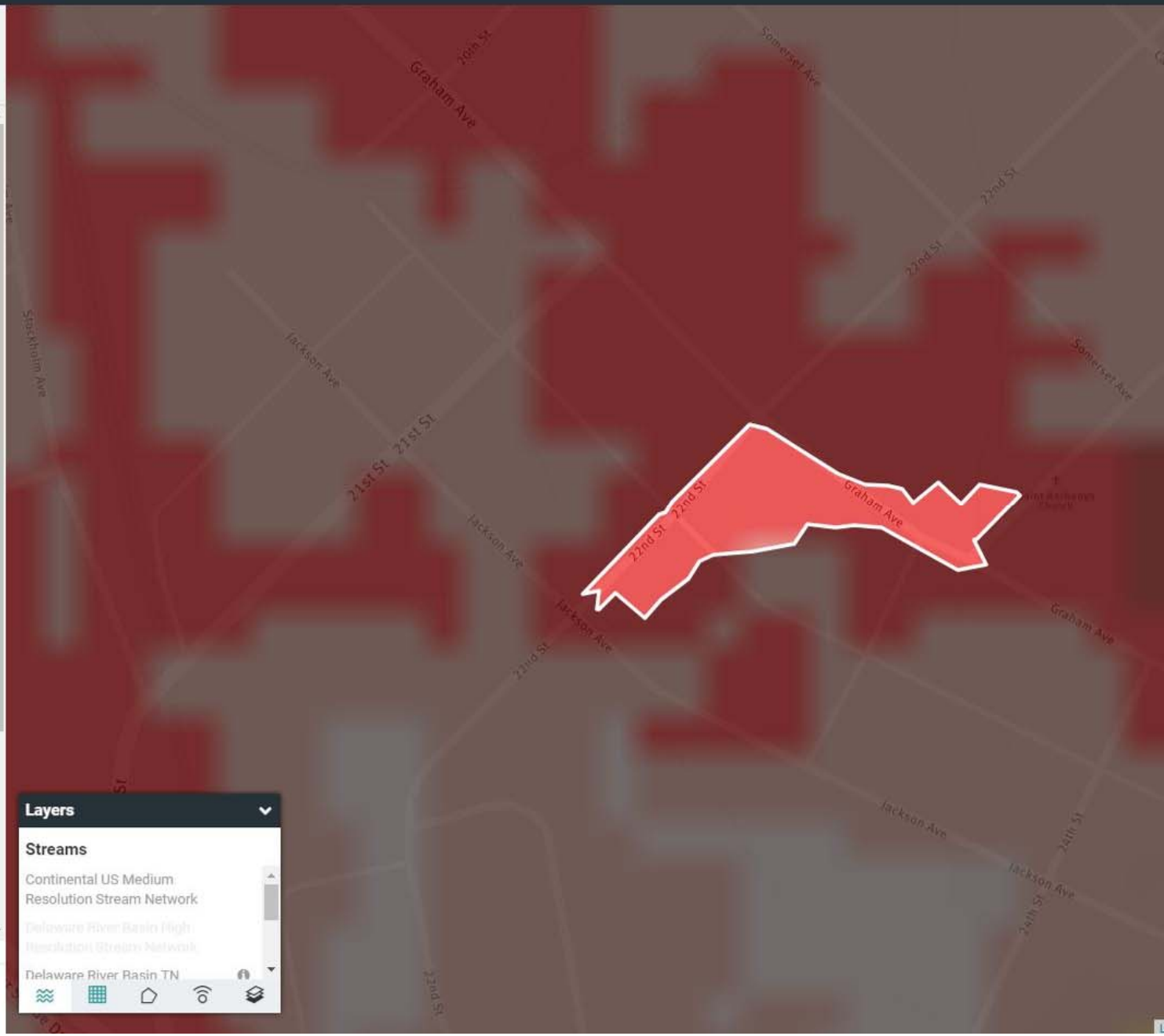
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Medium Intensity	4,486.08	83.3
Developed, High Intensity	897.22	16.7
Evergreen Forest	0.00	0.0
Developed, Low Intensity	0.00	0.0
Open Water	0.00	0.0
Developed, Open Space	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-007	2.52	0.00	2.52	0.00	1.22	1.30
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	8.3%	75.0%	16.7%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	358.47	2,396.28				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-007	**2.52**			**2,754.75**		

Model My Watershed

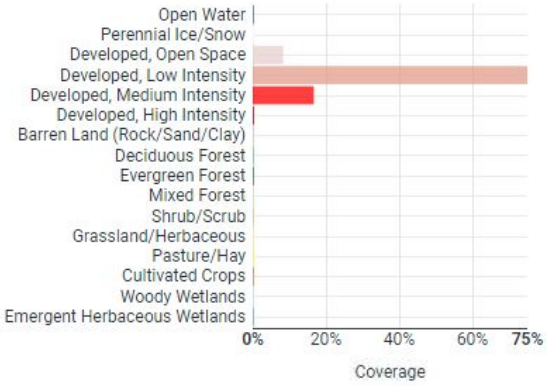
Selected Area 10,213 m^2

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

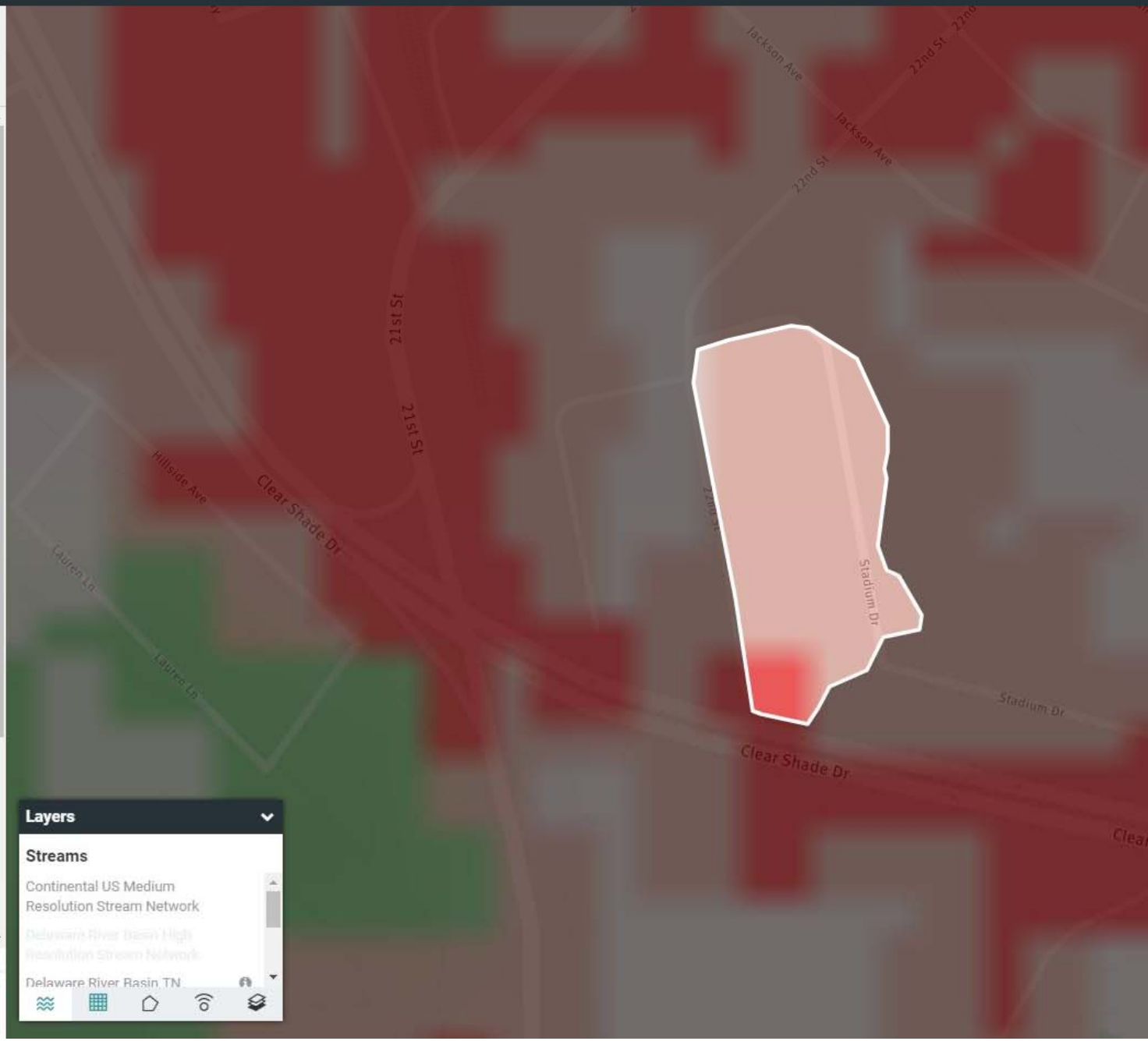
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m^2)	Coverage (%)
Developed, Low Intensity	8,074.95	75.0
Developed, Medium Intensity	1,794.43	16.7
Developed, Open Space	897.22	8.3
Evergreen Forest	0.00	0.0
Open Water	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-008	0.56	0.00	0.56	0.00	0.29	0.27
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	83.80	506.46				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-008	**0.56**			**590.26**		

Model My Watershed

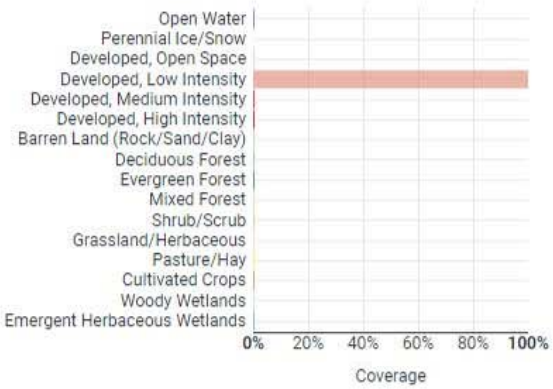
Selected Area 2,259 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

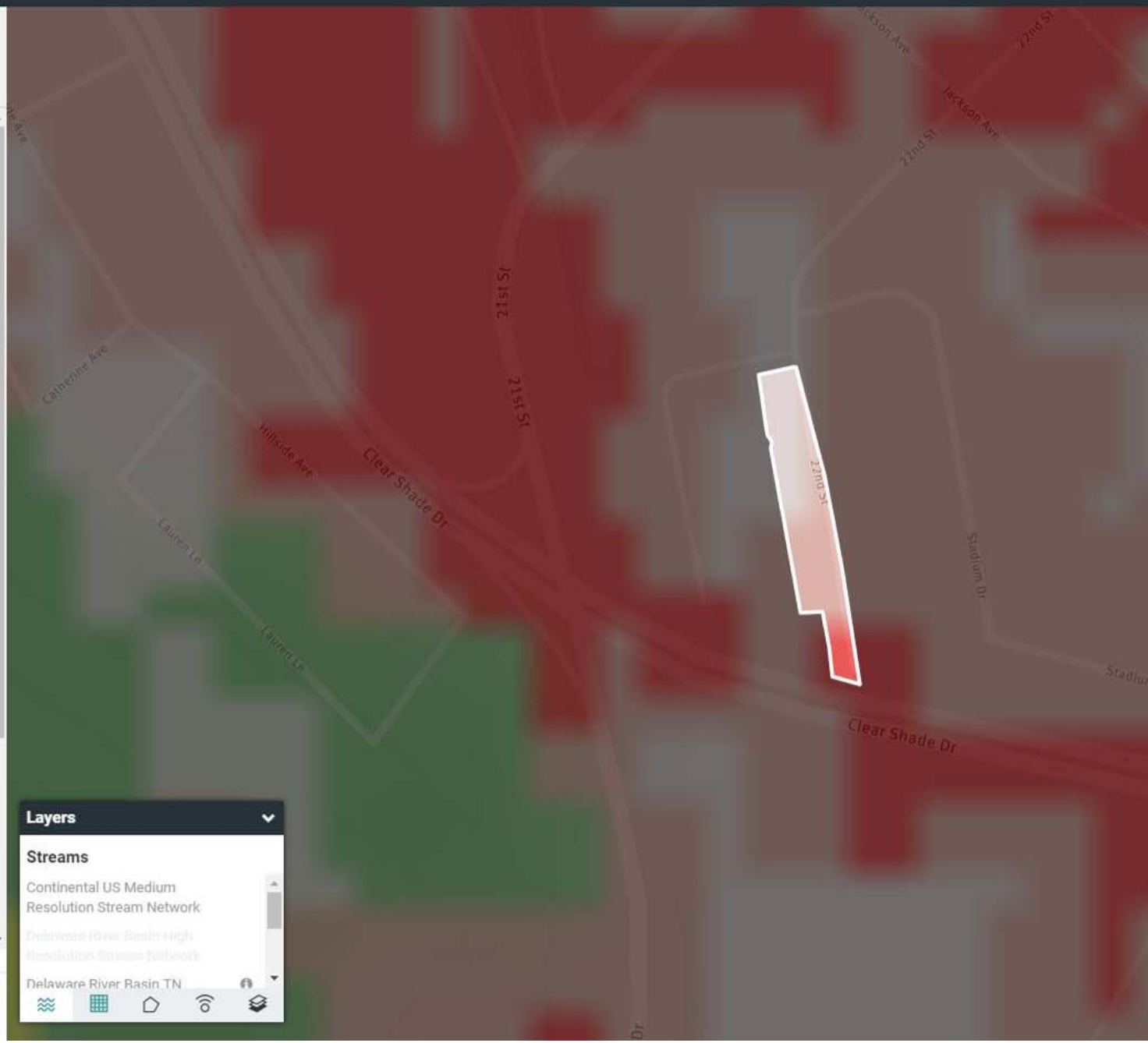
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	1,794.43	100.0
Evergreen Forest	0.00	0.0
Developed, Open Space	0.00	0.0
Open Water	0.00	0.0
Developed, Medium Intensity	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-009	9.81	0.00	9.81	4.01	3.83	1.97
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
40.9%	0.0%	34.1%	20.5%	4.5%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
941.28	1,123.20	3,635.57				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-009	**9.81**			**5,700.05**		

Model My Watershed

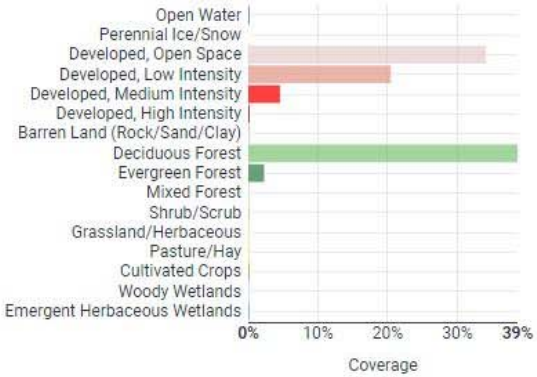
Selected Area 39,747 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

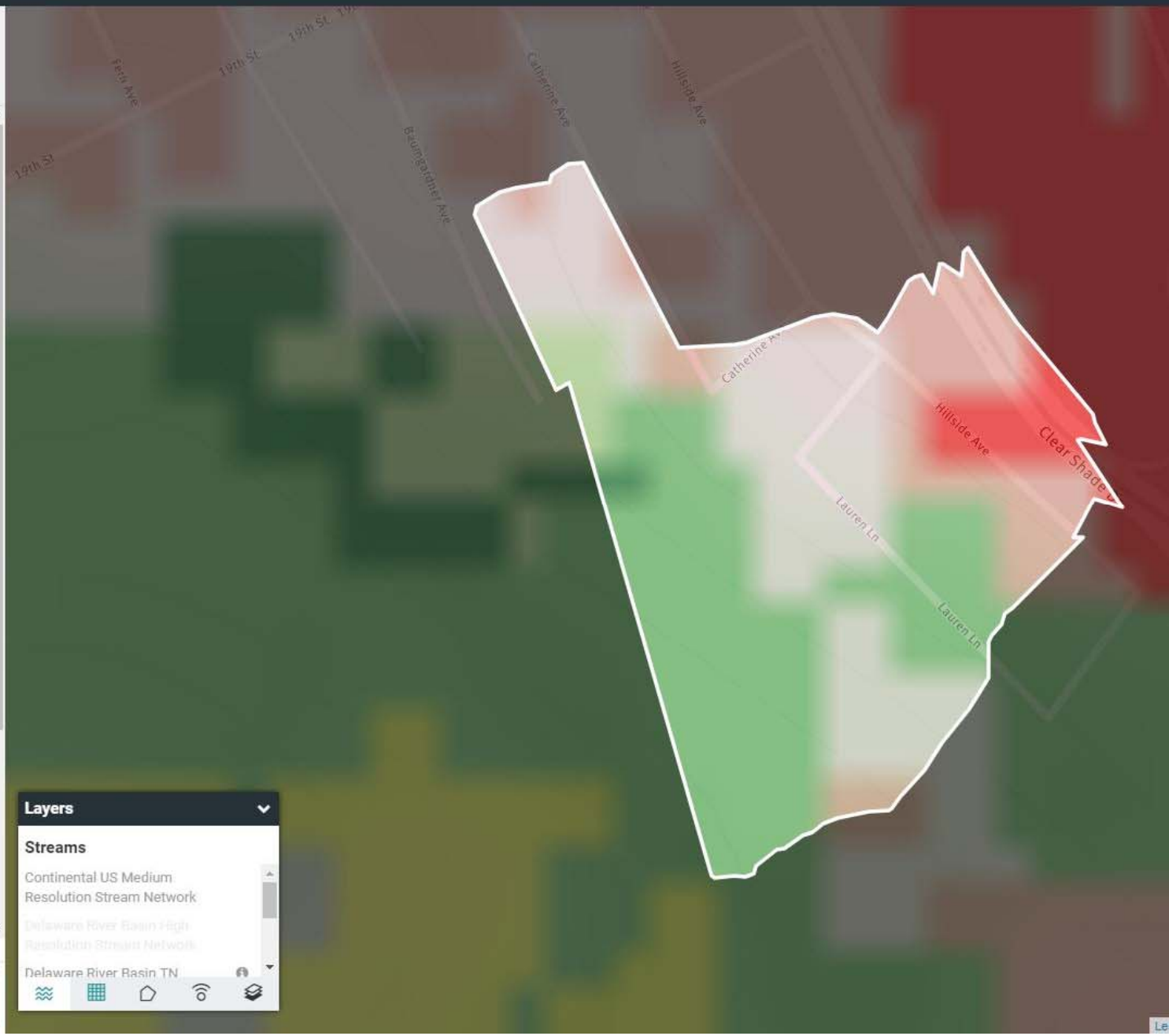
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Deciduous Forest	15,252.68	38.6
Developed, Open Space	13,458.25	34.1
Developed, Low Intensity	8,074.95	20.5
Developed, Medium Intensity	1,794.43	4.5
Evergreen Forest	897.22	2.3
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Open Water	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-010	6.77	0.00	6.77	0.00	2.79	3.98
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	3.3%	63.3%	30.0%	3.4%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	819.53	7,340.29				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-010	**6.77**			**8,159.82**		

Model My Watershed

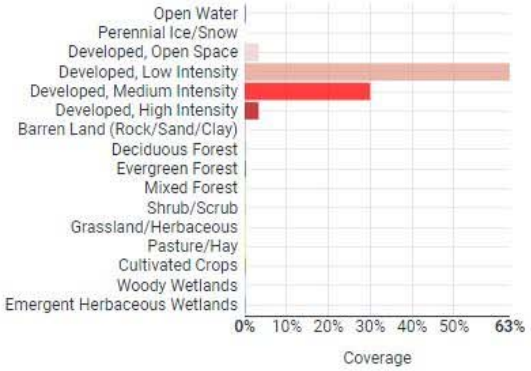
Selected Area 27,416 m^2

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

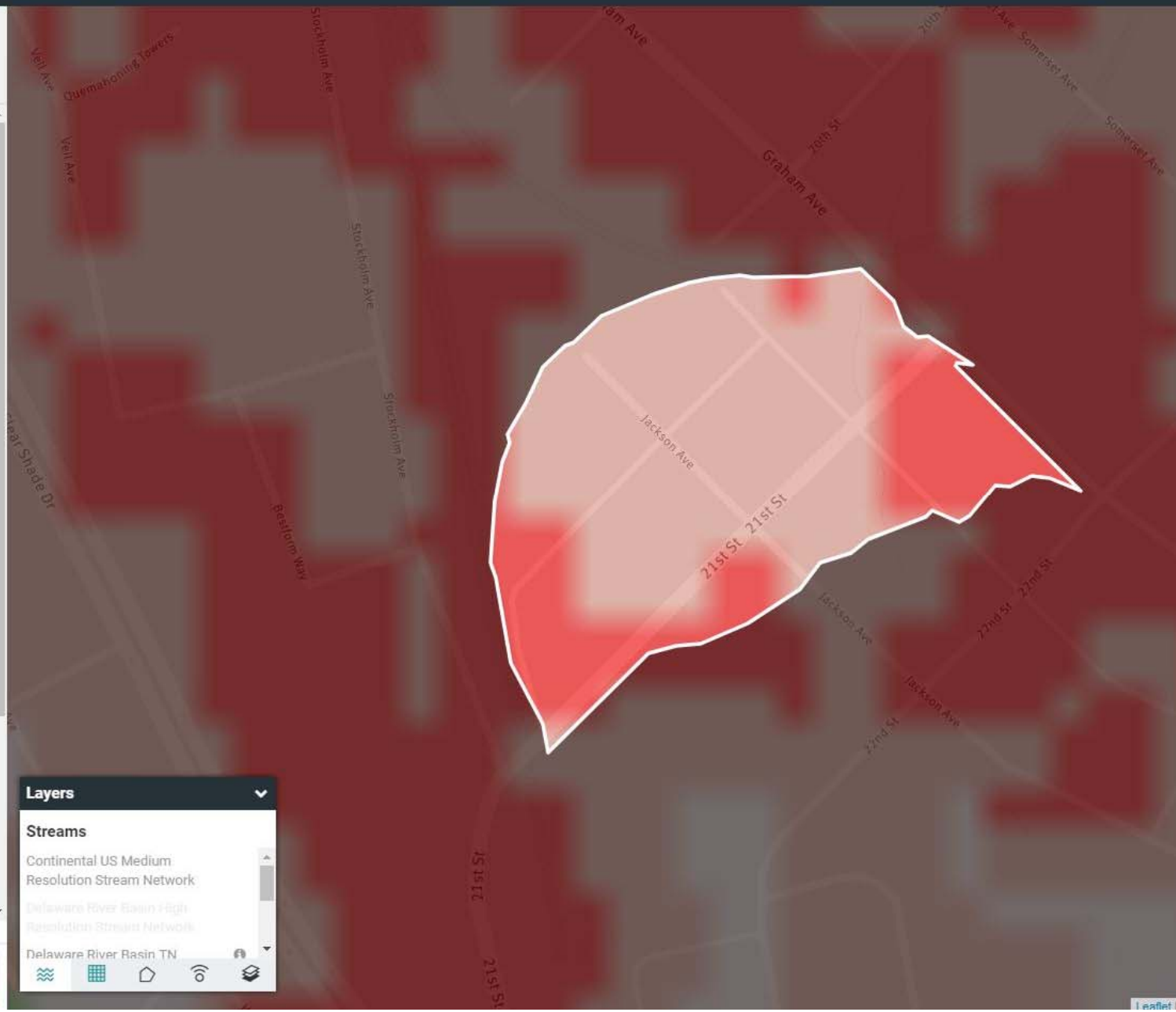
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m^2)	Coverage (%)
Developed, Low Intensity	17,047.11	63.3
Developed, Medium Intensity	8,074.95	30.0
Developed, Open Space	897.22	3.3
Developed, High Intensity	897.22	3.3
Evergreen Forest	0.00	0.0
Open Water	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-011	5.35	0.00	5.35	0.00	3.16	2.19
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	26.9%	73.1%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	927.28	4,041.63				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-011	**5.35**			**4,968.91**		

Model My Watershed

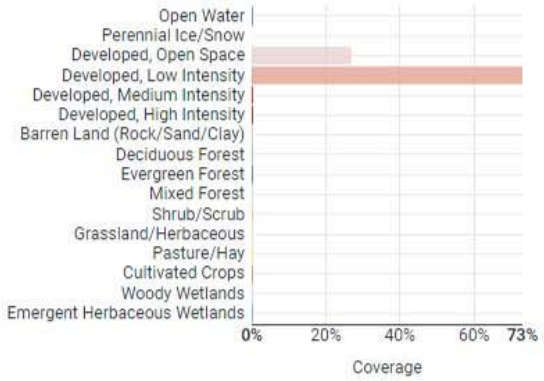
Selected Area 21,675 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

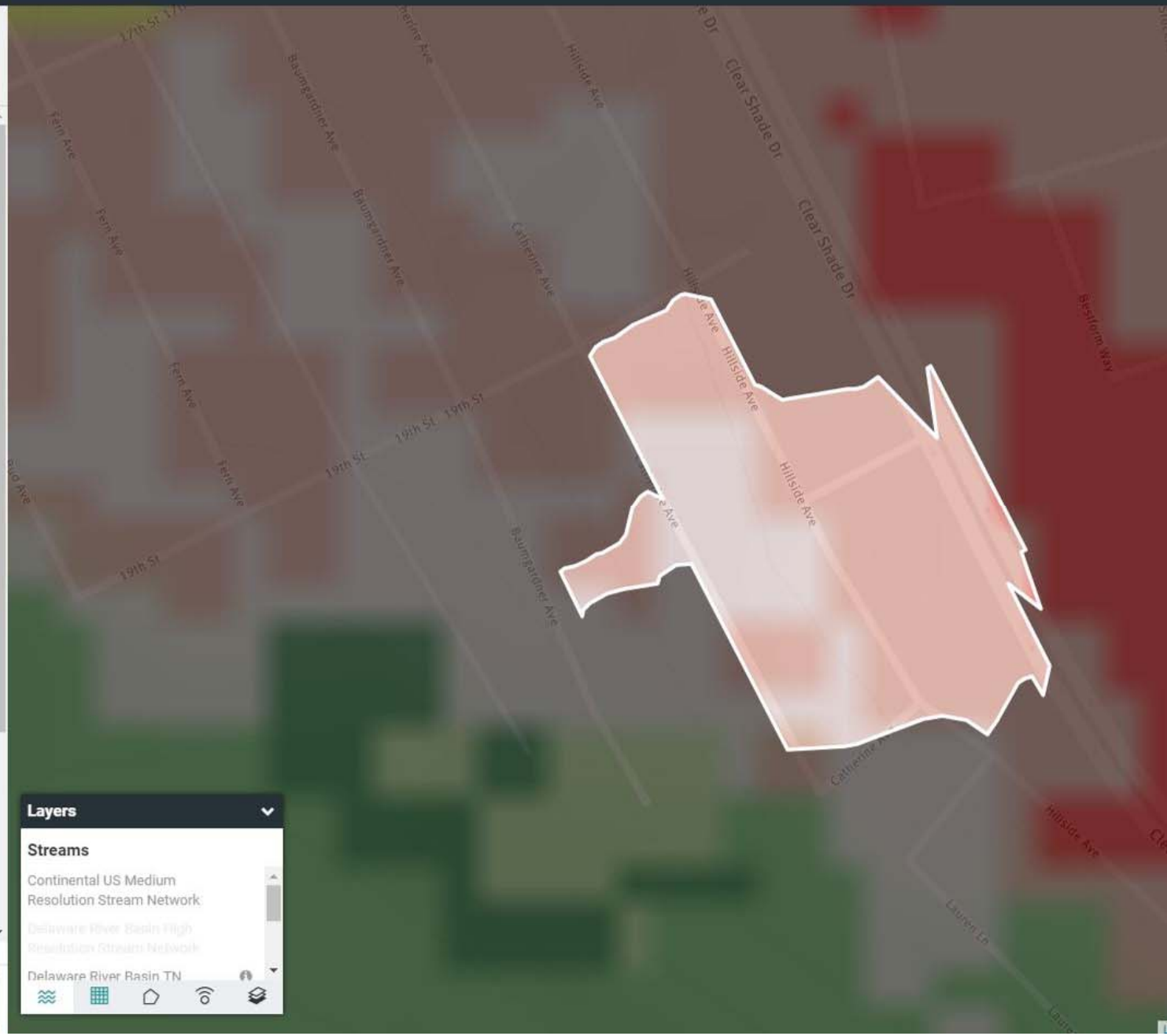
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	17,047.11	73.1
Developed, Open Space	6,280.52	26.9
Evergreen Forest	0.00	0.0
Open Water	0.00	0.0
Developed, Medium Intensity	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-012	8.61	0.00	8.61	0.48	5.01	3.12
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
5.6%	0.0%	33.3%	61.1%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
113.11	1,468.67	5,763.20				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-012	**8.61**			**7,344.98**		

Model My Watershed

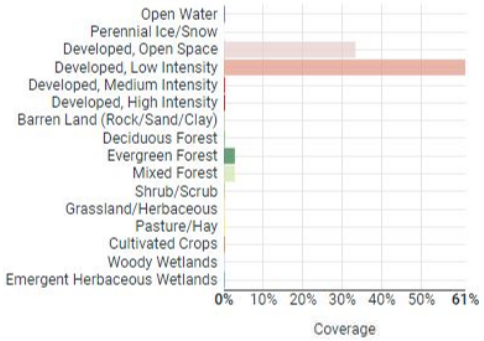
Selected Area 34,889 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	19,738.76	61.1
Developed, Open Space	10,766.60	33.3
Evergreen Forest	897.22	2.8
Mixed Forest	897.22	2.8
Developed, Medium Intensity	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Open Water	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model

Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-013	1.55	0.00	1.55	0.00	0.48	1.07
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	33.3%	66.7%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	140.94	1,974.26				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-013	**1.55**			**2,115.21**		

Model My Watershed

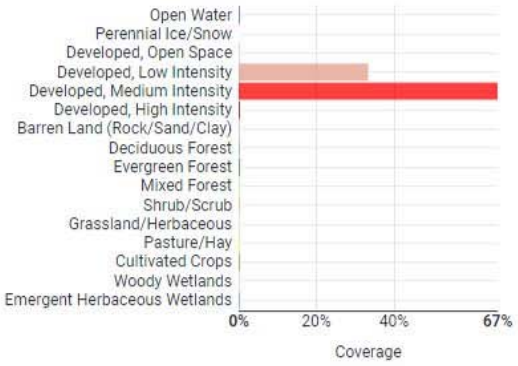
Selected Area 6,288 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

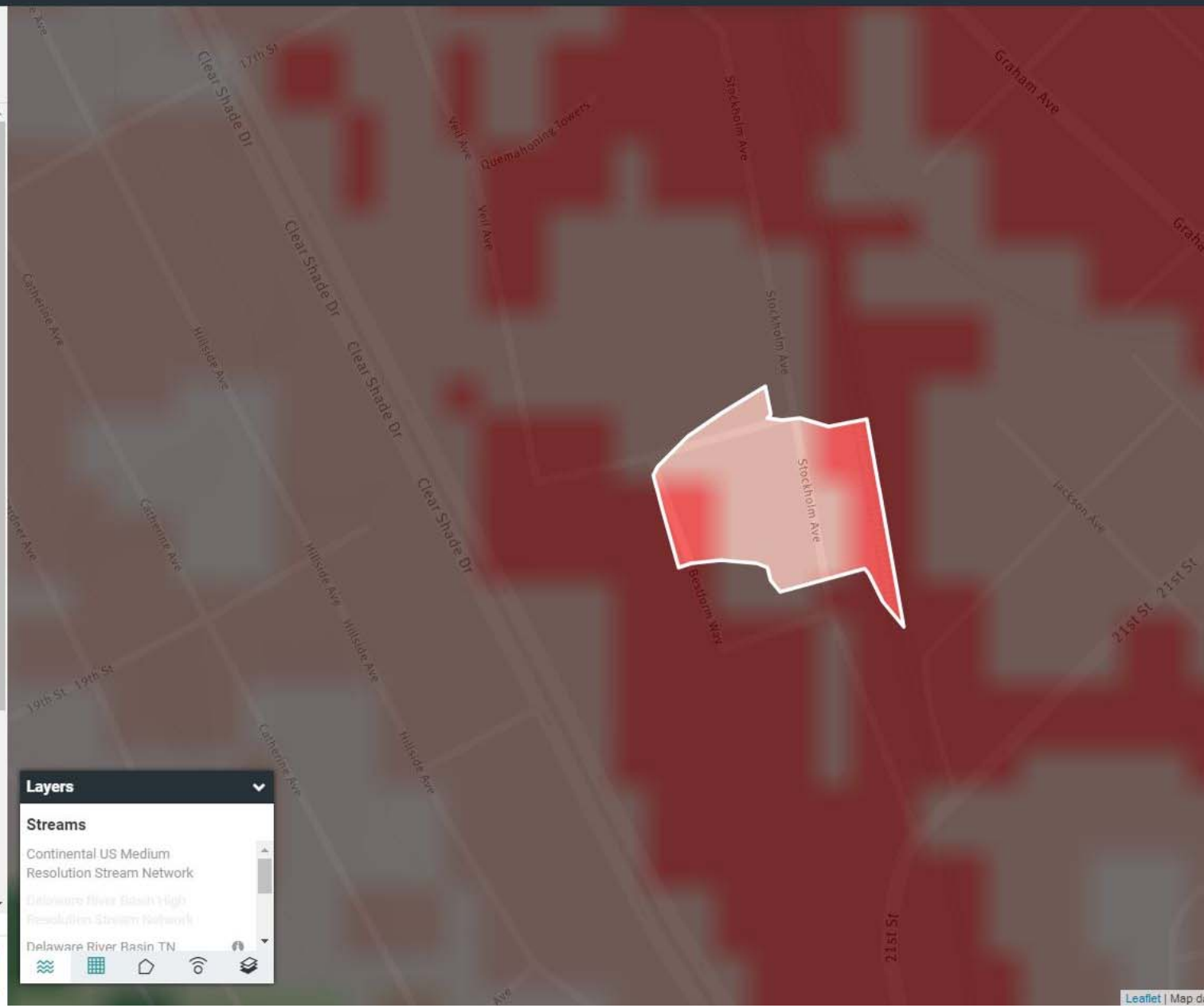
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Medium Intensity	3,588.87	66.7
Developed, Low Intensity	1,794.43	33.3
Evergreen Forest	0.00	0.0
Open Water	0.00	0.0
Developed, Open Space	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-014	0.34	0.00	0.34	0.00	0.17	0.17
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	50.88	307.49				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-014	**0.34**			**358.37**		

Model My Watershed

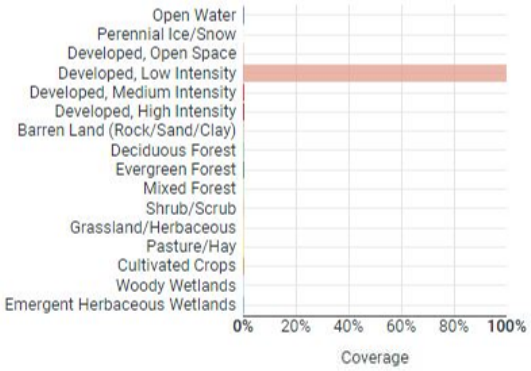
Selected Area 1,372 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

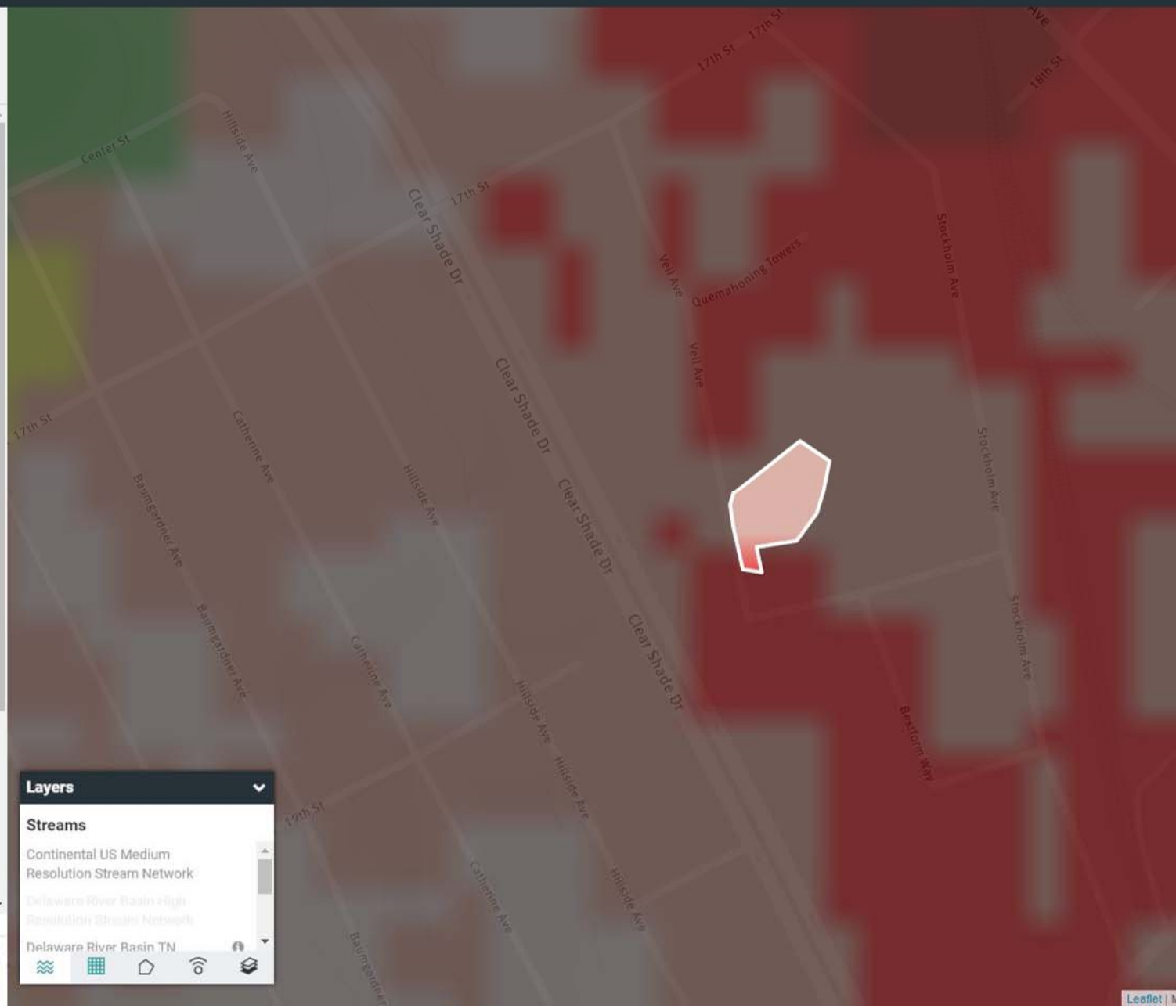
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	1,794.43	100.0
Evergreen Forest	0.00	0.0
Developed, Open Space	0.00	0.0
Open Water	0.00	0.0
Developed, Medium Intensity	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-015	5.64	0.00	5.64	0.00	2.16	3.48
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	7.7%	42.3%	50.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	633.99	6,421.77				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-015	**5.64**			**7,055.76**		

Model My Watershed

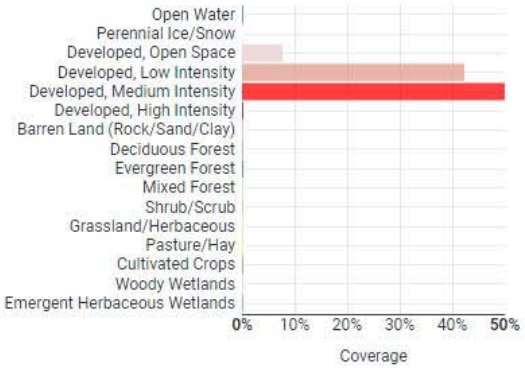
Selected Area 22,861 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

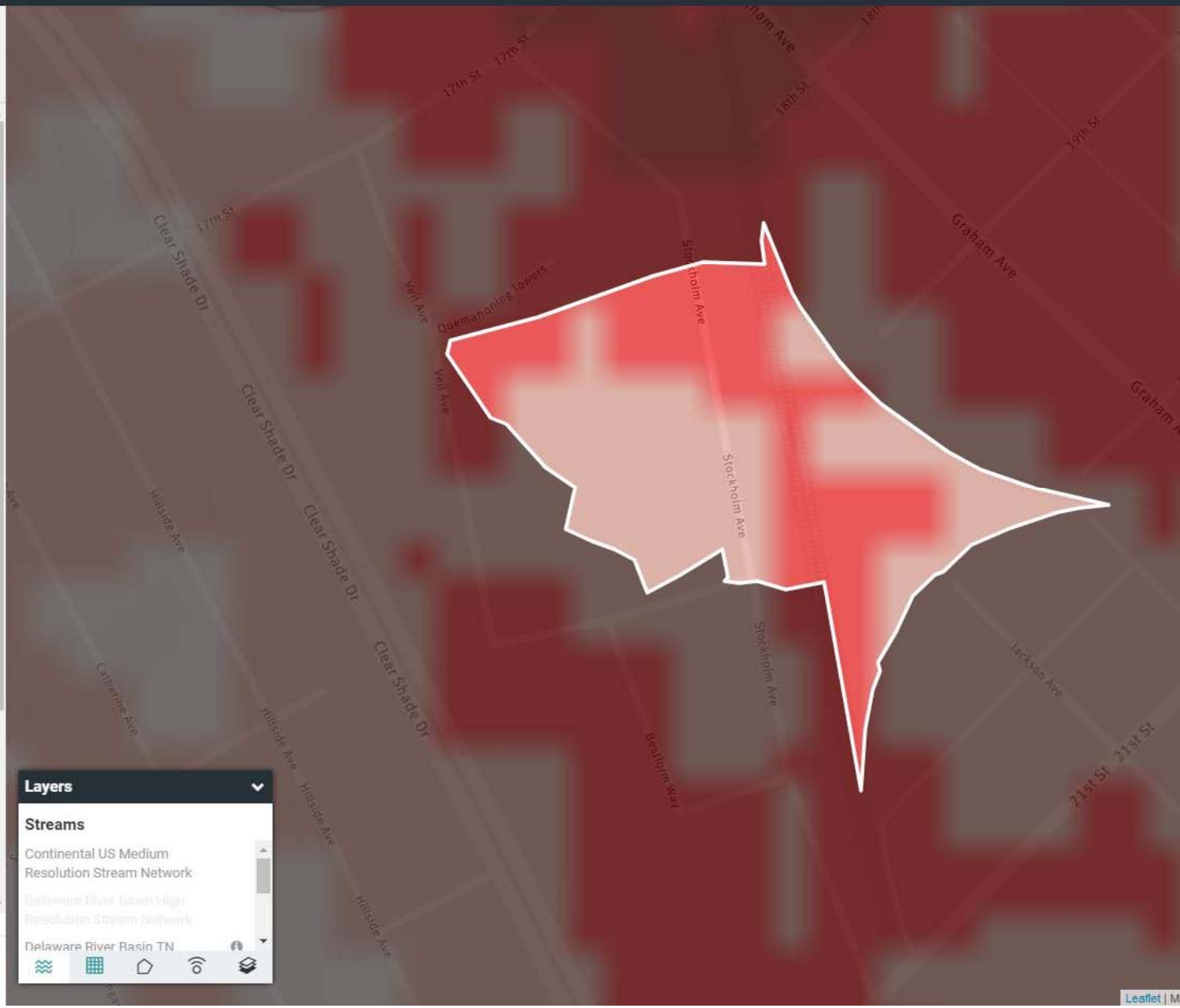
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Medium Intensity	11,663.81	50.0
Developed, Low Intensity	9,869.38	42.3
Developed, Open Space	1,794.43	7.7
Evergreen Forest	0.00	0.0
Open Water	0.00	0.0
Developed, High Intensity	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Deciduous Forest	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-016	0.10	0.00	0.10	0.00	0.00	0.10
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	0.00	184.57				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-016	**0.10**			**184.57**		

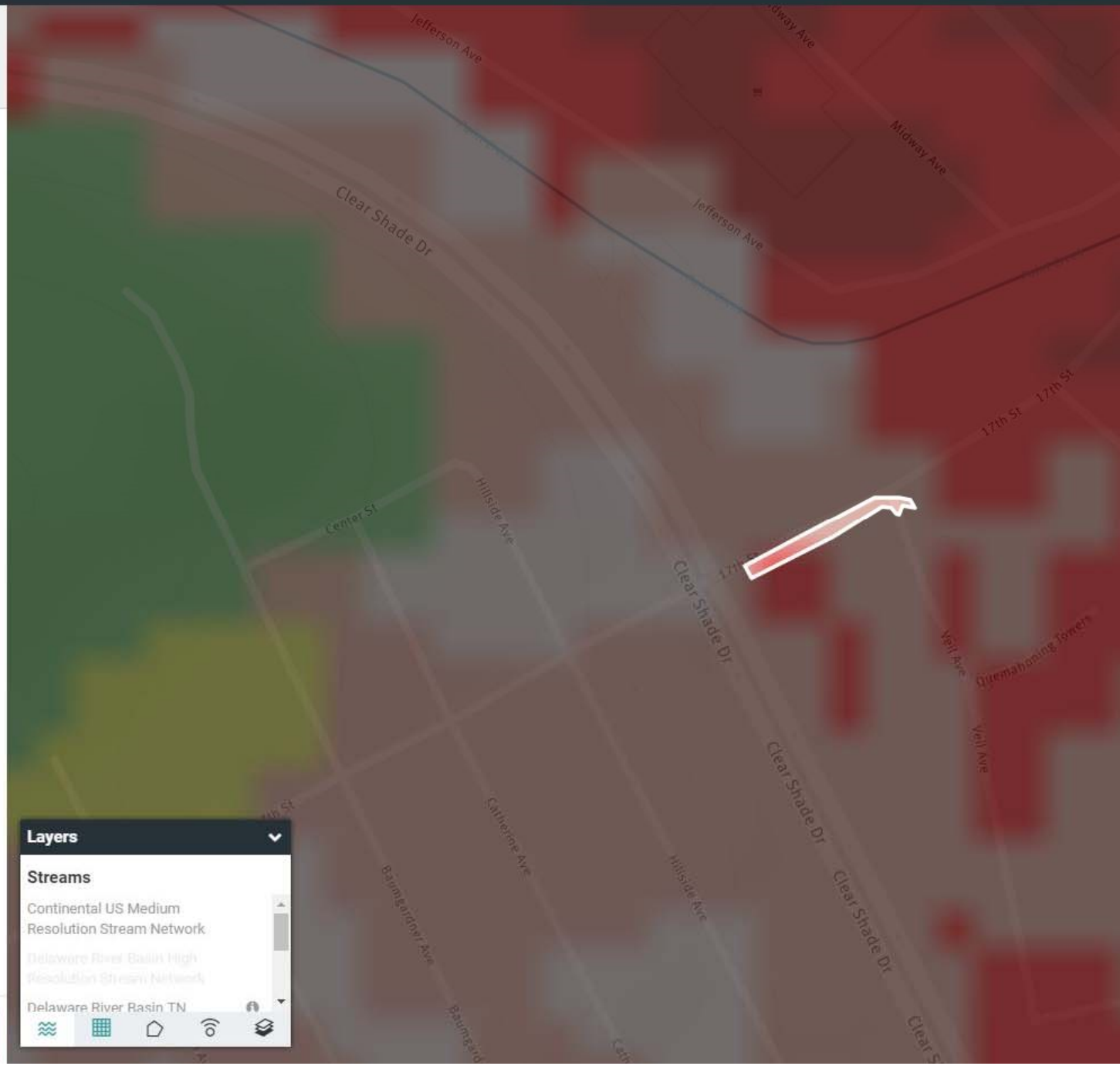
Model My Watershed

Selected Area 418 m²

Land | Soil | Animals | Point Sources | Water Quality

⚠ Error

Change area | Select a model



Sewershed Information (Areas in acres)						
Outfall	Municipal Sewershed Area	Parsed Area	Planning Area	Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-017	12.52	0.00	12.52	2.15	7.04	3.33
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
17.2%	10.3%	32.8%	37.9%	0.0%	1.8%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
505.20	2,064.46	6,147.46				
Sewershed Summary						
Outfall	**Planning Area (acre)**			**Total TSS Loading (lb/yr)**		
WB-SR-017	**12.52**			**8,717.13**		

Model My Watershed

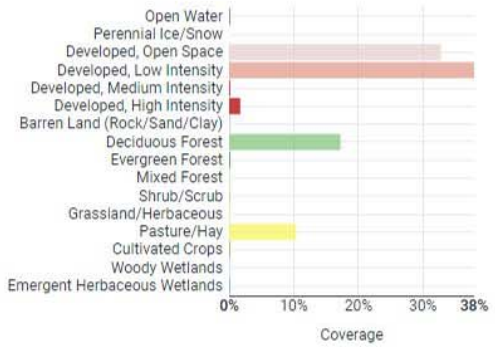
Selected Area 50,719 m²

Land | Soil | Animals | Point Sources | Water Quality

Land cover distribution

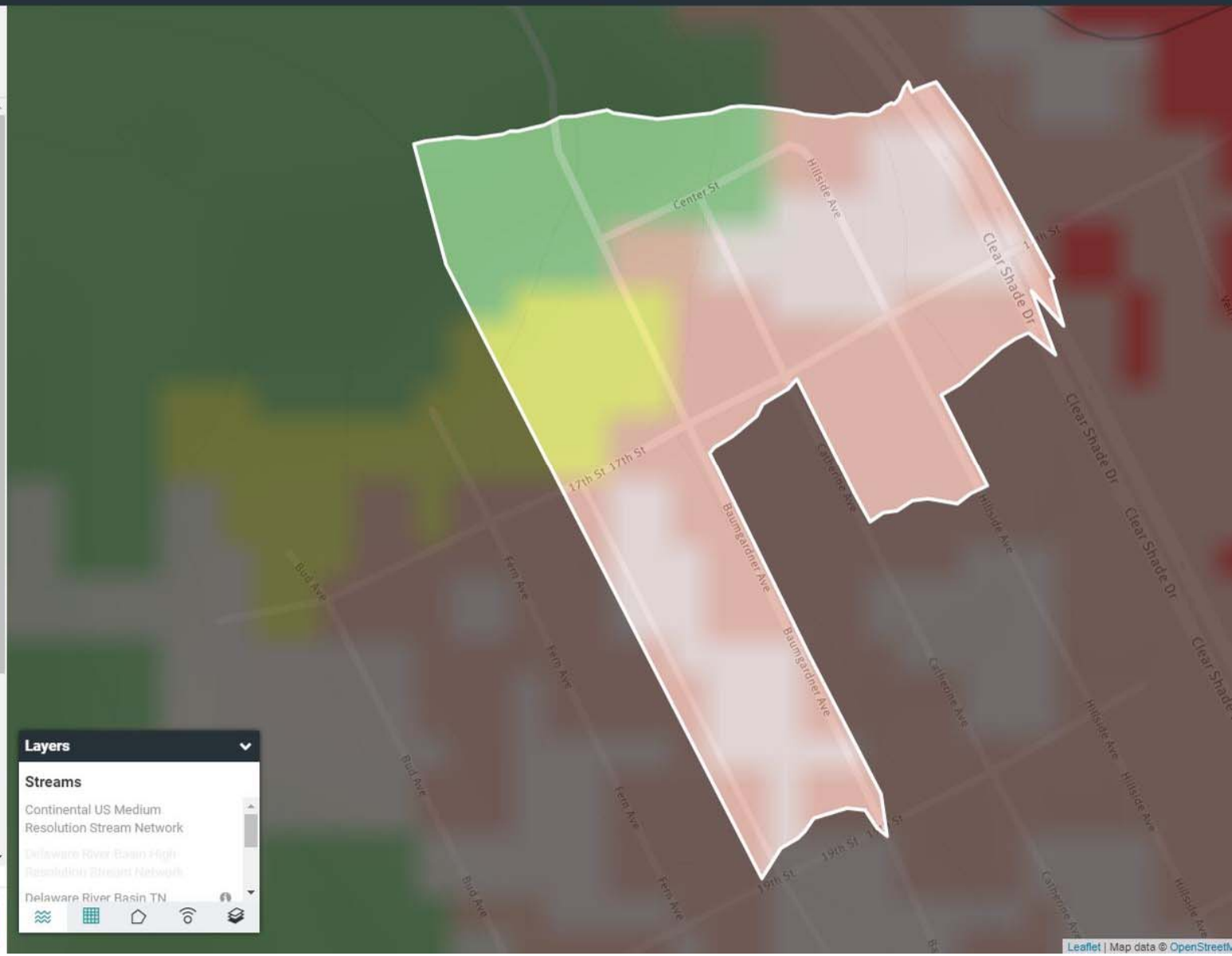
Related Layer: National Land Cover Database ✖ Turn off

Source: National Land Cover Database (NLCD 2011)



Type	Area (m²)	Coverage (%)
Developed, Low Intensity	19,738.75	37.9
Developed, Open Space	17,047.11	32.8
Deciduous Forest	8,972.16	17.2
Pasture/Hay	5,383.30	10.3
Developed, High Intensity	897.22	1.7
Evergreen Forest	0.00	0.0
Barren Land (Rock/Sand/Clay)	0.00	0.0
Developed, Medium Intensity	0.00	0.0
Perennial Ice/Snow	0.00	0.0
Mixed Forest	0.00	0.0
Shrub/Scrub	0.00	0.0

Change area | Select a model



Appendix 3 – Proposed BMP Analysis

Windber Borough - MS4 Polution Reduction Plan - BMP Selection & TSS Reduction Summaries							
Impaired Surface Water No. 1 - Paint Creek (Upper Section)							
BMP	BMP Type	Undeveloped Area (acre)	Pervious Area (acre)	Impervious Area (acre)	Total TSS Loading (lb/yr)	Effectiveness Value	Total TSS Reduction (lb/yr)
WB-PC-PBMP-1	Street Sweeping	0.00	0.00	10.05	18,549.29	9.0%	1,669.44
WB-PC-PBMP-2	Solids Removal	116.28	51.03	51.87	106,896.50	5.0%	5,344.83
WB-PC-PBMP-3	Stream Restoration	100.00 ft			N/A	44.88 lbs/ft/yr	4,488.00
						Total	**11,502.26**
Paint Creek Required TSS Reduction (10% of Total TSS Loading) (lb/yr) =					**10,689.65**		
Paint Creek Total Planned TSS Reduction (lb/yr) =					**11,502.26**		
Impaired Surface Water No. 2 - Seese Run							
BMP	BMP Type	Undeveloped Area (acre)	Pervious Area (acre)	Impervious Area (acre)	Total TSS Loading (lb/acre/yr)	Effectiveness Value	Total TSS Reduction (lb/acre/yr)
WB-SR-PBMP-1	Street Sweeping	0.00	0.00	8.43	15,559.25	9.0%	1,400.33
WB-SR-PBMP-2	Solids Removal	12.47	41.08	32.08	74,299.43	5.0%	3,714.97
WB-SR-PBMP-3	Vegetated Swale	0.00	3.16	2.19	4,968.91	50.0%	2,484.45
						Total	**7,599.76**
Seese Run Required TSS Reduction (10% of Total TSS Loading) (lb/yr) =					**7,422.94**		
Seese Run Total Planned TSS Reduction (lb/yr) =					**7,599.76**		

Sewershed Information (Areas in acres)						
BMP	Street Area			Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-PC-PBMP-1	10.05			0.00	0.00	10.05
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	0.00	18,549.29				
Sewershed Summary						
BMP	**Street Area (acres)**			**Total TSS Loading (lb/yr)**		
WB-PC-PBMP-1	**10.05**			**18,549.29**		
BMP Type		**Effectiveness Value**		**Total TSS Loading Reduction (lb/yr)**		
Street Sweeping (25 times/yr)		**9%**		**1,669.44**		

Sewershed Information (Areas in acres)						
BMP	Street Area			Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-PBMP-1	8.43			0.00	0.00	8.43
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	0.00	15,559.25				
Sewershed Summary						
BMP	**Street Area (acres)**			**Total TSS Loading (lb/yr)**		
WB-SR-PBMP-1	**8.43**			**15,559.25**		
BMP Type		**Effectiveness Value**		**Total TSS Loading Reduction (lb/yr)**		
Street Sweeping (25 times/yr)		**9%**		**1,400.33**		

Sewershed Information (Areas in acres)						
BMP	Tributary Area			Undeveloped Area	Developed Pervious Area	Developed Impervious Area
WB-SR-PBMP-3	5.35			0.00	3.16	2.19
Land Cover Distribution						
Undeveloped	Pasture/Hay	Developed (Open Space)	Developed (Low Intensity)	Developed (Medium Intensity)	Developed (High Intensity)	Total
0.0%	0.0%	26.9%	73.1%	0.0%	0.0%	100.0%
TSS Loading (lb/yr)						
Undeveloped	Developed (Pervious)	Developed (Impervious)				
0.00	927.28	4,041.63				
Sewershed Summary						
BMP	**Tributary Area (acres)**			**Total TSS Loading (lb/yr)**		
WB-SR-PBMP-3	**5.35**			**4,968.91**		
BMP Type		**Effectiveness Value**		**Total TSS Loading Reduction (lb/yr)**		
Vegetated Open Channel		**50%**		**2,484.45**		