Watershed Inventory Report

Phase 1 of the Watershed Improvement Plan

TOWNSHIP OF MILLSTONE

MONMOUTH COUNTY

Date Approved: 02/25/2026

Permit Number: NJG0153532

Stormwater Program Coordinator: Samuel J. Avakian, P.E., P.L.S., P.P.

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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

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. (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

The Township of Millstone's Watershed Inventory Report has been prepared by:

LEON S. AVAKIAN INC.
CONSULTING ENGINEERS

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Neptune, New Jersey 07753
(732) 922-9229

Regional Collaboration

No regional collaboration occurred during the preparation of this report.

Introduction

Location

The Township of Millstone is located in Monmouth County, New Jersey. The Township's address is:

470 Stage Coach Road
Millstone Township, NJ 08510
(732) 446-4249

Population

As per the 2020 US census, the population of Millstone Township was 10,376.

Demographics

As per the 2020 US census, the median age of Millstone Township residents was 45.6 years. Out of the 10,376 people in Millstone Township, 8,328 (80.3%) identified as White, 423 (4.1%) as Black or African American, 21 (0.2%) as American Indian and/or Alaska Native, 633 (6.1%) as Asian, 1 (<0.1%) as Native Hawaiian and Other Pacific Islander, 193 (1.9%) as Some Other Race, and 777 (7.5%) as Two or More Races. 844 (8.1%) of the population identified as Hispanic or Latino (of any race).

Out of a total of 3,324 households in Millstone Township, 2,492 (75.0%) reported as married couples, 123 (3.7%) as cohabiting couples, 320 (9.6%) as a male householder without spouse or partner, and 389 (11.7%) as a female householder without spouse or partner. 1,220 (36.7%) of households reported with individuals under 18 years old and 1,057 (31.8%) households reported with individuals 65 years or older.

Out of a total of 3,428 housing units in Millstone Township, 3,324 (97.0%) of units were occupied and 104 (3.0%) were vacant.

Land Use Type(s)

As per the 2020 NJ Land Use/Land Cover data, Millstone Township contains a diverse array of land classifications. Although moderately developed with urban land, the Township maintains a large amount of agricultural space as well. Forest and wetlands surround the many waterways passing through the Township. Some barren land exists in small, scattered patches.

Subwatersheds within or bordering Millstone Township

There are fifteen (15) subwatersheds within or bordering Millstone Township:

- Toms River (above Francis Mills) (HUC 02040301060010);
- Rocky Brook (below Monmouth County line) (HUC 02030105100050);

- Rocky Brook (above Monmouth County line) (HUC 02030105100040);
- Millstone River (above Route 33) (HUC 02030105100010);
- Millstone River (Applegarth Road to Route 33) (HUC 02030105100020);
- Metedeconk River SB (above I-195 exit 21 Road) (HUC 02040301030010);
- Metedeconk River NB (above I-195) (HUC 02040301020010);
- Manalapan Brook (above 40d16m15s) (HUC 02030105140010);
- Manalapan Brook (includes Lake Manalapan to 40d16m15s) (HUC 02030105140020);
- Lahaway Creek (above Prospertown) (HUC 02040201050010);
- Doctors Creek (Allentown to 74d28m40s) (HUC 02040201060020);
- Doctors Creek (above 74d28m40s) (HUC 02040201060010);
- Cranbury Brook (above NJ Turnpike) (HUC 02030105100070);
- Assunpink Creek (New Sharon Bridge to/including Lake) (HUC 02040105230020); and
- Assunpink Creek (above Assunpink Lake) (HUC 02040105230010).

Area(s) Prone to Flooding

Millstone Township is interspersed with many creeks, streams, brooks, tributaries, and lakes as seen from the large amount of subwatersheds within or bordering the Township. As a result, properties near any of these waterways are most at risk for flooding during high precipitation events.

Goals for the Watershed Improvement Plan

The goals of Millstone Township in developing the Watershed Improvement Plan are as follows:

- Involve the community with the decision-making process of this plan via public meetings and stakeholder engagement;
- Reduce flood damage, including damage to life and property;
- Minimize, to the extent practical, any increase in stormwater runoff from any new development;
- Reduce soil erosion from any development or construction project;
- Assure the adequacy of existing and proposed culverts and bridges, and other in-stream structures;
- Maintain groundwater recharge;
- Prevent, to the greatest extent feasible, an increase in nonpoint pollution;
- Maintain the integrity of stream channels for their biological functions, as well as for drainage;
- Minimize pollutants in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial, and other uses of water; and
- Protect public safety through the proper design and operation of stormwater basins.

Public Participation

Semiannual meetings pertaining to the Watershed Improvement Plan will be held starting in early 2026. The first meeting will discuss the contents of this report, future phases of the Watershed Improvement Plan, and begin to assemble a list of stakeholders. All Watershed Improvement Plan information, including upcoming meeting dates & times (once scheduled), can be found on the Township's stormwater management webpage:

https://millstonenj.gov/stormwater-management/

Stormwater Outfall(s)

Stormwater Outfalls Owned/Operated by Millstone Township

Stormwater outfall and receiving surface water data relevant to the Township were obtained through ArcGIS. A field crew systematically inspected all listed outfalls within the Township and recorded the required attributes on ArcGIS Field Maps. All of this data was obtained throughout 2024 and is publicly available via the infrastructure map on the Township stormwater webpage.

The Township of Millstone has 234 outfalls.

Out of the 234 outfalls in the Township, 28 (11.97%) discharge to the Toms River (above Francis Mills) subwatershed, 2 (0.85%) discharge to the Rocky Brook (below Monmouth County line) subwatershed, 30 (12.82%) discharge to the Rocky Brook (above Monmouth County line) subwatershed, 47 (20.09%) discharge to the Millstone River (above Route 33) subwatershed, 24 (10.26%) discharge to the Millstone River (Applegarth Road to Route 33) subwatershed, 29 (12.39%) discharge to the Manalapan Brook (above 40d16m15s) subwatershed, 13 (5.56%) discharge to the Lahaway Creek (above Prospertown) subwatershed, 25 (10.68%) discharge to the Doctors Creek (above 74d28m40s) subwatershed, 6 (2.56%) discharge to the Cranbury Brook (above NJ Turnpike) subwatershed, 6 (2.56%) discharge to the Assunpink Creek (New Sharon Bridge to/including Lake) subwatershed, and 24 (10.26%) discharge to the Assunpink Creek (above Assunpink Lake) subwatershed. No outfalls (0%) in the Township discharge to the Metedeconk River SB (above I-195 exit 21 Road), Metedeconk River NB (above I-195), Manalapan Brook (includes Lake Manalapan to 40d16m15s), or Doctors Creek (Allentown to 74d28m40s) subwatersheds.

Receiving Surface Waters

Receiving surface waters within the Township were obtained through the NJDEP's NJ-WET GIS service. This data was obtained in February 2025 and is publicly available.

The following surface waters are within the Township of Millstone:

- Assunpink Lake
- Bulks Lake
- Perrineville Lake
- Rising Sun Lake
- Red Valley Lake
- Assunpink Creek
- Bentley Brook
- Cranbury Brook
- Doctors Creek

- Ivanhoe Brook
- Lahaway Creek
- Manalapan Brook
- Millstone River
- North Branch Metedeconk River
- Rocky Brook
- Toms River

Additionally, many unnamed ponds and tributaries can be found throughout the Township.

Out of the 234 outfalls in the Township, 29 (12.39%) discharge to Assunpink Creek, 1 (0.43%) discharges to Assunpink Lake, 23 (9.83%) discharge to Bentley Brook, 5 (2.14%) discharge to Cranbury Brook, 25 (10.68%) discharge to Doctors Creek, 12 (5.13%) discharge to Ivanhoe Brook, 1 (0.43%) discharges to Lahaway Creek, 29 (12.39%) discharge to Manalapan Brook, 48 (20.51%) discharge to Millstone River, 33 (14.10%) discharge to Rocky Brook, and 28 (11.97%) discharge to Toms River. No outfalls (0%) in the Township discharge to Bulks Lake, Perrineville Lake, Rising Sun Lake, Red Valley Lake, or North Branch Metedeconk River.

Water Quality Classifications

Water quality classifications of receiving surface waters within the Township were obtained through the NJDEP's NJ-WET GIS service. This data was obtained in February 2025 and is publicly available.

All surface waters in the Township have a water quality classification of FW2-NT. A portion of Assunpink Creek and Assunpink Lake within the Township are Category 1 (C1) waterbodies, classified as FW2-NTC1. The entirety of the small portion of North Branch Metedeconk River within the Township is a C1 waterbody, classified as FW2-NTC1.

Out of the 234 outfalls in the Township, 232 (99.15%) discharge to FW2-NT surface waters and 2 (0.85%) discharge to FW2-NTC1 surface waters.

Table 1: Receiving Surface Water Bodies & Water Quality Classifications

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
BB-20.01-7.1	Assunpink Creek	FW2-NT
CDT-13-11	Assunpink Creek	FW2-NT
CDT-13-13	Assunpink Creek	FW2-NT
CDT-13-14	Assunpink Creek	FW2-NT
CDT-13-15	Assunpink Creek	FW2-NT
CDT-13-16	Assunpink Creek	FW2-NT
CDT-13-17	Assunpink Creek	FW2-NT
CDT-13-2	Assunpink Creek	FW2-NT
CDT-13-3	Assunpink Creek	FW2-NT
CDT-13-4	Assunpink Creek	FW2-NT

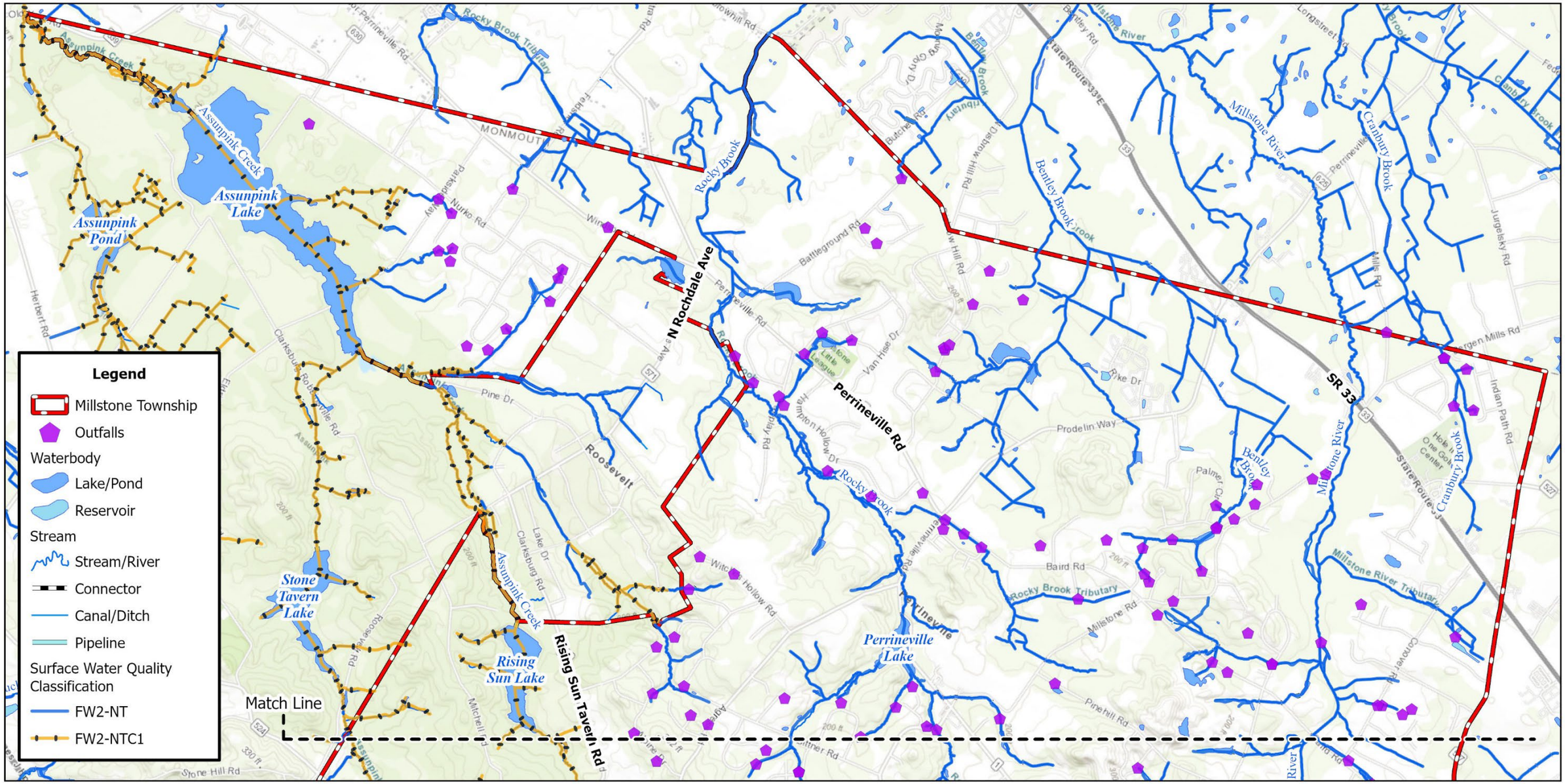
CDT-13-5	Assunpink Creek	FW2-NT
CDT-13-6	Assunpink Creek	FW2-NT
CDT-13-9	Assunpink Creek	FW2-NT
CDT-14-14.2	Assunpink Creek	FW2-NT
CDT-14.02-1	Assunpink Creek	FW2-NT
CDT-14.02-2	Assunpink Creek	FW2-NT
CDT-14.02-3.1	Assunpink Creek	FW2-NT
CDT-14.02-4.1	Assunpink Creek	FW2-NT
CDT-22-2	Assunpink Creek	FW2-NT
CDT-3-1	Assunpink Creek	FW2-NT
CDT-3-2	Assunpink Creek	FW2-NT
CDT-3.01-1.2	Assunpink Creek	FW2-NT
CDT-3.01-2	Assunpink Creek	FW2-NT
CDT-3.01-3	Assunpink Creek	FW2-NT
CDT-3.01-4.2	Assunpink Creek	FW2-NT
CDT-3.01-5.1	Assunpink Creek	FW2-NTC1
CDT-3.01-6	Assunpink Creek	FW2-NT
CDT-3.01-7	Assunpink Creek	FW2-NT
CDT-3.01-8	Assunpink Creek	FW2-NT
BB-20.02	Assunpink Lake	FW2-NTC1
CDT-3.01-5.2	Bentley Brook	FW2-NT
CDT-3.01-5.32	Bentley Brook	FW2-NT
MR-4-5	Bentley Brook	FW2-NT
MR-5-5	Bentley Brook	FW2-NT
MR-5-6	Bentley Brook	FW2-NT
MR-5.01-3	Bentley Brook	FW2-NT
MR-5.02-4.4	Bentley Brook	FW2-NT
MR-5.02-7.11	Bentley Brook	FW2-NT
MR-5.02-7.4	Bentley Brook	FW2-NT
MR-5.02-7.5	Bentley Brook	FW2-NT
MR-6-11	Bentley Brook	FW2-NT
MR-6-12	Bentley Brook	FW2-NT
MR-6-13.4	Bentley Brook	FW2-NT
MR-6-14	Bentley Brook	FW2-NT
MR-6-15.	Bentley Brook	FW2-NT
MR-6-16	Bentley Brook	FW2-NT
MR-6-20	Bentley Brook	FW2-NT
MR-6-20.3	Bentley Brook	FW2-NT
MR-6-6	Bentley Brook	FW2-NT
MR-6-7	Bentley Brook	FW2-NT
MR-6-8	Bentley Brook	FW2-NT
MR-6-9	Bentley Brook	FW2-NT
MR-8-8.6	Bentley Brook	FW2-NT
MR-7.01-2	Cranbury Brook	FW2-NT
MR-7.01-3	Cranbury Brook	FW2-NT

MR-7.01-4	Cranbury Brook	FW2-NT
MR-7.01-5	Cranbury Brook	FW2-NT
MR-7.01-6	Cranbury Brook	FW2-NT
BB-26-14	Doctors Creek	FW2-NT
CDT-3-3	Doctors Creek	FW2-NT
CWC-14-12	Doctors Creek	FW2-NT
CWC-14-13	Doctors Creek	FW2-NT
CWC-14-15	Doctors Creek	FW2-NT
CWC-14-2	Doctors Creek	FW2-NT
CWC-14.01-1	Doctors Creek	FW2-NT
CWC-14.01-2	Doctors Creek	FW2-NT
CWC-14.01-22	Doctors Creek	FW2-NT
CWC-14.01-3.2	Doctors Creek	FW2-NT
CWC-22.01-1.3	Doctors Creek	FW2-NT
CWC-22.02-1	Doctors Creek	FW2-NT
CWC-22.02-2	Doctors Creek	FW2-NT
CWC-22.03-1	Doctors Creek	FW2-NT
CWC-23-1	Doctors Creek	FW2-NT
CWC-23-14	Doctors Creek	FW2-NT
CWC-23-2.1	Doctors Creek	FW2-NT
CWC-23-3.2	Doctors Creek	FW2-NT
CWC-23-7	Doctors Creek	FW2-NT
CWC-25-4.8	Doctors Creek	FW2-NT
CWC-25-6	Doctors Creek	FW2-NT
MR-19-2.5	Doctors Creek	FW2-NT
MR-19-4.1	Doctors Creek	FW2-NT
MR-19-4.3	Doctors Creek	FW2-NT
MR-19-4.6	Doctors Creek	FW2-NT
BB-26-12	Ivanhoe Brook	FW2-NT
CWC-23-11.2	Ivanhoe Brook	FW2-NT
CWC-23-2.2	Ivanhoe Brook	FW2-NT
CWC-23-8	Ivanhoe Brook	FW2-NT
CWC-24-1	Ivanhoe Brook	FW2-NT
CWC-24-2	Ivanhoe Brook	FW2-NT
CWC-24-3	Ivanhoe Brook	FW2-NT
CWC-24-4	Ivanhoe Brook	FW2-NT
CWC-24-7	Ivanhoe Brook	FW2-NT
CWC-25-9	Ivanhoe Brook	FW2-NT
MR-19-8	Ivanhoe Brook	FW2-NT
MR-19-9	Ivanhoe Brook	FW2-NT
CWC-25-7	Lahaway Creek	FW2-NT
LR-16.01-1	Manalapan Brook	FW2-NT
LR-16.01-10	Manalapan Brook	FW2-NT
LR-16.01-12	Manalapan Brook	FW2-NT
LR-16.01-2	Manalapan Brook	FW2-NT

LR-16.01-3	Manalapan Brook	FW2-NT
LR-16.01-4	Manalapan Brook	FW2-NT
LR-16.01-5	Manalapan Brook	FW2-NT
LR-16.01-6	Manalapan Brook	FW2-NT
LR-16.01-7	Manalapan Brook	FW2-NT
LR-16.01-9	Manalapan Brook	FW2-NT
LR-17-1	Manalapan Brook	FW2-NT
LR-18-12	Manalapan Brook	FW2-NT
LR-18-14	Manalapan Brook	FW2-NT
LR-18-15	Manalapan Brook	FW2-NT
LR-18-6.2	Manalapan Brook	FW2-NT
LR-18-7	Manalapan Brook	FW2-NT
LR-18-9	Manalapan Brook	FW2-NT
LR-18.01-1	Manalapan Brook	FW2-NT
LR-18.01-1.3	Manalapan Brook	FW2-NT
LR-18.01-10	Manalapan Brook	FW2-NT
LR-18.01-11	Manalapan Brook	FW2-NT
LR-18.01-3	Manalapan Brook	FW2-NT
LR-18.01-4	Manalapan Brook	FW2-NT
LR-18.01-5	Manalapan Brook	FW2-NT
LR-18.01-6	Manalapan Brook	FW2-NT
LR-18.01-7	Manalapan Brook	FW2-NT
LR-18.01-8	Manalapan Brook	FW2-NT
LR-18.01-9	Manalapan Brook	FW2-NT
MR-19-5.9	Manalapan Brook	FW2-NT
MR-10.01-1	Millstone River	FW2-NT
MR-10.01-2	Millstone River	FW2-NT
MR-10.01-4	Millstone River	FW2-NT
MR-10.01-6	Millstone River	FW2-NT
MR-10.01-7.8	Millstone River	FW2-NT
MR-15-11	Millstone River	FW2-NT
MR-15-12	Millstone River	FW2-NT
MR-15-13	Millstone River	FW2-NT
MR-15-14	Millstone River	FW2-NT
MR-15-15.2	Millstone River	FW2-NT
MR-15.01-1	Millstone River	FW2-NT
MR-15.01-4.2	Millstone River	FW2-NT
MR-15.01-5	Millstone River	FW2-NT
MR-16-1	Millstone River	FW2-NT
MR-16-2	Millstone River	FW2-NT
MR-16-3	Millstone River	FW2-NT
MR-16-3.6	Millstone River	FW2-NT
MR-16-4	Millstone River	FW2-NT
MR-16-4.5	Millstone River	FW2-NT
MR-19-2.8	Millstone River	FW2-NT

MR-19-5.5	Millstone River	FW2-NT
MR-19-6.4	Millstone River	FW2-NT
MR-19-6.5	Millstone River	FW2-NT
MR-19-6.7	Millstone River	FW2-NT
MR-6-10	Millstone River	FW2-NT
MR-7.01-1	Millstone River	FW2-NT
MR-8-1	Millstone River	FW2-NT
MR-8-10	Millstone River	FW2-NT
MR-8-10.16	Millstone River	FW2-NT
MR-8-10.27	Millstone River	FW2-NT
MR-8-12	Millstone River	FW2-NT
MR-8-13	Millstone River	FW2-NT
MR-8-14	Millstone River	FW2-NT
MR-8-2	Millstone River	FW2-NT
MR-8-5	Millstone River	FW2-NT
MR-8-6	Millstone River	FW2-NT
MR-8-7	Millstone River	FW2-NT
MR-8-8	Millstone River	FW2-NT
MR-8.01-2	Millstone River	FW2-NT
MR-8.01-3	Millstone River	FW2-NT
MR-8.01-4	Millstone River	FW2-NT
MR-8.01-5	Millstone River	FW2-NT
MR-9-1	Millstone River	FW2-NT
MR-9-2	Millstone River	FW2-NT
MR-9-4	Millstone River	FW2-NT
MR-9.01-1	Millstone River	FW2-NT
MR-9.01-5	Millstone River	FW2-NT
MS-8-10.3	Millstone River	FW2-NT
MR-10-1	Rocky Brook	FW2-NT
MR-11-2	Rocky Brook	FW2-NT
MR-11-3	Rocky Brook	FW2-NT
MR-11-4	Rocky Brook	FW2-NT
MR-11-5	Rocky Brook	FW2-NT
MR-11-6	Rocky Brook	FW2-NT
MR-11-7	Rocky Brook	FW2-NT
MR-11-9	Rocky Brook	FW2-NT
MR-11.03-1	Rocky Brook	FW2-NT
MR-12-2	Rocky Brook	FW2-NT
MR-12-3	Rocky Brook	FW2-NT
MR-12-4	Rocky Brook	FW2-NT
MR-12.01-1	Rocky Brook	FW2-NT
MR-12.01-2	Rocky Brook	FW2-NT
MR-12.01-3	Rocky Brook	FW2-NT
MR-12.01-4	Rocky Brook	FW2-NT
MR-14-10	Rocky Brook	FW2-NT

MR-14-11	Rocky Brook	FW2-NT
MR-14-3	Rocky Brook	FW2-NT
MR-14-30	Rocky Brook	FW2-NT
MR-14.02-5	Rocky Brook	FW2-NT
MR-14.02-6	Rocky Brook	FW2-NT
MR-15-5	Rocky Brook	FW2-NT
MR-19-5.3	Rocky Brook	FW2-NT
MR-19-6.8	Rocky Brook	FW2-NT
MR-19-6.9	Rocky Brook	FW2-NT
MR-3-1	Rocky Brook	FW2-NT
MR-4-3	Rocky Brook	FW2-NT
MR-5.01-1.4	Rocky Brook	FW2-NT
MR-5.01-4.1	Rocky Brook	FW2-NT
MR-5.01-5	Rocky Brook	FW2-NT
MR-6-3	Rocky Brook	FW2-NT
MR-6-5	Rocky Brook	FW2-NT
BB-18-02	Toms River	FW2-NT
BB-18-03	Toms River	FW2-NT
BB-18-04	Toms River	FW2-NT
BB-18-05	Toms River	FW2-NT
BB-18-10	Toms River	FW2-NT
BB-18-5	Toms River	FW2-NT
BB-20-1	Toms River	FW2-NT
BB-20.01-2	Toms River	FW2-NT
BB-20.01-3	Toms River	FW2-NT
BB-20.01-3.4	Toms River	FW2-NT
BB-20.01-4	Toms River	FW2-NT
BB-20.01-5.2	Toms River	FW2-NT
BB-20.01-6.2	Toms River	FW2-NT
BB-20.01-8	Toms River	FW2-NT
BB-20.02-5	Toms River	FW2-NT
BB-20.02-6	Toms River	FW2-NT
BB-20.02-7	Toms River	FW2-NT
BB-20.02-8	Toms River	FW2-NT
BB-20.02-9	Toms River	FW2-NT
BB-26-1	Toms River	FW2-NT
BB-26-13.2	Toms River	FW2-NT
BB-26-2	Toms River	FW2-NT
BB-26-3	Toms River	FW2-NT
BB-26-4	Toms River	FW2-NT
BB-26-6	Toms River	FW2-NT
BB-26-7	Toms River	FW2-NT
BB-26-9	Toms River	FW2-NT
MR-19-3.31	Toms River	FW2-NT



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Consulting Engineers

0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

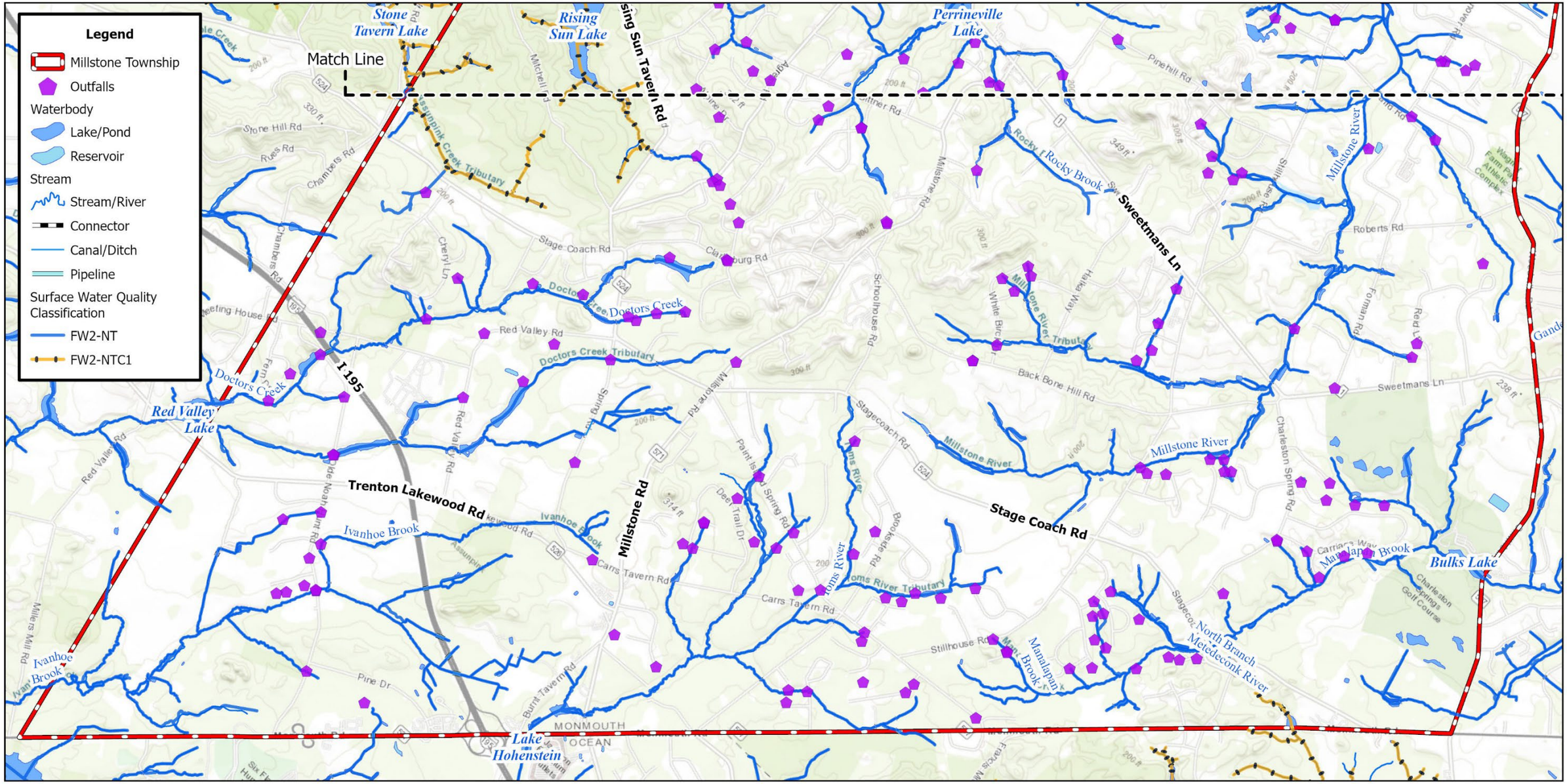
Figure 1a: Municipally Owned/Operated Stormwater Outfalls

Watershed Inventory Report
Township of Millstone - Northwest
Monmouth County, New Jersey

Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.



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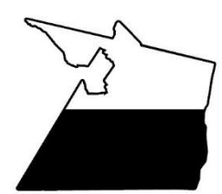
0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

Figure 1b: Municipally Owned/Operated Stormwater Outfalls

Watershed Inventory Report
Township of Millstone - Southeast
Monmouth County, New Jersey



Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.

Stormwater Interconnection(s)

Interconnections from Millstone Township's MS4 into another Entity

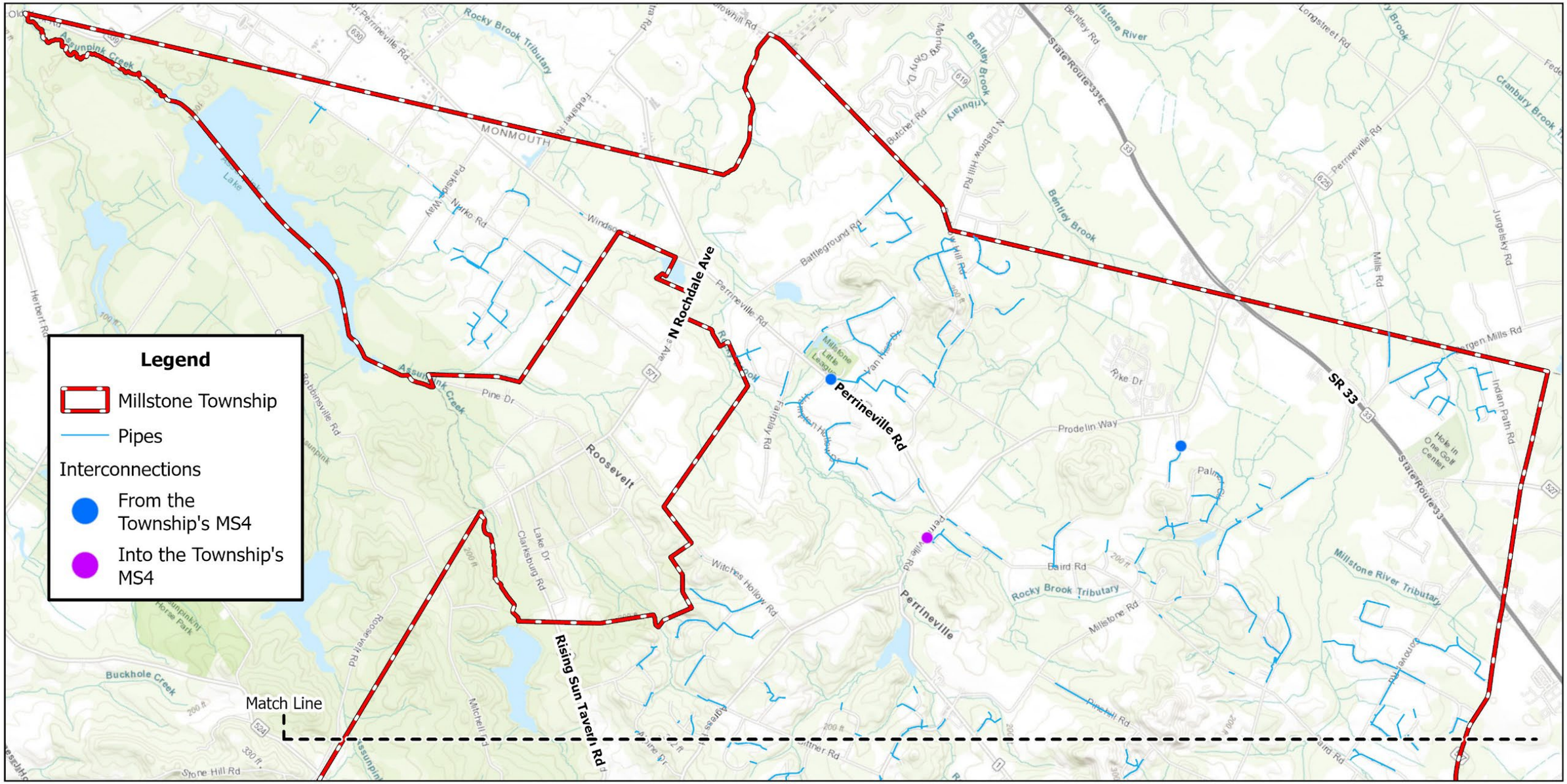
Interconnections from Millstone Township's MS4 into another entity data were obtained through ArcGIS. A field crew systematically inspected all listed conveyances within the Township and recorded the required attributes on ArcGIS Field Maps. Then, interconnections were identified by analyzing junctions of the conveyances data on ArcGIS Pro. All of this data was obtained throughout 2024 and is publicly available via the infrastructure map on the Township stormwater webpage.

There are five (5) interconnections from Millstone Township's MS4 into another entity. All of the interconnections are between pipes. One (1) of the interconnections flows into a private MS4 and four (4) flow into the Monmouth County MS4.

Interconnection(s) into Millstone Township's MS4 from another Entity

Interconnections into Millstone Township's MS4 from another entity data were obtained through ArcGIS. A field crew systematically inspected all listed conveyances within the Township and recorded the required attributes on ArcGIS Field Maps. Then, interconnections were identified by analyzing junctions of the conveyances data on ArcGIS Pro. All of this data was obtained throughout 2024 and is publicly available via the infrastructure map on the Township stormwater webpage.

There are seven (7) interconnections into Millstone Township's MS4 from another entity. All seven (7) interconnections are between pipes and flow from the Monmouth County MS4.



LEON S. AVAKIAN, Inc.

Consulting Engineers

0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

N

Figure 2a: Interconnections

Watershed Inventory Report
Township of Millstone - Northwest
Monmouth County, New Jersey

Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

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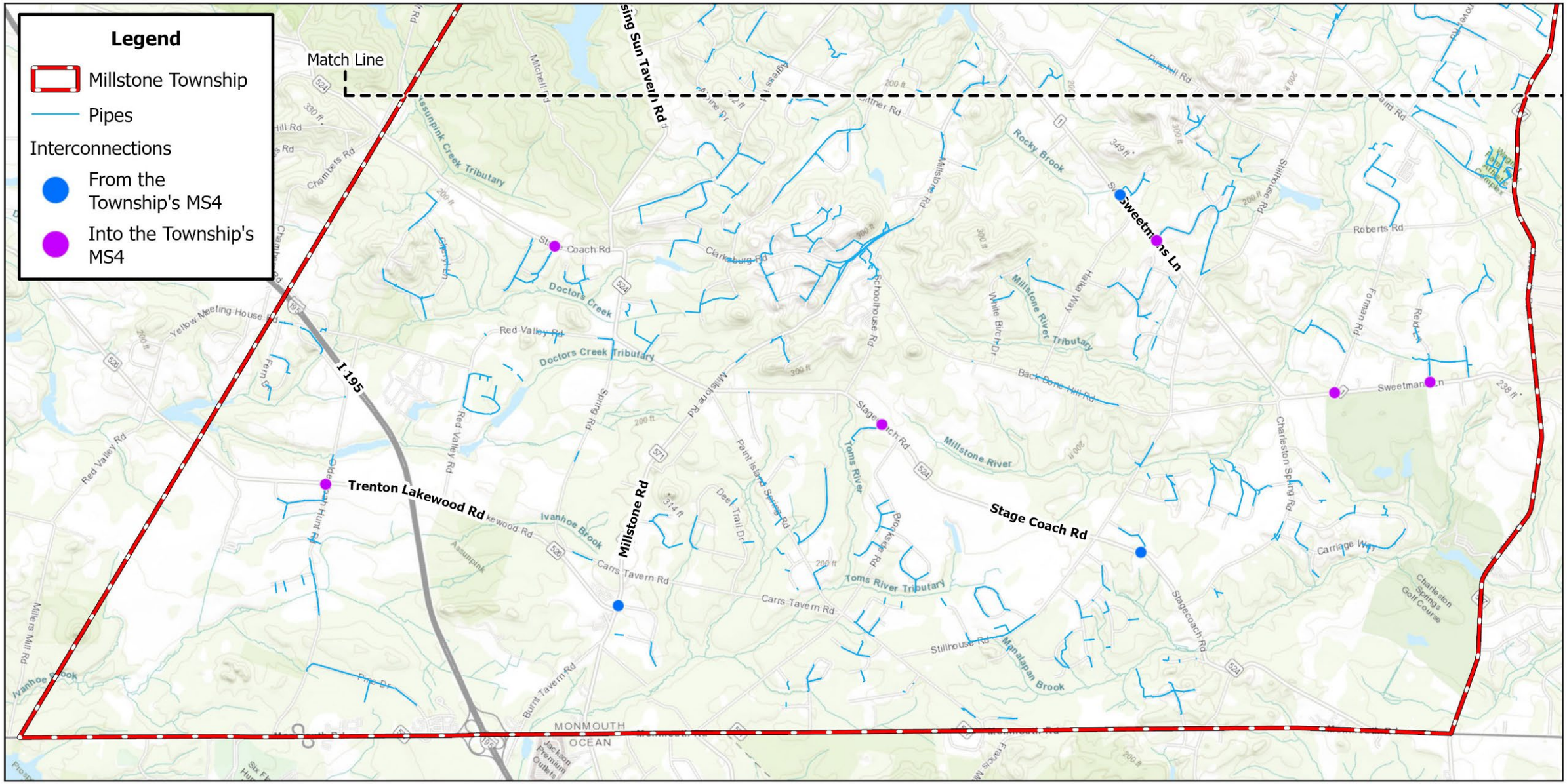


LEON S. AVAKIAN, Inc.

Consulting Engineers

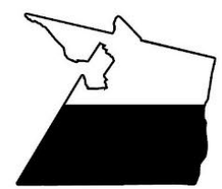
0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

N

Figure 2b: Interconnections

Watershed Inventory Report
Township of Millstone - Southeast
Monmouth County, New Jersey



Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

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Drainage Area(s) for Stormwater Outfalls and Stormwater Interconnections

Storm Drain Inlets

Storm drain inlet data relevant to the Township were obtained through ArcGIS. A field crew systematically inspected all listed inlets within the Township and recorded the required attributes on ArcGIS Field Maps. All of this data was obtained throughout 2024 and is publicly available via the infrastructure map on the Township stormwater webpage.

The Township of Millstone has 1,754 storm drain inlets.

MS4 Outfall Drainage Areas

Outfall drainage area data relevant to the Township were obtained through ArcGIS. A field crew systematically inspected all listed outfalls and pipes within the Township and recorded the required attributes on ArcGIS Field Maps. All of this data was obtained throughout 2024 and is publicly available via the infrastructure map on the Township stormwater webpage.

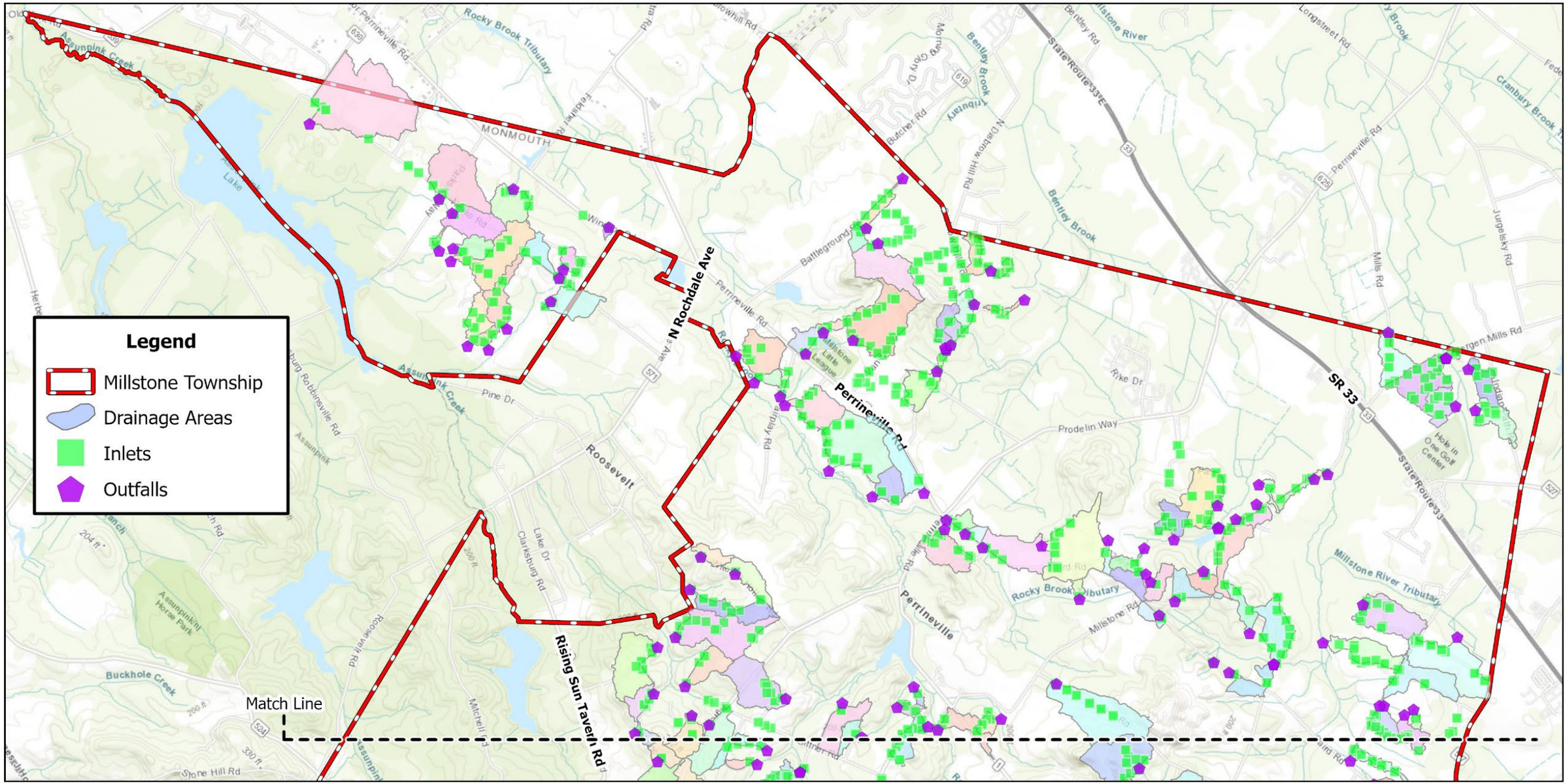
The outfall drainage areas were determined by burning the Township pipe network as well as surrounding streams and waterbodies into a USGS Digital Elevation Model (DEM) in ArcGIS Pro. The Township outfalls were aligned to the resulting network raster and a drainage area was created for each outfall using ArcHydro analysis tools. This procedure was provided by the Rutgers Cooperative Extension Water Resources Program in association with NJDEP. The USGS DEMs can be downloaded via the USGS EarthExplorer website, and the streams and waterbodies data are hosted on the NJDEP Bureau of GIS ArcGIS Online webpage.

Drainage Area of Interconnection(s) from Millstone Township to another Entity

Drainage area of interconnections data relevant to the Township were obtained through ArcGIS. A field crew systematically inspected all listed conveyances within the Township and recorded the required attributes on ArcGIS Field Maps. Then, interconnections were identified by analyzing junctions of the conveyances data on ArcGIS Pro. All of this data was obtained throughout 2024 and is publicly available via the infrastructure map on the Township stormwater webpage.

The interconnection drainage areas were determined by burning the Township pipe network as well as surrounding streams and waterbodies into a USGS Digital Elevation Model (DEM) in ArcGIS Pro. The Township interconnections were aligned to the resulting network raster and a drainage area was created for each interconnection using ArcHydro analysis tools. This procedure was provided by the Rutgers Cooperative Extension Water Resources Program in association with NJDEP. The USGS DEMs can be downloaded via the USGS EarthExplorer

website, and the streams and waterbodies data are hosted on the NJDEP Bureau of GIS ArcGIS Online webpage.



LEON S. AVAKIAN, Inc.

Consulting Engineers

0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

Figure 3a: Outfall Drainage Areas

Watershed Inventory Report
Township of Millstone - Northwest
Monmouth County, New Jersey

Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

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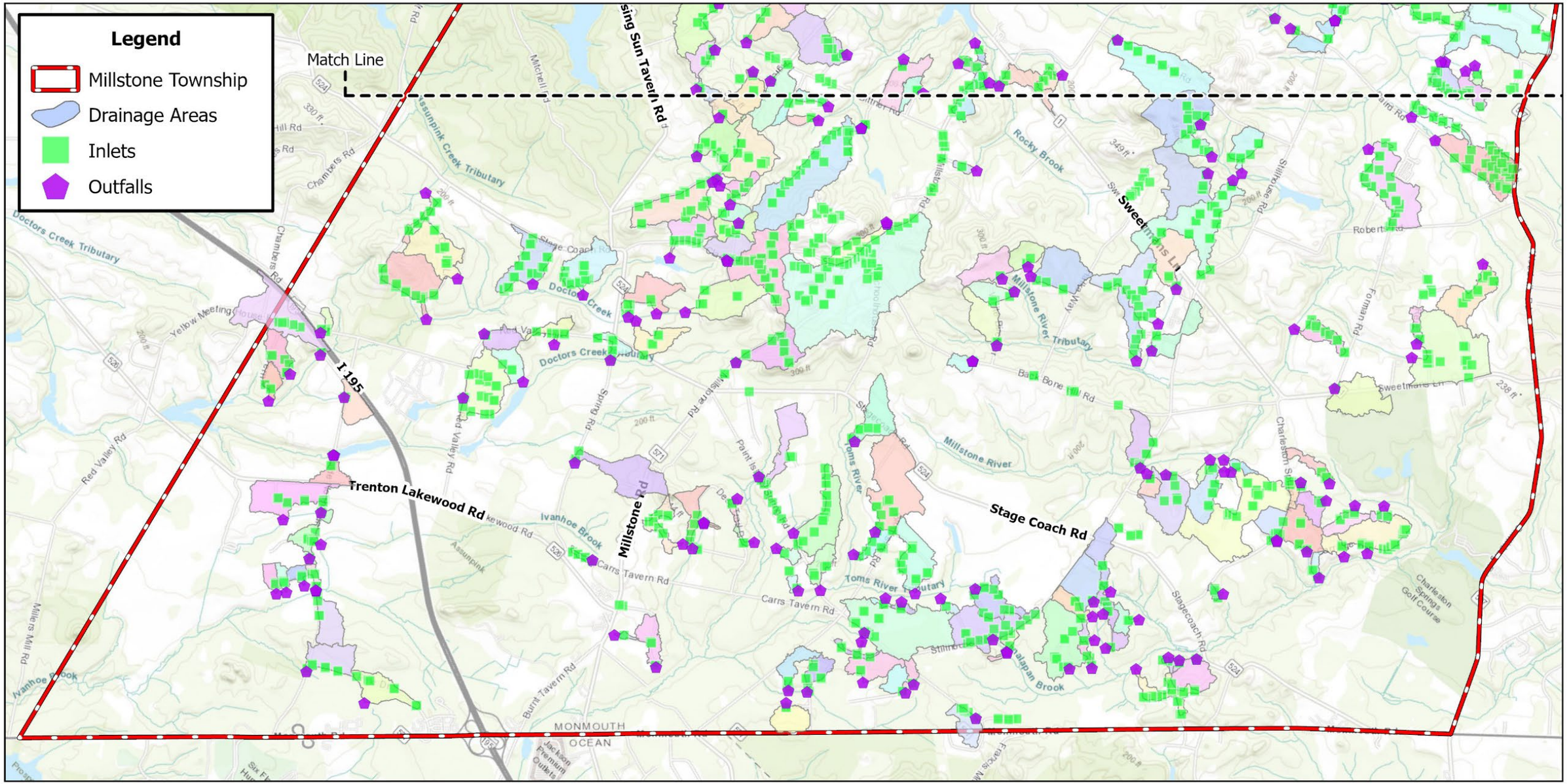


LEON S. AVAKIAN, Inc.

Consulting Engineers

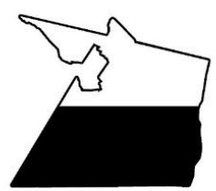
0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

N

Figure 3b: Outfall Drainage Areas

Watershed Inventory Report
Township of Millstone - Southeast
Monmouth County, New Jersey



Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

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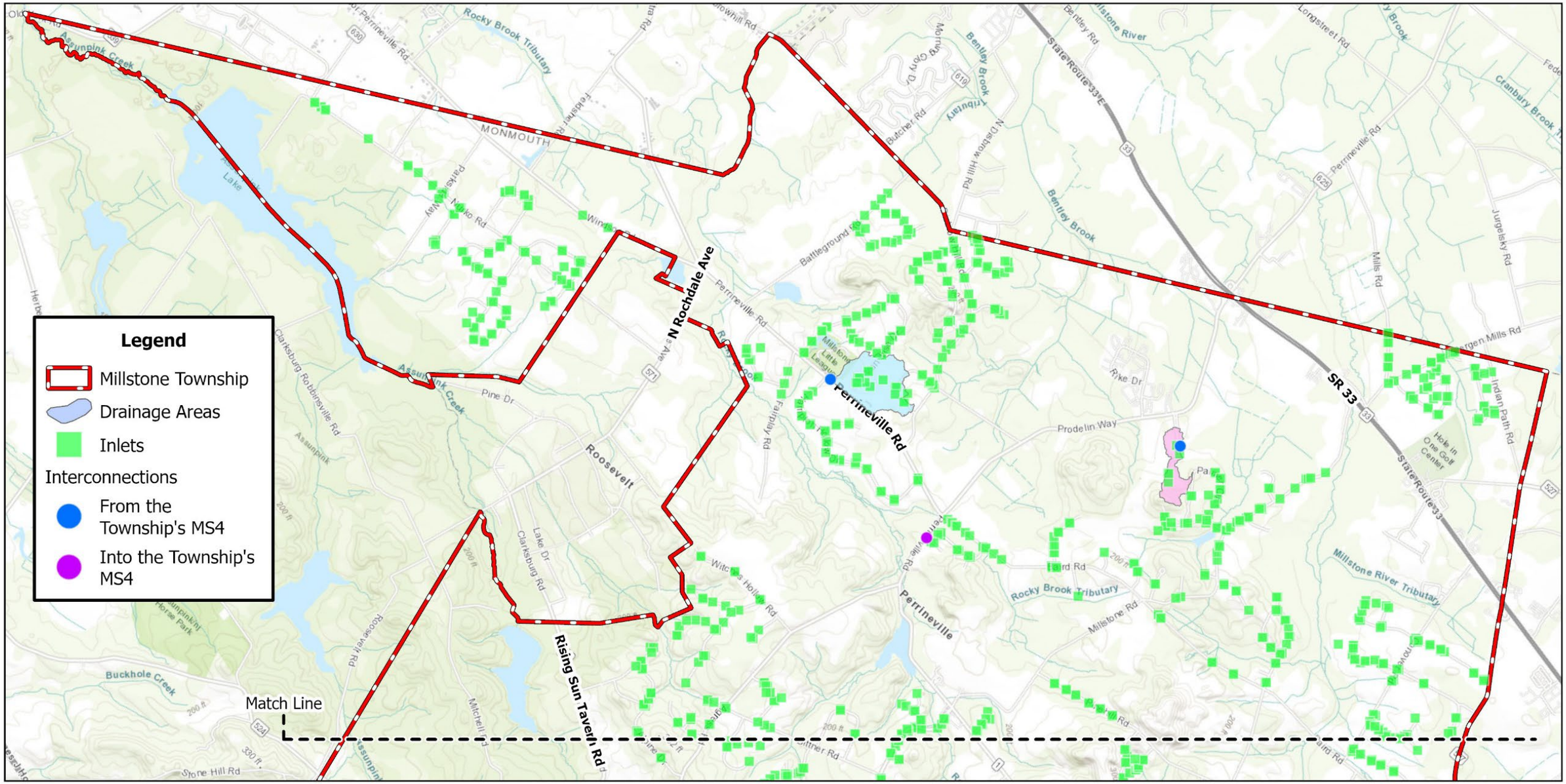


LEON S. AVAKIAN, Inc.

Consulting Engineers

0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

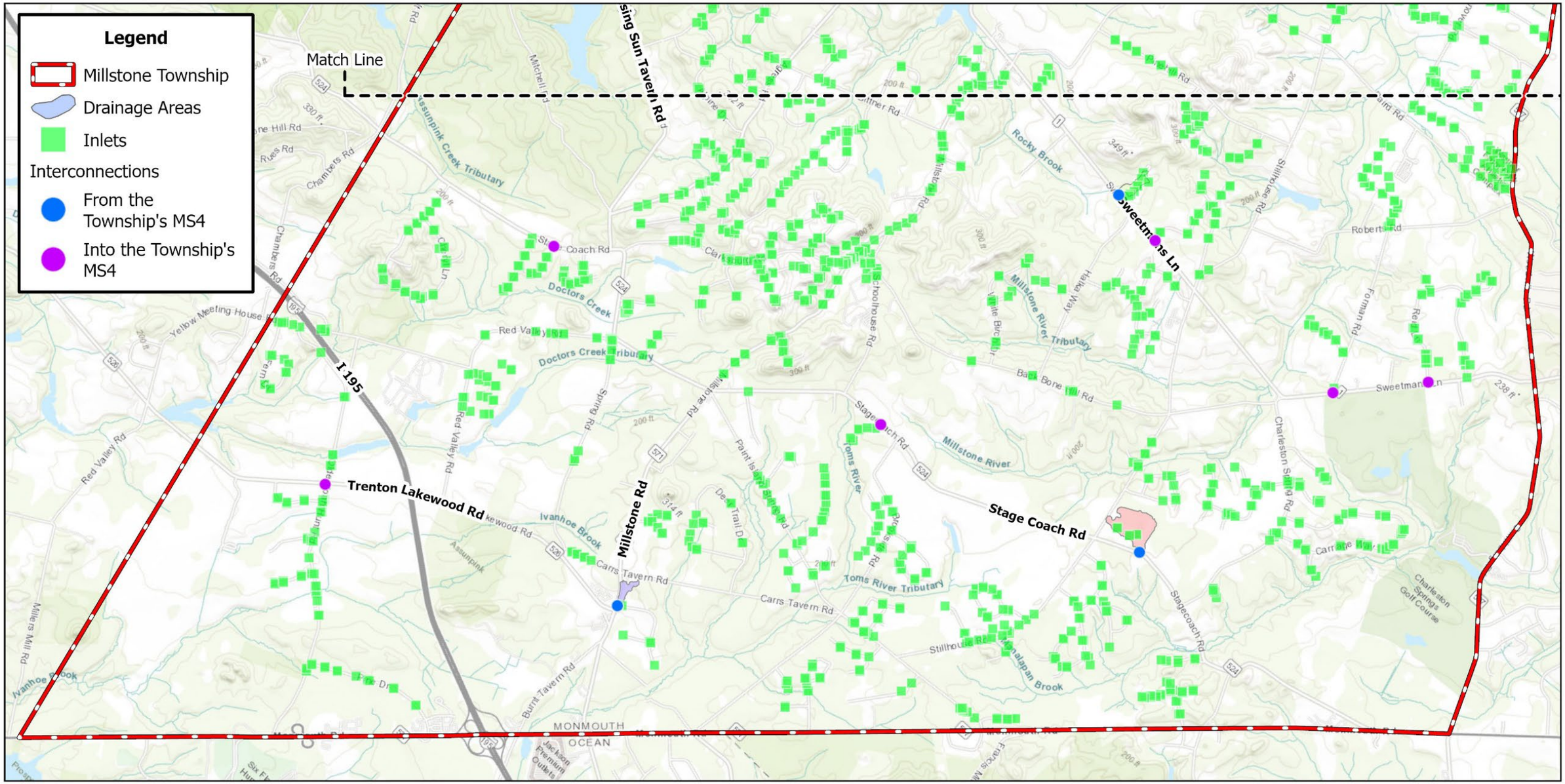
Figure 4a: Interconnection Drainage Areas

Watershed Inventory Report
Township of Millstone - Northwest
Monmouth County, New Jersey

Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.



LEON S. AVAKIAN, Inc.

Consulting Engineers

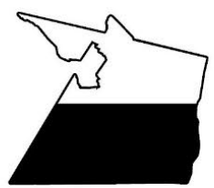
0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

N

Figure 4b: Interconnection Drainage Areas

Watershed Inventory Report
Township of Millstone - Southeast
Monmouth County, New Jersey



Source: LSA, NJGIN, and Monmouth County GIS.

Revised: February 25, 2026

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.

TMDLs and Water Quality Impairments

TMDLs and water quality impairments relevant to the Township were obtained through the NJDEP's TMDL Lookup Tool, the 303(d) List within New Jersey's Integrated Water Quality Assessment Reports, and the NJ-WET GIS service. Subwatersheds (HUC 14s) within or bordering the Township were identified through the NJDEP's NJ-GeoWeb GIS service. All of this data was obtained in February 2025 and is publicly available.

There are fifteen (15) subwatersheds within or bordering Millstone Township:

- Toms River (above Francis Mills) (HUC 02040301060010)
    - TMDLs: Fecal Coliform (Streamsheds pre-2008), Total Coliform (Shellfish)
    - Impairments: DO, Total Phosphorus
- Rocky Brook (below Monmouth County line) (HUC 02030105100050)
    - TMDLs: Mercury, TSS, Total Phosphorus (Streamsheds), Fecal Coliform (Streamsheds pre-2008)
    - Impairments: DO, PCBs in Fish Tissue
- Rocky Brook (above Monmouth County line) (HUC 02030105100040)
    - TMDLs: TSS, Total Phosphorus (Streamsheds)
    - Impairments: None
- Millstone River (above Route 33) (HUC 02030105100010)
    - TMDLs: TSS, Total Phosphorus (Streamsheds), Fecal Coliform (Streamsheds pre-2008)
    - Impairments: None
- Millstone River (Applegarth Road to Route 33) (HUC 02030105100020)
    - TMDLs: TSS, Total Phosphorus (Streamsheds), Fecal Coliform (Streamsheds pre-2008)
    - Impairments: None
- Metedeconk River SB (above I-195 exit 21 Road) (HUC 02040301030010)
    - TMDLs: Fecal Coliform (Lakesheds), Total Coliform (Shellfish)
    - Impairments: E. coli, TDS, Turbidity
- Metedeconk River NB (above I-195) (HUC 02040301020010)
    - TMDLs: Total Phosphorus, Fecal Coliform (Streamsheds pre-2008), Total Coliform (Shellfish)
    - Impairments: DO, Lead, PCBs in Fish Tissue, Turbidity
- Manalapan Brook (above 40d16m15s) (HUC 02030105140010)
    - TMDLs: Fecal Coliform (Streamsheds pre-2008), Total Phosphorus (Lakesheds)
    - Impairments: Total Phosphorus
- Manalapan Brook (includes Lake Manalapan to 40d16m15s) (HUC 02030105140020)

    - TMDLs: Mercury (Streamsheds), Fecal Coliform (Streamsheds pre-2008), Total Phosphorus (Lakesheds)
    - Impairments: PCBs in Fish Tissue
- Lahaway Creek (above Prospertown) (HUC 02040201050010)
    - TMDLs: PCBs, VOCs (Streamsheds)
    - Impairments: Total Phosphorus
- Doctors Creek (Allentown to 74d28m40s) (HUC 02040201060020)
    - TMDLs: PCBs, VOCs (Streamsheds), Total Phosphorus, Fecal Coliform (Streamsheds pre-2008), Total Phosphorus (Lakesheds)
    - Impairments: TSS
- Doctors Creek (above 74d28m40s) (HUC 02040201060010)
    - TMDLs: PCBs, VOCs (Streamsheds), Total Phosphorus (Streamsheds pre-2008)
    - Impairments: None
- Cranbury Brook (above NJ Turnpike) (HUC 02030105100070)
    - TMDLs: TSS, Total Phosphorus (Streamsheds), Fecal Coliform (Streamsheds pre-2008)
    - Impairments: None
- Assunpink Creek (New Sharon Bridge to/including Lake) (HUC 02040105230020)
    - TMDLs: Mercury (Streamsheds)
    - Impairments: DO, PCBs in Fish Tissue, Total Phosphorus
- Assunpink Creek (above Assunpink Lake) (HUC 02040105230010)
    - TMDLs: None
    - Impairments: E. coli, Total Phosphorus

Listed below are summaries of the TMDLs and Impairments found within the subwatersheds of the Township (obtained from NJDEP, "Pollutants of Concern"). Mercury is not listed on the "Pollutants of Concern" document, so an excerpt from "Total Maximum Daily Load for Mercury Impairments Based on Concentration in Fish Tissue Caused Mainly by Air Deposition to Address 122 HUC 14s Statewide" adopted June 10, 2010 (obtained from NJDEP) is used instead.

<u>Dissolved Oxygen (DO):</u>

"Dissolved oxygen (DO) refers to the concentration of oxygen gas incorporated into the water. Oxygen enters the water by direct absorption from the atmosphere and is enhanced by turbulence. Running water, such as that of a swift moving stream, normally contains more dissolved oxygen than the still water of a pond or lake. Water also absorbs oxygen released by aquatic plants during photosynthesis. Sufficient DO is essential to growth and reproduction of aerobic aquatic life (e.g., see Murphy 2006, Giller and Malmqvist 1998, Allan 1995; https://www.epa.gov/caddis-vol2/dissolved-oxygen). Low levels of oxygen (hypoxia) or no

oxygen levels (anoxia) can occur when excess organic materials are decomposed by microorganisms. During this decomposition process, the DO in the water is consumed. In some water bodies, DO levels fluctuate periodically, seasonally, and even as part of the natural daily ecology of the aquatic resource. As DO levels drop, some sensitive animals may move away, decline in health, or even die. DO is considered an important measure of water quality as it is a direct indicator of an aquatic resource's ability to support aquatic life. While each organism has its own DO tolerance range, generally, DO levels below 3 milligrams per liter (mg/L) are of concern and waters with levels below 1 mg/L are considered hypoxic and are usually devoid of life.

Stormwater runoff containing nutrients such as nitrate, phosphorus, and organic TSS matter and animal and pet waste cause the levels of dissolved oxygen to decrease in the receiving waters. An increase in these materials transported via stormwater runoff will have a greater impact on receiving waters." (pg. 4)

Lead:

"Lead is a naturally occurring elemental metal that is extremely toxic to humans and animals. Some common uses of lead today are lead acid batteries, including those used in automobiles, bullets and shotgun shot, fishing sinkers, industrial grade and non-domestic paint, boat keels, radiation shielding, and soldering.

Lead enters the environment through the manufacture and use of consumer products and by contamination of soils and water. Any lead occurring in soils can be mobilized into waterbodies through stream scouring and erosion. Lead in these forms makes its way into waterbodies, including those used for drinking water sources, through stormwater runoff. The Tier A MS4 permit prohibits the improper disposal of waste, such as paint, as well as a program to detect and eliminate illicit discharges." (pgs. 4-5)

Mercury:

"Mercury is a persistent, bio-accumulative toxin that can be found in solid, liquid, or vapor form. Mercury can cause a variety of harmful health effects including damage to the brain, central nervous system, and kidneys and is particularly harmful to children and pregnant and nursing women. Mercury comes from various natural and anthropogenic sources, including volcanic activity, burning of some forms of coal, use in dental procedures and manufacturing, use and disposal of products containing mercury. Most often, mercury enters the environment in gas or particulate form and is deposited on surfaces, often through precipitation, which washes deposited mercury into waterways. There it undergoes a natural chemical process and is converted to a more toxic form – methyl mercury. The methyl mercury builds up in the tissues of fish and animals, increasing its concentration as it moves up through the food chain, which results in high levels of mercury in some of the foods we eat. At certain levels, fish consumption advisories are triggered." (pg. 9)

Pathogens (Enterococcus, E. Coli, Fecal Coliform, Total Coliform):

"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.

When receiving surface waters include shellfish harvesting as a designated use, pathogens also pose additional concerns. Proximity to potential sources such as marinas, development served by septic systems and concentrated stormwater outfall locations warrant precautionary closures of shellfish waters on a seasonal or full-time basis. The National Shellfish Sanitation Program has established criteria for pathogens that are used to determine support of the shell fishing use." (pg. 7)

Phosphorus/Total Phosphorus:

"Phosphorus is a key nutrient for plant growth and is often the limiting nutrient in a freshwater setting. Total phosphorous is the sum of particulate and dissolved phosphorous which includes the total amount of phosphorous in both organic and inorganic forms. High concentrations of phosphorus in receiving waters may result from stormwater runoff due to poor agricultural practices, urban areas, leaking septic systems, illicit discharges or SSOs. Additional stormwater runoff sources of phosphorous include the breakdown of plant and leaf litter (including grass clippings), soil particles, pet and animal waste, fertilizer from lawns, and atmospheric deposition of phosphorus particles. Contribution from runoff from lawns and roads accounts for the greatest loading in many receiving waters. An excess of phosphorus into a water body can have a detrimental effect on designated uses related to both public health and aquatic health. For instance, too much phosphorus in a surface water can cause increased growth of algae and large aquatic plants (a process called eutrophication) causing significant swings in pH and dissolved oxygen, which can in turn result in the violation of surface water quality criteria for these parameters and adversely affect the aquatic community.

Additionally, high levels of phosphorus can also lead to HABs, that produce toxins which can be harmful to human and animal health. The presence of excessive plant biomass can also interfere with other designated uses, such as swimming or boating. When algae are present in large amounts, drinking water purveyors must also increase the use of disinfectants and oxidants to

treat the algae, which can lead to an increase in disinfection byproducts such as trihalomethanes, listed as likely carcinogens by EPA." (pgs. 8-9)

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. Their novel chemical properties led to widespread industrial production and usage peaking between the 1930's and late-1960's. 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. Their oily nature allows them to accumulate in fatty animal tissues and bioaccumulate up the global food chain where they contribute to organ damage and carcinogenesis in higher-tiered species.

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." (pg. 9)

Total Dissolved Solids (TDS):

"Total Dissolved Solids (TDS) is the measure of the concentration of dissolved inorganic substances, such as calcium, chlorides nitrate, phosphorus, iron, sulfur, and other ion particles, in water that can pass through a filter with pores of approximately 0.002 cm. TDS differs from TSS in that TSS particles will not pass through the same filter. TDS affects aquatic and human health by altering the water balance in the cells of organisms. For instance, when an aquatic organism is placed in water with very low TDS, such as distilled water, it will swell up because water will tend to move into its cells, which have a higher concentration of solids. Conversely, an organism placed in water with high TDS will shrink somewhat because the water in its cells will tend to move out. This will in turn affect the organism's ability to maintain the proper cell density, making it difficult to keep its position in the water column by causing it to float up or sink down to depths to which it is not adapted, and it might not survive. High concentrations of TDS may also cause adverse health effects due to the chemicals making up the TDS, make drinking water unpalatable and cause additional adverse health effects on people who are not used to drinking such water. Levels of TDS that are too high or too low can also adversely affect industrial processes that use raw water.

TDS is discharged into the receiving waters via stormwater as the runoff picks up various substances on the ground surface, such as salts and brine solutions used for de-icing of motor

vehicle surfaces and walkways, fertilizers, motor vehicle parts and fluids, illicit connections, and soil particles through erosion." (pg. 11)

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." (pgs. 11-12)

Turbidity:

"Turbidity refers to water's transparency and the amount of TSS that the water contains and is measured by how well light can pass through water. Turbid waters containing a larger amount of TSS have a low transparency and visibility, which can allow the waterbody to absorb more heat from the sunlight, thus increasing the temperature and decreasing the dissolved oxygen. High turbidity can negatively impact a waterbody's designated uses by reducing the ability of the waterbody to support aquatic life due to these effects, reducing the aesthetic quality of the receiving water, having a harmful impact on recreation and tourism, and increasing the cost of water treatment for drinking and industrial uses such as food processing. Municipal stormwater runoff can create turbid conditions in water when it picks up particulate debris from hard surfaces and transports it to water bodies. Turbidity in stormwater runoff is usually made up of

rock and soil fragments, dirt and debris from roads and vehicles, and other materials as noted under TSS." (pgs. 12-13)

Volatile Organic Compounds (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.

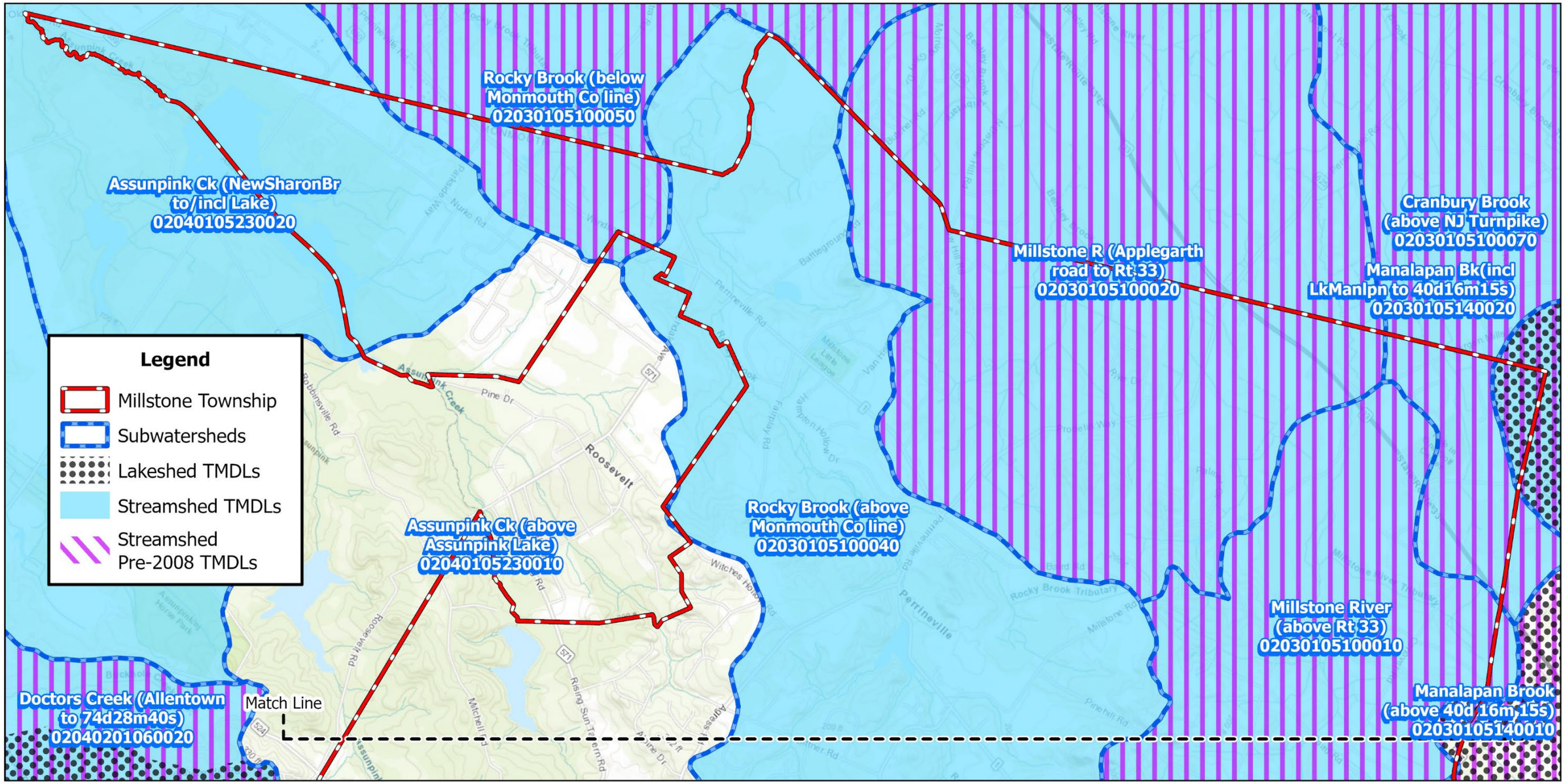
Surface water quality criteria serve to protect water quality for designated uses such as supporting the survival, growth, and reproduction of aquatic life, protecting the quality of drinking water sources, maintaining good water quality for primary and secondary contact recreational uses, and keeping fish safe for human consumption." (pg. 13)

Table 2: TMDLs and Impairments for Subwatersheds within or bordering Millstone Township

HUC 14	Subwatershed Name	TMDL(s)	Impairment(s)
02040301060010	Toms River (above Francis Mills)	Streamsheds pre-2008 Fecal Coliform Shellfish Total Coliform	DO Total Phosphorus
02030105100050	Rocky Brook (below Monmouth County line)	Streamsheds Mercury TSS Total Phosphorus Streamsheds pre 2008 Fecal Coliform	DO PCBs in Fish Tissue
02030105100040	Rocky Brook (above Monmouth County line)	Streamsheds TSS Total Phosphorus	None

02030105100010	Millstone River (above Route 33)	Streamsheds TSS Total Phosphorus Streamsheds pre 2008 Fecal Coliform	None
02030105100020	Millstone River (Applegarth Road to Route 33)	Streamsheds TSS Total Phosphorus Streamsheds pre-2008 Fecal Coliform	None
02040301030010	Metedeconk River SB (above I-195 exit 21 Road)	Lakesheds Fecal Coliform Shellfish Total Coliform	E. coli TDS Turbidity
02040301020010	Metedeconk River NB (above I-195)	Streamsheds pre-2008 Total Phosphorus Fecal Coliform Shellfish Total Coliform	DO Lead PCBs in Fish Tissue Turbidity
02030105140010	Manalapan Brook (above 40d16m15s)	Streamsheds pre-2008 Fecal Coliform Lakesheds Total Phosphorus	Total Phosphorus
02030105140020	Manalapan Brook (includes Lake Manalapan to 40d16m15s)	Streamsheds Mercury Streamsheds pre-2008 Fecal Coliform Lakesheds Total Phosphorus	PCBs in Fish Tissue
02040201050010	Lahaway Creek (above Prospertown)	Streamsheds PCBs VOCs	Total Phosphorus
02040201060020	Doctors Creek (Allentown to 74d28m40s)	Streamsheds PCBs VOCs Streamsheds pre-2008 Total Phosphorus Fecal Coliform Lakesheds Total Phosphorus	TSS
02040201060010	Doctors Creek (above 74d28m40s)	Streamsheds PCBs VOCs Streamsheds pre-2008 Total Phosphorus	None

02030105100070	Cranbury Brook (above NJ Turnpike)	Streamsheds TSS Total Phosphorus Streamsheds pre-2008 Fecal Coliform	None
02040105230020	Assunpink Creek (New Sharon Bridge to/including Lake)	Streamsheds Mercury	DO PCBs in Fish Tissue Total Phosphorus
02040105230010	Assunpink Creek (above Assunpink Lake)	None	E. coli Total Phosphorus



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Consulting Engineers

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Scale: 1in = 0.6mi

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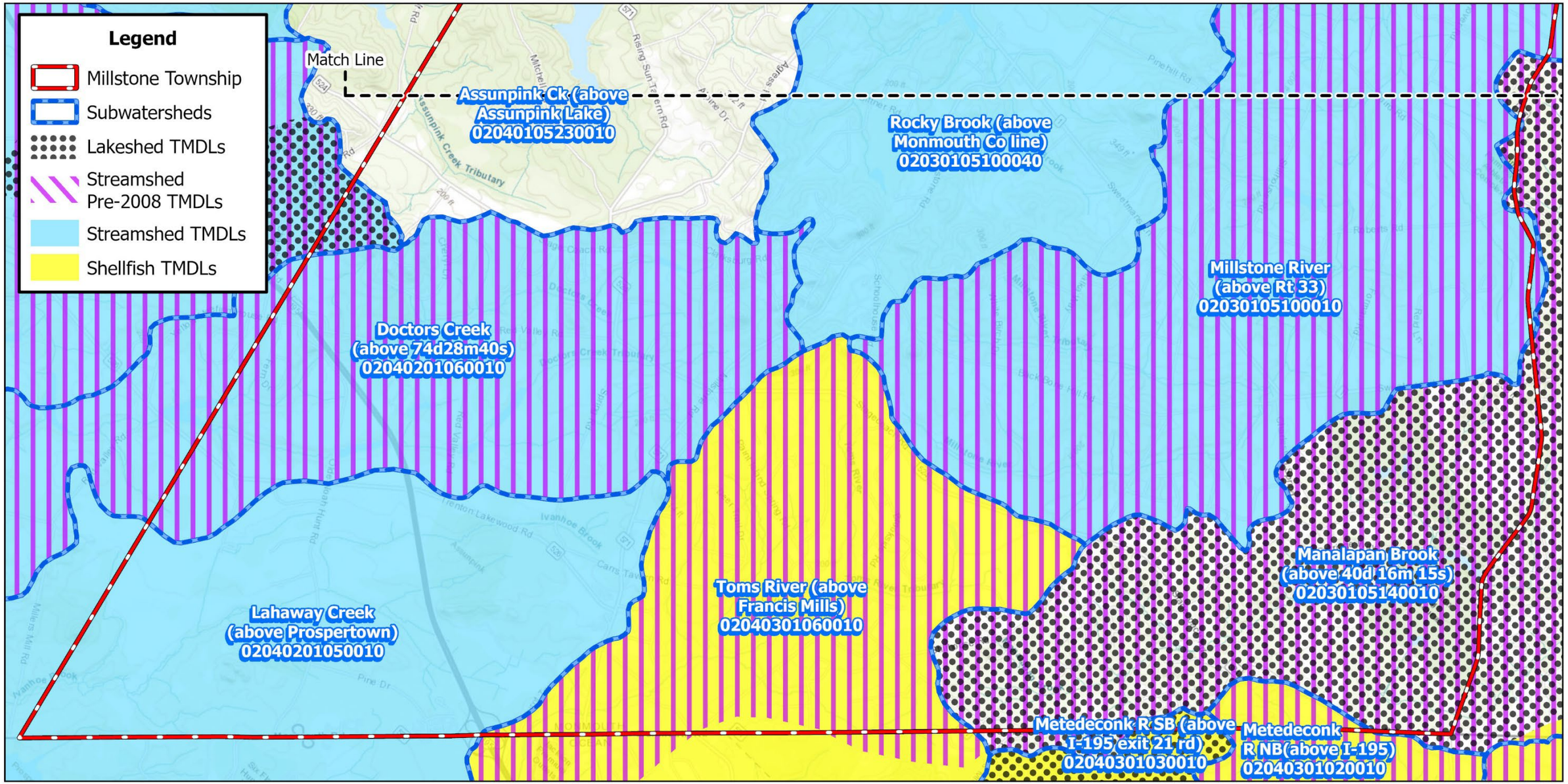
Figure 5a: TMDLs by Parameter

Watershed Inventory Report
Township of Millstone - Northwest
Monmouth County, New Jersey

Source: LSA, NJGIN, and Monmouth County GIS.

Revised: August 08, 2025

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized or endorsed.



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Scale: 1in = 0.6mi

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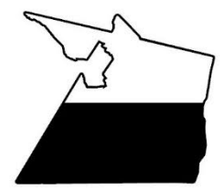
Figure 5b: TMDLs by Parameter

Watershed Inventory Report
Township of Millstone - Southeast
Monmouth County, New Jersey



Source: LSA, NJGIN, and Monmouth County GIS.

Revised: August 08, 2025

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Overburdened Communities

Overburdened communities (OBC) data was obtained through the NJDEP's NJ-WET GIS service. The data was obtained in February 2025 and is publicly available.

An area in New Jersey is considered an OBC if it meets at least one of these three criteria according to the most recent US Census:

1. At least 35 percent of the households qualify as low-income households (at or below twice the poverty threshold as determined by the United States Census Bureau);
2. At least 40 percent of the residents identify as minority or as members of a State recognized tribal community; or
3. At least 40 percent of the households have limited English proficiency (without an adult that speaks English "very well" according to the United States Census Bureau).

The importance of clean surface water within OBCs is paramount for several reasons. Environmental justice is the idea that all people regardless of race, color, national origin, or income should have equal access to a healthy environment. Unfortunately, OBCs are often found in highly developed areas surrounded by a high percentage of impervious surfaces and little to no Green Infrastructure or other Best Management Practices (BMPs) in place to effectively convey stormwater. This allows more pollutants to run off into local waterways, decreasing the quality of surface waters nearby and in turn the health of community members. Oftentimes lower income people lack the resources to travel or take vacations to recreate in cleaner waters that are farther away. There are no OBCs within Millstone Township.

Impervious Area

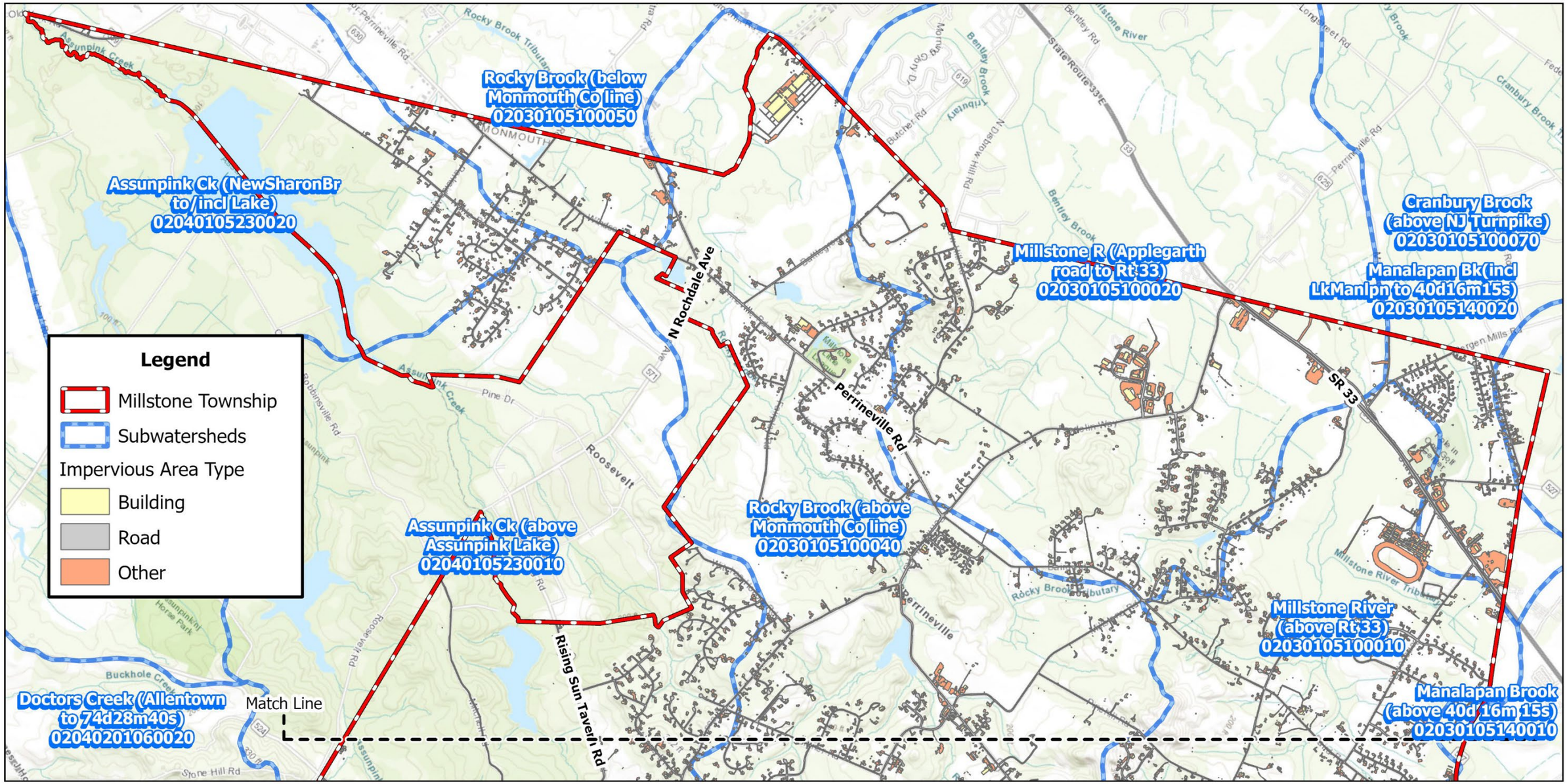
Impervious area data was obtained through the NJDEP's NJ-WET GIS service. Impervious cover percentages within subwatersheds were determined by analyzing NJ-WET GIS geodatabases in ArcGIS Pro. The data was obtained in February 2025 and is publicly available.

Impervious cover is any surface that does not allow water to infiltrate into it and eventually reach groundwater. Features like roads & parking lots (aside from pervious pavement), sidewalks, rooftops, basketball courts, etc. are examples of impervious cover. Impervious surfaces present a large problem to the hydrologic cycle and local water quality. Stormwater runoff that would naturally seep into groundwater aquifers through soils are instead diverted elsewhere, reducing groundwater recharge. This stormwater picks up nitrogen, phosphorus, fecal coliforms, motor oil, total suspended solids, floatables, and other pollutants lying on impervious cover and transports it directly to local waterways if not collected by storm drains or filtered through vegetation. This causes significant harm to the ecosystems present in the waterways as well as the water quality, causing issues such as harmful algal blooms and bioaccumulation of pollutants in fish. Creating more pervious land in large areas of impervious cover via Green Infrastructure like vegetative buffers surrounding waterways is essential to the health of local watersheds.

The percent impervious cover in each subwatershed within Millstone Township's jurisdiction is as follows:

- Toms River (above Francis Mills) (HUC 02040301060010): 10.13% impervious cover (0.33 out of 3.24 square miles)
- Rocky Brook (below Monmouth County line) (HUC 02030105100050): 6.61% impervious cover (0.038 out of 0.570 square miles)
- Rocky Brook (above Monmouth County line) (HUC 02030105100040): 6.99% impervious cover (0.44 out of 6.29 square miles)
- Millstone River (above Route 33) (HUC 02030105100010): 8.39% impervious cover (0.62 out of 7.35 square miles)
- Millstone River (Applegarth Road to Route 33) (HUC 02030105100020): 7.94% impervious cover (0.28 out of 3.54 square miles)
- Metedeconk River SB (above I-195 exit 21 Road) (HUC 02040301030010): 19.66% impervious cover (0.0059 out of 0.0301 square miles)
- Metedeconk River NB (above I-195) (HUC 02040301020010): 14.31% impervious cover (0.020 out of 0.143 square miles)
- Manalapan Brook (above 40d16m15s) (HUC 02030105140010): 7.05% impervious cover (0.24 out of 3.47 square miles)
- Manalapan Brook (includes Lake Manalapan to 40d16m15s) (HUC 02030105140020): 10.93% impervious cover (0.011 out of 0.105 square miles)

- Lahaway Creek (above Prospertown) (HUC 02040201050010): 6.31% impervious cover (0.21 out of 3.36 square miles)
- Doctors Creek (Allentown to 74d28m40s) (HUC 02040201060020): 0.70% impervious cover (0.00072 out of 0.10318 square miles)
- Doctors Creek (above 74d28m40s) (HUC 02040201060010): 8.23% impervious cover (0.30 out of 3.67 square miles)
- Cranbury Brook (above NJ Turnpike) (HUC 02030105100070): 17.93% impervious cover (0.10 out of 0.56 square miles)
- Assunpink Creek (New Sharon Bridge to/including Lake) (HUC 02040105230020): 3.60% impervious cover (0.055 out of 1.529 square miles)
- Assunpink Creek (above Assunpink Lake) (HUC 02040105230010): 5.96% impervious cover (0.19 out of 3.24 square miles)



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0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

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Figure 6a: Impervious Area

Watershed Inventory Report
Township of Millstone - Northwest
Monmouth County, New Jersey

Source: LSA, NJGIN, and Monmouth County GIS.

Revised: August 08, 2025

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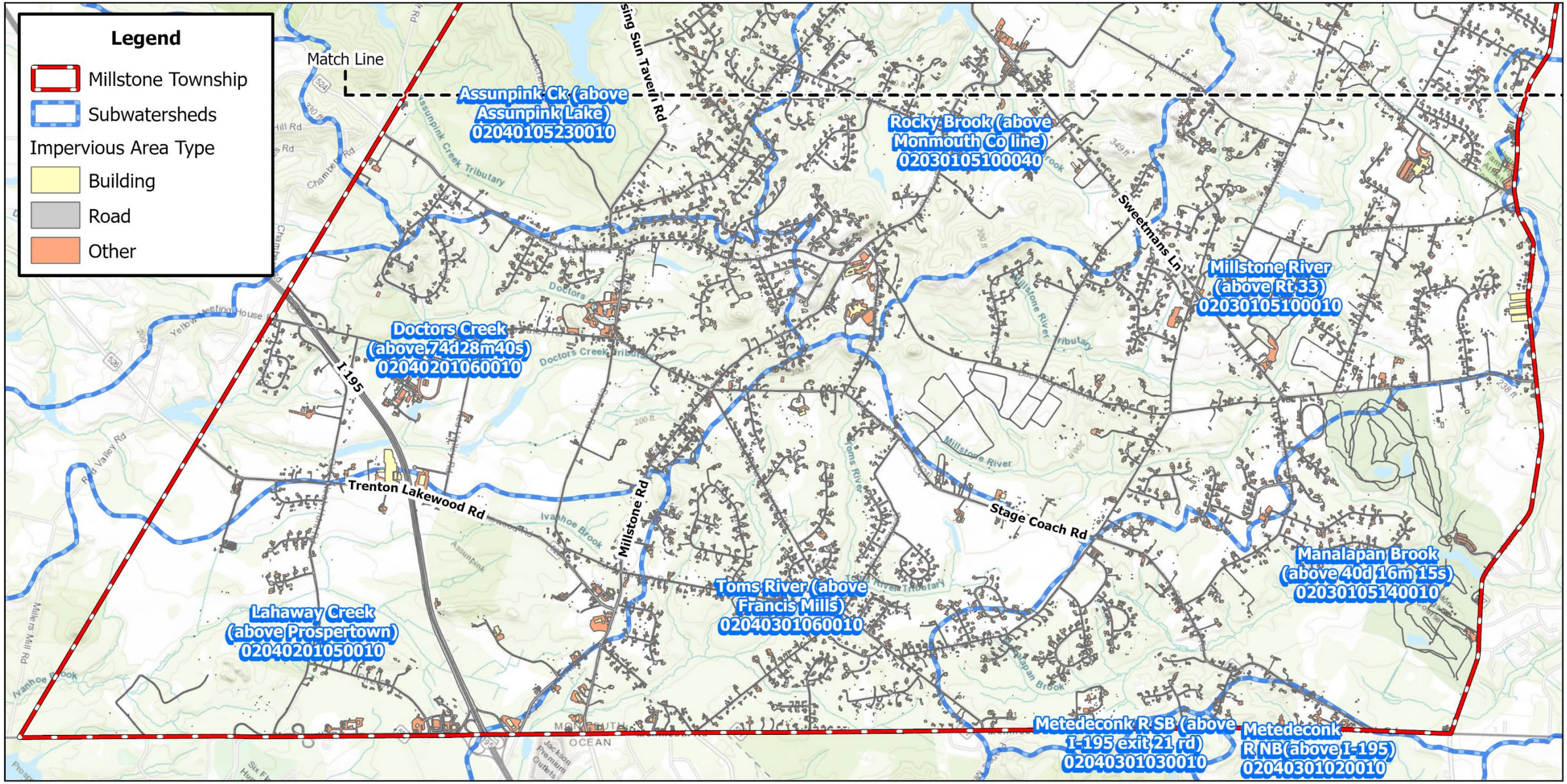

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0 0.15 0.3 0.6 0.9 1.2 Miles

Scale: 1in = 0.6mi

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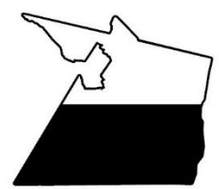
Figure 6b: Impervious Area

Watershed Inventory Report
Township of Millstone - Southeast
Monmouth County, New Jersey



Source: LSA, NJGIN, and Monmouth County GIS.

Revised: August 08, 2025

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Non-Municipally Owned or Operated Stormwater Facilities

Non-municipally owned or operated stormwater facility data was obtained through the Rutgers University H&H and NJDEP Land Use Land Cover 2020 datasets. Known lists of non-municipally owned or operated stormwater facilities were also consulted. The data was obtained in May 2025 and is publicly available.

There are 82 non-municipally owned or operated stormwater facilities in Millstone Township.

Table 3: Non-municipally Owned/Operated Stormwater Infrastructure by Subwatershed

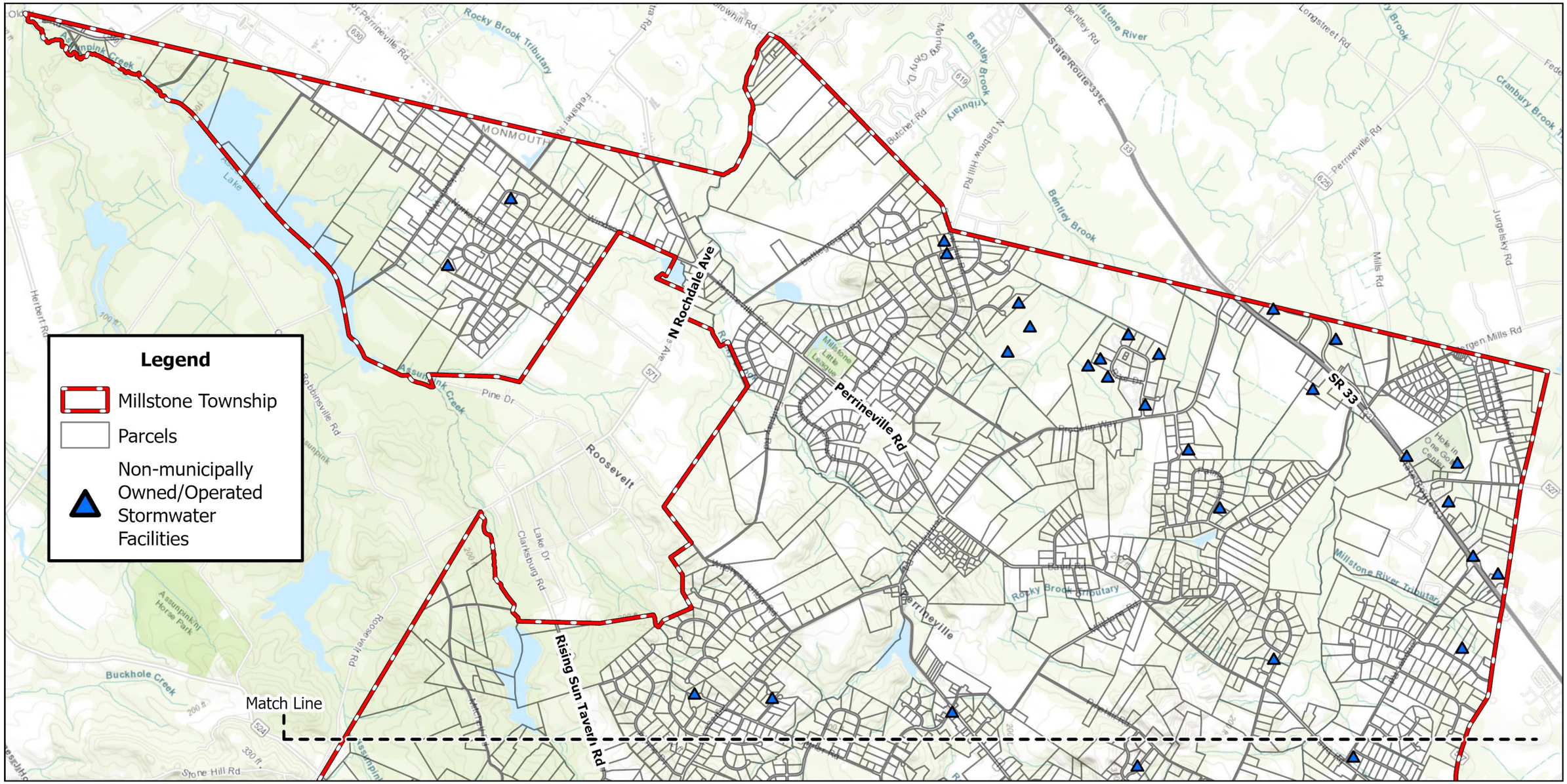
Subwatershed (HUC 14)	Number & Percent	Type	Block	Lot	Owner
Toms River (above Francis Mills)	5 (6.10%)	Detention Basin	48	14.44	MOSCARITOLO,MICHELE& PASQUALE, ETALS
		Detention Basin	57	17.01	HUNTER FAMILY REALTY LP %R FISCHER
		Infiltration Basin	60.01	16.01	494 MONMOUTH ROAD, LLC
		Detention Basin	50	23.03	LOBIANCO, ANTHONY & ANNA MARIE
		Detention Basin	60.01	17.01	KENSINGTON ORGANAZATION L.L.C.
Rocky Brook (below Monmouth County line)	1 (1.22%)	Detention Basin	7.01	5	RUGGIERO, DONALD D & PORNPIT
Rocky Brook (above Monmouth County line)	5 (6.10%)	Detention Basin	30	14.20	SZARO, JOHN & KATARZYNA
		Detention Basin	38	6.07	FEDERICI,FRANK A.& MARY LYNN
		Detention Basin	39.01	1	JTMB INVESTORS, L.L.C.
		Detention Basin	38	6.20	SHARP, DONZELLE & CHERRYL
		Detention Basin	36.01	14.18	GOYANES, ELENA & CUEVAS, JESSE
Millstone River (above Route 33)	15 (18.29%)	Detention Basin	45	5.08	KRISHNAMURTHY, SANDHYA
		Detention Basin	45	5.08	KRISHNAMURTHY, SANDHYA
		Detention Basin	40.01	20.01	ST. JOSEPH CHURCH

		Detention Basin	23	14.06	RIZK, CHRISTOPHER
		Detention Basin	45.01	3	RODRIGUEZ, ERIK & KRISTIN
		Detention Basin	42	5.06	BAKOS, MELISSA
		Detention Basin	27	7.06	JENKINS, ROBERT MAX & ABIGAIL M
		Detention Basin	40	38	RODRIGUEZ, JAVIER ANTONIO & AZALESH
		Detention Basin	24.04	1	ELWAKKAD, EHAB
		Detention Basin	24	8.08	BUONO,ANTHONY DAVID & ANTHONY JR.
		Detention Basin	27.03	3	DIMAGGIO, MARIA
		Detention Basin	27	3.05	KATZMAN, TIMOTHY M & TARA
		Detention Basin	20	3.13	JLE, L.L.C.
		Detention Basin	27.01	5	ISMAILI, SOHAIL & KHAN, SHAMEEN
		Retention Basin	27.01	5	ISMAILI, SOHAIL & KHAN, SHAMEEN
Millstone River (Applegarth Road to Route 33)	16 (19.51%)	Detention Basin	16	10.08	INTEGRATED REALTY HOLDINGS, LLC
		Detention Basin	16	2.06	BISWAL, RAJIV & CENCORA, BARBARA
		Detention Basin	18	2.01	700 HIGHWAY 33, LLC
		Detention Basin	16	9.05	LANDMARK INFRASTRUCTURE HOLDING COM
		Retention Basin	16	9.01	MOTO INDUSTRIAL PARK ASSOCIATION
		Detention Basin	16	9.11	CHERYL ONE PROPERTIES, LLC
		Detention Basin	16	9.01	MOTO INDUSTRIAL PARK ASSOCIATION
		Detention Basin	17	14.28	WHITE, NEWELL S. & ELEITH
		Detention Basin	12.05	1	SHAW, JERELL
		Detention Basin	12	6.01	ROCKY BROOK, L.L.C.

		Detention Basin	16	9.08	1300 RIKE DRIVE,LLC
		Detention Basin	16	3	PONDEROSA CROSSINGS LLC
		Detention Basin	16	3	PONDEROSA CROSSINGS LLC
		Retention Basin	18	2.04	FORCE 5 HOLDINGS, LLC
		Retention Basin	17	26.15	MATOS, PAULO & FERNANDA
		Detention Basin	17	8.06	LENZO FAMILY LLC%COLONIAL AIRSTREAM
Metedeconk River SB (above I-195 exit 21 Road)	0 (0%)	N/A	N/A		N/A
Metedeconk River NB (above I-195)	0 (0%)	N/A	N/A		N/A
Manalapan Brook (above 40d16m15s)	13 (15.85%)	Detention Basin	44	14.01	COUNTY OF MONMOUTH
		Detention Basin	62	21.10	DUTZ, CHRISTOPHER & CYNTHIA
		Retention Basin	44	6	COUNTY OF MONMOUTH
		Retention Basin	44	6	COUNTY OF MONMOUTH
		Retention Basin	44	6	COUNTY OF MONMOUTH
		Retention Basin	44	6	COUNTY OF MONMOUTH
		Retention Basin	44	6	COUNTY OF MONMOUTH
		Retention Basin	44	14.01	COUNTY OF MONMOUTH
		Retention Basin	44	14.01	COUNTY OF MONMOUTH
		Retention Basin	44	14.01	COUNTY OF MONMOUTH
		Retention Basin	44	14.01	COUNTY OF MONMOUTH
		Infiltration Basin	44	14.01	COUNTY OF MONMOUTH

		Detention Basin	45	11.07	LENNER, GERALD EMANUEL
Manalapan Brook (includes Lake Manalapan to 40d16m15s)	0 (0%)	N/A	N/A		N/A
Lahaway Creek (above Prospertown)	15 (18.29%)	Detention Basin	57	14.01	SVEDOVA PROPERTIES, LLC
		Detention Basin	55	3.03	MORGAN, ROBERT L & LINDA L
		Detention Basin	56	4	WAWA, INC.
		Detention Basin	56	13.01	ROUTE 537 HOLDING CO., LLC
		Detention Basin	57.01	19.02	ARCHLAND PROPERTY I, LLC
		Detention Basin	60.02	21.16	GRIES, ROBERT J. & JUDY P.
		Retention Basin	57.01	19.01	MILLSTONE MORO LLC
		Detention Basin	58	4.03	ANC JERSEY HOLDINGS, LLC
		Detention Basin	57	33	GREEN LEAF RESORT HOLDINGS, LLC
		Retention Basin	57	33	GREEN LEAF RESORT HOLDINGS, LLC
		Infiltration Basin	57	33	GREEN LEAF RESORT HOLDINGS, LLC
		Detention Basin	57.01	21.01	MILLSTONE MORO LLC
		Detention Basin	56	5.01	MHC 302 (MILLSTONE NJ) LLC
		Detention Basin	56	11.01	564 MONMOUTH ROAD HOLDING CO.
		Detention Basin	N/A	N/A	NJDOT
Doctors Creek (Allentown to 74d28m40s)	0 (0%)	N/A	N/A		N/A
Doctors Creek (above 74d28m40s)	6 (7.32%)	Retention Basin	53	4.07	1 AND 5 WREN HAVEN, LLC
		Detention Basin	36.03	1	BROSEN, ROBERT D & DALILA E

		Detention Basin	35	8.10	WALTERS, MARK J & CHRISTINA M
		Detention Basin	35	13.05	JENKINS, UNA C.& EDWIN M.
		Detention Basin	35	13.03	ALLEN HOUSE INC
		Detention Basin	53	2	SCENIC VIEW HOLDING COMPANY, LLC
Cranbury Brook (above NJ Turnpike)	4 (4.88%)	Detention Basin	20	3.13	JLE, L.L.C.
		Detention Basin	22	10.03	MILLSTONE CENTER, L.L.C.
		Detention Basin	22	13	SIL-KEMP CONCRETE,INC. T/A SILVI
		Retention Basin	22	2.03	RITAM 33 PROPERTIES, LLC
Assunpink Creek (New Sharon Bridge to/including Lake)	1 (1.22%)	Detention Basin	6.01	7	RIDINGS @ MILLSTONE C/O C.MANNIKUS
Assunpink Creek (above Assunpink Lake)	1 (1.22%)	Detention Basin	31.05	19.04	DEVERIN, RYAN & KATHARINE



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Consulting Engineers

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Scale: 1in = 0.6mi

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Figure 7a: Non-municipally Owned/Operated Stormwater Facilities

Watershed Inventory Report
Township of Millstone - Northwest
Monmouth County, New Jersey

Source: LSA, NJGIN, and Monmouth County GIS.

Revised: August 08, 2025

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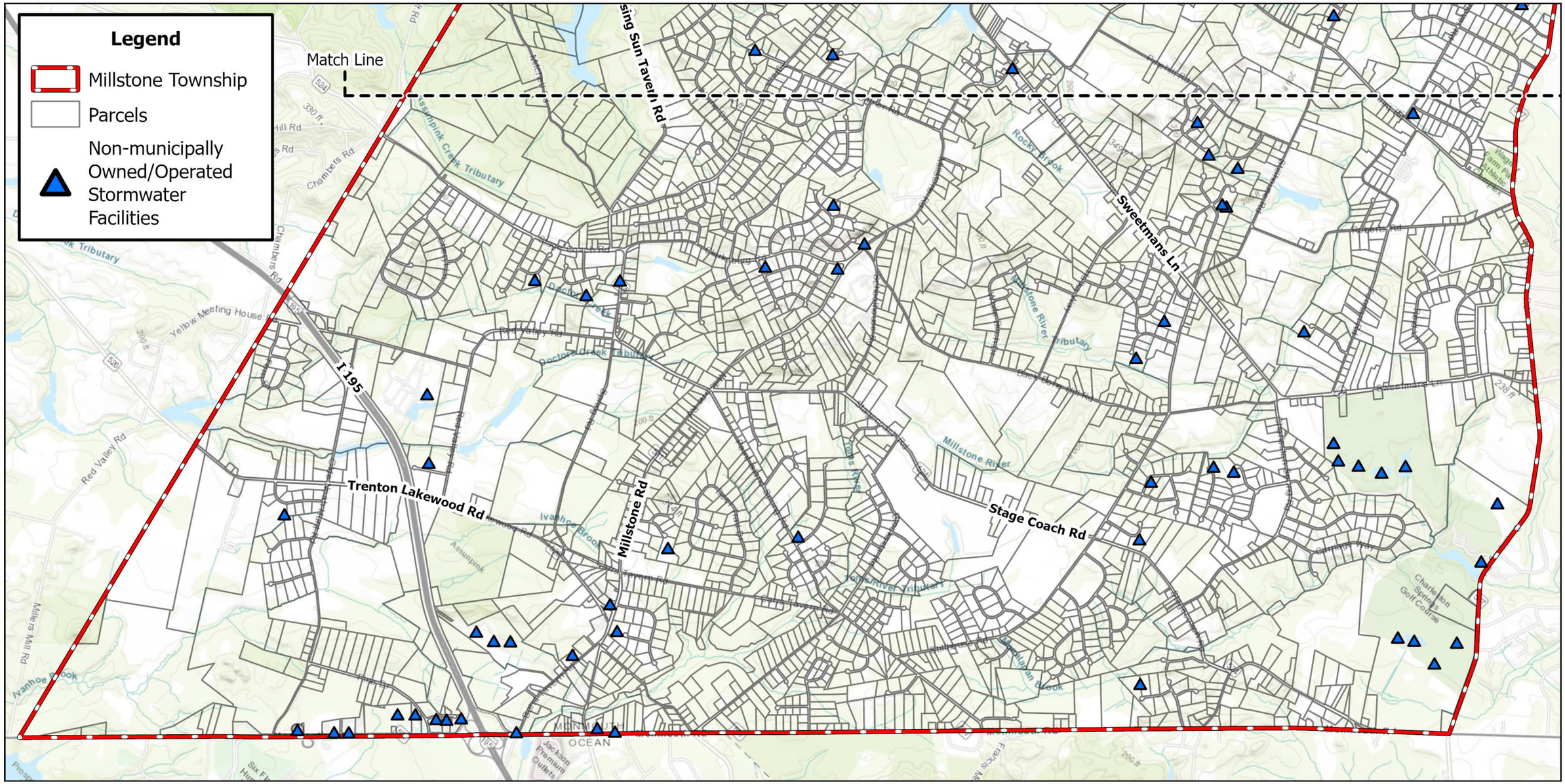

LEON S. AVAKIAN, Inc.

Consulting Engineers

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Scale: 1in = 0.6mi

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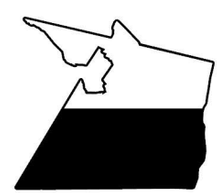
Figure 7b: Non-municipally Owned/Operated Stormwater Facilities

Watershed Inventory Report
Township of Millstone - Southeast
Monmouth County, New Jersey



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Revised: August 08, 2025

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Conclusion

The Watershed Inventory Report, Phase 1 of the Watershed Improvement Plan, identifies stormwater infrastructure, as required in the MS4 permits. It also summarizes water quality data, including stream classifications, TMDLs, and water quality impairments. The data that accompanies this inventory report has been compiled as an electronic map and submitted to the NJDEP through NJDEP Online via the Document Submittal Service. The information from this inventory report will be used to make informed decisions during the creation of the Watershed Assessment Report, Phase 2 of the Watershed Improvement Plan. The work done in Phase 2 will identify areas of potential concern and where potential water quality improvement projects may be implemented to address the highlighted water quality and quantity issues identified in this inventory report.

References

2020 Census of Population and Housing. Retrieved on February 10, 2025 from U.S. Department of Commerce, U.S. Census Bureau website: https://data.census.gov/.

Environmental Justice Mapping, Assessment and Protection Tool. Retrieved on February 10, 2025 from New Jersey Department of Environmental Protection, Bureau of Environmental Justice website: https://dep.nj.gov/ej/.

New Jersey 2022 Integrated Water Quality Report, including the 303(d) Impaired Waters List. Retrieved on February 10, 2025 from New Jersey Department of Environmental Protection, Bureau of Bureau of Environmental Analysis, Restoration and Standards website: https://dep.nj.gov/wms/bears/integrated-wq-assessmentreport-2022/.

New Jersey Hydrologic Modeling (H&H) Database. Retrieved on May 30, 2025 from Rutgers University Hydro website: https://hydro.rutgers.edu/.

New Jersey Watershed Evaluation Tool (NJ-WET). Retrieved on February 10, 2025 from Division of Watershed and Land Management, Bureau of NJPDES Stormwater Permitting & Water Quality Management website: https://dep.nj.gov/njpdes-stormwater/municipal-stormwater-regulation-program/watershed-improvementplan-guidance/.

NJDEP Open Data. Retrieved on February 10, 2025 from Division of Information Technology, NJDEP Bureau of GIS website: https://gisdata-njdep.opendata.arcgis.com/.

NJ-GeoWeb. Retrieved on February 10, 2025 from New Jersey Department of Environmental Protection, Bureau of GIS: https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=02251e521d97454aabadfd8cf168e44d.

Pollutants of Concern. Retrieved on February 10, 2025 from New Jersey Department of Environmental Protection, Bureau of NJPDES Stormwater Permitting and Water Quality Management website: https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/wip/pollutants-of-concern.pdf.

Total Maximum Daily Load for Mercury Impairments Based on Concentration in Fish Tissue Caused Mainly by Air Deposition to Address 122 HUC 14s Statewide. Retrieved June 9, 2025 from New Jersey Department of Environmental Protection, Bureau of Environmental Analysis, Restoration & Standards (BEARS): https://www.nj.gov/dep/wms/bears/docs/TMDL%20HG%20document%20final%

20version%209-8-09_formated%20for%20web%20posting%20js.pdf.

Total Maximum Daily Load (TMDL) Look-Up Tool. Retrieved on February 10, 2025 from New Jersey Department of Environmental Protection, Bureau of NJPDES Stormwater Permitting and Water Quality Management website: https://dep.nj.gov/njpdes-\ stormwater/municipal-stormwater-regulation-program/tmdl/.

Watershed Inventory Report Template. Retrieved on February 10, 2025 from New Jersey Department of Environmental Protection, Bureau of NJPDES Stormwater Permitting and Water Quality Management website: https://dep.nj.gov/wp-content/uploads/njpdes-stormwater/wip/draft-template_watershed-inventory-report-phase-1-wip.pdf.