



Watershed Inventory Report

Phase 1 of the Watershed Improvement Plan

Robbinsville Township
Mercer County

Date Report Finalized: 12/23/2025

Permit Number: NJG0149004

Stormwater Program Coordinator: Nicholas Papasso

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Acronyms & Definitions

1. Acronyms

- i. “BMP” – Best Management Practice
- ii. “DO” – Dissolved Oxygen
- iii. “EPA” – U.S. Environmental Protection Agency
- iv. “GIS” – Geographic Information System
- v. “HUC 14” – Hydrologic Unit Code 14
- vi. “MS4” – Municipal Separate Storm Sewer System
- vii. “MTD” – Manufactured Treatment Device
- viii. “NJPDES” – New Jersey Pollutant Discharge Elimination System
- ix. “NJ-WET” – New Jersey Watershed Evaluation Tool
- x. “TDS” – Total Dissolved Solids
- xi. “TMDL” – Total Maximum Daily Load
- xii. “TSS” – Total Suspended Solids
- xiii. “WIP” – Watershed Improvement Plan

2. Definitions (regulatory citations are included at the end of each definition for those that are copied from that regulation)

- i. “**HUC 14**” or “hydrologic unit code 14” means an area within which water drains to a particular receiving surface water body, also known as a subwatershed, which is identified by a 14-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geological Survey. (see N.J.A.C. 7:9B)
- ii. “**Municipal separate storm sewer**” (or MS4 conveyance) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) as defined in more detail at N.J.A.C. 7:14A-1.2.
- iii. “**Outfall**” means any point source which discharges directly to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.
- iv. “**Storm drain inlet**” means the point of entry into the storm sewer system.
- v. “**Stormwater**” means water resulting from precipitation (including rain and snow) that runs off the land’s surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities or is conveyed by snow removal equipment.
- vi. “**Stormwater facility**” means stormwater infrastructure including, but not limited to, catch basins, infiltration basins, detention basins, green infrastructure (GI), filter strips, riparian buffers, infiltration trenches, sand filters, constructed wetlands, wet basins, bioretention systems, low flow bypasses, Manufactured Treatment Devices (MTDs), and stormwater conveyances.
- vii. “**Stormwater management basin**” means a stormwater management basin as defined in N.J.A.C. 7:8.
- viii. “**Stormwater management measure**” means a stormwater management measure as defined in N.J.A.C. 7:8.
- ix. “**Stormwater runoff**” means water flow on the surface of the ground or in storm sewers, resulting from precipitation.
- x. “**Total maximum daily load**” or “**TMDL**” means a total maximum daily load formally established pursuant to Section 7 of the Water Quality Planning Act (N.J.S.A. 58:11A-7) and Section 303(d) of the Clean Water Act, 33 U.S.C. §§12512 et seq. A TMDL is the sum of individual wasteload allocations for point sources, load allocations for nonpoint sources of pollution, other sources such as tributaries or adjacent segments, and allocations to a reserve or margin of safety for an individual pollutant.
- xi. “**Waters of the State**” means the ocean and its estuaries, all springs, streams and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction” (see N.J.A.C. 7:9B-1.4).

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Acknowledgements

Robbinsville's Watershed Inventory Report has been prepared by: *Nicholas Papasso, Stormwater Program Coordinator.*

Partial funding for this project has been generously provided by the New Jersey Department of Environmental Protection for MS4 Tier A municipalities. Additional technical assistance was provided by the Rutgers Cooperative Extension Water Resources Program and the Mercer County Planning Division.

Introduction

The Township of Robbinsville occupies 13,160 acres, or 20.56 square miles, and is situated on the Inner Coastal Plain of New Jersey. Most development in Robbinsville is concentrated in the western half of the township due to its relative proximity to the regional hub of Trenton, as well as the I-195 and NJTP (I-95) traffic corridors. Robbinsville’s municipal offices are located at 2298 NJ-33, Mercer County, New Jersey. In 2020, Robbinsville had a population of 15,476 people (2020 United States Census) and has continued to grow in the years since. According to the same 2020 United States Census data, the population density of Robbinsville is approximately 757 people per square mile, the median age is 43.7 years, and per capita income is \$70,190. The Township consists of a diverse mix of land uses. The dominant land cover type is natural or open space with wetlands, forest, water, and barren land covering approximately 40% of Robbinsville. However, approximately 39% of Robbinsville is classified as developed or “urban”. An additional 20% is represented by agricultural uses.

Of Robbinsville’s 39% urban land cover, approximately 5,148 acres, about half consists of residential uses. Residential uses cover approximately 2,523 acres or 49% of urban land cover and 19% of all land in Robbinsville. Commercial and industrial uses make up approximately 6% and 10% of urban land cover within the Township respectively. The majority of land uses in Robbinsville are single-unit low density and single-unit rural residential uses. Together, these represent 82% of residential uses in Robbinsville. Per Township zoning standards, the allowable impervious cover on these lots ranges from 15%-25% (in the RR, R-1.5, and transitional zones). The remaining medium and high density uses, about 18%, where the allowable impervious cover is higher can be found in the R-1.5 PVD and TC zoning districts.

Robbinsville Township contains portions of nine sub-watersheds within three watershed management areas (WMA). Robbinsville is located in WMA10 (Millstone), WMA11 (Central Delaware Tributaries), and WMA 20 (Assicunk, Crosswicks, and Doctors Creeks). **Table 1** below lists the sub-watersheds, their HUC14 codes, and their percentage of land area within Robbinsville. Additionally, there are rivers and streams within the municipality; Miry Run and tributaries and Assunpink Creek and tributaries being the two dominant water bodies. Other streams include Edges Brook, Back Creek, Bear Brook, Indian Run, Doctors Creek, and all associated tributaries.

Table 1: Sub-Watersheds Within Robbinsville

Sub-Watershed Name	HUC14 Code	Percentage of Land
Assunpink Creek (Shipetaukin to Trenton Road)	02040105230050	0.63%
Assunpink Creek (Trenton Rd. to New Sharon Branch)	02040105230050	29.77%
Assunpink Creek (New Sharon Branch to and Including Lake)	02040105230020	3.99%
New Sharon Branch (Assunpink Creek)	02040105230030	8.32%
Miry Run (Assunpink Creek)	02040105240030	32.84%
Pond Run	02040105240040	0.74%
Back Creek (above Yardville-Hamilton Square Road)	02040201070010	8.82%
Doctors Creek (above Allentown)	02040201060030	9.99%
Bear Brook (above Trenton Road)	02030105100120	4.89%

The purpose of this watershed inventory report is to provide a comprehensive understanding of the key features and characteristics of the watersheds within Robbinsville Township. This includes collecting, organizing, and presenting information on current environmental conditions, land use, and infrastructure across each watershed area, and the Township as a whole. The report is intended to serve as a resource to support informed decision-making, planning, and the implementation of sustainable watershed management practices that protect and enhance the health of Robbinsville’s watersheds, their ecosystems, and the surrounding community.

Throughout the preparation of this report and data gathering, Esri ArcGIS software was used to collect, store, and visualize data pertaining to the existing stormwater infrastructure, land cover, watershed delineation, and water quality classification and impairments within separate layers. Datasets from the New Jersey Department of Environmental Protection’s (NJDEP’s) GIS database in conjunction with the Township’s own datasets were used to populate the various maps contained in this report.

Public Participation

No regional projects or collaboration efforts are currently in progress. Robbinsville township is exploring options for a regional approach to completing future phases and projects of the Watershed Improvement Plan. Representatives of the Township have attended several regional watershed meetings hosted by The Watershed Institute, and are moving toward developing an agreement with neighboring municipalities to work regionally. Robbinsville has not hosted public meetings, nor are there any scheduled at the time of finalizing this report. Robbinsville will continue to attend regional meetings held by The Watershed Institute. The next meeting is scheduled for December 9th, 2025.

Stormwater Infrastructure

The following sections under this heading describe stormwater infrastructure that is owned and operated by Robbinsville Township, as well as infrastructure that is not owned or operated by Robbinsville Township. An interactive digital version of the maps in this section, as well as others in this report will be made available for public viewing on the Robbinsville Stormwater Page found at https://www.robbinsville-twp.org/departments/engineering/stormwater_management.php.

Storm Drain Inlets

Robbinsville Township has mapped 2,231 storm drain inlets and owns and operates about 1,831 storm drain inlets and catch basins that drain into waterways throughout the township. ESRI ArcGIS Pro and Field Maps software was used to collect and map these inlet locations. In addition, the Township sometimes utilizes the web-based GIS application TRAIRS to manage their stormwater assets. **Figure 1** depicts the Robbinsville owned and operated catch basin network across the township, as well as additional inlets that are included in the dataset for those not owned by the Township.

Robbinsville DPW conducts annual inspections of storm drain inlets and open conveyances at which time they inspect the condition of the labels on storm drain inlets. DPW staff perform visual inspections of all municipally owned storm drain inlets annually and make a list of any inlets in need of maintenance. The staff will remove any debris off the inlet grate and surrounding area and load the debris into their trucks for proper disposal or make a note of the location to return to conduct the cleaning within 1 week. Areas that often clog and flood during storms are inspected frequently and prior to large, forecasted storms, are cleaned if necessary. DPW shall inspect at least 20% of catch basins per year. Inspections are routine and conducted throughout the year. Additionally, the Township policy is to repair, reconstruct, and retrofit storm drain inlets and catch basins within project areas during all roadway rehabilitation projects.

Robbinsville

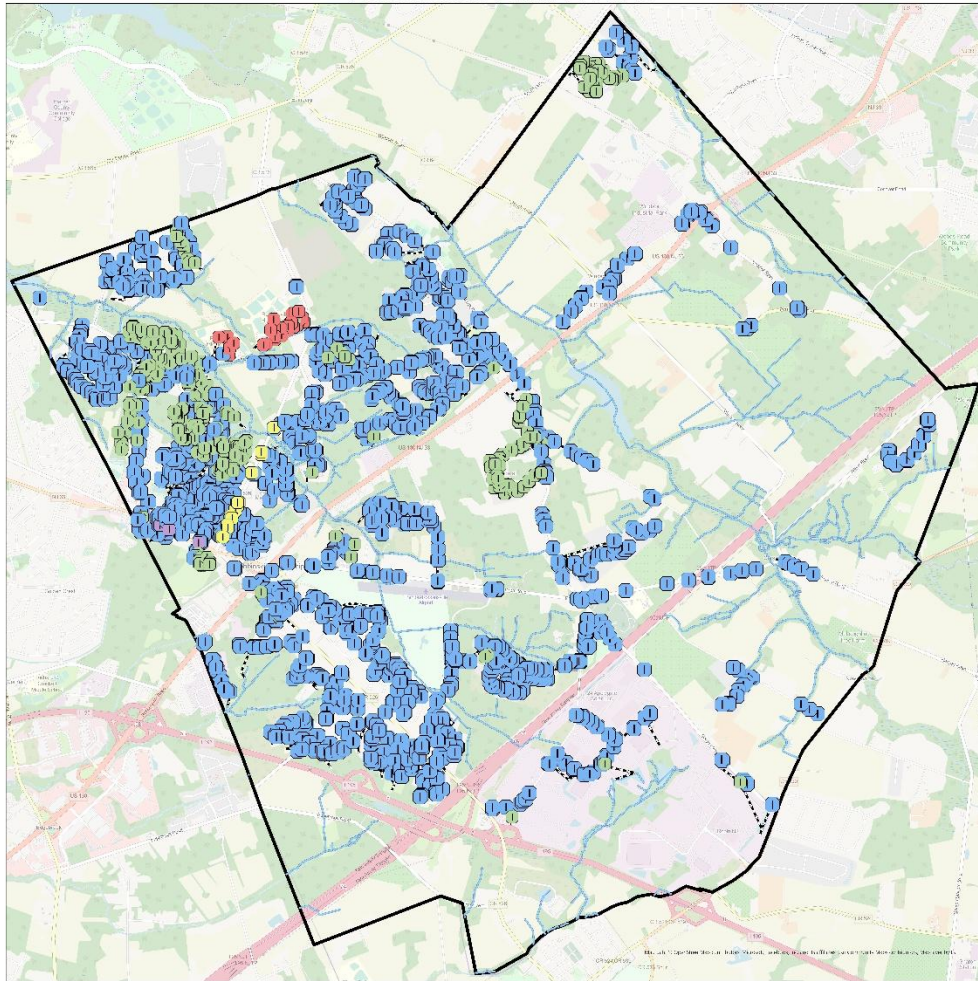
TOWNSHIP

BE AT THE CENTER OF IT ALL

Stormwater Catch Basins

Robbinsville Township
Mercer County, New Jersey

Revised November 2025



0 0.25 0.5 1.5 2 Miles

Legend

- | | | |
|------------------|-----------------|------------|
| Stormwater Inlet | Private | Surface |
| County | School District | Waterbody |
| Municipality | State | Stormwater |
| Other | | Conveyance |

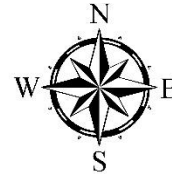


Figure 1: Stormwater Catch Basins in Robbinsville

Stormwater Outfalls

Robbinsville Township has mapped 173 stormwater outfalls, and owns and operates about 45 of the stormwater outfalls which drain into waterways throughout the township. ESRI ArcGIS Pro and Field Maps software was used to collect and map these outfall locations using both in-person GPS collection and construction records to locate these outfalls. **Figure 3** depicts the Robbinsville owned and operated stormwater outfalls across the township, as well as additional outfalls that are included in the dataset for those not owned by the Township. The map also depicts the nine HUC14s within the Township. Private operators are often Homeowners Associations or private businesses.

Robbinsville Township owns 45 stormwater outfalls and inspects at least 20% per year. Outfalls are inspected for dry weather discharges (72 hours after a rain event), intermittent non-stormwater flow, stream scouring, and discoloration or inappropriate debris (such as toilet paper) in and immediately downstream of the outfall. Additional information about the observed outfall conditions and illicit discharge investigations are reported upon in the Robbinsville “Stormwater Outfall Assessment Summary”. Maintenance actions are reported to DPW staff.

Of the 45 municipally owned and operated outfalls, 73.3% discharge to Miry Run, 17.8% discharge to Assunpink Creek, and 8.9% discharge to Back Creek. Some outfalls directly discharge to the main receiving waterbody, however most discharge to associated tributaries, ditches, and wetlands. The majority of outfalls within Robbinsville are not owned and operated by the Township and they discharge to a significantly larger selection of waterbodies. **Figure 2** below shows a breakdown of discharge to waterbodies by percentage of outfalls.

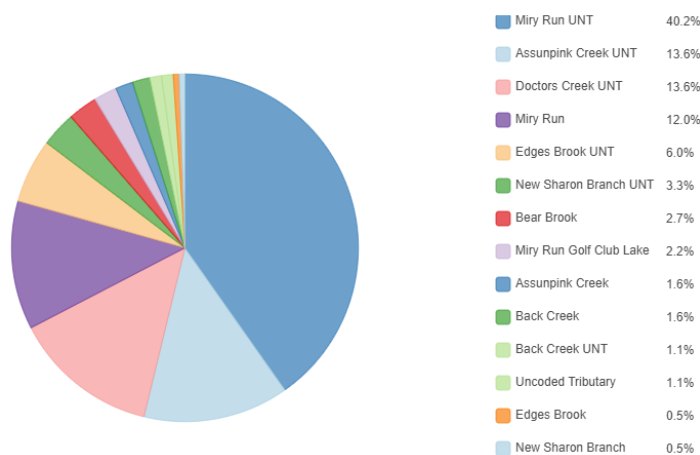


Figure 2: Outfall Discharge to Waterbodies by Percentage

Robbinsville

TOWNSHIP

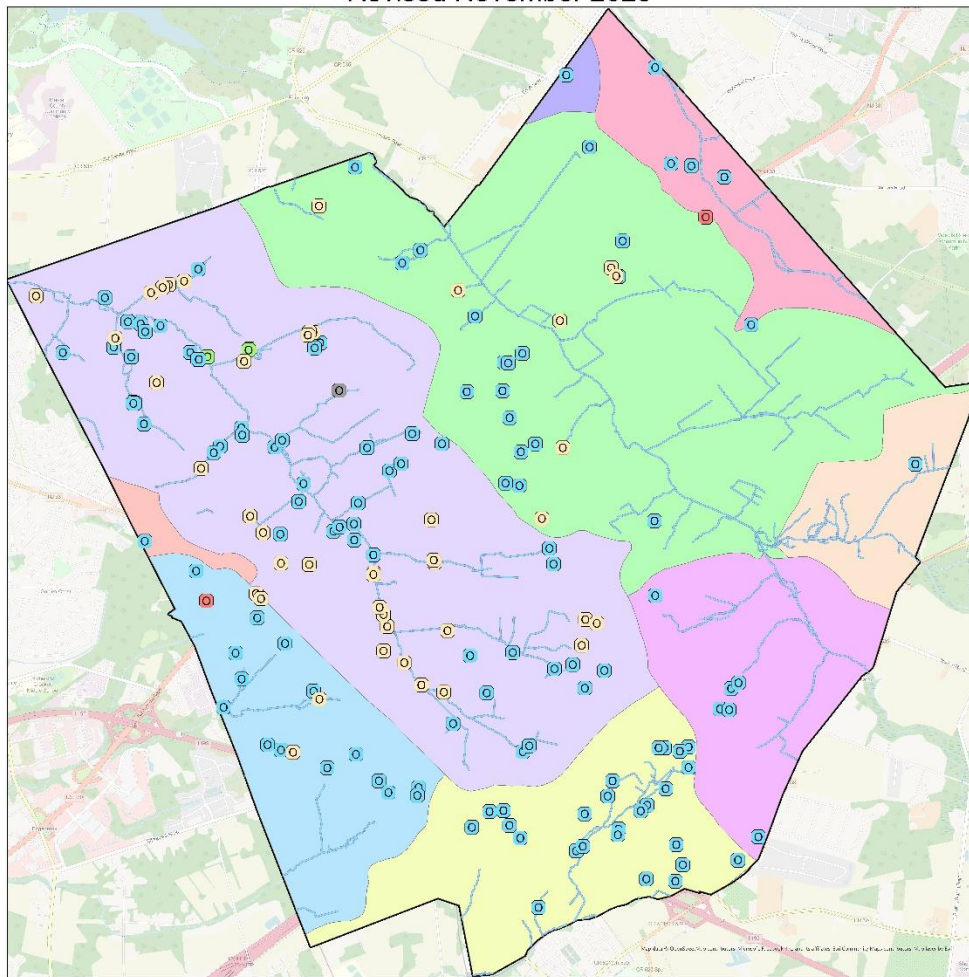
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Stormwater Outfalls

Robbinsville Township

Mercer County, New Jersey

Revised November 2025



0 0.25 0.5 1 1.5 2 Miles

Legend

- | | | | |
|---------------------|--|--|-------------------------------------|
| Stormwater Outfall | HUC14 Watershed | Back Creek (above Yardville-H Sq Road) | Miry Run (Assumpink Cr) |
| (O) Municipality | Assumpink Ck (NewSharonBr to mid Lake) | Bear Brook (above Trenton Road) | New Sharon Branch (Assumpink Creek) |
| (O) Private | Assumpink Ck (Shipetaukin to Trenton Rd) | Doctors Creek (Allentown to 7428m40s) | Pond Run |
| (O) School District | Assumpink Ck (TrentonRd to NewSharonBr) | Doctors Creek (below Allentown) | Surface Waterbody |
| (O) State | | | |
| (O) Unknown | | | |

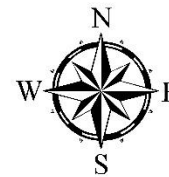


Figure 3: Stormwater Outfalls in Robbinsville

Stormwater Facilities

Robbinsville Township has collected data for municipally and non-municipally owned and operated stormwater facilities that primarily consists of stormwater management basins (detention basins, retention basins, infiltration basins). ESRI ArcGIS Pro and Field Maps software was used to collect and map these basin locations using both in-person GPS collection and construction records. In addition, the Rutgers University H&H database was used to assist in locating privately owned infrastructure. These facilities are shown in **Figure 9** below. Of the 156 mapped stormwater basins, approximately 91% are privately owned, 6.4% are municipally owned, and 2.6% are school district owned. Additionally, there are approximately 18 privately owned subsurface infiltration/detention basins. There were several instances where projects with stormwater facilities not owned/operated by Robbinsville were approved but not constructed; these facilities were not mapped. Facilities known to be part of Public Complex/Highway Agency infrastructure were not mapped. **Figures 4-8** show stormwater facilities categorized by subwatershed and owner type. The final electronic dataset also includes owner and block/lot information collected from Robbinsville tax records.

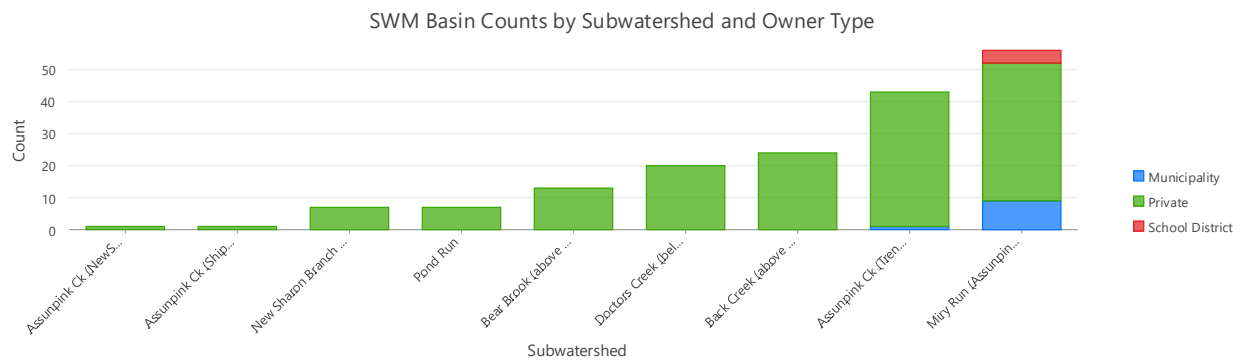


Figure 4: Stormwater Management Basins in Robbinsville per Subwatershed by Owner Type

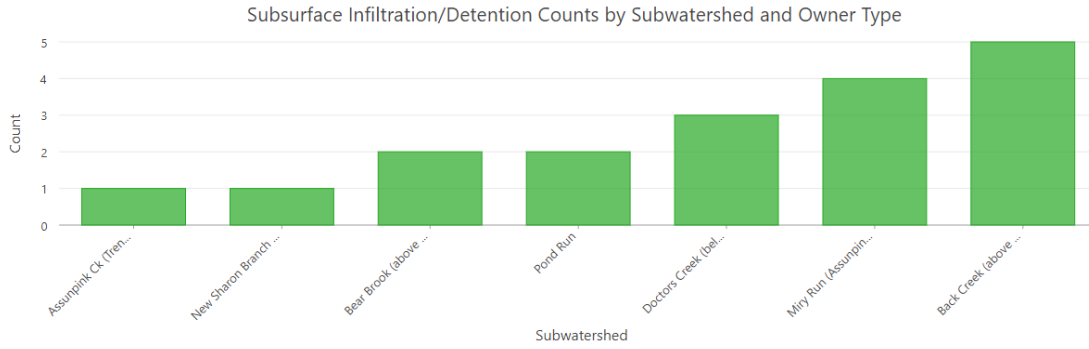


Figure 5: Subsurface Infiltration/Detention Basins in Robbinsville per Subwatershed by Owner Type

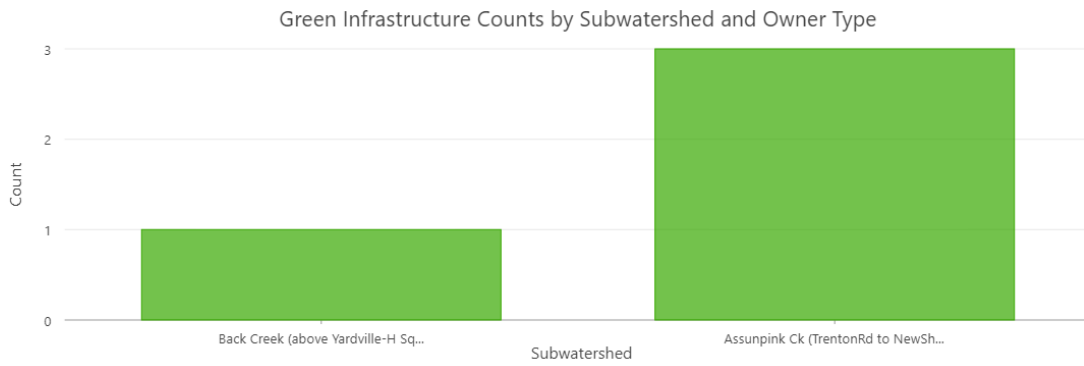


Figure 6: Green Infrastructure in Robbinsville per Subwatershed by Owner Type

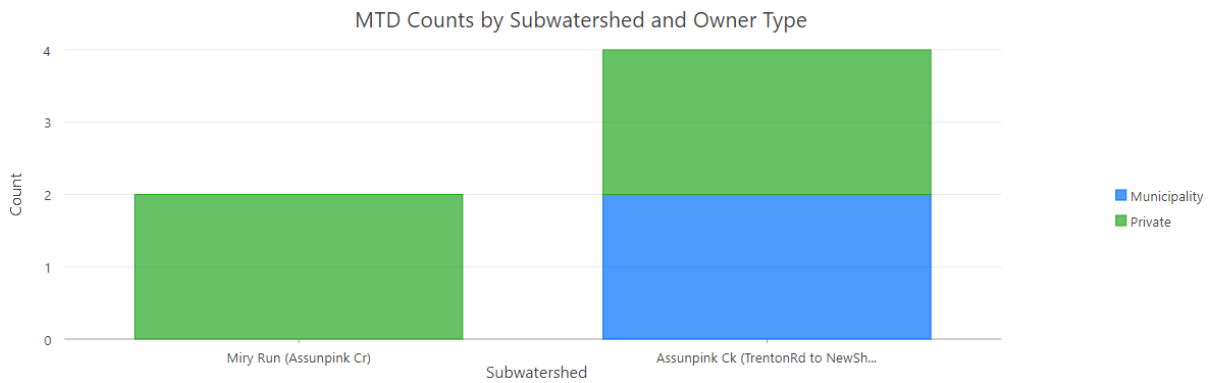


Figure 7: Manufactured Treatment Devices in Robbinsville per Subwatershed by Owner Type

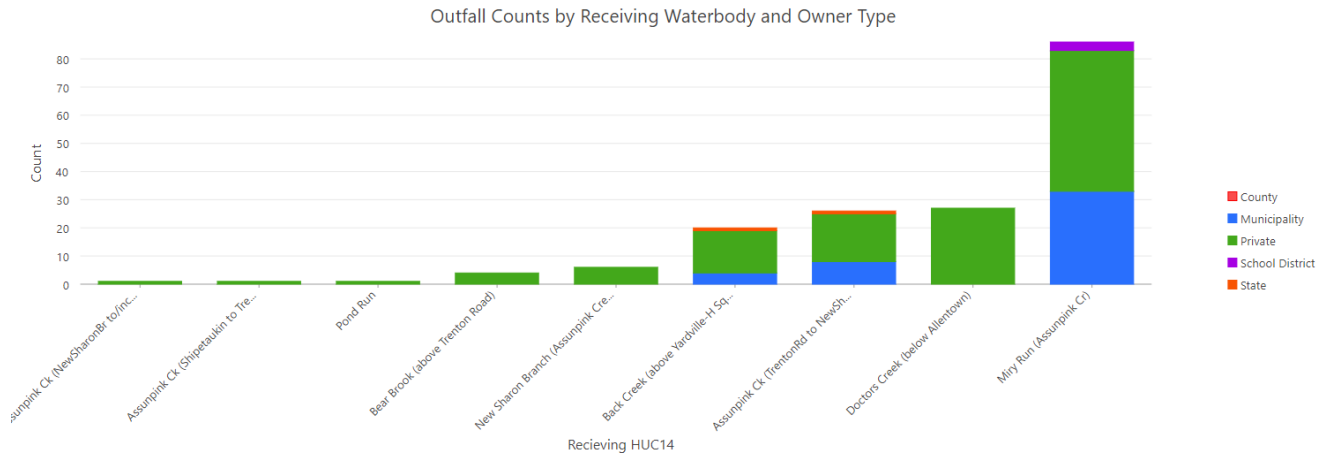


Figure 8: Stormwater Outfalls in Robbinsville per Subwatershed by Owner Type

Robbinsville

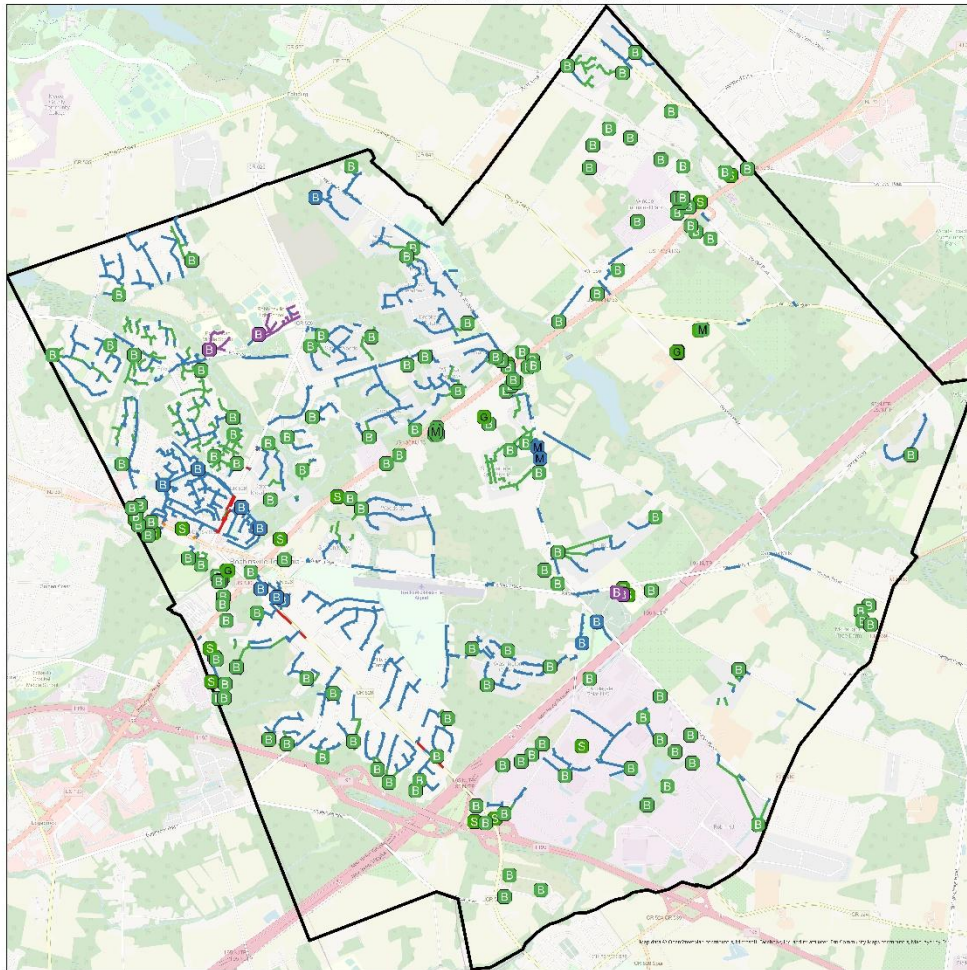
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Stormwater Facilities

Robbinsville Township
Mercer County, New Jersey

Revised November 2025



Legend

- | | | |
|--|--|---|
| <p>Stormwater Conveyance by Type</p> <ul style="list-style-type: none"> County Municipality Private School District State | <p>Subsurface Detention by Type</p> <ul style="list-style-type: none"> Private <p>SWM Basins by Owner Type</p> <ul style="list-style-type: none"> Municipality Private School District | <p>Green Infrastructure by Owner Type</p> <ul style="list-style-type: none"> Private <p>MTDs by Owner Type</p> <ul style="list-style-type: none"> Municipality Private |
|--|--|---|

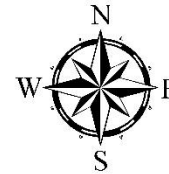


Figure 9: Stormwater Basins in Robbinsville

Stormwater Interconnections

Robbinsville Township contains parts of other MS4 systems including state owned (New Jersey Department of Transportation (NJDOT) and other NJ State property) and county owned (Mercer County) systems. There are also small portions of adjacent municipalities' MS4 systems that drain into or out of Robbinsville (Hamilton, West Windsor). However, most interconnections in Robbinsville are with private entities, mainly Homeowner Associations. This is because the Township typically operates public street systems (inlets, manholes, conveyances) and private parties are responsible for the maintenance of their facilities and outfalls, therefore there is an interconnection point at the handoff from street systems to private facilities. The locations of these stormwater interconnections have been delineated as a series of point locations that mark where one system enters or leaves from another. These points were typically placed at the next downstream infrastructure point (inlet, manhole, basin) though some points are placed on a right of way or property line intersecting a conveyance. All interconnections were mapped using construction records, survey maps, and other historical records. **Figure 10** shows the interconnections in Robbinsville. Of the 118 mapped interconnections in Robbinsville, 92 connections flow from Robbinsville into another system and 24 connections flow into Robbinsville systems. There are several interconnections in which the Township is not an involved party that were not mapped as part of this project.

Robbinsville

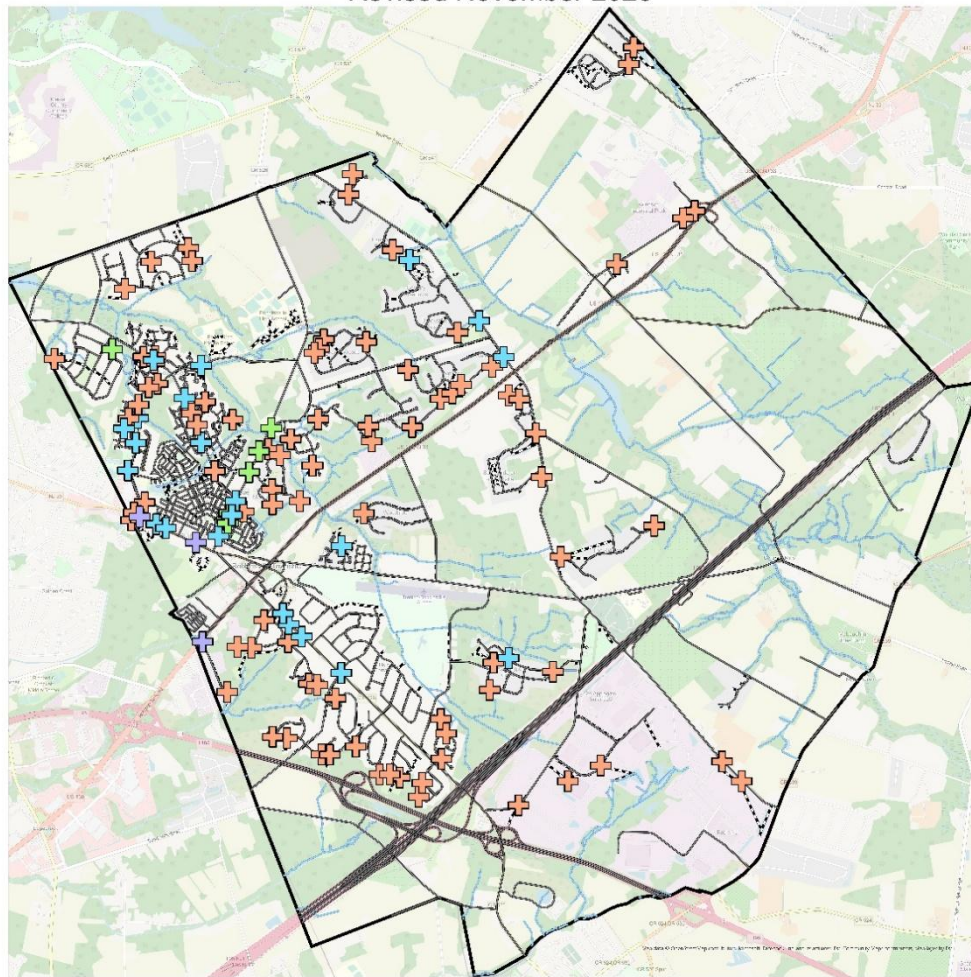
T O W N S H I P

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Stormwater Interconnections

Robbinsville Township
Mercer County, New Jersey

Revised November 2025



0 0.25 0.5 1 1.5 2 Miles

Legend

- Robbinsville_Roads
- - - Stormwater Conveyance
- Surface Waterbody
- Receiving Entity Type
 - County
 - Municipality
 - Private
 - State

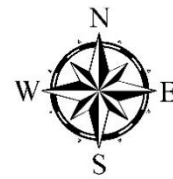


Figure 10: Stormwater Interconnections in Robbinsville

Surface Water Quality Classification

Most of the streams in Robbinsville Township are classified as non-trout freshwaters that are subject to man-made wastewater discharges (FW2-NT). Approximately 73% of surface waters within the township fall under this FW2-NT classification. The remaining portion – approximately 27% - are designated as FW2-NTC1, reflecting higher water quality standards and more stringent protection criteria. **Figure 11** below displays the water quality classification of surface waters throughout the Township. In Robbinsville, 178 (96.7%) outfalls discharge to FW2-NT waters and 6 (3.3%) outfalls discharge to FW2-NTC1 waters.

Robbinsville

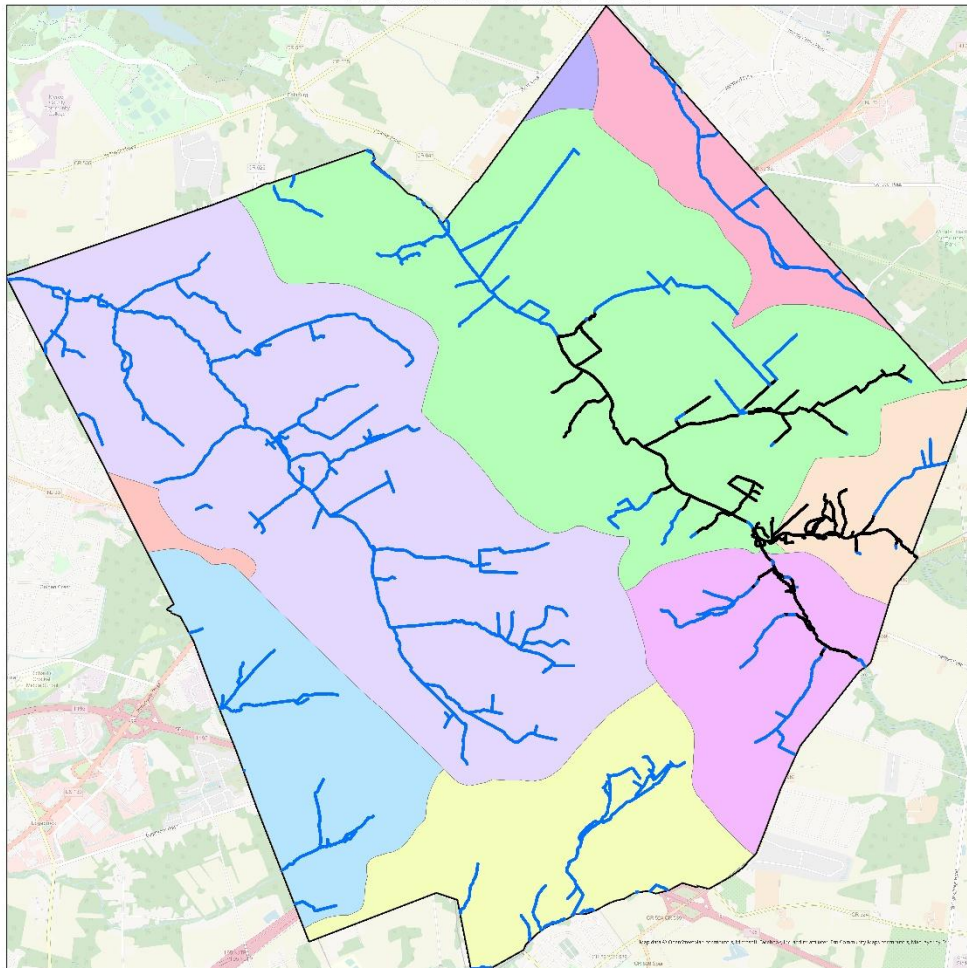
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Surface Water Quality Classifications

Robbinsville Township
Mercer County, New Jersey

Revised November 2025



- | | | | | |
|--|--|--|--|-------------------------------------|
| Water Quality Classification | Assunpink Ck (Shipetaukin to Trenton Rd) | Back Creek (above Yardville-H Sq Road) | Doctors Creek (Allentown to 74d28m40s) | Miry Run (Assunpink Cr) |
| FW2-NT | Assunpink Ck (TrentonRd to NewSharonBr) | Bear Brook (above Trenton Rd) | Doctors Creek (below Allentown) | New Sharon Branch (Assunpink Creek) |
| FW2-NTCL | | | | Pond Run |
| HUC14 Watershed | | | | |
| Assunpink Ck (NewSharonB to/Incl Lake) | | | | |

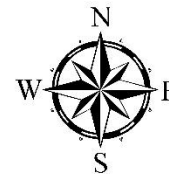


Figure 11: Surface Water Quality Classifications in Robbinsville

Drainage Area Delineations

The Watershed Inventory Report includes a delineation of the drainage areas that are flowing to outfalls as well as upstream of interconnection points. These delineations can identify potential sources for illicit discharges from outfalls, or aid in identifying other issues in the stormwater piping network. Technical assistance in the delineation of drainage areas of stormwater outfalls and interconnections was provided by the Rutgers Cooperative Extension Water Resources Program. The general methodology below was also provided by the Rutgers team.

General Methodology (Provided by Rutgers)

The procedure used to delineate drainage areas for the outfalls and interconnection points considered the township's topography, the stream network, and the pipe network using toolsets in ArcGIS Pro and ArcHydro. This stormwater representation combines surface drainage and connectivity defined by the stormwater infrastructure which redirects the surface drainage. The outfalls and interconnection points represent drainage points for drainage area delineation purposes. Since the datasets mapping the pipe network and these drainage points were established independently of one another, it was important to establish connectivity within the network. Thus, the closest point along a pipe to these drainage points was found. For the interconnections, these points were adjusted where needed to ensure they were placed along the stormwater pipe network. In the case of the outfalls, these points were connected via new lines representing the connection from the stormwater pipe network to the outfalls. The same procedure was then used to establish connectivity between the outfalls and the nearest stream or waterbody.

Once connectivity was established, these networks were used to alter the existing topography by reconditioning the digital elevation model (DEM) to represent this network as an artificial low point in the elevations. The purpose of this is to direct surface flow to the stormwater pipe network and into the streams. Further processing must be employed to generate a hydraulically correct DEM by filling local low points that would otherwise disrupt further hydraulic analysis.

Using this modified DEM, analysis tools constructed rasterized flow direction and flow accumulation data. Ideally, the flow accumulation would coincide with the pipe and stream network. However, the necessary measures for DEM preprocessing and reconditioning introduce

some error to the analysis, so these layers are not entirely in agreement. As the drainage points must be located along the flow accumulation network, the closest point along the flow accumulation line was found for each of the outfalls and the interconnections. Then, a watershed delineation tool was used, which took the flow direction into account along with each of the drainage points to delineate each respective drainage area.

Visual analysis was performed to ensure that the delineated drainage areas were adequate representations of the surface flow into the pipe network that fed into each drainage area. Delineations that were insufficient representations for their associated outfall or interconnection were disassociated with drainage points.

The delineation procedure is not entirely accurate due to assumptions and analysis issues and is ineffective if there is not a well-established pipe network, but it does provide a rough understanding of what the drainage areas sources are for outfalls. Future procedures can be refined to improve the delineation process by incorporating networks and catch basins into the analysis. This effort should be combined with auditing and refining the stormwater pipe network to fill in gaps.

Outfall Results

The watershed delineation tool generated a total of 182 drainage areas, 30 of which required manual review (6 for municipally owned outfalls). The drainage area polygons were also “generalized” for ease of viewing and manual editing, removing excessive vertices. Visual analysis resulted in the deletion or manual adjustment to those drainage areas. Any drainage area deleted from the dataset was due to it being representative of the streamshed rather than what drained to the outfall, and manual adjustment was to ensure the drainage areas were more accurately represented. The 170 unique watersheds displayed in **Figure 12** were deemed to be an appropriate representation of the surface runoff that drained to the pipe network associated with each of these outfalls. The symbology of the Outfall Drainage Area layer is represented by the owner type attribute of the associated outfall.

Interconnection Results

The watershed delineation tool generated a drainage area for each of the 94 stormwater interconnections. Manual adjustments were made to four of these drainage areas. As shown in **Figure 13**, the drainage area symbology is representative of the upstream entity type and interconnection points downstream.

Robbinsville

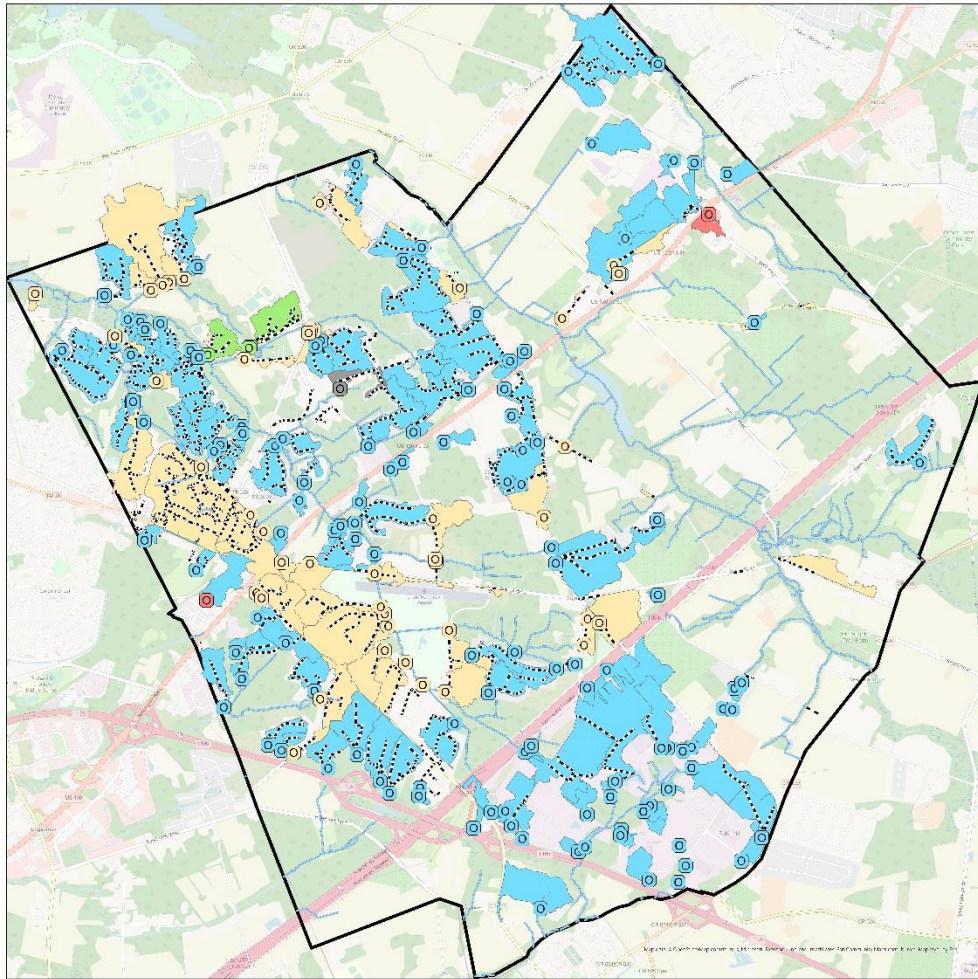
TOWNSHIP

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Stormwater Outfall Watersheds

Robbinsville Township
Mercer County, New Jersey

Revised December 2025



0 0.25 0.5 1 1.5 2 Miles

Legend

- | | |
|---------------------------|-----------------------------|
| Stormwater Outfall | — Surface Waterbody |
| ☐ Municipality | Drainage Area by Owner Type |
| ⊙ Private | ☐ Municipality |
| ⊙ School District | ⊙ Private |
| ⊙ State | ⊙ School District |
| ⊙ Unknown | ⊙ State |
| --- Stormwater Conveyance | ⊙ Unknown |

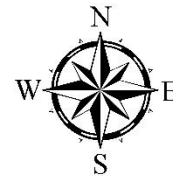
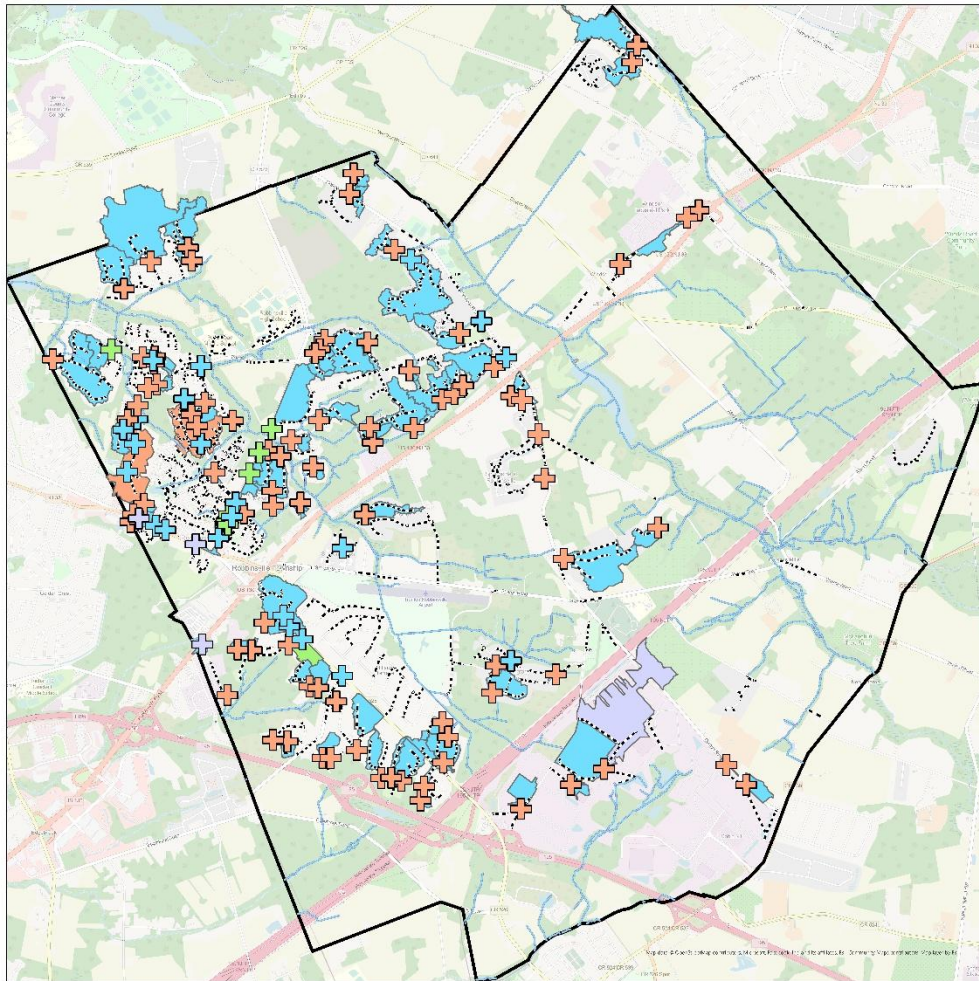


Figure 12: Outfall Watershed Delineations in Robbinsville

Stormwater Interconnection Watersheds

Robbinsville Township
Mercer County, New Jersey

Revised December 2025



Legend

- Stormwater Conveyance
- Surface Waterbody
- Interconnections by Receiving Entity Type
- County
- Municipality
- Private
- State
- Drainage Areas by Contributing Entity Type
- County
- Municipality
- Private
- State

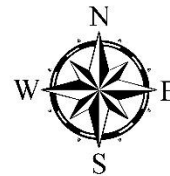


Figure 13: Interconnection Watershed Delineation in Robbinsville

Electronic data required for submission: MS4 Outfall and Interconnection Drainage Area(s)
 The following is an example attribute table detailing, at a minimum, what data is required to be submitted for this feature class.

Drainage Area ID	Drainage Area (sq miles/sqft/acres)	Interconnection or Outfall	Primary Contributing Drainage Area Type
01	0.2565	Outfall 001	Commercial
02	5.2556	Interconnection 001	Industrial
03	95.5356	Outfall 002	Park or Open Space
04	0.5655	Interconnection 002	Residential
05	84.5256	Outfall 003	Mixed Use

TMDLs and Water Quality Impairments

Water Quality Impairments

Section 303(d) of the Clean Water Act requires states to identify and list waters that do not meet water quality standards after the implementation of technology-based controls. These waters are impaired, meaning they do not meet water quality standards designed to protect public health and the environment. If a water body is found to be impaired, it is included in the 303(d) list, and a total maximum daily load (TMDL) may be developed for that impairment. **Table 2** shows all 303(d) TMDLs and Impairments for each HUC14 watershed in Robbinsville. **Figures 14 - 15** show historic TMDLs (Pre-2008) and current TMDLs in Robbinsville respectively. Shapefiles and associated data were extracted from NJDEP Open Data.

Table 2: TMDLs and Impairments for Each Subwatershed Within Robbinsville

Sub-Watershed Name	HUC14 Code	TMDL(s)	Impairment(s)
Assunpink Creek (Shipetaukin to Trenton Road)	02040105230050	Streamsheds: TMDL for Mercury Impairments	Mercury
Assunpink Creek (Trenton Rd. to New Sharon Branch)	02040105230050	Streamsheds: TMDL for Mercury Impairments	Mercury
Assunpink Creek (New Sharon Branch to and Including Lake)	02040105230020	Streamsheds: TMDL for Mercury Impairments	Mercury
New Sharon Branch (Assunpink Creek)	02040105230030	Streamsheds: TMDL for Mercury Impairments	Mercury
Miry Run (Assunpink Creek)	02040105240030	Streamsheds: TMDL for Fecal Coliform, TMDL for Phosphorus	Fecal Coliform, Total Phosphorus
Pond Run	02040105240040	Streamsheds: TMDL for Fecal Coliform	Fecal Coliform
Back Creek (above Yardville-Hamilton Square Road)	02040201070010	Streamsheds: TMDL for PCBs	Polychlorinated Biphenyls (PCBs), Volatile Organic Compounds (VOCs)

Doctors Creek (below Allentown)	02040201060030	Streamsheds: TMDL for Fecal Coliform, TMDL for Phosphorus, TMDL for PCBs	Polychlorinated Biphenyls (PCBs), Volatile Organic Compounds (VOCs), Fecal Coliform, Total Phosphorus
Bear Brook (above Trenton Road)	02030105100120	Streamsheds: TMDL for Phosphorus, TMDL for Total Suspended Solids	Total Phosphorus, Total Suspended Solids

TMDLs

Under Sections 305(b) and 303(d) of the Federal Clean Water Act, New Jersey must regularly evaluate the condition of its surface waters and identify any streams or lakes that do not meet water-quality standards. When a waterbody is found to be impaired, the State may need to develop a Total Maximum Daily Load (TMDL). NJDEP carries out these requirements through its Integrated Water Quality Monitoring and Assessment Report, published every two years. This report includes the Integrated List of Waterbodies, which identifies any waters that require a TMDL. These TMDLs define the maximum amount of a pollutant that the waterbody can receive from both point sources (such as regulated stormwater discharges) and nonpoint sources (such as runoff, wildlife, and natural background) while still meeting water-quality standards. Robbinsville, classified as a Tier A municipality, is treated as a point source. NJDEP provides a TMDL Look-Up Tool that identifies the specific TMDLs that apply to each municipality, including Robbinsville. The tool is available at: <https://www.nj.gov/dep/dwq/msrp-tmdl-rh.htm>. **Table 3** on Page 33 shows the approved TMDLs and year approved for the waterbodies in Robbinsville.

Phosphorous/Total Phosphorous

Phosphorus is a critical nutrient that often limits plant growth in freshwater systems. Total phosphorus, comprising both dissolved and particulate forms, can enter surface waters through stormwater runoff from agricultural lands, urban areas, lawns, roads, leaking septic systems, soil erosion, pet and animal waste, and atmospheric deposition. Elevated phosphorus levels promote excessive algal and aquatic plant growth (eutrophication), which causes significant fluctuations in

pH and dissolved oxygen. These changes can violate water-quality criteria, degrade aquatic habitat, and impair designated uses such as recreation and aquatic life support. High phosphorus concentrations can also trigger harmful algal blooms (HABs) that produce toxins harmful to humans and animals. Additionally, heavy algal loads increase drinking-water treatment needs and may lead to higher concentrations of harmful disinfection byproducts.

Within Robbinsville Township, the Miry Run, Doctors Creek, and Bear Brook subwatersheds have had streamshed TMDLs developed for total phosphorous impairments. These streamsheds are susceptible to phosphorus loading, particularly from urban stormwater runoff associated with dense residential areas, roadway networks, and landscaped surfaces. Municipal strategies to help reduce loading include ordinances for pet waste, wildlife feeding, waste disposal, as well as infrastructure inspections and other public works programs.

Fecal Coliform

The Miry Run, Pond Run, and Doctors Creek subwatersheds have been identified as having impairments due to fecal coliform and subsequent TMDLs have been developed and approved to address them. The TMDL document has identified the fecal coliform as attributed to non-point sources and stormwater runoff. For example, common sources are farmland, animal waste, and failing septic/sewer systems. There are no publicly owned treatment plants in Robbinsville, though those contribute a negligible portion. Additionally, Robbinsville does not own or operate any combined sewers. The TMDL sets targets based on New Jersey water-quality criteria: a geometric mean of 200 CFU/100 ml, and no more than 10% of samples above 400 CFU/100 ml (in FW2 waters). Municipal strategies to help reduce loading include ordinances for pet waste, wildlife feeding, waste disposal, as well as infrastructure inspections and other public works programs.

Pathogens, including enterococcus, E. Coli, fecal coliform, and total coliform, enter the receiving waters when stormwater comes into contact with sources of these pathogens, such as pet waste, animal waste from geese and other wildlife, some farming activities, illicit discharges, failing sewage conveyance systems and septic systems, combined sewage overflows, and sanitary sewer overflows (SSOs). While sewage treatment plants contribute a steady input of treated sewage to their receiving waters, stormwater runoff is the primary contributor to pathogen loads in the surface waters of the state. Many of these pathogens affect the designated uses of the receiving waters and are harmful to human or animal health when ingested causing intestinal disease. Pathogens can

attack the immune system and cause infections that may result in abdominal issues, respiratory problems, fever, headache, skin rashes, etc. (Water Quality Topics: Pathogens | US EPA).

Polychlorinated Biphenyls (PCBs)

The term ‘PCBs’ (Polychlorinated Biphenyls) represents a broad class of toxic industrial chemicals first discovered and synthesized in the late 19th century. Some products may continue to contain PCBs, including electrical equipment, motor and hydraulic oils, oil-based paint, and some plastics. The recognition of PCB associated health hazards were first noted in the 1960’s and their production finally banned in 1979. PCBs can accumulate in the leaves and above-ground parts of plants and food crops. They are also taken up into the bodies of small organisms and fish. As a result, people who ingest fish may be exposed to PCBs that have bioaccumulated in the fish they are ingesting.

PCBs are easily carried away as TSS by stormwater runoff from products containing the compounds which are exposed to stormwater and known and unknown contaminated areas. PCBs have a moderate level of volatility, which means that their vapors are also readily carried aloft by the wind. They are then deposited on exposed surfaces via air deposition. The most prominent source of PCBs are industrial sites, brownfields, and superfund sites.

The Delaware River Basin Commission (DRBC) prepared a TMDL for polychlorinated biphenyls (PCBs) for water quality management zones 2-5 of the Tidal Delaware River, due to findings of PCBs in fish tissue in the Delaware River. Robbinsville is in water quality management zone 2 as it exists in the TMDL document. More specifically, Back Creek and Doctors Creek are streamsheds in Robbinsville identified as having PCB impairments. The calculated wasteload allocation for the MS4s in zone 2 is 1.511 mg/day for penta-PCBs and 6.044 mg/day for total PCBs. Municipal strategies to help reduce PCB loading include waste disposal ordinances and infrastructure inspections focused on eliminating illicit discharges, and other public works programs.

Total Suspended Solids (TSS)

Stormwater runoff can pick up particulates, also known as Total Suspended Solids (TSS), from the land surface and carry the particulates into the receiving waterbodies. TSS is one of the most

common pollutants found in stormwater runoff. TSS originates from many sources including areas such as roadways, parking lots and developments, erosion of pervious surfaces such as construction sites and dust, litter and other particles deposited on impervious surfaces from human activities. TSS can be made up of particles from pavement (from wear), vehicle exhaust emissions, vehicle parts, building and construction material, road salt, road paint, pedestrian debris, soil material, plant and leaf litter, and may contain heavy metals as well as atmospheric deposition of particles that may be transported from outside of the municipality (Hopke et al., 1980; Taylor and Owens, 2009; Total Suspended Solids (TSS) in stormwater - Minnesota Stormwater Manual (state.mn.us)).

High concentrations of TSS in the receiving waters can cause problems and negatively impact multiple designated uses, including those related to human health and aquatic life. Excessive TSS can bury benthic organisms and affect the viability of organisms that reside in the water column. These materials can easily become suspended due to stormwater runoff, erosion, and resuspension from seasonal water flow. TSS can impact not only aquatic organisms but drinking water as well. Organic TSS, such as decomposing matter or sewage effluent from illicit connections and/or SSOs include high levels of microorganisms such as protozoa, bacteria, and viruses. Such pathogens contribute to waterborne diseases like cryptosporidiosis, cholera, and giardiasis. Turbid water, whether due to organic or inorganic material, cannot be easily disinfected at potable water treatment facilities, as the suspended particles will “hide” these microorganisms. Turbidity may also reduce visibility of underwater structures such as logs or large boulders, negatively affecting a water body’s recreational use.

The Bear Brook subwatershed has been identified as having a TSS impairment, and has been included as part of a larger TMDL developed for watersheds of the Raritan River Basin. The TMDL calls for the existing 55,961 kg/day total loading capacity (for the entire Millstone watershed) to be reduced to 35,707 kg/day, a reduction of 36.2%. The TMDL considers Robbinsville a point source for stormwater discharges (no WWTPs or CSOs). Stormwater point sources, like nonpoint sources, derive their pollutant load from runoff from land surfaces and load reduction is accomplished through best management practices (BMPs). Municipal strategies to help reduce loading include municipal ordinances for pet waste, wildlife feeding, waste disposal, as well as infrastructure inspections and other public works programs.

Volatile Organic Compound (VOCs)

Volatile Organic Compounds (VOCs) is the name given to a large group of chemical compounds that vaporize into the air and can dissolve into the water from certain solids or liquids at varying rates. VOCs are released or “off-gassed” into the air by many products that are used to build and maintain motor vehicles and houses, such as paints, glues, caulk, solvents, fuels and other vehicle fluids, cleansers and disinfectants, aerosol sprays, pesticides, and wood preservatives. Common examples of VOCs are benzene, ethylene glycol, formaldehyde, methylene chloride, tetrachloroethylene, toluene, xylene, and 1,3- butadiene. While many VOCs can cause adverse effects on aquatic life, there are also several adverse human health risks associated with encountering VOCs, including worsening asthma symptoms, cancer, liver and kidney damage, and central nervous system damage.

Stormwater can come in contact with VOCs from vehicle surfaces, roads, parking lots, driveways, and litter or other wastes. Once these improperly disposed materials containing VOCs encounter stormwater runoff, they are discharged to the surface and ground waters of the state which are in turn used for drinking water supplies and the protection and propagation of aquatic life.

There have been no approved TMDLs for VOCs approved for streamsheds in Robbinsville. The Back Creek and Doctors Creek subwatersheds have been identified as having VOC impairments. Municipal strategies to help reduce loading include waste disposal ordinances as well as infrastructure inspections and other public works programs.

Mercury

Mercury is identified by NJDEP as a pollutant of concern in streamsheds because it can enter surface waters through atmospheric deposition, stormwater runoff, and the mobilization of contaminated soils and sediments. Once deposited in a watershed, mercury can be converted to methylmercury, a toxic form that bioaccumulates in fish and other aquatic organisms, leading to fish consumption advisories and water-quality impairments under Section 303(d) of the Clean Water Act. Even low concentrations of mercury in the water column can result in elevated levels in fish tissue due to this bioaccumulation process. Mercury also persists in stream sediments, which can act as long-term sources of impairment when disturbed by storm events, erosion, or land-disturbance activities. For Robbinsville Township, any portion of the municipality that drains into

a waterbody identified as impaired for mercury is subject to NJDEP’s TMDL framework, which focuses on reducing pollutant loadings from both point and nonpoint sources.

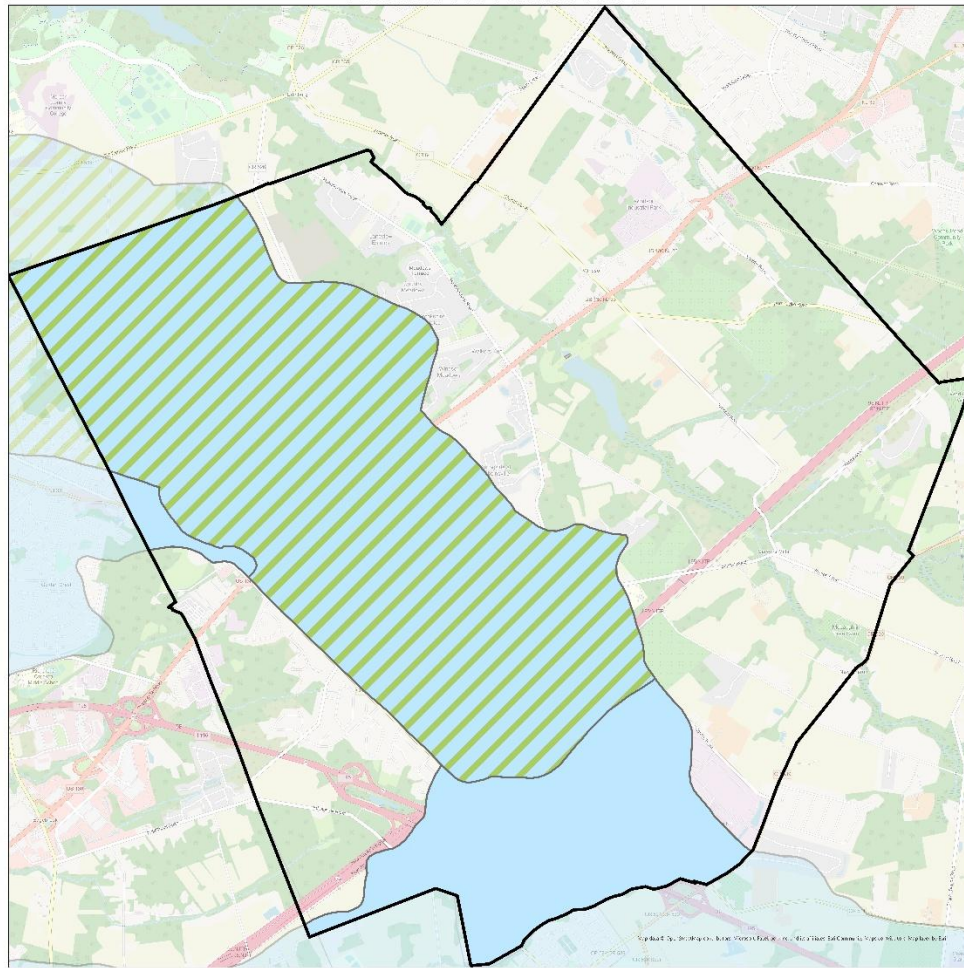
Table 3: Approved for Each Subwatershed Within Robbinsville

Sub-Watershed Name	TMDL(s)	Date(s)
Assunpink Creek (Shipetaukin to Trenton Road)	Streamsheds: TMDL for Mercury Impairments	2017
Assunpink Creek (Trenton Rd. to New Sharon Branch)	Streamsheds: TMDL for Mercury Impairments	2011
Assunpink Creek (New Sharon Branch to and Including Lake)	Streamsheds: TMDL for Mercury Impairments	2011
New Sharon Branch (Assunpink Creek)	Streamsheds: TMDL for Mercury Impairments	2011
Miry Run (Assunpink Creek)	Streamsheds: TMDL for Fecal Coliform, TMDL for Phosphorus	2003, 2007
Pond Run	Streamsheds: TMDL for Fecal Coliform	2003
Back Creek (above Yardville-Hamilton Square Road)	Streamsheds: TMDL for PCBs	2003
Doctors Creek (below Allentown)	Streamsheds: TMDL for Fecal Coliform, TMDL for Phosphorus, TMDL for PCBs	2003, 2007, 2003
Bear Brook (above Trenton Road)	Streamsheds: TMDL for Phosphorus, TMDL for Total Suspended Solids	2016, 2016

Historic Total Maximum Daily Loads (Pre-2008)

Robbinsville Township
Mercer County, New Jersey

Revised November 2025



0 0.25 0.5 1 1.5 2 Miles

- Legend**
- Total Maximum Daily Loads Historic (Pre 2008)
 - Fecal Coliform
 - Total Phosphorus

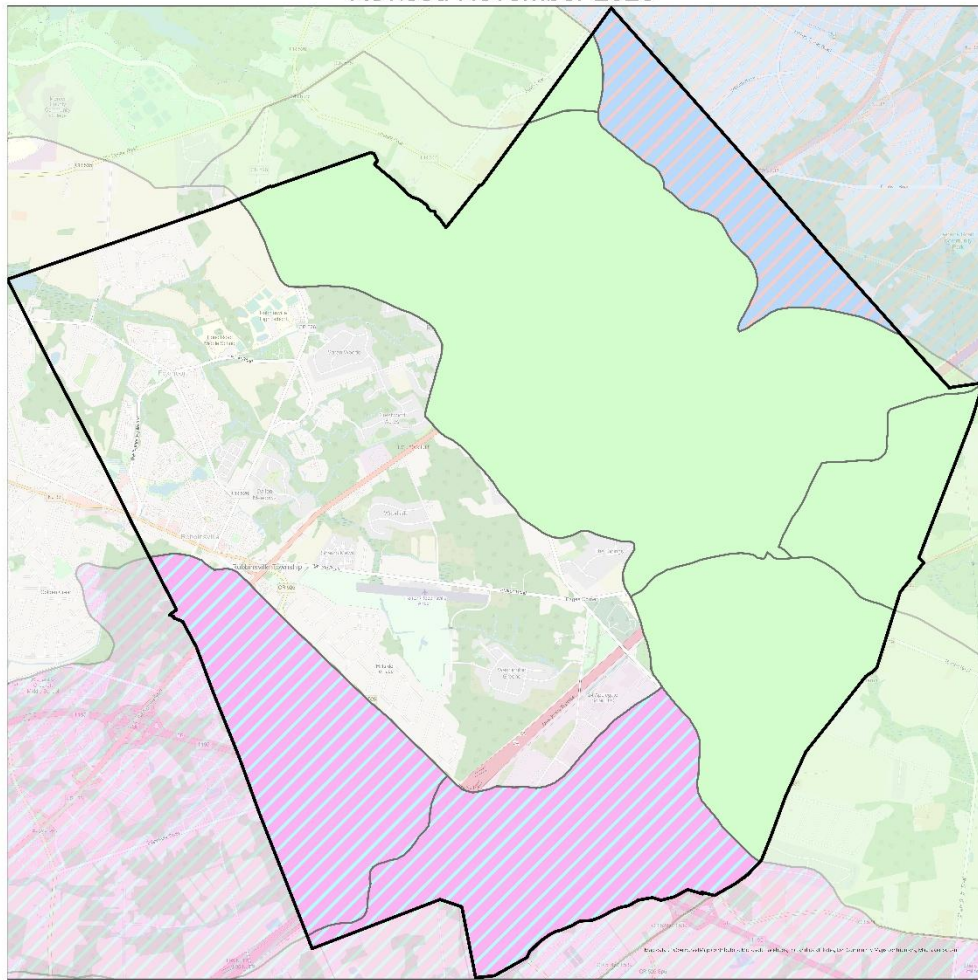


Figure 14: Pre-2008 TMDLs in Robbinsville

Total Maximum Daily Loads (Post-2008)

Robbinsville Township
 Mercer County, New Jersey

Revised November 2025



Legend

- Total Maximum Daily Loads
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Total Phosphorus
- Total Suspended Solids
- Volatile Organic Compounds (VOCs)

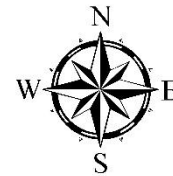


Figure 15: TMDLs in Robbinsville

Overburdened Communities

Overburdened communities with limited financial resources have a reduced capacity to invest in effective stormwater management systems, making them more vulnerable to flooding and related impacts. Flooding in these areas can also exacerbate existing public health challenges, as residents in overburdened communities are often already more susceptible to health disparities. This analysis uses data extracted from the NJDEP's GIS Open Data source, and the sections of Robbinsville identified as overburdened communities are illustrated in **Figure 16** below.

Robbinsville

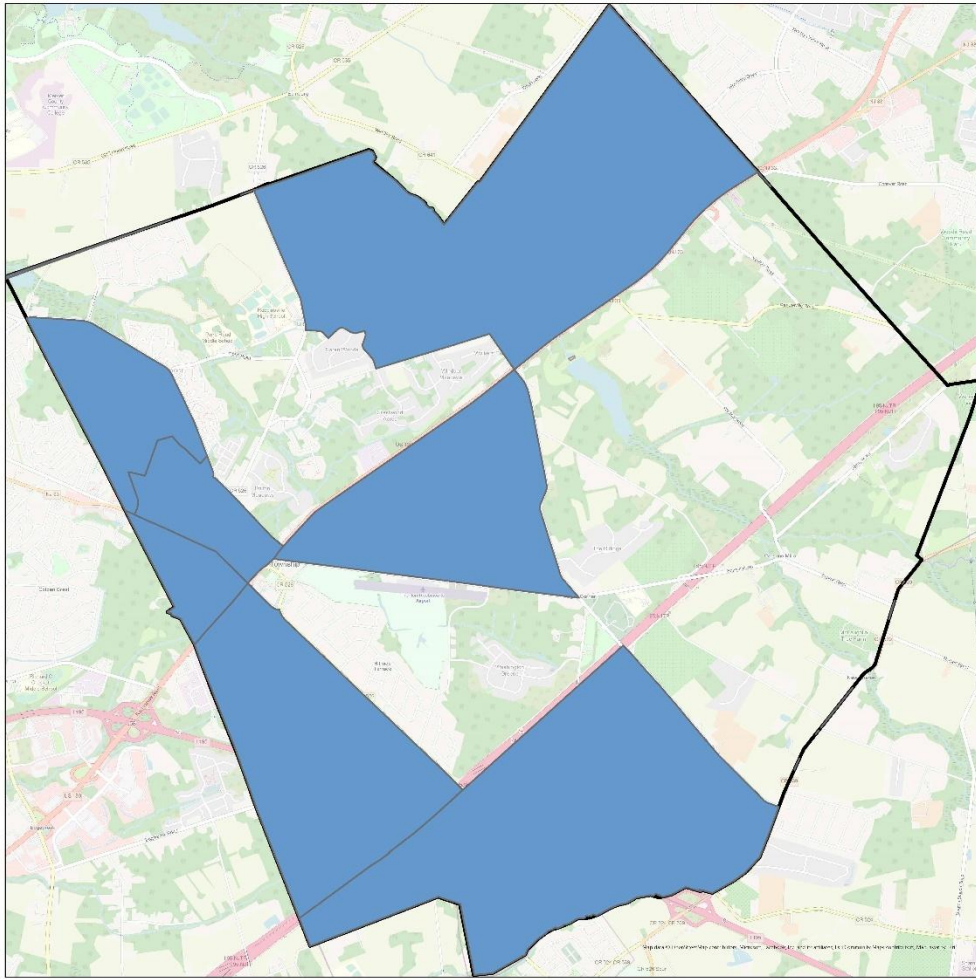
T O W N S H I P

BE AT THE CENTER OF IT ALL

Overburdened Communities

Robbinsville Township
Mercer County, New Jersey

Revised November 2025



Legend
Overburdened Communities

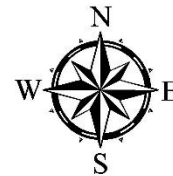


Figure 16: Overburdened Communities in Robbinsville

Impervious Cover

Per the NJDEP’s Open Data impervious surface GIS layer, areas within Robbinsville Township that are covered by materials resistant to water infiltration—such as pavement, concrete, and rooftops—have been identified as impervious surfaces. This data was used to estimate the overall impervious coverage for Robbinsville Township. Based on the NJDEP impervious surface dataset, Robbinsville Township has an estimated impervious cover of 16.43%, or 2,163 acres. The extent of impervious cover in Robbinsville, using the most recent data, is shown in **Figure 17**.

The Watershed Institute (TWI), a nonprofit organization in New Jersey, has conducted a series of Impervious Cover Assessment and Reduction Action Plans (ICA/RAPs) for municipalities across central New Jersey to better understand how impervious cover affects watershed health. Their studies, among others, show that as impervious cover increases, so do flooding, stormwater runoff, and ecological degradation. For example, TWI’s assessment of Robbinsville found that about 11.38% of the land area is impervious, a level above the commonly cited 10% threshold where streams begin to experience measurable ecological stress. In nearby Montgomery Township, impervious surfaces have increased by more than 30% since the 1990s, leading to a significant rise in stormwater runoff volumes and localized flooding. TWI estimated that Montgomery generates approximately 2.1 billion gallons of stormwater runoff annually from impervious surfaces alone.

These findings demonstrate that impervious cover prevents natural infiltration, reducing groundwater recharge and routing pollutants such as nutrients, oils, and sediments directly into waterways. As infiltration decreases, streams lose their natural ability to filter contaminants, regulate temperature, and sustain aquatic life. TWI highlights that these hydrological changes result in degraded water quality, increased stream erosion, and loss of biodiversity. Watersheds with more than 25% impervious cover often experience severe degradation, making restoration efforts increasingly difficult.

Robbinsville

TOWNSHIP

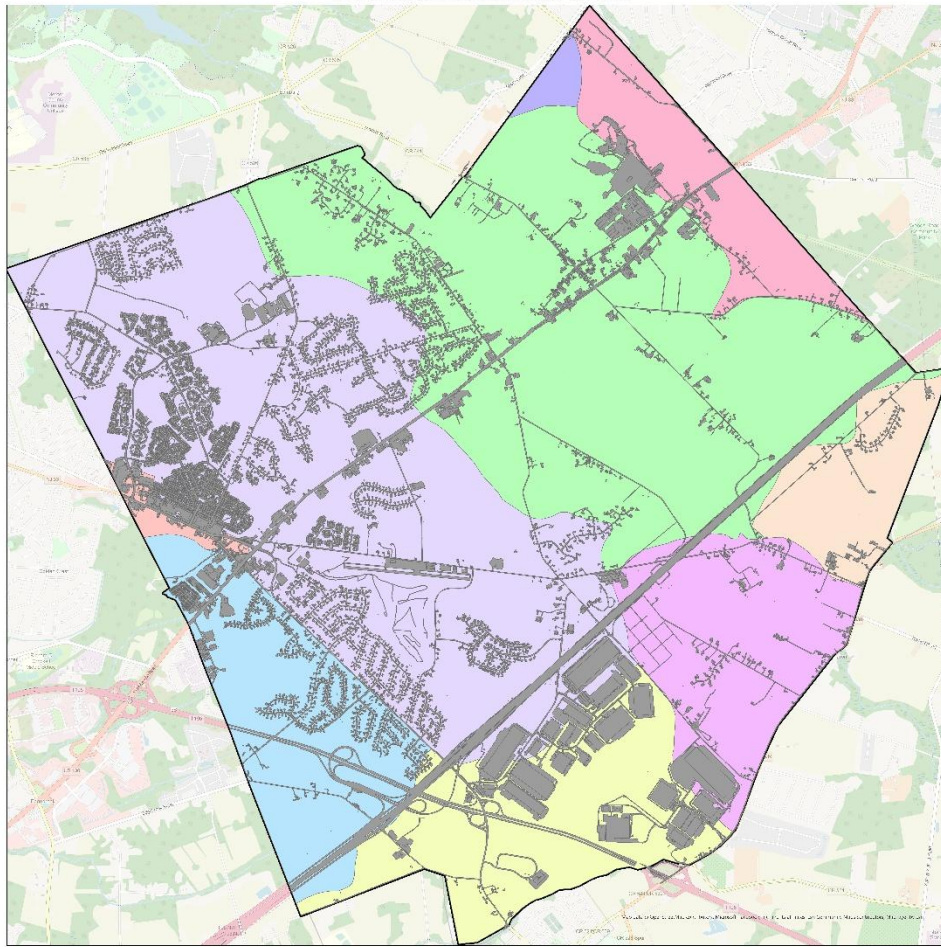
BE AT THE CENTER OF IT ALL

Impervious Cover

Robbinsville Township

Mercer County, New Jersey

Revised November 2025



Legend		
HUC14 Watershed	Back Creek (above Yardville-H Sq Road)	Miry Run (Assumpink Cr)
Assumpink Ck (NewSharonBr to/Incl Lakc)	Bear Brook (above Trenton Road)	New Sharon Branch (Assumpink Creek)
Assumpink Ck (Shipetaukin to Trenton Rd)	Doctors Creek (Allentown to 74d28m40s)	Pond Run
Assumpink Ck (TrentonRd to NewSharonBr)	Doctors Creek (below Allentown)	Impervious Surface



Figure 17: Impervious Cover in Robbinsville

Conclusion

The Watershed Inventory Report, completed as Phase 1 of the Watershed Improvement Plan, provides a comprehensive overview of Robbinsville Township's stormwater infrastructure, as required under the MS4 permit program. The report compiles and summarizes key water quality information, including stream classifications, Total Maximum Daily Loads (TMDLs), and known water quality impairments. All collected data have been integrated into a GIS-based digital map and submitted to the New Jersey Department of Environmental Protection.

This digital map serves as both a record and a planning tool, allowing for detailed analysis of the township's stormwater systems and water quality conditions beyond what static maps can show. The information gathered in this phase will directly inform the development of the Watershed Assessment Report (Phase 2), which will identify areas of concern and potential locations for water quality improvement projects. Ultimately, the Watershed Inventory Report establishes the baseline data needed to guide future actions aimed at improving water quality and managing stormwater more effectively within the township.

An interactive digital version of the maps in this section, as well as others in this report will be made available for public viewing on the Robbinsville Stormwater Page found at https://www.robbinsville-twp.org/departments/engineering/stormwater_management.php . All layers used in this report and the MS4 infrastructure map will be toggleable for the public to configure these maps to their needs. In addition, a PDF of this report will be uploaded to the Stormwater Page for public viewing.

References

Data Sources

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